The Time-Travelling Economist

"interesting new approach to low income development, highlighting why India can boom for decades"

—Suresh Prabhu, India's minister of Civil Aviation (2018–19),
Commerce and Industry (2017–19), Railways (2014–17),
Power (2000–2002)

"I have listened to and read several presentations by Charles Robertson. It is always amazing how much he captures his audiences' attention and leaves them in deep thought, thereafter.

I am sure he will do exactly the same with this book."

—Dr Shamsuddeen Usman, Nigeria's Minister of planning (2009–11),
Minister of Finance (2007–09), deputy governor
of the Central Bank of Nigeria (1999–2007)

Charlie Robertson

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Why Education, Electricity and Fertility Are Key to Escaping Poverty

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Charlie Robertson
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Contents

List of Figures

Education: No Take Off Without Adult Literacy

Electricity: Power to the People

Sex and Money: How Many Babies Are Too Many?

Debt: A Debt Crisis Is Probably Unavoidable in a Bid to Create Jobs

What the Future Holds: Democracy, Corruption, ESG and Emigration

List of Tables

Debt: A Debt Crisis Is Probably Unavoidable in a Bid to Create Jobs

Demographics and Growth: Who Booms, When?

What the Future Holds: Democracy, Corruption, ESG and Emigration

Introduction

That first time you land in a country is often a sensory overload. The temperature, the sounds and smells and the slight nerves at passport control and then the first step outside the airport all provide those first clues about a country. Lee Kwan Yew, who was probably the world's greatest development economist, understood this very well and from the start of his rule, did all he could to make landing in Singapore a positive experience. It still is, although Georgia's practice of handing you a small bottle of local red wine when you arrive went one better. It is soon clear you are somewhere different. What is often less clear is "when" you are.

This book tries to show why just three data points are all you need to answer that question. These are the adult literacy rate (in any language), average electricity consumption per person and the total fertility rate.

Once you know these three modest pieces of information, you already know a huge amount, whether you've just arrived at your destination by plane or train, or even just in your imagination via the time-travelling machine that is a great history book or novel. With them, you might answer whether you're in 1980s Peru, 1970s China or 1750s Scotland. Will there be corruption? What profession does the taxi driver hope his children will have, and what proportion of his relatives still work in farming? How many people will have relatives or friends working abroad? If you're a governing minister in a lower-income country, these three numbers will tell you what your policy priorities should be, and whether the job will feel overwhelming or give you European-style August holidays with your family. If you're in the diplomatic corps, the military or intelligence agencies, these figures are enough to tell you whether to expect a coup, civil unrest or terrorism. Journalists can call their editors and know just what type of stories they'll be sending into head office. Bankers and investors can analyse where the best business and finance opportunities are, and where the risks are most likely to be.

Yet this book isn't just for the visitors. It's really aimed at the population, who of course know where they live, but are often unaware of "when". This is not a criticism. It is easier to see differences if you're the one travelling between countries, and it gets even easier with age. If you've had the good fortune to visit Mumbai in 1991 and up-and-coming 2012, it is much easier to see "when" Kenya or Pakistan are.

Even for the visitor, it has got harder to recognise the time travel inherent in going abroad. Your mobile phone is likely to work in almost every city you visit; the people you meet will have seen many of the same films or TV box-sets, will listen to the same music and follow some of the same people on Twitter. But this book is not about the individuals you might easily relate to. It is about countries and comparisons between them, both today and over time. It is about recognising and learning from time travel. Yet unlike an economic history book, it aims not to dwell on the past, but to help reveal the likely future of countries from Asia to Latin America, but mainly Africa and South Asia. We can work out which countries will struggle with mass unemployment and default in the coming decades and which economies will double in size in the 2020s, and double again in the 2030s.

Why the focus on low-income countries? The psychological roots might be because, like Freddie Mercury, "I'm just a poor boy from a poor family" in Cornwall, the lowest-income county of England. My mother remembers the family washing being dried in a mangle in the shed next to the (only) toilet, outdoors of course. An adoring grandmother who loved books so much she would steal away for hours to read them might have influenced the literacy chapter. The focus on electricity might stem from the power cuts that struck regularly enough during my childhood that I can still remember where the candles were kept. It's a long way from all that to the other extreme of constant intercontinental air travel, plush hotels and meetings with presidents and billionaires (well, a few).

The headline reason for the focus on low-income countries is that this has been my career. It started with forecasts about the poor countries of Eastern Europe in the 1990s. I was one of the first economists to tell financial markets they should lend to Eastern Europe at interest rates that reflected eventual EU membership. This helped Romania move from the brink of default in 1999 when it was shunned by the market, to one able to borrow, paving the way for EU entry in 2007. It helped Romania and the region achieve bounding leaps in living standards. Some are now on track to surpass the wealth levels of Greece. It was a steep learning curve, but enjoyable and satisfying, partly because the forecasts were broadly right. What I didn't realise then was that deeper underlying trends explained in this book were at play in driving Central Europe's convergence towards West European norms—and these were far more important than the forecasts of a mere economist.

The last decade has been even more engaging, but an even steeper learning curve, in part because my UK background is up to two centuries away from countries like Nigeria or Pakistan that I've been working in. This temporal gap is a problem for both development economists and wealthy countries engaging with low-income countries. China is more engaged in Africa than the West partly because China is just a generation or two ahead of the development in Africa and South Asia, not centuries. The West and Japan too often misunderstand what's happening because they don't remember what's important. When it comes to clashes over culture, some in the West even forget their own history from half a century or so ago, when women did not have the vote in Switzerland and gay sex was a criminal offence.

My primary focus has been on Africa, but also Pakistan and other so-called frontier markets. It has proven oddly personal, perhaps because for anyone living in London, countries such as Nigeria or Pakistan don't feel so far away. So many time travel to London, that there is a familiarity with the Igbo and the Shoshone, the Gambia and Punjab, that runs deep. The current leader of Gambia worked just 15 minutes' walk from my home. Britain's own history plays a role too. There's barely a family that isn't intertwined at one point with South Asia or Africa. Even a poor family in Cornwall had ancestors who used their new-found adult literacy, and the infrastructure of new railways and ports of the nineteenth century, to escape poverty and find work in emerging markets such as the US, South Africa and Venezuela.

In the last decade, whether in new capital cities, in lockdown London or my Twitter feed, I keep encountering the same questions. Why is my country poor? What have we done to deserve this government? When is it going to get better?

In these questions, there are echoes of Karl Marx's critique of Europe in the nineteenth century. At a time when labour was in ample supply, but savings were not and capital was expensive, it was fairly clear to Marx who was to blame. Capitalists were at fault, and labour was being deprived of their rightful share of profits. It wasn't long before imperialism was intertwined with capitalism in the critique, and it was the "third world" and "labour" that were being deprived of justified profits by the rich who would keep them forever poor.

This was already an attractive argument for many in Africa, Latin America or Asia in the 1960s when dependency theory tried to explain the relative wealth of the West and the poverty in the developing world. Commodity exporters were dependent on, and suppressed by, richer industrial economies. It remains an attractive theory for some today, including a few policymakers in powerful positions. Poor countries are kept poor by the West. France is using West African foreign exchange reserves to fund the French budget. Washington consensus policies ruined Nigeria in the 1980s leading to millions of fewer births. Mining companies exploit Africa's riches and fail to pay proper taxes. Foreign bankers charge excessive interest rates when they lend to the poor. The West and its public and private sector minions are using all the tools at their disposal to keep Africa down. The IMF and World Bank always demand cuts in government spending. A fair price is not paid for Ivorian cocoa or cobalt in the Congo. Wages are suppressed and a continent stays in poverty. The temptation for the suppressed governments to fight back, to raid the coffers of these foreign-owned companies with taxes or fines or to bully mining and energy companies out of a country, so the residual company can be run for the benefit "of the people", is a difficult temptation to resist.

It is not just foreign capitalists who are blamed though. From Abuja to Dar es Salaam, I've heard local bankers condemned for the high (often 20–30%) interest rates they charge businesses and households. Worse still, in the eyes of local finance ministry officials, these banks charge double-digit rates to their own governments. Governments struggling to fund education, infrastructure, an effective judiciary and health service have to borrow at high rates to the apparent benefit of the bankers and the wealthy with deposits in those banks. It is not a huge surprise when there is a backlash and legislators put a cap on interest rates or go the whole hog, as in Ethiopia, and force banks to lend at sub-inflation interest rates to certain companies.

The only advantage of being a local capitalist—even a banker—is they are often admired for what they have achieved and for keeping at least some of their money in-country. Given the challenges of running a business, the idea that you might grow it so large that you can fund private jet travel, be feted in London and provide jobs for thousands is seen by many as extreme good fortune. Even promises by Nigeria's most famous billionaire, Aliko Dangote, to rescue my local football club Arsenal are generally appreciated, except by Manchester United fans. As with a lottery winner, it is hard to begrudge good luck, especially when that money is reinvested locally (Dangote has invested across the continent, and not actually bought Arsenal). It's a rather different sentiment from what we see in the US or Europe, when the more extreme voices call on American billionaires to have their wealth confiscated to wipe out student debt or provide a one-off cheque to every citizen.

Yet the trouble with all these explanations of poverty is that they are wrong. Marxism fails conceptually, and not because communism was never tried properly, but because Marx failed to forecast demographic change.

Poor countries are not kept poor by the West.

Africa's wealth is not under its soil.

Local bankers are not ripping off borrowers.

African risk is not mispriced by western fund managers.

It has taken a decade of constant questioning and research, and more flights than I'd like to admit in these environmentally conscious times, to uncover what I outline in this book. The expense has been borne by (and hopefully some of the benefits will accrue to) the investors who have a different perspective on the challenges in much of Africa, South Asia and Latin America. When they travel, they ask will this country be the next China or to be more with the 2020s zeitgeist, the next Vietnam? They see that life is tough for most, but these investors have also time travelled. Some investors remember when Asian success stories looked hopeless and know the situation will improve. But they all want to know, when?

The answers to the questions outlined above are simple. The reason so many are poor is because literacy has been too low, because electricity consumption still is too low and because countries are starved of cheap investment when family sizes are too high. As you can see, the arguments get progressively more controversial as we move along.

Few debate the education argument. It helps that it is based on a theory espoused 60 years ago by Mary Jean Bowman that looked at economic development in a range of countries from eighteenth-century Great Britain to twentieth-century Spain. She argued that you need adult literacy (in any language) of 70–80% to industrialise and escape poverty. At under 40% adult literacy, you can't sustainably grow. This in itself is enough to explain the mess in Afghanistan or parts of the Sahel region in Africa, as I told US Africa Command when they flew me out to their headquarters a few years ago. I explained that given the adult literacy rate, terrorism (at worst) and insecurity (at best) will emanate from these countries for at least the next decade. As one perceptive officer then pointed out, "So you're saying, if in 2001, we'd spent money funding education in Afghanistan instead of bombing the country, today Afghanistan would be a success story instead of a warzone we're still embroiled in". Yes, exactly. "And that neither the Sahel nor Afghanistan are going to get better for the next decade." Yes, exactly. Since that meeting, the US has pulled its troops out of Afghanistan and the Sahel region. President Macron of France in 2021 also announced a reduction in troops in the region, recognising the problems there are also a development problem. He's right. Unfortunately, money to fund better education provision has not been poured in.

However, the best news is that adult illiteracy is now confined to just a few countries. Most of the world, and most of Africa, has the education level necessary to escape poverty, to become more like India or China. It is an impressive achievement given the starting point of adult literacy that was 20% or less when many of these countries became independent. While some have said Africa prematurely de-industrialised in the 1980s and 1990s, the key message in this book is that they had premature industrialisation, because the human capital was insufficient to industrialise except in three countries. All three industrialised.

The only question I get about education is whether this is correlation or causation. My simple answer is this. No country has sustained wealth while remaining ignorant. Every country that has sustained wealth has decent adult literacy. I'll save the embarrassing story about Oman for the first chapter.

But education is not the only precondition to escape poverty. Joe Studwell in his excellent book *How Asia Works* dismissed education as overly emphasised in development literature. If adult literacy is such a big deal, he asked, why has the Philippines done so badly? His argument is not ageing well because the Philippines is now booming. But he was obviously right for a long time. The answer turns out to be electricity. For decades the Philippines did not have enough.

Why is electricity so important? To be honest, this is not a question you will hear often in South Africa, which has suffered power cuts ever since 2008, or Nigeria where I've had more than a few meetings in a hot stuffy dark office having climbed five flights of stairs in over 30 °C. Electricity is something too many take for granted.

The explanation is simple. When you have a literate workforce that is ready to move out of zero value-added subsistence farming, the first industrial job they take is inside a textile mill. Just ask any time traveller to industrial revolution England or South Carolina in the 1890s. It is exactly what is happening in Ethiopia today. There are plenty of countries from China to Vietnam and now Bangladesh, with a literate workforce and textile factories that have cheap reliable electricity. If you have expensive, erratic electricity, your textile mill will not compete with cheap Chinese-made imports. If you have a barely literate workforce—with workers who expect to go home during the harvest season—you will struggle to compete. Bangladesh exports more textiles in a month than 14 African countries can export in a year, combined. Why? Because they have a literate workforce with cheap reliable electricity.

Achieving high adult literacy is a multi-generational challenge. With hindsight, James Bond in *The Living Daylights* and Rambo should arguably have been supporting Afghanistan's communist government in the 1980s against the western-backed (largely illiterate) mujahideen. From improving women's education to electricity, communist governments have generally done a good job. But electricity ought to be quick to sort out. If most countries in the world now have sufficient literacy to escape poverty, but most in Africa don't have enough electricity, surely electricity provision to textile mills should be the priority of every government. So why is electricity still a problem in Nigeria in 2021 when the presidential election of 2011 was won by the candidate promising electric power to the people?

Here we have to turn to the crucial issue of interest rates and the cost of investment. Power stations, transmission grids and distribution networks are very expensive to build. They only make a return over decades. Governments, or the private sector, have to pay upfront to build them. Anyone who's spent five minutes with a government minister in any low-income country knows that very few governments have a few billion dollars just lying around ready to finance the power sector. So governments turn to borrowing to finance infrastructure. But double-digit interest rates are prohibitively expensive. Electricity supplied from expensive loans has to be sold at an expensive rate to pay the interest. This means textiles mills in most African countries are relatively uncompetitive when they are competing against a Bangladeshi textile firm.

So how can Bangladesh borrow at low rates while Nigeria can't? How did China roll out its electricity grid cheaply, while Kenya has to pay double-digit interest rates to achieve the same? As noted above, some think they know the answer—it is rapacious local banks or foreigners who can't price African risk properly.

Yet high interest rates are not the reality for all of Africa. In Mauritius, one-year borrowing costs of 2% are the same as in China. At this point, I'm usually told that Mauritius is not really Africa, it is more Indian (my debaters fail to explain why Mauritius can borrow so much more cheaply than India). So I mention Morocco where interest rates are also low like China or Vietnam. Then I'm told Morocco is not really Africa either, they're Arabs and different. Again my debaters fail to explain why

Morocco borrows cheaply but Egypt does not. My point is that low interest rates determine electricity supply and, indeed, investment in general. Mauritius and Morocco have both low interest rates and electricity in abundance. They also have very large amounts of cash in their banks.

I visited Rabat and asked the Moroccan central bank why savings were so high and interest rates were so low, but the official admitted he didn't know. He then laughed and told me it was because Morocco took all the wealth from Southern Spain when the Moors were pushed out in 1492 and they'd been saving ever since. Sadly, the data nerd in me has to dispel this romantic notion. It turns out Moroccan savings only boomed 500 years after this, and it was because women halved their average fertility rate from 5.5 children in the 1980s to under 3.0 children in the mid-1990s. A decade later, Renault cars were rolling off Moroccan production lines.

We discovered the link between family size, national savings and interest rates via an IMF research paper on China. This found that since the 1970s, over half of the rise of household savings (which are massive) in China was due solely to smaller family sizes. Those savings have been poured into the banking system. Flooded with deposits, those banks have then lent out that money to businesses and the government at low rates.

Why does family size matter? When you have 5–6 children, you have no savings. Children are your savings. They are your unemployment benefit, your pension and your healthcare provision. You have no money left to put in the bank at the end of the month. You send the kids out to work rather than fund them at school until they're 18. When the average family has no savings, bank deposits are small in your country, money is scarce but in high demand, so it becomes expensive. Interest rates are high. This ensures that investment is low, so few jobs are created. The kids you send out to work as teenagers struggle to find jobs, and don't really have the education they need either. Fears intensify about mass unemployment and low or negative per capita GDP growth. This is how the gap in wealth between low-income countries and rich countries, such as the US, dramatically widened rather than narrowed between 1960 and today. While well-educated Americans get richer, billions stayed poor. If you live in Zimbabwe, many will tell you the economy functioned better in the old days, and this isn't just the elderly being sentimental. It's true.

When you have 2–3 children, they become your investment. There are fewer of them, so it becomes more important that each succeeds. You save for their education, perhaps you send them to university. Being able to save and invest in them becomes plausible when you have just 2–3 children; you have more chance of putting money aside at the end of each month. Bank deposits grow. Money becomes more plentiful. Interest rates fall. High investment helps create jobs and countries get richer. Your country becomes a success story.

And this we have found to be globally true. Countries with high fertility rates are in poverty, with high interest rates and little investment. Countries with low fertility rates enjoy high savings, low interest rates and high investment. The latter escape poverty. Since 1960, there are no sustained exceptions to this.

It is a point Marx entirely missed in the nineteenth century for understandable reasons. Back then no country had seen family size drop to 2–3 children. France was among the first and that didn't happen until 1900. My Cornish and Devonian great grandparents born in the 1870s and 1880s were born into families of 5–11 children per mother (not all survived childhood). They would share a lot of similarities to a family in Niger today. They collected water from a well, lived without electricity and some died within a mile of where they'd been born.

The reality that Marx saw was large families, a shortage of savings, a high cost of capital and no prospect of that changing. It was a recipe for unrest. It was the reality of Imperial Russia in the run-up to the Bolshevik Revolution of 1917, and the reality of China as it became communist in 1949. It continues to be a reality in parts of Africa today.

This book aims to help policymakers recognise what long-term measures need to be taken to ensure their countries thrive in the twenty-first century. Encouraging smaller families, providing good basic education and investing in electricity to support export manufacturing are the key elements. Great progress has already been made, but this coming decade offers a once in a lifetime opportunity to accelerate it—but at considerable risk as we outline in the chapter "Debt: A Debt Crisis Is Probably Unavoidable in a Bid to Create Jobs". Global borrowing rates are lower than a generation ago. Foreign money is now available to fund investment, similar to what the UK did for the US in the nineteenth century, or what the US did for Korea and Taiwan in the 1960s. This can help provide the investment that so many countries need. The risk is that countries borrow more than they can manage.

Blaming local banks, foreign mining companies, bond investors or the 60-year-old legacy of colonialism for current difficulties is tempting but is a distraction that does not address the fundamental problems. The goal of this book is not to defend these actors. Some foreign mining companies surely do attempt to minimise their tax payments. Bond investors could spend a little longer analysing the credits they buy. The imperial legacy does add to challenges facing rulers today—just look at the language or tribal divides that trouble countries from Cameroon to Somalia. Leaving colonial India or Africa with an adult literacy rate so low that growth was not sustainable is hardly something anyone in these former imperial powers can be proud of.

But the key point of this book is that the solutions to the challenges in Africa or Asia today can be home-grown. They don't require a US- or Chinese-led commodity price boom. They don't need UK or French parliamentarians to pass anti-corruption legislation. Every country in Africa and Asia could be adopting the "beyond aid" mantra of Ghana's president within a generation.

We already know South Asia's and Africa's development will be extremely varied in coming years. India and Bangladesh should thrive, a fact recognised by many, and Pakistan can join them within a decade. The second industrialisation wave in Africa will be led by North Africa and possibly Ghana or Kenya. The demographic trends are already favourable in North Africa, but are improving in much of East Africa, Southern Africa and Southern Nigeria. The greatest difficulties are likely in Angola, DR Congo, Northern Nigeria and the Sahel region. Based on the most recent UN forecasts, some countries such as Tanzania or Angola are not going to see their fertility rate drop below 3 until about 2070, 170 years after France. The 100 years after France got its fertility rate below 3.0 was mostly very good for France's economy—Tanzania's good century won't start until 2070 unless demographic problems are addressed.

UN demographic forecasts may well be wrong. But even the most rapid fall in family size still means that many countries will be starved of domestic savings for a decade or two. Luckily, there is one golden key that can open the door to higher investment. As Asia has shown, cheap exchange rates can help deliver the trade and current account surpluses, which means dollars and euros flow to your country. If the surplus is big enough, this can drive down interest rates. It is perhaps the easiest policy shift to make, and some, for example Ghana and Angola, have done this in recent years.

Some silver keys can help in the process too, but are not so easy to make happen. Encouraging in foreign direct and portfolio investment provides another way to supply the capital that will compensate for a lack of domestic savings. But in this, countries are in competition with others. As the smart former CEO of the Nigerian Investment Promotion Council often had to explain to local leaders, global businesses do not need Nigeria, just as they did not need China for most of the twentieth century. As countries such as Rwanda have found, being open and welcoming to foreign direct investors does not actually mean FDI will come.

Where does this all fit into the existing economic literature? Unfortunately, the debate has long gone past many of the issues raised here. The question in Russia or Iran has been about how to raise the birth rate, not cut it. The most vocal demographic concerns in the western press are about the crisis of an ageing society, not one that is too young. The electricity debate in developed economies is about how quickly a country can shift from fossil fuels to green energy. Few bother to note that US plans for 24 GW of new wind-generated electricity over 2021–2022 add about 0.2% to its generation capacity, but alone would be enough to more than double all the existing electricity generation from any source in Nigeria with its 200 mn+ population. About the only time electricity gets a mention is when environmental campaigners push back against Chinese-financed coal power plants in Pakistan or elsewhere. Meanwhile with regard to education, the UK asks whether 50% of young people should be at university, not whether girls should learn to read and write. The issues that remain so important, that mattered for all of our countries at one point or another, are too often ignored, despite how crucial they are for billions of people. This book tries to bring alive economic history and show how relevant it remains for the future.

The Growth Commission of 2008 did highlight five themes that the most successful economies since the 1950s shared: (1) They all imported the knowledge of the rest of the world and exported what it wanted; (2) they maintained macroeconomic stability; (3) they mustered high rates of saving and investment; (4) they let markets allocate resources and (5) they had committed, credible and capable governments.

At the risk of simplifying too much—in the hope that this gets read by more than the 84,000 who have downloaded the Growth Commission report in the past 13 years—we argue that achieving high adult literacy, rolling out electricity to factories and reducing the birth rate go a long way to achieving each one of these goals. Getting the birth rate down increases savings and therefore makes investment cheaper. As a result, governments do not need to borrow so much abroad, and their interest burden can fall, so they are more likely to maintain macroeconomic stability. The result is governments that look more credible and capable.

This book is controversial because it requires many to give up on their belief systems about what is holding back lower-income countries. Colonialism, or neo-colonialism, can no longer independently explain away a country's relative weakness. Commodity exploitation by the West and now China is not the major problem. Local rich elites with their corruption, or the high interest rates changed by banks, are symptoms, not the causes of the challenges facing countries today. Challenging these views will alienate many on the left. "Investment bank economist thinks corruption, exploitation and colonialism aren't important issues" is a headline that is easy to imagine in *The Guardian*.

More controversial still, we argue that these challenges have often been addressed most quickly by communist governments. From Russia to Vietnam, the Leninist priorities of universal adult literacy and electrification and decent health care have made a huge difference within one to two decades. So many of the issues confronting low-income countries today are the same as those that faced China in the 1940s, Russia in the 1910s and England in the 1840s when Friedrich Engels began writing that morphed into the Communist Manifesto. So it should not be a surprise that this approach might still have relevance today. Letting markets allocate resources does work, as Western Europe, the US or Japan all demonstrate, but often slowly. "Investment bank economist thinks communism is justified in Africa" would raise the temperature of many *Wall Street Journal* readers.

It is possible that Africa will be home to the last communist revolutions. Mass unemployment of 20–30% in the two biggest economies, Nigeria and South Africa, is already a potential trigger for it. But it shouldn't be anyone's central scenario. Successful communist revolutions tend to have been born in war—and war is far less common than it was. Revolutionaries were often supplied with weaponry and money by other communist governments, but communist governments are an awful lot less common than they were too.

Communism may be effective in delivering the preconditions for industrialisation, but it has an appalling track record for taking countries out of the middle-income trap. Russia eventually dumped it in the 1990s. China and Vietnam are communist in name only, but not economic reality. Semi-communist countries such as Cuba and North Korea are nowhere near as powerful or influential as the USSR or China were a few generations ago. Communism is not a multi-generational solution to the challenges facing low-income countries today.

This book has multiple audiences but really just one purpose, which is to improve the outlook for the lower-income countries around the world. Mass adult literacy campaigns *could* change West Africa's outlook within a decade. Well-directed foreign borrowing *could* double sub-Saharan electricity provision within a decade. Policies to support lower fertility *could* reduce the number of countries with excessive fertility from over 40 now to around 10 by 2030 and zero by 2040.

I hope policymakers will focus on the issues that are likely to make the most difference in coming years. Amidst the mass of challenges facing any government in a low-income country, keeping a focus on just three is what should guarantee a better life for coming generations.

I also hope public opinion will recognise that education, electricity and family size are the priority. If this is understood, it might be easier to reject the siren calls of populist leaders who try and distract attention onto other areas. It is always tempting to blame poverty on amoral foreign investors, foreign colonialist governments or the greed of domestic business and finance communities, but this is too often counter-productive, time-consuming and ineffective.

The media has a vital role to play in holding governments to account and channelling public opinion. If the western media are understandably more interested in low fertility than high fertility, it is up to African or Pakistan's media to publish what is important for Africa and Pakistan.

For investors, this book shows which economies should improve the most and when they will do so. From Vietnam and probably Bangladesh and then Pakistan in Asia, to Morocco, Egypt and Ghana, then Kenya and Rwanda, huge progress has already been made and these economies may be as hard to recognise in 20 years as Mumbai was to me in 2012. Others are in danger of lagging, but focused government and central bank efforts (potentially even communist government efforts) in Nigeria, Angola or DR Congo could accelerate change.

But there is a warning here too for investors. The temptation of savings-starved governments to borrow excessively is probably as high today as it has ever been. Borrowing costs had plunged globally by 2021 to the lowest levels in centuries. Even as they rise in 2022, there is a fantastic opportunity to leap ahead with more spending on adult literacy, electricity and transport, but also a great risk of bribing voters with lower taxes that doesn't help provide a return that will service this debt.

So this book will demonstrate in chapter "Education: No Take-Off Without Adult Literacy" how 13-year-old Greek kids can successfully tell me, after a short presentation and based only on adult literacy data in 1950, which African country was the richest in 2020. We'll see in chapter "Electricity: Power to the People" how electricity is holding back sub-Saharan Africa (SSA) industrialisation, and how, by coming later to electrification, Africa will achieve the greenest industrial revolution that any continent has seen. In chapter "Sex and Money: How Many Babies Are Too Many?", we'll move onto demographics and see how smaller family size is so closely related to Asian success in the past two decades. Chapter "Debt: A Debt Crisis Is Probably Unavoidable in a Bid to Create Jobs" will address the opportunity and risk that stems from the world's largest-ever savings glut in the West and Japan coinciding with the last global savings shortage in parts of Asia and Africa. In chapter "Demographics and Growth: Who Booms, When?", we get still more speculative and forecast which countries are likely to grow the most in the coming decades, and which are most likely to still be in poverty in 2050—explaining why Egypt's economy will likely surpass Nigeria's in the 2030s, and why India will remain bigger than Africa for most of the next 40 years. I hope many of the forecasts are wrong. If governments respond to the message from this book, their countries will be richer, the people better off and the standard of living vastly improved. In chapter "What the Future Holds: Democracy, Corruption, ESG and Emigration" we note the impact some of this will have, on democratisation, in terms of improved environmental, social and governance indicators, but curiously also in the huge increase in mass migration that in twenty-first-century Africa might echo what we saw out of nineteenth-century Europe.

This book is the result of a decade of thoughts and conversations, from businesspeople and taxi drivers (of course) to the smartest central bank governor I've met (in Africa, of course), combined with the constant challenges from the knowledgeable investors and journalists who've reliably questioned every assertion I've ever made. Light-bulb moments included an argument in Nairobi with a posh investment banker about whether Kenya has enough electricity, the woman who asked Nigeria's vice-president about excessive fertility at a conference in London (the world is small enough that I identified her while writing this book) and all of the people who asked me at every conference whether robots will take all of Africa's jobs. The tone of this book is different from our first effort a decade ago, *The Fastest Billion: The Story Behind Africa's Economic Revolution*, but some elements have remained constant, including the focus on education. That book and this one could probably have never have happened without my colleague Yvonne Mhango, Africa economist at Renaissance Capital, who has guided, educated and advised me for over a decade.

This book is meant to inform and stimulate debate. Most of the ideas have come about because of questions. Please do send me constructive criticism. Email them, tweet them—I'm keen to learn.

Yours
Charlie Robertson
Global chief economist