



Demography

A school for small families

NAIROBI, SEOUL AND TORODI

Thanks to education, global fertility could fall faster than the UN expects

THE AVERAGE woman in Niger has seven children. The average South Korean has barely one. The future size of the world's population depends largely on how quickly child-bearing habits in places like Niger become more like those in South Korea. If women in high-fertility countries keep having lots of babies, the number of people will keep swelling. The sooner they curb their fecundity, the sooner it will peak and start falling.

The UN projects that fertility will fall gradually and that lifespans will increase, so the world's population will rise from 7.7bn today to 11.2bn by 2100. (This is its best estimate; the UN says it is 95% confident that the true figure will lie between 9.6bn and 13.2bn.) Opinions are divided over the effects of such growth. For some, a more crowded planet will be an environmental disaster. For others, those billions of extra brains will help humanity devise ever more cunning solutions to its problems.

But what if the projection is wrong? Some demographers argue that the UN underestimates how fast fertility will de-

Data from before the Industrial Revolution are spotty but evidence from countries that kept good records, such as America, suggests that a typical woman had seven or more children. By 1960 the global fertility rate had fallen to five. Today it is 2.4. This is only just above the "replacement rate" of 2.1, at which the population remains stable, with each generation replacing itself but no more. (The rate is more than two because not every baby grows up to be able to have children.)

Nearly all rich countries have sub-replacement fertility rates: the OECD average is 1.7. Middle-income countries are close, at 2.3. Only in poor countries is fertility still high enough to fuel rapid population growth. In sub-Saharan Africa it is 4.8; in "heavily indebted poor countries" (as the World Bank calls them) it is 4.9. Pre-industrial fertility rates persist only in the poorest parts of the poorest countries.

The decline in fertility in Africa was recently smaller than expected. If this is a long-term trend rather than a blip, then the world's future population will be much

demographer at the International Institute for Applied Systems Analysis in Austria, argues that it is indeed a blip. It happened because spending on education stalled during the 1990s. Many women born around 1980 received less education than the previous generation. The UN extrapolates from past trends, so the stalling in Africa makes its model predict higher fertility far into the future. However, the decline in education has reversed. The long-term trend is for ever more women to complete a basic education (see chart 1 on next page). After a lag (since schooling starts several years before puberty), this should allow fertility to resume its downward slide.

Educated guesses

Models that take education into account produce wildly different projections. Mr Lutz and his team have produced a range. If progress in education and other social indicators stalls, the global population will be 12bn by 2100. If current progress continues, it will peak at 9.4bn in 2075 and then fall to 8.9bn by 2100. If progress is a bit brisker, the world's population will peak at around 9bn and decline back to 7bn—today's level—by 2100 (see chart 2). These estimates are based on three scenarios devised by climate-change wonks. Both the medium and optimistic ones are significantly lower than the UN's 95% confidence range. To assess whether this is plausible, it is important to understand why some women have lots of children and others

► **Oumou Nyero** lives in Torodi, a rustic district in Niger. She has had eight children, one of whom died. Though tragic, this is not unusual in rural Niger, where nearly one child in six dies before the age of five. Ms Nyero is 43 and assumes that her child-bearing days are over, unless God wills it. She is Muslim, conservative and veiled. Yet she is happy to discuss procreation, smiling and giggling as she does so. Giving birth eight times was not easy. Asked if any of her children were twins, Ms Nyero grins, raises her forefinger and says: "No. One. One. One. One." At every "one" she waves her finger around and puffs out her face to emphasise how hard it was.

She is intensely proud of her brood—three surviving boys and four girls, aged between two and 21, and delighted that there are so many of them. "It is very, very important to have children," she says, sitting on a wicker chair in the shade of a dusty tree.

Ms Nyero's view is typical for someone in her circumstances, and perfectly rational. Her family are poor and rural. Her husband is a small farmer, one of the most precarious jobs in the world. She works for five hours a day selling millet snacks by the side of the road. Having lots of children is an investment that pays off quickly. From a young age, her brood can help in the fields, gather wood, fetch water and do all kinds of odd jobs to eke out the family budget. A local proverb sums it up: "A child comes with two hands and only one mouth."

Having a large family is also an insurance policy. Some may die, others may turn out to be feckless. "It is better to have many children, because you cannot tell if you will need them or not," says Ms Nyero. In the absence of a public safety-net, "children will take care of you in old age."

There are intangible benefits, too. For a woman, "it raises your value if you have more [children]," says Ms Nyero. "If you have many, even the friends of your children pay you respect." By contrast, a failure to breed carries a social stigma. In rural Niger, a woman is not considered an adult un-

less she has children, observes Alison Heller of the University of Maryland, the author of "Fistula Politics: Birthing Injuries and the Quest for Continence in Niger". In parts of the country, women whose children all die are known as *wabi*, meaning a tree whose fruit falls off without ripening.

Married men in Niger say they want, on average, 12 children. Asked if her husband would like more, Ms Nyero says: "Yes, of course." She adds: "If he had money, he would marry more wives and have more children. But he hasn't got money. So, he has to stick to one wife."

Ms Nyero adds with a chuckle that she pities childless people, such as the correspondent from *The Economist* interviewing her. Her approach to child-rearing is loving, fatalistic and far removed from the "helicopter parenting" so common in rich countries. Asked where her two-year-old son is, she grins nonchalantly and looks around the yard. "He was around playing here, but he has wandered off into the fields," she shrugs.

Non-productive cost-centres

For people in rich countries, the economics of child-rearing are different. Rather than start earning at the age of five, the little darlings consume huge amounts of time, resources and parental attention for at least the first 18 years, and possibly far longer. Instead of putting them to work in the fields, their parents try to cram them with education, hoping they will get into a good university and eventually land a good job. All this is costly, so they can afford to do it only once or twice.

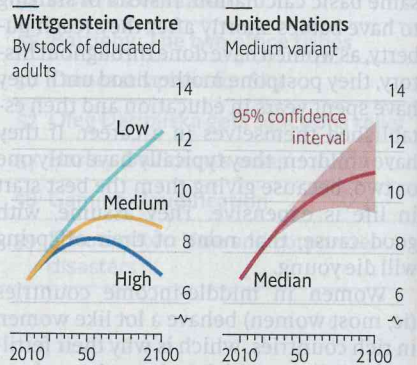
Chung Yeon-jeong lives in Seoul, the bustling capital of South Korea. She works as a translator for a small pharmaceutical company, but is currently on maternity leave. She is still 34, the age at which she had her one child, a boy, and one at which women in Niger are quite likely to be grandmothers. (The median age at which to have one's first baby in Niger is 18.)

She is vastly richer than Ms Nyero, but finds even one child a financial strain. She moved in with her parents elsewhere in the country for five months after the birth, because she and her husband could not afford an apartment big enough for three in Seoul, where the average home costs \$640,000. "We lived in a small studio flat, which was just about fine for the two of us, but it would have been miserable raising a child there," she says. Raising seven children in a mudbrick home with no running water, as Ms Nyero does, is hard to imagine.

Whereas people who are hungry think only of food, those with full fridges crave less tangible things: a fulfilling career, a spouse who is also a soulmate, quality time with each individual child. Ms Nyero never so much as mentions any of these first-world luxuries. For Ms Chung they are im-

Class divide

World population forecasts, bn



Sources: Wittgenstein Centre; UN population division

portant—but also hard to combine with having lots of children.

Having her parents to help was great, she says, but in other ways it was a tough time. Her husband worked in Seoul and came to see them only at weekends. "The idea was that he would spend time with our son or with me when he came, but sometimes he'd just sit in his room and work, so I didn't get to spend any time with him, or even have any time to myself, because I had to look after the baby."

Ms Chung has now moved back to Seoul. Her husband has found a new job with a broadcasting company that lets him get home at a reasonable hour every night. This is unusual in South Korea, where male white-collar workers are expected to put in punishing hours and then go drinking with colleagues. The husbands of Ms Chung's friends are rarely home before midnight.

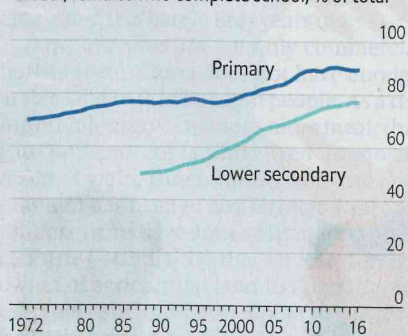
The pressure on South Korean mothers is unusually intense. Their bosses often assume that they will quit. Employers are legally obliged to offer 12 months of maternity leave, but often find ways to avoid it, complains Ms Chung. The average Korean husband does far less child care or housework than his Western peer.

Moreover, the competition to get one's children into the right university is ferocious. Families spend a fortune on cram schools, despite attempts by the government to restrict them. Mothers spend hours nagging their children to study and preparing snacks so they can stay longer in the library. Ms Chung wants her son to have the best education possible, which will be horribly expensive. She would like more children but doubts that would be compatible with her desire to go back to work. Also, if she had several kids she could not afford to educate them properly, she says.

Some young South Korean women go further, and say that even one child is too many. "I look at my mother and how she's sacrificed everything and people don't even notice. I don't want my life to be like ►►

More books, fewer babies

Global, females who complete school, % of total



Source: World Bank

hat," says a 22-year-old student in Seoul.

South Korea is an extreme example, but women in other rich countries make the same basic calculation. Instead of starting to have babies shortly after they reach puberty, as women have done throughout history, they postpone motherhood until they have spent years in education and then established themselves in a career. If they have children, they typically have only one or two, because giving them the best start in life is expensive. They assume, with good cause, that none of their offspring will die young.

Women in middle-income countries (ie, most women) behave a lot like women in rich countries, which is why their fertility rate is but a whisker above the replacement level. In China, the norm of having just one child has become so ingrained since the one-child policy was introduced in 1979 that even after its progressive relaxation in recent years, the birth rate has continued to fall. Officially, the fertility rate is 1.6, but some demographers suspect it is actually lower. In India, which is far poorer, the rate is nonetheless only 2.3.

Stuck in the middle with two

It is unlikely that the trend towards lower fertility will reverse. "Once having one or two children becomes the norm, it stays the norm," write Darrell Bricker and John Ibbotson in "Empty Planet: The Shock of Global Population Decline". "Couples no longer see having children as a duty...to their families or their god. Rather, they choose to raise a child as an act of personal fulfilment. And they are quickly fulfilled."

The big question-mark hangs over women in poor, high-fertility countries. By 2025 only 1% will live in places where the fertility rate is above 5.0; however, a hefty 32% will live in places where it is between 2.1 and 5.0, predicts the UN. Some people argue that having big families is part of the culture of such places and unlikely to change. Many locals would agree, and their religious leaders would add that God wants them to multiply. But a similar "cultural" preference for large families once prevailed almost everywhere and has changed beyond recognition. So there is no reason to assume that it is immutable.

Others assume that the important factor is the availability of contraception. However, using household surveys in Africa, Mr Lutz found that less than a tenth of women who researchers thought might need birth control cited cost or lack of access as reasons for not using it. The main reasons were lack of knowledge, misplaced fear of health risks and opposition to family planning. None of these things can be changed by handing out free condoms. All require a change of mindset. (Or, in some cases, contraception that a woman can use

Several factors correlate strongly with smaller families. One, as mentioned, is income. Another is urbanisation. Probably the most important, however, is educating girls. The more years they spend in school, the fewer babies they have.

This is hard to disentangle from the other two—richer countries tend to be more urban and to educate girls better. And it is theoretically possible that causality could flow the other way—women who get pregnant as teenagers may be forced to drop out of school. But this effect is likely to be small. When researchers look only at the education that girls receive before they become sexually mature, they still find that more years in school means fewer babies later in life. That suggests that learning reduces fertility, not the other way round.

A truckload of academic studies supports this argument. Education reduces fertility by giving women other options. It increases their chances of finding paid work. It reduces their economic dependence on their husbands, making it easier to refuse to have more children even if he wants them. It equips them with the mental tools and self-confidence to question traditional norms, such as having as many children as possible. It makes it more likely that they will understand, and use, contraception. It transforms their ambitions for their own children—and thus the number that they choose to have.

Education also takes a long time. A woman who studies until she is 25 and then spends ten years building a career has just a few years left to get pregnant before she no longer can. Technology may someday remove this constraint, but for now it is hard to have eight children unless, like Ms Nyero, you start early.

The difference that education makes is especially notable in countries where fertility has only just started to fall. In Ethiopia, for example, a household survey in

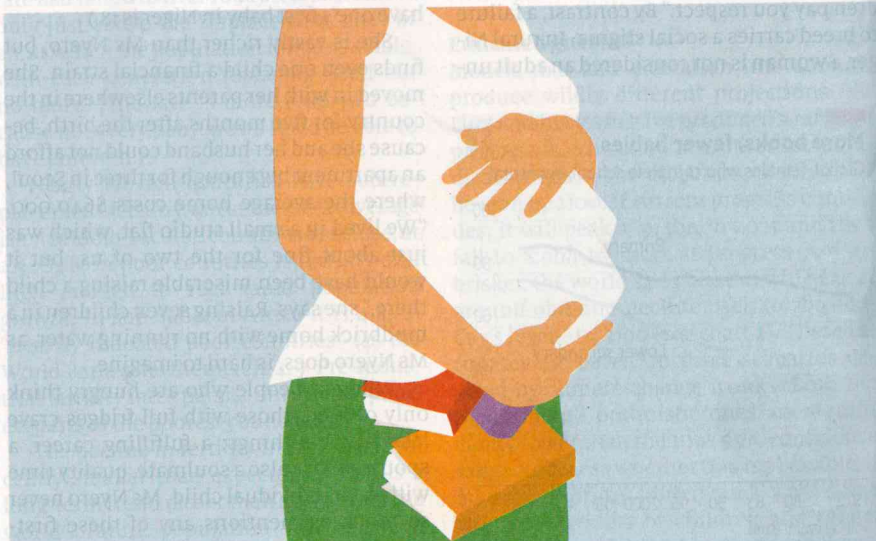
2005 found that the fertility rate for women with no formal schooling was 6.1; for women with secondary education or more, it was only 2.0. Educating girls better is one of the few goals that nearly every government agrees is important. So it would be surprising if the girls of the future were worse educated than today's. The proportion worldwide who complete primary school has risen from 76% in 1997 to 90%. The last mile may be the hardest, but there is no doubt what parents and voters want.

A transition that took 200 years in the West, from seven children to two, can now take place astonishingly fast. When rural folk move to the city, it can happen in a single generation. Consider Dorothy Achieng, a 29-year-old receptionist at an accountancy firm in Nairobi. Her mother had eight children, one of whom died. Dorothy has two. Whereas her mother could barely read and put her older children to work on a small family farm, Ms Achieng hopes to keep hers in school.

Ms Achieng is typical of those who move from the countryside to the city. The rural fertility rate in Kenya is 4.5; the urban one, 3.1. Most of Ms Achieng's friends, like her, have far fewer children than their parents did. No one she knows has seven or eight children.

Although she lives in a slum and has no running water in her modest two-room flat, Ms Achieng is part of the aspiring middle class. Indeed, on her salary of just \$200 a month, she pays for a private school that costs \$50 per child, per term. It is a strain, but she thinks it is worth it. She does not plan to have more children. If she did, she says, she could not "give them the best".

Asked what they want to be when they grow up, her two boys stop whizzing around her flat in pursuit of a remote controlled car. "A doctor," says Crispian, who is nine. Lennox-Lewis, aged seven, chimes in: "And I want to be a lawyer." ■



The indictments are explosive. Huawei is alleged to have awarded bonuses to staff based on the value of information they filched from competitors, as revealed in internal emails written in 2013, obtained by the FBI. Speculation swirled that prosecutors might have secretly indicted Mr Ren as well; America's acting attorney-general, Matthew Whitaker, said Huawei's criminal activity went "all the way to the top of the company". In one of the indictments, some defendants' names have been blacked out.

And if America is able to prove a simple case of trade-secret theft and bank fraud,

Huawei will have plenty to fret about. A bipartisan bill introduced in Congress a few weeks ago would, if passed, systematically ban the sale of American tech to any Chinese firm found to have violated export-control laws or sanctions. When ZTE, a Chinese peer, was hit with such a ban last April, only a surprise reprieve from President Donald Trump three months later saved it from collapse. In October Fujian Jinhua, a state-owned chipmaker, was hit with an export ban for posing a "significant risk" to American national security; it is soon expected to suspend all operations.

The threat of a similar ban is Huawei's greatest fear. "Any relief for the Chinese national champion will likely come at a steep price," writes Dan Wang of Gavekal Dragonomics, a research firm. Huawei could perhaps dodge such a ban by paying a fat fine and allowing Americans to monitor it from the inside (a demand to which ZTE yielded last year). The big American suppliers that sell so much of their gear to Huawei, including Qualcomm, Intel and Seagate, would also rather see it more leniently treated. But for now, at least, America seems determined to press on, not settle. ■

Bartleby The two tribes of working life

Those who love networking and those who want to be left alone

PERHAPS THEY are two of the most welcome words in the English language: "Meeting cancelled". When they cropped up in Bartleby's message the other day, he experienced a brief moment of elation. In truth, the meeting turned out only to be postponed for two weeks, but procrastination is an under-appreciated pleasure.

Workers, and possibly all people, can be divided into two groups. Those who like to be involved in everything and can be dubbed "FOMOS" because they suffer from a "fear of missing out". And then there are those who would ideally want to be left to get on with their own particular work, without distraction—the "JOMOS" (joy of missing out).

When *The Economist* moved offices in London in 2017, the new building came with a set of meeting spaces. As was inevitable, there are a lot more meetings. It is hard to walk by these gatherings without wondering who these people are and what they are doing. (It mostly seems to involve them gazing earnestly at a projection of a computer screen). Never once has Bartleby, who was born under the sign of JOMO, wanted to join one of the groups.

Readers will instantly know their tribe. If the boss announces a new project, do you immediately volunteer, thinking this will be a great chance to prove your skills? If so, you are a FOMO. Or do you foresee the hassle involved, the likely failure of the project, and the weekend emails from all the FOMOS wanting to spend less time with their families? Then you are a certified JOMO.

Another test is technology. FOMOS are early adopters, snapping up the latest gadgets and sending documents to colleagues via the latest file-sharing programme. JOMOS tend to believe that any

tech upgrade will be initially troublesome and wonder why on earth their colleagues can't send the document as a PDF.

FOMOS relish the chance to take part in a videoconference call so that they can share fully in the dynamics of the meeting and not miss any clues about the participants' long-term agenda. JOMOS deeply resent the video element, which prevents them from checking their emails or playing solitaire while Ted drones on about budgets for 20 minutes.

Networking events are the kind of thing that gets FOMOS excited as a chance to exchange ideas and make contacts. When JOMOS hear the word "networking", they reach for their noise-cancelling headphones. For them, being made to attend an industry cocktail party is rather like being obliged to attend the wedding of someone they barely know; an extended session of social purgatory.

Similarly, FOMOS see a breakfast meeting as a chance to start the day on a positive note. They would hate to turn one down in case they lost business, or the chance of career advancement. JOMOS

resent setting their alarm earlier and would rather breakfast at their kitchen table, grumbling about the news headlines to their spouse. If it is a work meeting, then hold it during working hours.

As for business travel, FOMOS can't wait to experience the delight of overseas conferences and visiting new places. It will all look good on their curriculum vitae. JOMOS know that such travel involves cramped airline seats, jet lag and a long shuffle through immigration. The final destination tends not to be some exotic location but an identikit conference centre or hotel that they forget five minutes after they have departed.

JOMOS recognise that they have to attend some meetings and go on trips to get their work done. But they regard such things as a penance not a privilege. Something useful may come out of it, but best not to get their hopes up.

It might seem obvious that employers should look to hire FOMOS, not their opposites. After all, in a company full of JOMOS, sales might suffer and there would be little innovation. But while FOMOS are racing from meeting to networking event, you need a few JOMOS to be doing actual work. If FOMOS are like dogs, barking excitedly and chasing their own tails, JOMOS are more feline. They will spring into action if a mouse is in the vicinity but, in the meantime, they are content to sit by the fire.

The other reason why depending on FOMOS is dangerous is that they are naturally restless. JOMOS will be loyal, for fear of ending up with a worse employer. But FOMOS may think that working for one company means they are missing out on better conditions at another. That is the point of most networking, after all.

