

## Fast Forward: Disruption and the Singapore Economy

# Making disruption work for humans

That will mean spreading out the economic gains so those at the bottom do not miss out



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Split, shatter, break apart. That is the original Latin meaning of the word disruption. Even today, the word provokes fear.

When my colleagues and I conceptualised this series, Fast Forward: Disruption and the Singapore Economy, of which you are now reading the final instalment, we considered technology-driven job loss to be a big threat. Just before this series was launched, Transport Minister Khaw Boon Wan spoke of a time, perhaps just 15 years away, when private cars would go the way of horse carriages as driverless vehicles become the norm; and with that change, the prospect that thousands of transport workers would be thrown out of work.

The fears over the rise of robots and artificial intelligence (AI) ratcheted up a notch in March, after the AI program Alpha Go defeated world champion Lee Sedol at Go, a complex board game that requires intuition and creative and strategic thinking.

And yet, disruption is not driven by technology alone. Societies are also evolving. Two major forces are demographics and ageing, and the deepening divides between rich and poor, old and young and their impact on economies and politics.

**A rethink of old positions, especially on social security, is crucial to making disruption work for the majority, not just the elite minority whose wealth and knowledge shield them from the worst effects of economic restructuring.**

A final change of special relevance to this city state located at the foot of the Malay peninsula is the shift in the global centre of gravity from West to East, thanks to China's continued ascent and the emergence of large, fast-growing markets in India and in Singapore's very own neighbourhood – South-east Asia.

Straits Times journalists explored the impact of these disruptive trends so as to help you, our

readers, make sense of the times we live in, with the view that awareness and understanding are vital aids in navigating and dealing with disruption.

One way to sum up the challenge ahead is to focus on the need to make disruption work for people, so human beings do not fall victim to technological, economic and social forces run amok. That also means spreading out the economic gains to make sure the upsides do not accrue disproportionately to a very small minority of capital owners, and to mitigate the downsides for those who struggle to keep up.

#### JOB LOST AND GAINED

If one were to fixate on how software and machines are able to do more and more of what humans do – whether to drive, speak or write – then the future of human work can seem daunting.

The AI revolution is undeniable. It began around 2009 with a major breakthrough – the discovery that the specialised chips used to generate fancy graphics and known as graphical processing units, or GPUs, were good for running deep-learning algorithms. Deep learning is a technique that uses large amounts of data to train

computational models. It powers Google's search engine, Facebook's automatic photo tagging and Tesla's self-driving cars.

The excitement over AI is because "one technique, deep learning, can be applied to so many different domains", as Google's head of machine intelligence research John Giannandrea said in a recent special report by The Economist. This application across different domains tracks the leap a technology makes from specific to general purpose, as the Internet has done and as the steam engine and electrification did in their time. It is a shift that unleashes deep disruptive effect on many industries.

Such cycles of creative destruction lie at the heart of long-term economic growth, which must involve not just producing more goods in existing factories but also structural change in employment, writes Dr Carl Benedikt Frey of Oxford University. He is the co-author of a much-cited 2013 report that estimates that up to 47 per cent of jobs in America are at risk of being automated.

"Labour markets may once again be entering a new era of technological turbulence and

widening wage inequality," he observes in a 2014 article on work.

"And this highlights a larger question: Where will new types of work be created? There are already signs of what the future holds.

Technological progress is generating demand for big data architects and analysts, cloud services specialists, software developers, and digital marketing professionals – occupations that barely existed just five years ago."

While Singapore cannot isolate itself from technological change, the actual effect on workers depends on the local context and policy response. Here is where size and demographics make a difference.

Job loss is a huge risk for a labour-rich country like China, but for a small one with a chronic labour shortage, automation has its benefits. "Here, robots could be integral in creating the right balance between Singaporeans and foreign labour," suggests Dr Satish Lele, senior vice-president of automation and electronics at research agency Frost and Sullivan, Asia-Pacific.

Automation is also a way to raise productivity, and with it, wages. Take advanced manufacturing, a sector Singapore's economic

agencies want to grow. It differs from traditional manufacturing in exploiting new technologies such as 3D printing, the Internet of Things and data analytics to transform how things are made. The end products are usually customised and of high value.

If Singapore succeeds in restructuring its manufacturing sector, both companies and workers will benefit, says the Ministry of Trade and Industry (MTI). The Brookings Institution has found that in 2013, US workers in advanced industries earned nearly twice as much as the average worker outside the sector.

Likewise in Singapore, "advanced manufacturing is expected to improve the productivity of our firms and create new manufacturing jobs with good wages", the MTI says.

A third dynamic that needs to be factored in when discussing the future of work is new demand from Asia's expanding middle class. New demand creates new jobs.

In the aviation sector, for example, global annual passenger traffic is expected to hit seven billion by 2034, with more than four in 10 passengers flying to, from or within the Asia-Pacific.

Then there is the new growth

frontier right on Singapore's doorstep – Asean. With a combined population of 628 million and with per capita gross domestic product set to more than double from now to 2030, the Asean 10 have huge economic potential. Now the world's seventh largest economy, it is projected to become the world's fourth largest economy by 2050.

Singapore therefore must position itself to exploit such growth opportunities in the region. At the same time, it needs to prepare and support workers whose lives are disrupted by volatility.

#### TOWARDS FLEXICURITY?

Since job security is fast becoming a relic of the past, the goal of government policy must be to ensure employment security.

Workers must expect to change jobs, employers and even industry during the course of their work lives. They must be prepared to learn new skills so as to do the jobs that will be created in future. The No. 1 quality they must have, to quote Manpower Minister Lim Swee Say, is to be reskillable.

The Government, on its part, must make sure there are jobs available and provide the education and training workers need to move

to new jobs. It must also recast the social safety net so that workers do not lose their healthcare insurance, retirement savings or training support when moving from one employer to the next.

SkillsFuture is a key component. It is an ambitious national plan to make learning a way of life, for workers across the age and education spectrum. To that end, the Government is mobilising a range of institutes – from polytechnics and universities to private-sector providers – to run courses designed to meet the needs of working adults. That includes keeping courses short and perhaps locating classes near where people live or at MRT stations.

The Government has sought to hook workers through its SkillsFuture Credit scheme, which banks \$500 into the accounts of each citizen aged above 25 to be used for continual education and training. Some, like engineer Ang Hong Seng, have already caught the lifelong learning bug. At age 55, Mr Ang has just graduated from the National University of Singapore with a degree in electronics engineering and says "learning has no full stops".

In the Fast Forward instalment on autonomous vehicles, transport

journalist Adrian Lim tracked down a Dutch bus driver who switched to a new job as controller of six driverless buses. At age 51, Mr Bram Moelker is evidence that age is no barrier to picking up new skills. He thinks his new job is "something special", he said from Rotterdam in the Netherlands where he lives and works.

Employment security, however, cannot stop at SkillsFuture. It must also include income security, especially in an era when most workers will have to endure periods of joblessness. There has been little policy movement on this front, perhaps because the Government has always been wary of doling out unemployment benefits for fear that they will, over time, undermine the work ethic.

That stands in stark contrast to Denmark's approach which aims to provide workers with "flexicurity" – labour market flexibility combined with social security – and guarantees a legally specified unemployment benefit of up to 90 per cent for the lowest-paid workers. The Danish Employment Ministry maintains that the effect on the work culture has been positive, with workers being more willing to take risks.

"By increasing the security in

connection with, for instance, job change, workers are encouraged to become more mobile in the labour market. Flexibility with regards to hiring and firing means that employers can afford being more risk-taking by, for instance, hiring employees who are alienated from the labour market," the ministry says on its website.

Singapore must find a policy that best suits its circumstances but in a radically new job landscape, it is no longer viable to have no policy on income security. A rethink of old positions, especially on social security, is crucial to making disruption work for the majority, not just the elite minority whose wealth and knowledge shield them from the worst effects of economic restructuring.

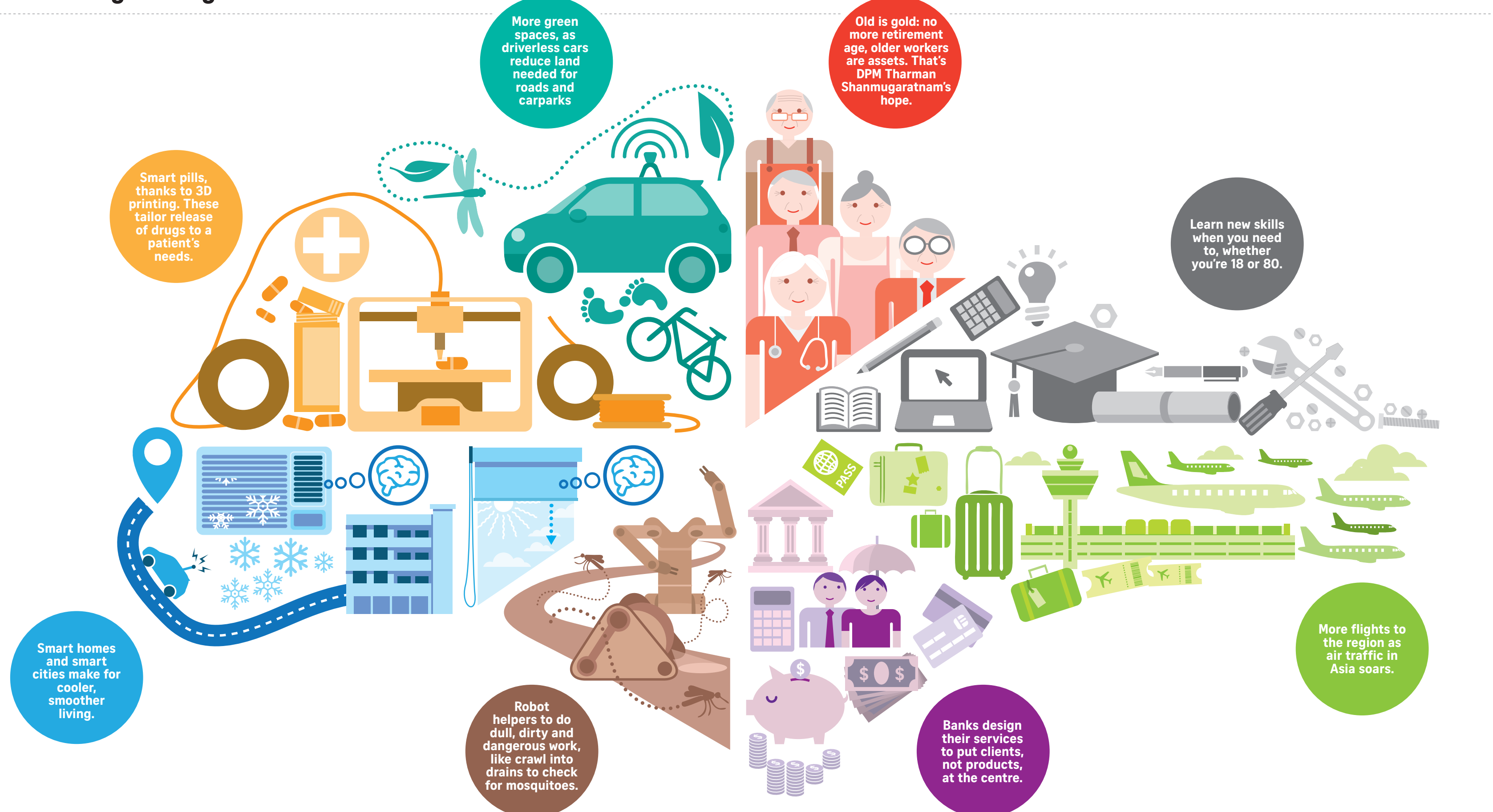
So is Singapore ready to deal with disruption?

Many unknowns remain but this is a nation born of disruption, a political breaking apart in 1965 now better known as Separation. In the wake of that trauma, Singaporeans stayed together and prospered.

There is no reason they cannot do so again, provided political leaders put in place measures to support people through these changes.

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## SG future: Eight things to look forward to



STRAITS TIMES GRAPHICS: CHNG CHON HONG



Left: A cleaning robot pacing a human-operated cleaning machine at the National University Hospital. Automation is a way to raise productivity, and with it, wages. ST FILE PHOTO

Right: Global annual passenger traffic is expected to hit seven billion by 2034, with more than four in 10 passengers flying to, from or within the Asia-Pacific. ST PHOTO: SEAH KWANG PENG



Mr Bram Moelker is proof that age is no barrier to picking up new skills. At age 51, the bus driver from the Netherlands switched to being a controller of six driverless buses – and says his new job is "something special". PHOTO: BRAM MOELKER

## Wars within, and how to forestall them

Today, the greatest disruption to the lives of people in Western democracies can come not from wars waged against other nations but from the wars within.

Brexit and the ongoing Trump versus Clinton battle are two examples. They have exposed deep divides and cynical disillusion among citizens of two leading democracies, and these wars within are warping the trajectories their countries were on.

Might the same happen to Singapore? In June last year, Prime Minister Lee Hsien Loong identified as "our most fundamental challenge" in the very long term, that is 50 years hence, the work of preventing the break-up of Singapore society into "warring clans". Speaking at the Ho Rih Hwa Leadership in Asia Public Lecture, he also identified economic growth as the big challenge in the short term, meaning the next 10 years, and raising the birth rate as the key challenge in the medium term of the next 25 years.

That is good news of sorts. It indicates that by the Government's own assessment, Singapore is not likely to suffer serious disruption from internal division until many years from now.

What forces could splinter society here? The fault lines include the old ones of race and religion, or new ones over issues related to lesbian, gay, bisexual and transgender (LGBT) people. Society could also split along the lines of rich versus poor, or due to the pull of external forces from religious extremism or big powers in the region. Those were the threats cited by PM Lee, who said: "To keep Singapore special to maintain that sense that I am a Singaporean, I am proud of it and I want to uphold it, to feel a duty and a responsibility not only to your fellow citizens today but to the next generation, to feel one united people and not warring clans, I think in a very long term that is our most fundamental challenge."

In the Fast Forward series, political journalist Charissa Yong examined another possible fault line – that between the young and the old as the baby-boomer generation, who number some 900,000, near retirement age. By 2030, seniors like them could account for up to one in four voters – making for a sizeable bloc.

Other countries have seen their politics split by diverging interests of the young and the old, with Britain the most recent high-profile example. The most common source of tension is public spending, with the old seeking to protect their pensions and other old-age benefits and the young resenting the taxes levied on them to pay for seniors' support.

Where Singapore differs from the West is in not having entrenched benefits for baby boomers at the expense of the young, says National University of Singapore political scientist Reuben Wong.

If anything, Singapore's pioneer generation of political leaders did the opposite. They were almost obsessive about saving for the future and salted away years of Budget surpluses to build up the national reserves. Today, Singapore is reaping the rewards of that stockpile as the investment returns from the reserves help to fund government spending, including on healthcare where expenditure is rising fast as society ages.

Yet the question remains: Will each generation clamour for more benefits for its members? Will baby boomers, for instance, lobby the Government for medical subsidies as generous as those under the \$8 billion Pioneer Generation Package? Will the younger generation expect more and more financial support in return for having babies?

Such demands would add pressure on the Government to spend more, even as the revenue outlook tightens with slowing gross domestic product growth and lower investment returns from the reserves. Managing people's expectations will be a key challenge. To keep the balance, it is important that "no one group feels it is being taken advantage of", Gillian Koh, deputy director of research at the Institute of Policy Studies. However, a serious strain on public finances or some long-term economic shock could put social and political resilience to the test, she warns.

Another recent development is the opening up of fresh fissures over moral and cultural issues, as the culture wars of the West take on local form. A sharp divide has formed, for instance, over LGBT issues. In one camp are those whose stand is informed by deeply held religious beliefs; in the opposing camp are people who hold fast to principles of equality and freedom of choice. The room for compromise is thus limited.

Strong feelings were stirred up in June when the Ministry of Home Affairs moved to ban foreign sponsorship of the annual Pink Dot rally in support of the LGBT community. Verbal clashes online and competing calls for support are becoming more regular.

Against this backdrop, the Institute of Policy Studies' recent study on the New Singaporean Pluralism is timely as an attempt to tease out the "principles and practices of governance that may help maintain the civility of our shared political space", to quote the study's co-investigator Johannis Bin Abdul Aziz.

The study involved closed-door focus group discussions and interviews with prominent public advocates on all sides of the issues of LGBT rights and the "sanctity of life" or euthanasia debate. The investigators found that face-to-face meetings and the telling of stories helped to humanise each side to the other. There was a suggestion for civil and democratic values to be taught in schools so young people learn how to engage civility online and honestly negotiate democratic practices such as debate and lobbying for support.

In a commentary for this newspaper, Dr Johannis wrote that the study's aim is to help reaffirm – against a background of irreducible pluralism – "a unity of purpose where a unity of views is impossible".

Such efforts are welcome and necessary to forestall future wars within.

Lydia Lim