NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

NTU-SBF Centre for African Studies
Nanyang Business School

Africa Current Issues

Shifting Global Demographics: An African Opportunity?

Vol. 2020 - 32

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Introduction

Demographers generally agree that the rate of global population growth is likely to fall, with population peaking by the end of this century, and then declining. In their 2019 book *Empty planet: The shock of global population decline*, authors Darrell Bricker & John Ibbitson assert that the challenge the world must face is not of a "population bomb but of a population bust – a relentless, generation-after-generation culling of the human herd".[1] Even though remarkably contrarian and counterintuitive, this "empty planet" thesis warrants serious consideration.

A study published in July 2020 issue of *The Lancet* envisions the world reaching peak population only a few years after 2050, with a substantial decline by the end of the century.[2] Such an outcome would not necessarily lead to negative consequences. Fewer human beings would probably be good for the environment, our climate and food security. Still, a smaller workforce might slow economic growth and increase the support burden falling on those who do work.

Some high-achieving global innovators align with the populist bust thesis. In August 2019, for instance, Elon Musk and Jack Ma, two of the world's most successful and dynamic innovators, one from the West, the other from the East, converged on an astonishing prediction. Musk opined, "The biggest issue in 20 years will be population collapse, not explosion, collapse." And without equivocation, Ma agrees: "You call it a 'collapse', I agree with you."[3]

Intuitively, a population bust may seem farfetched. But a global demographic shift that leaves the West (and increasingly the East) ageing and with an insufficient workforce is already apparent. The reverse is almost certainly to be the case in Africa. Global fertility rates are in decline, although this trend is slower in sub-Saharan Africa (SSA). And as European & Central Asian populations shrink, that of Africa is expected to continue to grow.

UN projections of global population tend to be very reliable. Its *2019 World Population Prospects* project global population to grow by 10 per cent to 8.5 billion by 2030. The UN projects its growth to 9.7 billion in 2050, then to 10.9 billion in 2100.[4] The UN expects Africa's population to reach twice its 2019 level of about 1.1 billion by 2050. Of the nine countries that account for more than half of our world's projected 2019-2050 population growth, five are African: Nigeria, the Democratic Republic of Congo, Ethiopia, Tanzania and Egypt.

As Africa would increasingly account for a greater portion of the global working age population, economists expect a "demographic dividend." As societies develop, child mortality falls, and families eventually tend to have fewer children. The resulting transition in the population's age structure leads to a preponderance of the working population (15 to 64 years) versus the dependent (14 years and younger, and 65 years and older) population.[5] This trend tends to increase GDP and generate wealth.

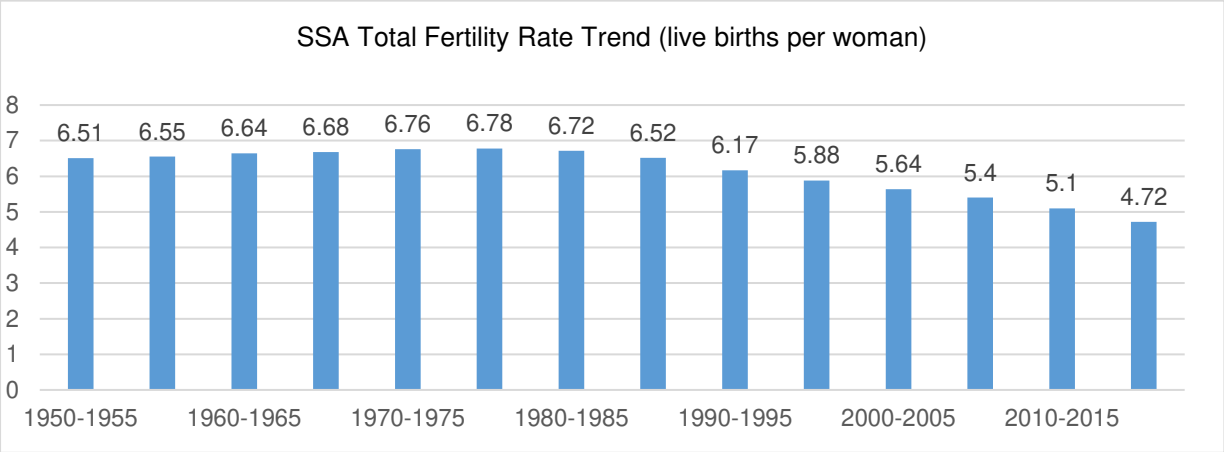
However, the emergence of the fourth industrial revolution (digitization, artificial intelligence, automation, etc.) may cancel the expected demographic dividend from Africa's youthful and globally dominant population. In this scenario, a large and preponderantly youthful working-age population may not be a source of wealth.

But the current hype surrounding these supposedly labour-destroying technological advances may be just that. The real issue is, does Africa have sufficient time for an ideal transformation from agrarian subsistence to industrial wealth? If the answer is yes, which opportunities can firms leverage to deploy the potentially favourable global demographic shifts in favour of Africa? How should the continent proceed over the next thirty years to 2050, another fifty years to the end of the 21st century, and thereafter? This article seeks to clarify and answer these questions.

Africa's unique demographics — a double-edged sword?

The demographic dividend is "the tendency for economic growth to be spurred by rapid growth of the working-age share of the population."[6] It emerges as the working age population (age 15 to 64) begins to outnumber child dependents (age below 15). With fewer dependents, families invest more in their children and build savings that feed back into the economy, creating a virtuous cycle. Reduced fertility and increased productivity and savings are the key drivers for the demographic dividend (Harper, 2016).

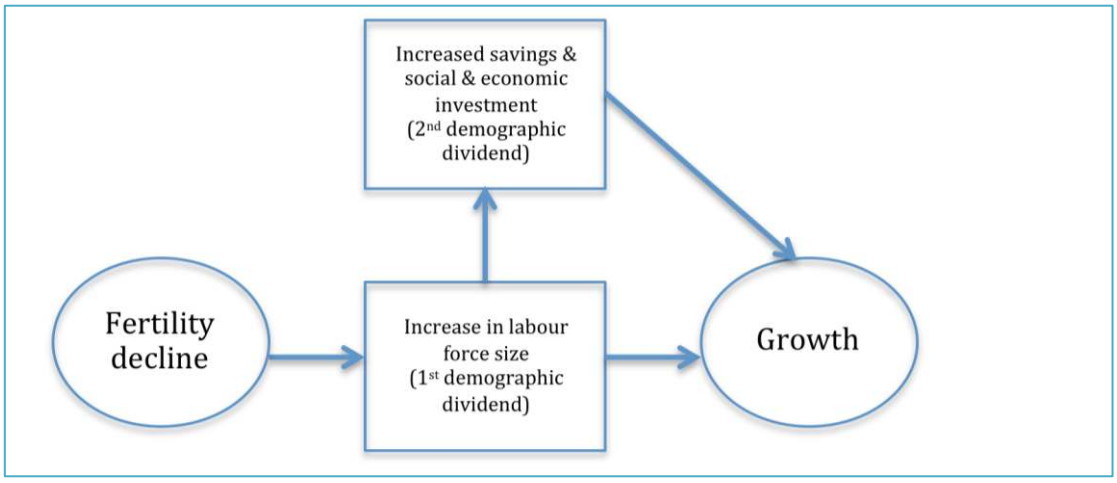
Figure 1: SSA total fertility rate (live births per woman) trend



Source: United Nations Population Division

SSA's total fertility rate (TFR) is slowly but surely in decline (Figure 1). However, the levels of African productivity and savings remain far less than ideal.[7] Without improvements in these factors, increases in the working age population may not become a sustainable engine of economic growth. To improve productivity and savings, African authorities must create and sustain an enabling environment that integrates good health, good education, good governance and good economics.

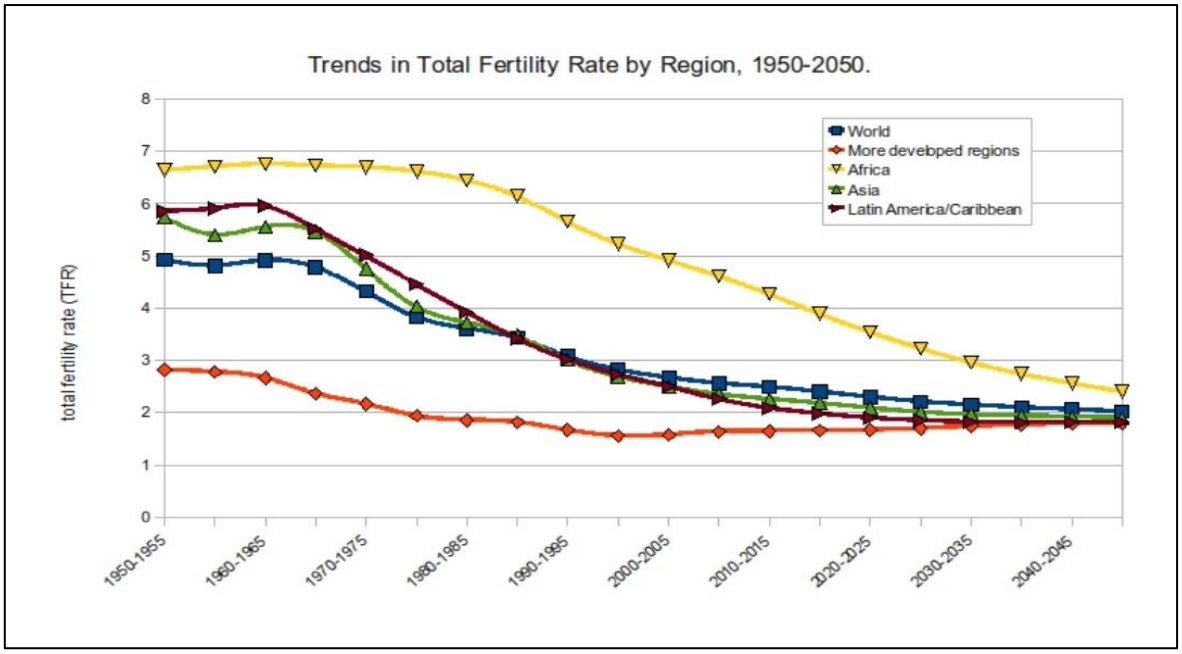
Figure 2: Demographic transition to demographic dividend



Adapted from Wietzke (2020)[8]

The emerging global demographic shifts favour Africa. This may attract global firms to focus on the continent either as destination consumer or labour markets. With Africa's projected progression from its current 10 per cent to 20 per cent of the global population in only thirty years, many global companies would target Africa for consumption at scale. And since about 4 of every 10 human beings may be African by 2100, Africans would not only generate consumption, but also be a source of skilled labour. It is not farfetched to view the continent's stomachs, hands and brains as the key driver for global economic growth in the 22nd century, when perhaps one out of every two humans may be African.

Figure 3: Trends in total fertility rates for Africa vs. other regions (1950-2045)



Source: https://www.populationconnection.org/africa-globaldev/

Although Africa currently has the world's highest birth, mortality and migration rates, it is still in the early stage of its demographic transition, characterised by high fertility but longer (albeit still low) life expectancy (Morland, 2019). In other words, Africa continues to have high birth rates, even as fewer die and more live longer. The outcome is a population boom. Africa's population growth is likely to account for more than half of global population growth through to 2050, based on the 2015/2016 Global Monitoring Report. By 2050, about a third of Africa's population would be children, while about a fifth would live beyond the continent. In fact, sub-Saharan Africa could account for more than half of the world's working age population by 2050.[9] Clearly, the implications of these projections, if realised, would be far-reaching, not only for the continent but for the entire world.

Table 1: Population Projections (millions)

Region	2019	2030	2050	2100
World	7,713	8,548	9,735	10,875
Sub-Saharan Africa	1,066	1,400	2,118	3,775
Central & Southern Asia	1,991	2,227	2,496	2,334
Eastern & South-Eastern Asia	2,335	2,427	2,411	1,967
Europe & North America	1,114	1,132	1,136	1,120

Source: United Nations, Department of Economic & Social Affairs, Population Division (2019). World Population Prospects 2019

But will more able bodies in Africa be assets if there are fewer entry-level jobs? Automation, artificial intelligence and the other digital technologies that drive the so-called fourth industrial revolution (4IR) will reduce demand for many kinds of labour. It may not be realistic to expect Africa to have its time in the sun through labour-intensive manufacturing work in an era when digital innovations reduce labour requirements while increasing output quality.

Recent reports suggest it may be quite some time before these new technologies become viable and scalable. Businesses find that adopting artificial intelligence at scale is difficult, data is less readily available than hoped, and deploying 4IR tools proves to be relatively expensive.[10] Humans may be a surer bet, especially in less-developed settings. Thus, Africa may still have time to follow the typical development progression from agrarian squalor to industrial wealth and sophisticated services. True, the window is closing. But enough time probably remains in the 21st century for African manufacturing to take off on the back of the labour advantages derived from its youth bulge, to build a substantial middle class, and to transition to the vast consumer market the industrial world needs to consume its excess output.

This raises an interesting question. If the rich world's population shrinks, and 4IR evolves too slowly to help their economies avoid labour scarcity and its effects, might potentially more reproductive regions such as Africa and Asia be able to exploit this gap? There is a strong logical basis for this reasoning. Morland (2019) views Britain's population explosion as crucial to its global exploits. "Britain had the population scale to become the world's factory and then, based on the wealth it accumulated, to become the world's financier (Morland, 2019)."[11] Is Africa positioned to evolve similarly?

If the thesis of a future world in which Africans play a far more dominant role comes to pass, then non-African firms and societies must prepare to welcome that eventuality. The early signs are that a world order that discriminates against a more dominant African presence would be a recipe for disaster. The rapid globalisation of the "Black Lives Matter" protests in 2020 signals that the world (firms, individuals, societies, and governments) must take action to strengthen the foundations of an equitable world of opportunities that benefit everyone.

The ageing developed world may always need labour (It is unlikely robots would be able to do everything.). There is little doubt that Africa can fill part of its requirement. However, an unskilled African population would be unable to tap new opportunities as they emerge. For Africa to exploit its demographic advantage, its education, infrastructure, and democratization policies must receive priority. There is evidence that such policies engender and prolong the demographic dividend. Renteria, Souto, Mejia-Guevara & Patxot (2016) find education policy crucial to extending the demographic dividend for developing countries, as they navigate through the early stages of their demographic transition.[12]

The alternative, an African population that is largely unskilled and uneducated, would be injurious both to Africa and to the world. Youth bulges are linked to violence and war.[13] "There is a proven link between the youthfulness of a society and its proclivity to go to war (Morland, 2019)." But it need not be so. "Population growth and economic boom become self-reinforcing under the right circumstances (Morland, 2019)." If economic opportunities are abundant, an educated and skilled African workforce is unlikely to be viewed as threatening. In fact, this would provide a solution to what Bricker & Ibbitson (2019) call the future "empty planet".

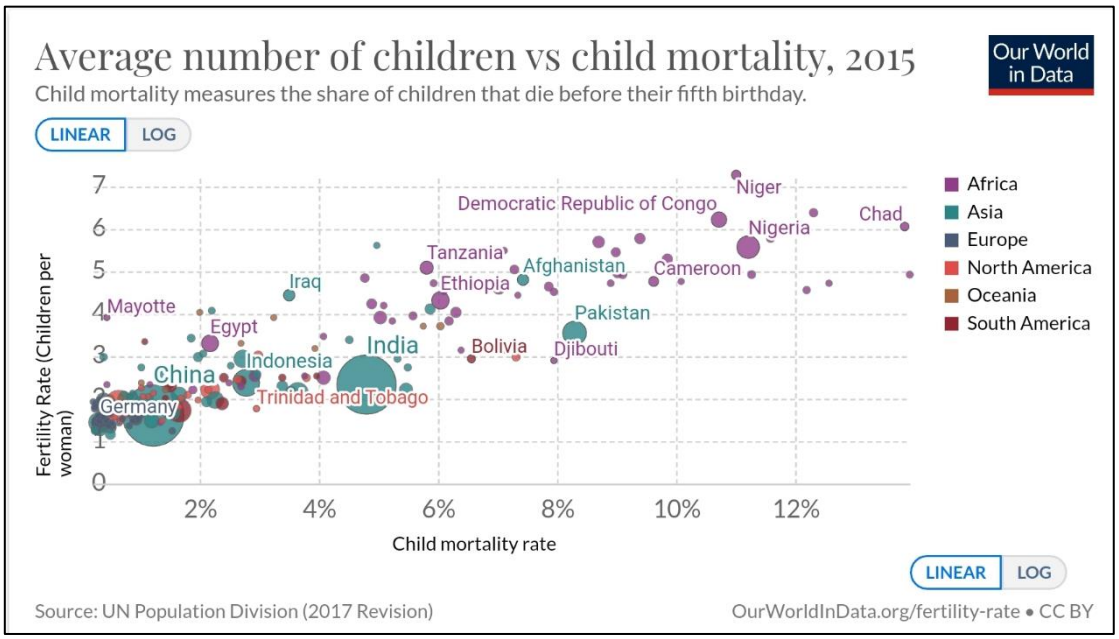
Table 2: Fertility transition versus stalling in Africa

Started fertility transition but now stalled	Pre-transitional TFR over 6	Started transition, stalled but now declining
Benin	Burundi	Ethiopia
Burkina Faso	Chad	Ghana
Ivory Coast	Mali	Kenya
Gabon	Niger	Madagascar
Guinea		Rwanda
Mozambique		Senegal
Nigeria		Tanzania
Zambia		Togo
Zimbabwe		Uganda

Source: Harper (2016)

Demographic transition theory posits "societies that experience modernization progress from a pre-modern regime of high fertility and high mortality to a post-modern regime in which both are low (Kirk, 1996)."[14,15] Using data for the 1970-2005 period from 77 countries, Wilson & Dyson (2017) find that the demographic transition facilitates democratization.[16] This process is underway in Africa, and the continent is likely to realise dividends from its transition. However, Africa has a unique set of circumstances. Its demographic transition to date has been unsteady, with halts and reversals (see Table 2). As shown in Figure 4, many African countries continue to have high fertility and child mortality rates. Thus, "while sub-Saharan Africa will likely follow a similar process of development to that already seen in other countries this process may take 50 years, or it may take 200 years; the difference between these in terms of human welfare is enormous" (Canning, 2011).[17]

Figure 4: Total fertility rate vs. child mortality rate



Source: https://ourworldindata.org/grapher/fertility-vs-child-mortality

But transition is still in its early stages. The "demographic dividend" is years away for many African countries, most of which remain predominantly rural and agrarian. "Africa's rapid progression to lower fertility has been charted, and this might spread to the rest of sub-Saharan Africa far more quickly than expected, bursting the African demographic bubble (Morland, 2019)." The continent's projected urban

and industrial metamorphosis is likely to take years, if not decades. This is because only a few African countries have been able to leverage the opportunities their cities provide to reduce poverty.[18] According to Lall (2020), "markets for land are generally dysfunctional, product markets are fragmented, and weak city planning and limited finance hobble urban development." And not until policies and markets are well-aligned to development can Africa hope to fully realise its demographic dividend.

Lower fertility and mortality rates and a growing labour force will characterise this new urban and industrial Africa. These factors will encourage savings, investment and greater welfare.[19] Of course, demography alone will not guarantee economic and geopolitical success. For instance, "Japan's ability to conquer and dominate large parts of China shows that demography alone was not sufficient – China, after all, always had more people – but a combination of Japanese demographic and industrial dynamism could defeat the Chinese demographic giant" (Morland, 2019). Without appropriate policies, Africa's demographic advantage might well become a population growth story featuring misery instead of prosperity.

Africa still has time to benefit from the age of labour

Century after century, technological progress has failed to produce massive job losses or the feared "technological unemployment". Robots can and do take over routine tasks (and increasingly some non-routine ones), with job losses owing to factor substitution. But evidence of job losses due to 4IR is scarce.[20] Author Daniel Susskind argues in his 2020 book *A World without work: Technology, automation and how we should respond* that while machines take over some jobs, they add value to the jobs they do not take over. The total value from the complementarities of the "productivity effect", "bigger-pie effect" and "changing-pie effect" generates more demand and thus new jobs (Susskind, 2020). That is, they create as many or more jobs as they displace. There is wide agreement on this thesis.[21] This motivates Susskind (2020) to assert that the current "Age of Labour" will continue for decades.

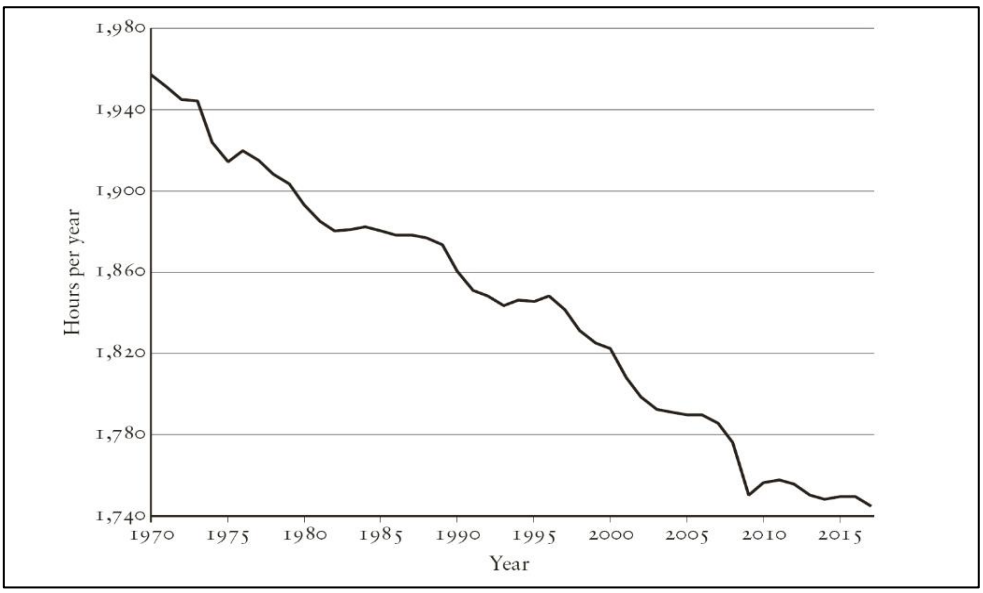
Table 3: The four waves of industrial revolution

Wave	Period	Main technical achievement	Main developed industries	Skill level	Labour intensity
1	1760-1900	Steam engine	Textile, steel	Low	Very High
2	1900-1960	Internal combustion engine	Metallurgy, auto, machine building	Medium	High
3	1960-2000	Computers, robots	Auto, chemistry	High	Medium
4	2000-present	Internet of Things, genetic engineering, 3D printer	High tech industries	Very high	Low

Adapted from Prisecaru (2016)[22] & Ndung'u & Signe (2020)

Human labour has repeatedly proven its utility in the face of many innovations over the past centuries, and humans are intrinsically more adaptable than machines. Thus, people should continue to add value regardless of how proficient machines become. And as the past two industrial revolutions each lasted for at least forty years, one could reasonably assume that the fourth will probably last as long. Also, as the digital technologies of the fourth industrial revolution would transform production and its inputs in unprecedented ways, the cycle may take longer to fully evolve. In other words, its impacts may emerge more slowly than the hype suggests.

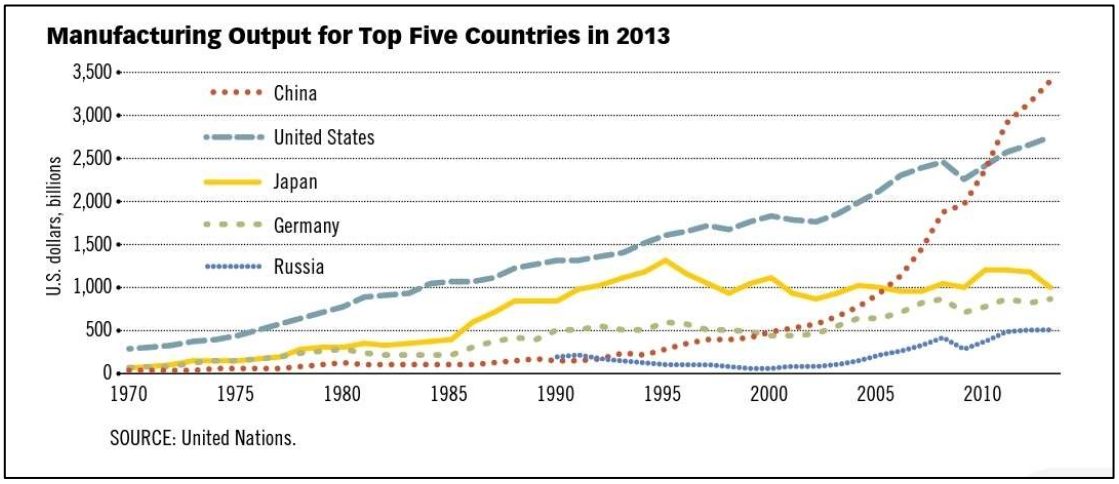
Figure 5: Hours worked per person, per year, in OECD countries



Source: Susskind (2020)

In his 2020 book *How innovation works: And why it flourishes in freedom*, author Matt Ridley highlights famed futurist Roy Amara's portrayal of how we tend to overestimate the impact of a new technology in the short run but underestimate it in the long run.[23] Artificial intelligence's underwhelming evolution to date almost certainly reflects the Amara hype cycle (Ridley, 2020). He makes the point succinctly: "I am not saying autonomous cars won't happen, just that we are likely to be underestimating the time it will take and the disappointments along the way (Ridley, 2020)." So, Africa probably still has time to leverage its demography for growth over the next thirty years or so. And this cycle could very well last longer than that. That said, with the skill level and labour intensity of the past industrial revolutions inversely proportional to each other (see Table 3), there is little doubt that production-related sectors will need less labour in the future.

Figure 6: China's manufacturing output (1970-2013)

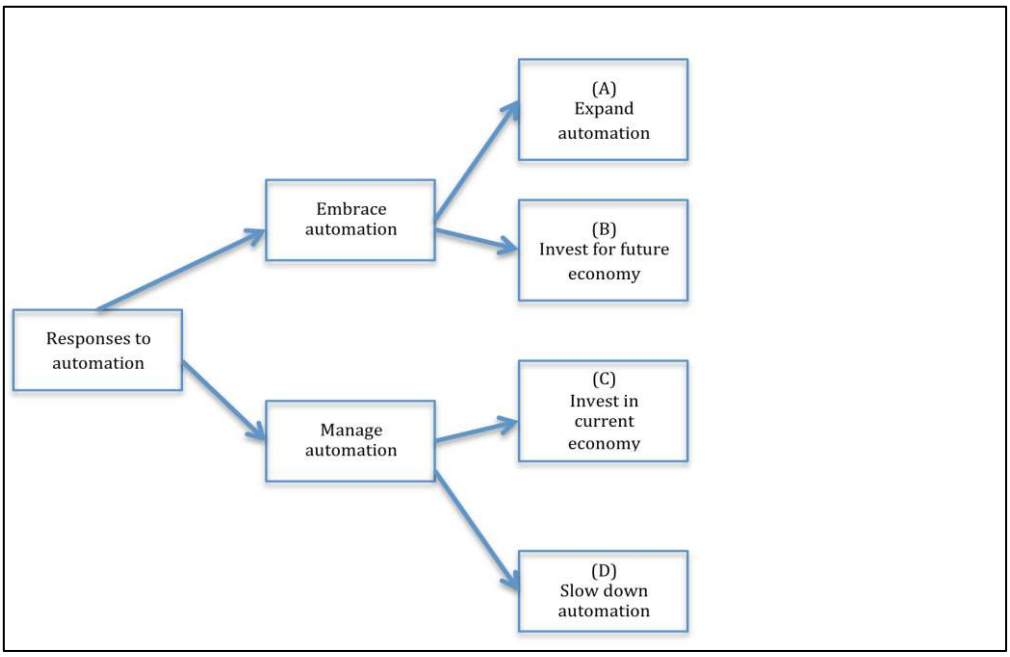


Source: Wen (2016)

Regardless, thirty years is more than enough for Africa to earn its demographic dividend. It took China just thirty-five years to transition from an agrarian economy to an industrial powerhouse, for instance

(see Figure 6).[24] Africa could very well have as much as eighty years to do likewise and equip its population for the inevitable future of high technology. This is because "even at the century's end, tasks are likely to remain that are either hard to automate, unprofitable to automate, or possible and profitable to automate but which we will still prefer people to do (Susskind, 2020)."[25] Also, Africa does not need to take as long as China.

Figure 7: Potential policy responses to automation

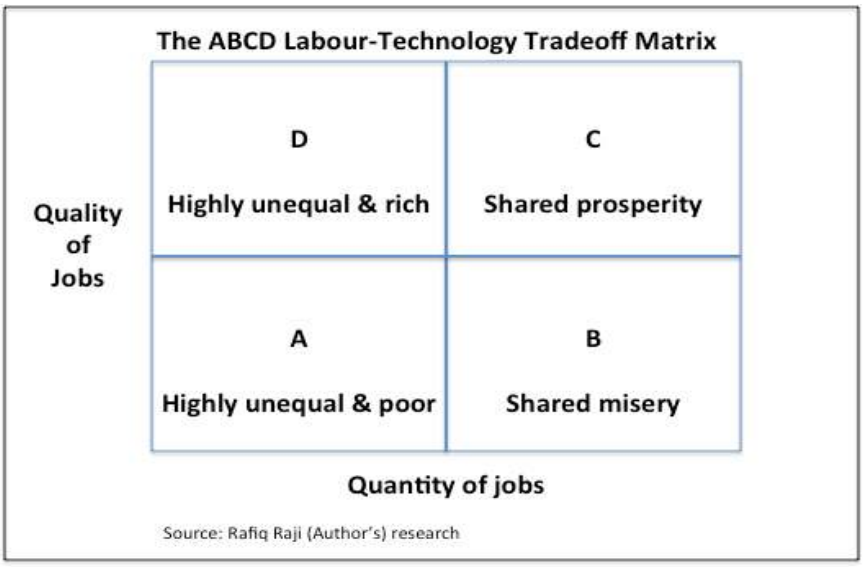


Adapted from Akileswaran & Hutchinson (2019)

Akileswaran & Hutchinson (2019) suggest African governments face the binary choice of embracing automation or managing automation during the 15- to 30-year time window that probably remains (see Figure 7) to do so. The choice is probably not mutually exclusive. Instead, Africa must manage and embrace automation in parallel. In doing so, global firms looking to extract more value from their expectedly increasingly redundant equipment stock could do so on the continent. Those looking to invest in the continent's future by building its digital infrastructure and preparing the population for the high technology era via EdTech, HealthTech, and so on, could also do so in parallel. Chinese firms already do both via the BRI and investments in the building blocks for the realisation of the continent's consumption potential (Kolodko, 2020).

Africa's 4IR prospects do not lead to a dead end. Many see advanced technology as the path on which the continent can fully realise its demographic dividend. Ndung'u & Signe (2020) see a transformative potential for 4IR in Africa. Applications of 4IR can generate economic growth while driving structural transformation in African economies. Such restructuring can lead to poverty alleviation via easier access to information for the poor, financial inclusion via digital financial services, modernizing agriculture and agro-allied industries, improving healthcare and reinventing labour, skills and production processes.[26] Thus, adoption of 4IR-based solutions in Africa may represent an opportunity and an imperative for global businesses and investors.

Figure 8: The ABCD labour-technology trade-off matrix



An economy fits into one of the four quadrants of the "Labour-technology tradeoff matrix" (Figure 8). Shared prosperity (Quadrant C) is an ideal outcome. In this state, an economy has about as many jobs in labour-light advanced services sectors as in labour-intensive primary agricultural and secondary industrial sectors. Ideally, an economy should evolve from a highly unequal and poor (Quadrant A) to a "shared prosperity" state (Quadrant C), en route passing through "shared misery" (Quadrant B). However, as is increasingly the case for advanced countries in the West, the journey may end in a highly unequal but nevertheless rich state (Quadrant D), owing to demographic and technological forces in the political economy.

Technological disruption, deindustrialisation, and technological displacement might divert states not already industrialized through labour-intensive manufacturing (Quadrant A) to evolve to a highly unequal but rich society (Quadrant D) instead of one of shared prosperity (Quadrant C). Some advanced economies such as the US, the UK, and others are increasingly unequal and en route to Quadrant D.

Over time, as advanced technologies diffuse, there may not be enough agriculture, mining and manufacturing jobs to go around. Most available jobs would require increasingly higher levels of learning and skillsets. In any case, the working population shortfall in advanced economies would lead to an organic decline of labour-intensive business models in favour of labour-light high-technology models.

Africa's potentially favourable demographics, combined with the forced global circumstance of increasing automation, may enable it to skip the "shared misery" state of plentiful low-skilled and low-paying jobs (Quadrant B), from which the Asian success stories emerged. Instead, Africa may be able to leapfrog directly to a shared prosperity (Quadrant C) state. In such a shared prosperity state, currently unequal and poor African countries would have as many low-skilled jobs as needed for their respective populations. Most of these jobs would be in primary sectors such as agriculture and mining. Many would be in medium-paying and medium-skilled secondary industrial sectors, with an increasing number in the rapidly evolving high paying and advanced-skilled high technology sectors.

Surplus absorption and development

Surpluses chasing deficits underpins global trade. "Over the past several decades, demand for good and services has therefore become the world's scarcest and most valuable resource, with the United States playing the role of swing producer."[27] Slavery, immoral though it was, could be seen as surplus labour in Africa filling labour deficits in the West. Colonialism was also the primary channel through

which the United Kingdom funnelled its production surplus abroad to earn funds to meet its input deficits (Klein & Pettis, 2020). From this perspective, the post-World War Two Marshall Plan was in effect, a mechanism by the United States that created demand for its own goods by lending a war-devastated Europe the cash that enabled them to buy American goods. In fact, "The Marshall Plan eventually provided $13 billion of aid between 1948 and 1952, around 5% of US GDP (Coggan, 2020)."

The exposition above shows how Africa has always acted as a surplus absorber for the rich world. The difference this time around is that it does not need to be forced to do so. This model also illuminates China's *Belt and Road Initiative (BRI)* role as a surplus absorption scheme. While not originally motivated by Africa's so-called "demographic exceptionalism", it could have done. The BRI should primarily focus on what is increasingly seen as the "African century". This is not farfetched.

In his 2020 book *China and the future of globalization: The political economy of China's rise,* Grzegorz Kolodko asserts that motivations for China's *Belt and Road Initiative* and its investments in Africa anticipate the continent's future wealth. "Just think that even if, halfway into the century, only a tenth of Africa's population is wealthy, let's say with incomes at the level of today's US middle class, this will represent for China a bigger market than Europe, with its middle class (Kolodko, 2020)."[28]

China's demographics are evolving. Its aged are increasing, and its birth rates are low. These factors lead China to being only nine per cent of the world's population by 2100, down from 14 per cent today. China is leading the efforts to digitalize its manufacturing and services (Kolodko, 2020). While China evolved quickly enough to avoid the initial impacts of automation and robotisation, these are now in full play. Africa may not be able to industrialize before China offsets its inevitable labour constraints with robots. As China would need a market for what will almost surely be excess production, its investments in the continent's infrastructure and capacity ahead of a future when these scarce resources will likely be in demand make sense.

Africa could become a huge export market for high technology from the developed world.[29] But apart from China, there is little awareness of this thesis. China seems to be the only industrialised country with a comprehensive strategy that acknowledges Africa's demand potential and leverages that as the basis for its engagement with the continent. That may be about to change.

American thinkers and policymakers are beginning to catch on.[30] In a recent policy brief, leading American think-tank Centre for Strategic & International Studies acknowledges "U.S. policy toward Africa is in need of a facelift – in both substance and strategic vision – to keep up with the continent's shifting demographics and growing influence on the world stage." Africa's unique demographics underpin this rethink. It is a bit surprising that it took China's competitive stance on the continent to motivate this realisation; especially as one would think that an America that was forward-thinking and visionary in its Marshall Plan surplus absorption scheme for Europe would have been first out the gate on the African front. Still, it supports the thesis of this article. Shifting global demographics tilts likely scarce future demand towards Africa. To make this a reality, however, global firms need a "Marshall Plan type" business strategy for the continent.

Table 4: African opportunities to engender demographic transition & dividend by sector

Health	Contraceptives, condoms, pharmaceuticals, health technology
Education	Digital/online learning, education technology
Population	Fast moving consumer goods
Business development & investment	Infrastructure, SME financing, ICT
Domestic savings	Mobile money, digital financial services
Trade	Imports, exports, trade finance

Adapted from Canning, Raja & Yazbeck (2015)

Canning, Raja, & Yazbeck (2015) observe "the sectors needed to encourage the demographic transition and produce a dividend include health, education, population, business development and investment, domestic savings and trade."[31] Better health infrastructure will help reduce child mortality. Female contraceptives may empower women to make self-interested fertility decisions. Secondary school education is found to raise the marriage age for girls and delay childbirth. It also raises employment prospects for both genders. Adding greater financial inclusion that rewards saving and provides income-enhancing credit results in a virtuous cycle.

Conclusion

Africa has the time needed to fulfil its potential in today's age of labour and position itself for the coming age of machines in tandem with humans. The choices are not mutually exclusive. Global businesses and investors have opportunities to invest in either or both ages. The real choice global firms face is time-dependent. Would it be optimal to invest in managing automation for the next three decades or so? Or would a firm be better off getting in on the ground floor of 4IR on the continent? The optimal decision would depend on the company, the sector and the country. China is already investing in both futures via the BRI and its bilateral 4IR partnerships with African countries through its many technology-based firms.[32]

But there is no one-size-fits-all solution. Some African countries have little choice but to remain in the age of labour longer than others. In other cases, the sector might evolve too quickly into the high technology age to leave firms with a real choice. Ultimately Africans may make up nearly half of the world's population by the end of the 21st century. Thus, the consumption story is irrefutable. But the story may also have a broader spectrum. "We have a hunch that the really exciting music and theatre, the truly ground-breaking innovations, the revolutionary new thinking in the last decades of this century will more likely come from Lagos or Mumbai than from Paris or Tokyo (Bricker & Ibbitson, 2019)."

As our exposition shows, this view is not farfetched. A decline in human capital growth is seen as the cause of the perennially dull economic growth of the developed world since the late nineteenth century.[33] Vollrath (2020) finds ageing and smaller family sizes as the principal culprits for America's growth slowdown. Almost paradoxically, decline in fertility is a consequence of wealth and thus a symptom of success. As suggested by the title of Vollrath's book *"Fully Grown: Why a stagnant economy is a sign of success,"* birth rate decline also signals potentially irreversible economic stagnation. That seems inevitable unless human capital decline is mitigated by immigration. This is because an organic replenishment, even by very determined government policies, of the lost human capital due to these demographic changes would take decades (Vollrath, 2020).

History tells us that, with few exceptions, a sizeable working-age population is one prerequisite for economic success. As early as the 1960s, fears emerged in the United States that automation would take jobs away.[34] But people were needed to fill the new and more interesting jobs brought on by automation. Besides, even in the anticipated age of artificial intelligence, a conservative time estimate for the ubiquity of desirables such as driverless cars is at least another twenty years.[35]

So the key issue is not whether there will be demand for human labour. It is far more likely to be about finding adequate numbers of right-skilled people for the jobs ushered in by successive waves of high technology. If about half the world's people at the end of the 21st century are likely to be African, then the currently rich world would be wise to ensure that the continent's human resources would be more than capable to fill the inevitable gaps in their own economies by that time.

Even so, many will make their own way at home. This would in part be due to better conditions and opportunities over time. True, many would likely migrate to Europe and The Americas, with a likely relative few making their way to Asia. However, the majority of the expectedly dominant African population would likely make their contributions to global progress from within their continent. Digital technologies already demonstrate the feasibility of this scenario.

Our instinct is to veer towards the positive. Credible forecasts (Vollset et al. 2020) of demography-induced economic development predict that Nigeria, Africa's currently most populous and largest economy, is likely to be the ninth largest economy in the world by the end of the 21st century. Imported goods (or their substitutes produced locally by multinationals) are sold at relatively attractive margins. And firms are the ultimate beneficiaries of investments in education, especially in secondary school education for girls. True, the inevitable rise in the opportunity costs of industrial capacity redundancy, high labour costs, and peak (and eventually slowing) demand owing to the shifts in demography may plague some currently developed economies. But other factors will pay a less immediate dividend for the African continent.

Each of the three basic demographic transitions — child survival, fertility decline and educational attainment — provides opportunities for global firms to contribute to the achievement of key milestones. Cincotta (2018) notes that service-driven achievements in any of these basic transitions "tend to drive demand for other services, spurring progress across several development transitions."[36] Child survival and fertility decline are already observable milestones on the continent (Vollset et al., 2020).,Educational attainment at scale that positions Africa for the high technology age should lead to increased income, and is likely to be the right path.

What type of educational attainment would be an optimal starting point? Goldstone (2019) argues for secondary school education as the most pertinent to achieving both fertility decline and creating the solid foundations for greater wealth for the many.[37] While investments by global firms in African secondary school education may not yield immediate returns, they would strengthen inputs to the continent's emerging manufacturing and services sectors. This would benefit global firms on the continent in the long run, as boosting the value of the human resource supply generates demand for more advanced goods and services, forming a virtuous cycle.

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