





## INTERNATIONAL

## Genetics

# China monkey clone breakthrough raises prospect of human copies

Macaque success follows huge rise in state funding of basic scientific research

EMILY FENG — BEIJING  
CLIVE COOKSON — LONDON

Scientists in China have successfully cloned two monkeys, the latest step in the country's ambition to become a global scientific leader.

The genetically identical long-tailed macaques born in Shanghai last month, called Zhong Zhong and Hua Hua, are the first primate clones produced through the method that made Dolly the sheep in Scotland in 1996. Their names are a play on the phrase *Zhonghua*, which means Chinese nation or people.

Although the cloning method, known as somatic cell nuclear transfer (SCNT), is almost routine in mammals such as sheep, cattle and mice, it has been extremely difficult to replicate in primates. Previous efforts with monkeys often resulted in clones that did not develop properly as embryos or died shortly after birth.

Now that SCNT cloning has been achieved with primates, human cloning is possible, said authors of the study, which is published in the journal *Cell*.

"The technical barrier is now broken. In principle [this method] can be applied to humans," said Mu-ming Poo, a co-author, from the Chinese Academy of Sciences Centre for Excellence in Brain Science and Intelligence Technology. But, he added, "we cloned [the macaques] to produce animal models useful for medicine, for human health. There's no intention for us to apply this method to humans."

SCNT involves replacing the nucleus of an egg cell with DNA from a differentiated body cell such as skin. This reconstructed egg develops into a clone of the DNA donor.

In 1999 US researchers at the Oregon National Primate Research Center pro-



Zhong Zhong and Hua Hua, cloned using the method that made Dolly the sheep — Qiang Sun and Mu-ming Poo/Chinese Academy of Sciences

duced a live cloned rhesus monkey, named Tetra, through embryo splitting — a simpler process that occurs naturally in identical twins but cannot generate more than four clones at a time.

In principle, SCNT can produce a larger number of clones from the same donor, which could help medical research by generating genetically uniform groups of monkeys with specific characteristics.

The team at the Chinese Academy of Sciences' Institute of Neuroscience in Shanghai failed in its efforts to produce healthy clones from adult cells but succeeded with fibroblasts — connective tissue cells — from a macaque foetus.

"The researchers not only replace the DNA sequence but also make sure the

sequence expression of certain genes and the amount of that expression are co-ordinated so they are in the right place at the right time," said Gang Fang at New York University Shanghai. "That's quite difficult."

Zhong Zhong, eight weeks, and Hua Hua, six weeks, are apparently developing normally. The Shanghai team expects more macaque clones to be born over the coming months.

The study raises concerns about animal ethics in China, which has less rigid testing regulations than many other countries, though the researchers followed guidelines for animal research set by the US National Institutes of Health. Dr Poo is encouraging scientists internationally to discuss the issue. "We are

very aware that future research using non-human primates anywhere in the world depends on scientists following very strict ethical standards," he said.

The cloned macaques are examples of the way skyrocketing Chinese state funding of basic research is yielding significant advances in fields ranging from quantum computing to biology.

Chinese state-led funding of basic research — science that has no immediate commercial applications — increased to \$10bn in 2015. While that number is about one-quarter of US federal spending on basic research, it represents a vast increase from the \$3.9bn in total state science funding four years earlier, according to China's National Natural Science Foundation.

## Infrastructure projects

# Beijing fails to share its New Silk Road contracts

JAMES KYNGE — LONDON

China's pledge to the world is that it will create a "community with a shared future for mankind". But a new study shows that sharing is no more than an afterthought as it rolls out an ambitious programme to build transport infrastructure across Eurasia.

The study by the Center for Strategic and International Studies (CSIS), a Washington-based think-tank, reveals that 89 per cent of the contractors in China-funded transport infrastructure projects in 34 Asian and European countries were Chinese companies, leaving only 11 per cent for contractors from elsewhere.

The discrepancy challenges the rhetoric that Beijing has used to promote its Belt and Road Initiative (BRI), a signature policy of Xi Jinping, China's president, which seeks to build infrastructure and win friends in some 70 countries around the world.

In his speech to the 19th Party Congress late last year, Mr Xi promised that China's engagement with the world would be open and inclusive to create a "shared community".

He said: "We should stick together through thick and thin, promote trade and investment liberalisation and facilitation and make economic globalisation more open, inclusive and bal-

anced so that its benefits are shared by all."

But Jonathan Hillman, director of the Reconnecting Asia Project at CSIS, said the study showed the gap between rhetoric and reality. "Despite official rhetoric about the Belt and Road being open, it is first and foremost a China-centric effort," Mr Hillman said.

"It is in everyone's interest, including China's, that projects are open to fair competition. Unless there are more concrete opportunities to participate in the BRI, more countries will start to ask why they joined the BRI and those that have not joined will not."

In contrast to the overwhelming preference shown to Chinese contractors in China-funded projects, data for projects in Eurasia funded by two western multilateral development banks (MDBs) — the World Bank and the Asian Development Bank — show a more even distribution of awards.

Among MDB-funded transport infrastructure projects, a total of 41 per cent of contractors were from countries in which the infrastructure was being built, while 29 per cent were Chinese and 30 per cent were from third countries, according to the CSIS study, which covered 178 projects between 2006 and now.

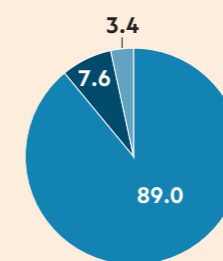
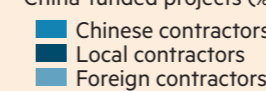
The central importance of BRI — also known as the New Silk Road — to Beijing was highlighted during Mr Xi's speech to the party congress, when he stressed its role in forging a new type of international development distinct from the western-led world order.

Raffaello Pantucci, director of the Royal United Services Institute for Defence and Security Studies in the UK, said hopes that China would open up its contract awards in the BRI to foreign contractors were based on a misreading of Beijing.

"When we hear the BRI rhetoric we think it is about China sharing the love and giving us money and contracts, but they would say they are sharing the love by helping fill the infrastructure deficit and helping under-developed countries develop," Mr Pantucci said.

## Chinese companies win majority of Eurasia projects

China-funded projects (%)



Source: CSIS Reconnecting Asia Project

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INTERNATIONAL

Southeast Asia. Geopolitics

# India woos Asean bloc to foil China

New Delhi fetes regional leaders as Modi looks to take on more active strategic role

AMY KAZMIN — NEW DELHI  
JOHN REED — BANGKOK

India's Republic Day parade is a popular public spectacle: a display of military hardware, leavened by cheesy floats and folk-dancing troupes. It is also the annual highlight of India's diplomatic calendar, given New Delhi's decades-old tradition of inviting a strategically important foreign leader as the parade's "chief guest".

When India's missiles and tanks roll down New Delhi's Rajpath for this year's parade tomorrow morning, the VIP dais — graced in recent years by Shinzo Abe, Japan's prime minister, Barack Obama, the former US president, and François Hollande, the former French president — will be heavier than usual.

Rather than a single high-profile foreign dignitary, New Delhi is hosting 10 leaders from the Association of Southeast Asian Nations, a strategically

important region with which India is seeking to deepen ties to counter China's increasing sway. "India does not want an Asia that is dominated by China," says Dhruva Jaishankar, a fellow at Brookings India, a think-tank. "And a big part of where that will be determined is Southeast Asia."

India's feelings are not unreciprocated. While China is Southeast Asia's biggest trading partner, it is also a hegemon that many regional elites privately fear or loathe for its heavy-handed military and economic clout. The South China Sea is a particular flashpoint, given Beijing's build-up of artificial islands for potential military use. India has openly sided with Southeast Asia in the dispute, with Narendra Modi, the prime minister, criticising China's military build-up as evidence of an "18th-century expansionist mindset".

It is that sense of India's growing resolve in the face of Chinese assertiveness that has caught Asean's attention. "What [Southeast Asian countries] are seeking — and have — in India is a partner that stands up for a rules-based international order, and that's particularly important in the maritime space," says Alyssa Ayres, a senior fellow at the Wash-

ington-based Council on Foreign Relations. "In India, they see a global giant — a huge country that is not as big a behemoth as China on trade, but one that is willing to say to Vietnam and the Philippines, 'We are with you on this question'. They are ready to stand up to China."

The idea of an "Indo-Pacific" region with India playing a more active strategic role has also been endorsed by Japan, Australia and Donald Trump, the US president, who spoke of a "new chapter for the Indo-Pacific" at a recent Pacific Rim summit.

"We are talking about a new paradigm for what used to be called the Asia-Pacific," says Thitinan Pongsudhirak, associate professor of political science at Thailand's Chulalongkorn University. "When India is included, Southeast Asian countries see it as a potential giant that could counterbalance China. They are looking for some hedging as well."

When it comes to commercial and economic ties, New Delhi's hesitant engagement with Asean over the past 25 years has been underwhelming. Bilateral trade was just \$58bn a year in 2015, substantially less than Asean's trade with Hong Kong or Taiwan. In contrast, Asean is bound to China by vast networks of integrated supply chains, with bilateral trade forecast to reach \$1tn in 2020. India lacks the financial depth to match China for infrastructure funding, or underwriting bonds. But even New Delhi's more modest goals to boost connectivity — such as a trilateral highway between India, Myanmar and Thailand agreed 15 years ago — remain unrealised.

"There is a bit of angst about the gap between promises and delivery," says Vishnu Prakash, a retired Indian diplomat. "We do not have the resources China has and we cannot or should not try to compete there. But whatever we promise, at least we should be able to deliver on that."

But India is stepping up security co-operation with Southeast Asian countries, albeit in small but symbolically important steps. These include training combat pilots and submariners from several Asean countries, a new naval agreement with Singapore, growing technical co-operation and patrolling east of Malacca by the Indian navy.

Many are expecting India to pursue stronger defence partnerships with Asean countries in the coming years, possibly in conjunction with other like-minded Pacific powers, such as Australia and Japan. "On the security front there have been more developments than is often appreciated," says Mr Jaishankar. "There is no expectation that India should match China one for one. But if you can provide even part of an alternative, that is helpful."

South Korea's foreign ministry said it would not try to renegotiate the agreement, but called on Tokyo to keep making efforts to restore honour and dignity to the victims. The South Korean government also said it would set aside \$9m to help the victims in place of compensation already paid by Japan.

Many in South Korea and Japan regard those actions as tantamount to nullifying the deal. Some of Mr Abe's conservative supporters want him to retaliate by freezing relations with Seoul. But other Japanese officials think that would play into Mr Moon's hands by allowing him to claim that the 2015 agreement was dead. They want to uphold Japan's end of the deal and force Mr Moon to take the initiative.

"We welcome Japan's decision to officially announce Prime Minister Abe's visit to the Pyeongchang Winter Olympics," Seoul's presidential spokesman said, adding that the two governments would consult closely to make Mr Abe's visit a success.

Mr Abe said he also wanted to discuss North Korea with Mr Moon. Tokyo and Seoul are the two most important US allies in the region. Co-operation is important in coping with Pyongyang's military threats and the unpredictability of Donald Trump, the US president.

The "comfort women" issue has long poisoned relations between the neighbours. Many in South Korea believe Tokyo has never shown sufficient remorse. Many in Japan think Seoul uses the issue as a diplomatic weapon and no apology will ever be sufficient.



Military manoeuvres

'India does not want an Asia that is dominated by China'

DHRUVA JAISHANKAR, BROOKINGS INDIA

'We are talking about a new paradigm for what used to be called the Asia-Pacific'

THITINAN PONGSUDHIRAK, CHULALONGKORN UNIVERSITY

Boogie time: Indian troops relax during rehearsals for tomorrow's Republic Day parade in Kolkata

Saikat Paul/Pacific Press via Zuma Wire/DPA



Narendra Modi: India's premier has accused China of an '18th-century expansionist mindset'

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'Comfort women'

## Abe to visit S Korea Olympics despite conflict over sex slaves

ROBIN HARDING — TOKYO  
SONG JUNG-A — SEOUL

Shinzo Abe will attend the Winter Olympics next month despite a diplomatic dispute with hosts South Korea over Japan's wartime use of sex slaves.

The Japanese prime minister said yesterday that he wanted to hold a summit with Moon Jae-in, South Korea's president, and support a fellow Asian host ahead of the Tokyo Olympics in 2020.

Mr Abe's decision suggests he will not break off relations over Seoul's call for further recompense and apology to "comfort women" forced to work in military brothels during the second world war. Japan rejects those calls because the two countries signed a "final and irreversible" settlement of the issue in 2015.

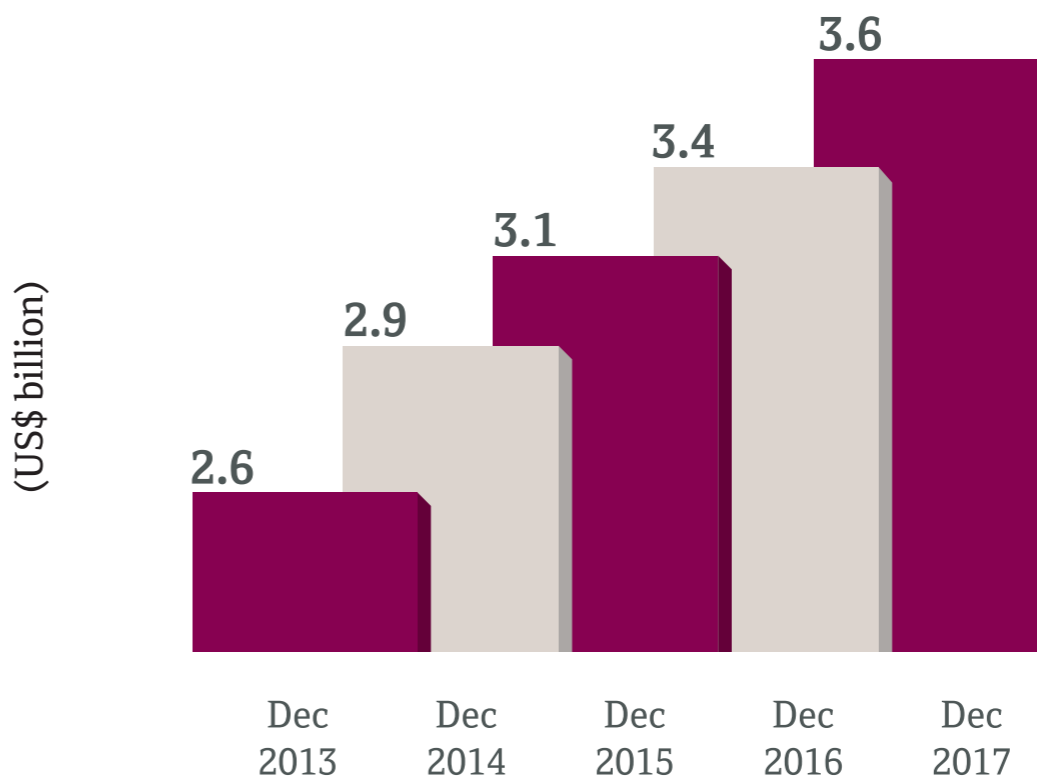
Instead, Mr Abe will demand that South Korea honours its side of the 2015 deal, making it harder for Mr Moon to reignite the dispute even as he welcomes world leaders to the Olympics.

"If circumstances allow, I want to attend the opening ceremony for the Pyeongchang Olympics," Mr Abe said. "At the same time, I'd like to hold a summit with President Moon Jae-in and properly lay out Japan's position on our 'comfort women' agreement."

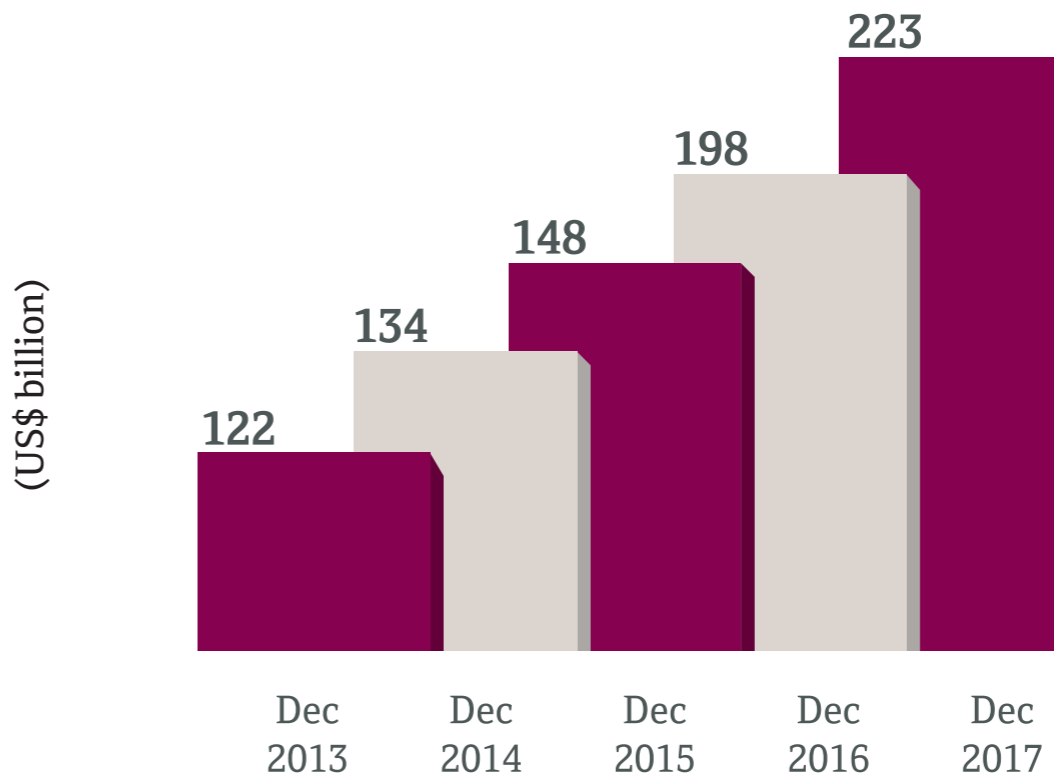
The 2015 agreement was thrown into doubt early this year when Mr Moon derided it as "seriously flawed". A state-appointed panel in South Korea said the previous conservative government had failed to consult victims properly before reaching the deal. Earlier this month,

### QNB Group, the largest financial institution in the MEA region delivers another record result in 2017

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## ARTS

## Stop-motion story is a fabulous feat of clay

## FILM

Nigel Andrews



Start mining ore," says someone in *Early Man*. "Or what?" comes the reply. Animator Nick Park's new film, his first feature as writer-director since winning an Oscar for *The Curse of the Were-Rabbit*, suggests the English language was a pitfall of potential errors as early as the Pleistocene Age.

For instance: might they not have meant Plasticine? Every character here, human and animal, is formed of stop-motion clay. And since the film is set, according to an opening title, "Near Manchester. Around lunchtime", we can be sure these primitives are exact ancestors of Wallace and Gromit. Toothy Dug (voiced by Eddie Redmayne) and his dim-but-excitabile wild boar Hognob (eloquently grunted by Park himself) may be the first instance of a mad-inventor-and-pet duo in an evolution that led, finally, to the heroes of *The Wrong Trousers*.

The film is funny, silly in the best sense and full of deadpan puns, malapropisms and wordplay. "You haven't finished your primordial soup," a diner is nagged. Park's eye for visual gags is unerring. A village zebra crossing is an actual dead zebra, stretched flat. And surely the shade of *Spartacus* hovers over the scene in which a bathtime Lord Nooth, leader of the Bronze Age invaders (voiced in spoofy French by Tom Hiddleston), is massaged by an interloping Hognob, mistaken in the shadows for his body servant. Hognob goes on to play the harp: a music experience none should miss.

Is there too much football? Perhaps. To win back the verdant natal valley they've lost to the invaders, Dug and his Stone Age friends challenge "Real Bronzio" to a match. To UK soccer-philes this will be hilarious. (Rob Brydon ventriloquises a mock John Motson commentary.) To everyone else



worldwide? The action-replay puppet show joke is brilliant. But even here, don't you need to have been raised on a British beach, circa 1950, to get the puppet crocodile gag?

Never mind. Outside the soccer stuff, *Early Man* is a joy for all. The early hunting, gathering and living scenes offer persuasive speculations on prehistoric society. (Large, sharp-pincered beetles used as pre-electric shavers.) A Stone Age rabbit hunt is a triumph of mind over mad-hatter methods. And Hognob is a comic hero worth a future feature. For his sake alone we may hope to look forward to *Early Middle Man*, *Early Late Man*, or even – to borrow the film's soccer-phrase pun and if we are to have, willy-nilly, more sport – *Early Man United*.

Some directors seem unable to make

Silly: Dug and Hognob, voiced by Eddie Redmayne and Nick Park, in 'Early Man'. Below: Matt Damon and Jason Sudeikis in 'Downsizing'



a bad film. Which doesn't mean they don't try. Richard *Boyhood* Linklater's *Last Flag Flying* might have been bloody awful – or buddy-awful – in its tale of three former Vietnam friends (Steve Carell, Bryan Cranston, Laurence Fishburne) reuniting to journey to the Arlington funeral of Carell's son. He died a hero in Iraq, or that's the official story. He will receive full military honours. Cue comradeship, tears, remembering-old-times, semi-drunken nights on the road. Cue manly togetherness, the love that passeth understanding, the love that passeth 124 minutes with only popcorn for pain relief.

But then think of *The Last Detail*. That had grit, wit and a scabrously good Jack Nicholson. With *Detail* author Darryl Ponicsan also scripting *Last Flag Flying* (with Linklater) from his own novel, redemption and salvation are at hand here. Even a kind of triumph. Another trio of gifted actors, reprising the earlier movie's ex-service chums, set alight to potential clichés, watch them burn and conjure phoenix truths from the threatened cornball. Linklater and cast find buddyism's frail absurdity. They also find the way it can torque triteness into Talking About America.

Carell is the trio's quiet centre. Fishburne, a former hellraiser, is now a Reverend, still secretly fond of the drink. It takes Cranston's heavy-bibbing bar owner – a near-burnout enjoying his last flagflations – to smoke out his friends' lurking demons.

A reminiscence session in a jolting train carriage, modulating from sentimentality to mild uproar to a kind of crazed, reflective self-awareness, is the best scene. The film finds its gonzo heart. Set in 2003, it also makes funny play with pre-smart mobile phones: these alien gizmos, ringing the world with their no-escape ringtones, promising new intimacies for old reunited friends – even if they don't want them.

Alexander Payne's *Downsizing* is a movie with a message. It's a movie, I suspect, with half-a-dozen messages, if one

bears to count. And it's as earnest and onerous as that sounds. Dare we say that this once admired indie writer-director, who made *Exhibition*, *Sideways* and *About Schmidt*, is developing a humourless streak? (After *Nebraska*, yes, we can.) The neo-Swiftian tale of an occupational therapist (Matt Damon) who, for self-therapy and humanity's interest in an overcrowded world, submits to shrinkage – the latest fad of an imagined future – should have been a sharp-toothed satire. Shouldn't it? Something surely, at least, more vivid than a sluggish serio-comedy carrying or courierring a sermon on planet care.

Kristen Wiig plays Damon's frivolous wife, in early scenes, as if she might be fun. But her first betrayal of his trust is her last and out she goes. Exit *Saturday Night Live*. Enter Sunday morning, which lasts till the final reel. Payne and his regular co-writer Jim Taylor invent their sci-fi details as if in a bid to punish our longing for escapist fantasy: we've given up on demonic satire. Damon, pre-shrinkage, has a full-body shave and dental MOT while we watch. It's not pretty. It doesn't even seem to have a point. In *Leisureland* – Payne and Taylor's Lilliput – our hero is persuaded to spurn his mansion to minister to the poor and sick in a quasi-barrio. Here he meets a girl (Hong Chau), a Vietnamese dissident refugee with a prosthetic leg ...

The carpet-bombing of our conscience isn't done yet. Survivalism and

## Early Man

Nick Park  
★★★★☆

## Last Flag Flying

Richard Linklater  
★★★★☆

## Downsizing

Alexander Payne  
★★★☆☆

## The Nothing Factory

Pedro Pinho  
★★★★☆

the Scandinavian school of hair-shirt Utopianism are still to come. The last scenes are a bleeding-heart fantasia of apocalypse set amid scenic fjords – though the scale considerations of putting mini-humans in un-shrunk landscapes don't seem to be addressed at all. Surely there were better ways to morph *Gulliver's Travels* with *Fantastic Voyage*? Surely glum, plethoric preachiness isn't the way to a filmgoer's heart, never mind his funny bone. Nor to his conscience, arduously bypassing his intransigent lust for entertainment.

For the first hour of Pedro Pinho's *The Nothing Factory*, a three-hour Portuguese film about a factory strike, I thought I had died and gone to Purgatory. It's very slow. But this docudrama which won a Cannes International Critics' Prize should be persevered with.

The "real time" feel of the strikers' lives and actions disarms any charge of Agitprop Lite. (We don't get Ken Loach's tendency to put capering with the campaigning.) There is gathering power as we peer into lives, conflicts and labour pains, in all senses, of a new-born industrial showdown. Here it is the extended lock-out of management by workers in an elevator factory, inspired by a real and long-lasting strike at a Portuguese Otis plant.

Stay to the third hour and you get the best of the film: vignettes of deep-banked anger – a young striker's father with a startling buried treasure – and domestic tragedy/comedy. There is even a song-and-dance production number. The most striking scene, no pun meant, is a long conversation around a table about left-versus-right economics. It's a sort of high-calibre Marxmanship contest between four *chatterati*; with powder-packed views on capitalism's failure (if that's a concept you accept) and what to do about it.

## SUNDANCE FILM FESTIVAL

Damon Wise reports on this year's line-up, including Bart Layton's jaw-dropping fact-based crime story, 'American Animals'

ft.com/arts



Buddies: from left, Laurence Fishburne, Bryan Cranston and Steve Carell in 'Last Flag Flying'

## Fanning the flames of Wilde's comedy

## THEATRE

## Lady Windermere's Fan

Vaudeville Theatre, London  
★★★★☆

Ian Shuttleworth

This is only the second full-scale production of its year-long Oscar Wilde stint (along with a couple of holiday-season diversions), but already Dominic Dromgoole's Classic Spring company seems to have developed a house style. Like Dromgoole with *A Woman of No Importance* last autumn, Kathy Burke directs Wilde's first great dramatic success in a careful pastiche of the late-Victorian manner but which also includes an assortment of tweaks and nudges more in tune with a 2018 audience. The extent to which the blend succeeds is a matter of individual taste; I found myself more or less on-side at the beginning, but my sympathies paled progressively as the evening continued.

Burke has a keen directorial eye, but periodically her comic actor's instincts win out. She brings out the blood tie between the idealistic, moralistic Lady Windermere (Grace Molony) and the disgraced Mrs Erlynne (whom London society believes is Lord Windermere's mistress, and played by Samantha Spiro, who can command a stage

without a shred of imperiousness) by giving them both a little snort when they laugh ... then overdoes it in the final minutes by having them do so in unison.

As the Duchess of Berwick (a Wildean warm-up for Lady Bracknell), Jennifer Saunders begins her first proper stage appearance in 20 years with brittle precision, but is allowed to broaden her performance in Act Two. After the interval, the Duchess disappears from the action, but returns front-of-curtain to cover a scene change by singing – well, delivering – a musical number with the euphemistic refrain "Keep your hands off my fan."

Alas, Burke and Co. ratchet up the comedy just as Wilde is heightening the drama and sentiment, as the Windermere and Mrs Erlynne each find that both happiness and morality are more complex matters than they had believed. For me, this is where the production falls on the side of contradiction rather than counterbalance. For others, though, Burke arguably meets her target: "I want to come away feeling I've been told a really good story, which I've enjoyed, that I've had a bit of a giggle and that it's opened my mind a little."

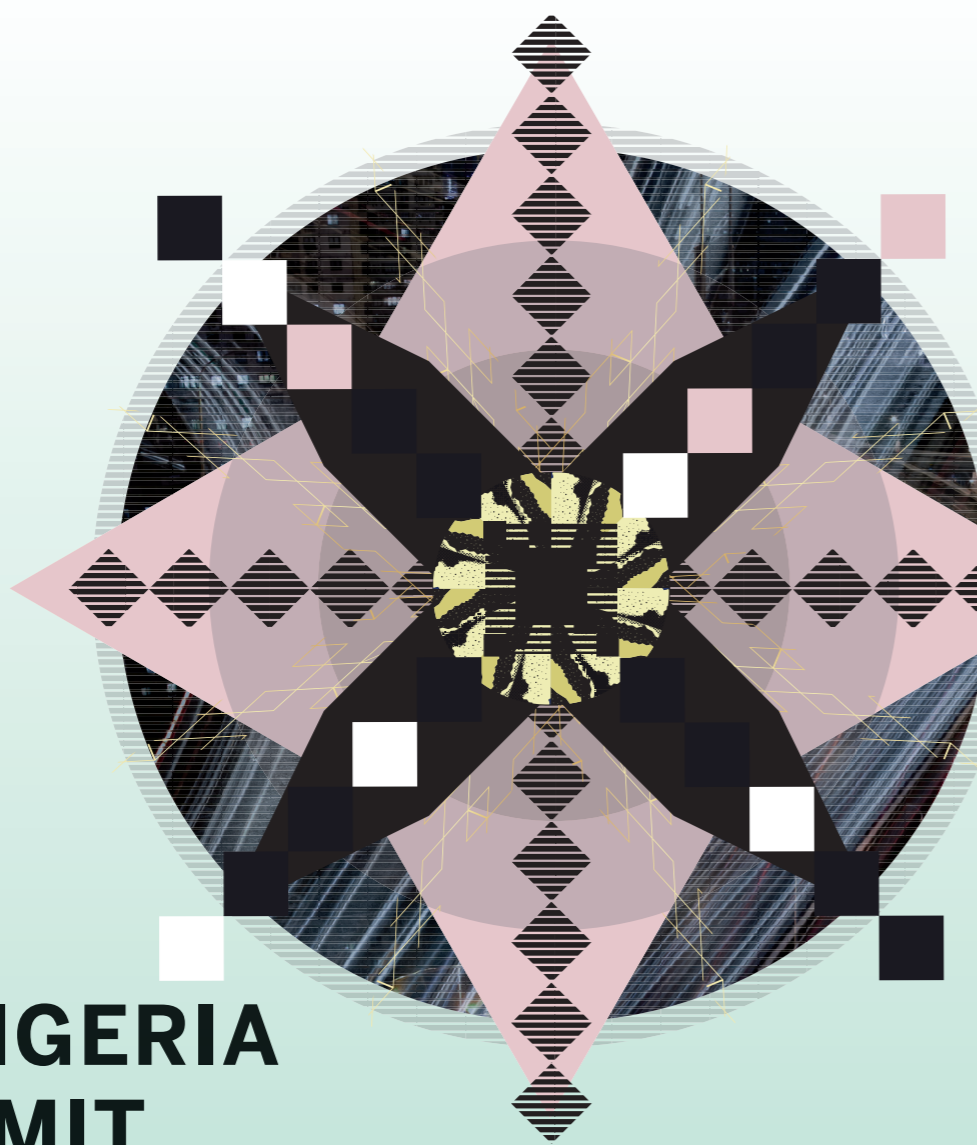
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Pastiche: Jennifer Saunders and Grace Molony in 'Lady Windermere's Fan'

Marc Brenner

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31 May 2018

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## FT BIG READ. SATELLITE TECHNOLOGY

It is expensive to launch satellites, but a US company is now offering cheap rocket technology and a launch pad in New Zealand. Governments, scientists and venture capitalists are eyeing fresh opportunities.

By Jamie Smyth

Peter Beck has always been fascinated by space. As a teenager he built his own rockets, strapping them to bicycles and other vehicles in sometimes hair-raising experiments. But his love of engineering paid off on Sunday when Rocket Lab blasted three small satellites into orbit from a private launch pad on an 8,000-acre sheep and cattle farm in rural New Zealand – a “world first” that some believe could revolutionise the space industry.

“Our rocket is one of the tools that is enabling much more access to space. It will allow some really cool things to happen that will have significant effects on humanity,” says Mr Beck, a 40-year-old engineer with boundless enthusiasm. “You are seeing the democratisation of space. Space is tipping from a government dominated domain to a commercial domain.”

Rocket Lab is part of a wave of innovators driving a new space race. But unlike the 20th century cold war version between the superpowers, it is focused on developing commercial rather than military technologies. Consumers have for years benefited from internet, television and GPS navigation signals from space but developments in satellite technology are unleashing a plethora of services, from tracking commercial shipping to monitoring crops, cattle and pollution.

The race is being fuelled by a new generation of miniature satellites, so-called nanosatellites or CubeSats, which are typically no larger than a shoebox, cheaper to build and easier to deploy than traditional bus-sized versions. The ability to mine big data, the falling costs of accessing space due to rocket innovation and a surge of investment by billionaires, such as Elon Musk of Tesla, Amazon's Jeff Bezos and Virgin's Richard Branson, and more recently venture capitalists, are combining to provide a boost to the industry.

\$2.7in

Estimated value of space market in 2045, from \$339bn now

\$5m

Cost of Rocket Lab launch. SpaceX's Falcon rocket costs \$62bn to launch

Bank of America Merrill Lynch estimates the space market – ranging from the manufacture and use of infrastructure, to space-enabled applications such as satellite phones and weather services – is worth \$339bn. It predicts this will grow eightfold due to the boom in satellite deployment, ancillary services and launch capabilities by 2045 to \$2.7tn and produce “more advances in the next few decades than throughout human history”. Investors funnelled \$2.8bn into space start-ups in 2016, a record amount for a second consecutive year in a sector where governments and their militaries remain the big spenders.

The US, which appeared to temporarily lose interest in space after the end of its shuttle programme in 2011, appears once again to be prepared to lead. In December President Donald Trump asked Nasa to send Americans to the moon for the first time since 1972 and to prepare for trips to Mars. But experts warn the lack of a specific timeline or funding details means the announcement should be treated with caution.

Commercial opportunities are tempting new countries to join the competition. In 2016 New Zealand established a space agency and last month legislation setting out a regulatory framework aimed at encouraging space businesses came into force. Australia, one of just two OECD countries without a space agency, along with Iceland, is setting up its own in March.

“Australia can't afford to be left behind,” says Brad Tucker, an astrophysicist at Australian National University. “Almost every aspect of our modern lives is dependent on satellite infrastructure and this makes us very dependent on other countries' space infrastructure.”

#### Scaling down

At an industrial park on the outskirts of Adelaide, Italian rocket scientist Flavia Tata Nardini is hoping Fleet Space Technology, the company she co-founded with aerospace engineer Matthew Tetlow, can put Australia at the forefront of the nanosatellite industry. “When I arrived in Adelaide four years ago there were very few companies involved in space technologies. That is changing fast,” she says. “Now there are 55 space start-ups which have raised A\$20m [\$16bn] over the past six months.”

Ms Nardini worked previously at the European Space Agency and TNO, a technology organisation based in the Netherlands. Fleet plans to launch 100 nanosatellites into orbit to provide internet connectivity for millions of sensor devices based in remote locations on Earth. It is targeting the mining,



Planet and Spire always have CubeSats on the shelf. Rocket Lab could be a game changer for the small satellite industry’

oil and agricultural industries, which are beginning to deploy large numbers of sensors to collect data that can then be mined to improve efficiency.

“Technology has progressed to the point that nanosatellites are small, light and significantly cheaper to build than the traditional billion-dollar satellites,” says Chris Willshire, an automation and robotics engineer at Fleet. “It allows us to develop them a lot faster and launch them far cheaper than we used to.”

In the past satellites could only be built and launched by multibillion-dollar companies like Boeing, Lockheed Martin – one of the world's biggest defence contractors – and Orbital Sciences Corporation. Today, start-ups and even universities are developing and launching them into orbit.

In November UNSW Canberra, an Australian institution with a focus on defence, launched its first CubeSat, to help predict the orbit of space junk – disused satellites and other debris. To date, almost 900 nanosatellites have been launched into space and 560 remain in orbit, according to the Nanosats.eu online database.

Planet Labs, a San Francisco company founded in 2010 by three former Nasa scientists, owns two of the satellites blasted into space by Rocket Labs on Sunday. In February it launched 88 of its Dove nanosatellites on a single rocket – the largest constellation ever to reach orbit from a single launch.

The Californian company now has a network of 149 satellites that capture images of the Earth's surface every day.

The US government and humanitarian agencies used it to map the impact of deadly hurricanes in Florida, Puerto Rico and Texas last autumn. In New Zealand, farming groups are using the technology to estimate pasture cover to better direct livestock towards grazing.

“This technology is a first for New Zealand and has not been previously commercially viable due to the frequent cloud cover over the country,” says Ian Ritchey, from Planet Labs. “Planet's ability to capture images daily effectively counters this issue.”

Spire, a satellite company based in San Francisco, bought a slot for one of its earth imaging devices on Sunday's launch. Rocket Lab launch charges start from about \$100,000 for a nanosatellite but prices vary depending on the payloads they carry and overall weight.

“Getting into space is the biggest bottleneck we face,” says Jenny Barna, director of launch at Spire. “There is always a backlog in the US CubeSat community. [But] Planet and Spire always have CubeSats on the shelf. If Rocket Lab can do what it says then it could be a game changer for the small satellite industry.”

#### ‘Our own private ride’

Nanosatellites are launched into low-earth orbit – 500km-2,000km above Earth and far below the 36,000km “geostationary” altitude of larger communications satellites. This means they usually drop out of orbit and burn up in the atmosphere within two to three years, thereby requiring regular

Sky high: Rocket Lab's successful launch has been described as a ‘significant breakthrough’ for the industry. Below, Peter Beck, the company's founder – Rocket Lab; Getty Images



replacement and frequent launches. But blasting rockets into orbit is a complicated, expensive and risky process.

The Atlas 5 rocket developed by United Launch Alliance – a joint venture of Lockheed Martin and Boeing and a mainstay for satellite deployments in recent years – cost about \$109m to launch, in December 2016. It faces tough competition from Elon Musk's SpaceX, which developed the Falcon, the world's first re-usable rocket, that can now be launched for about \$62m.

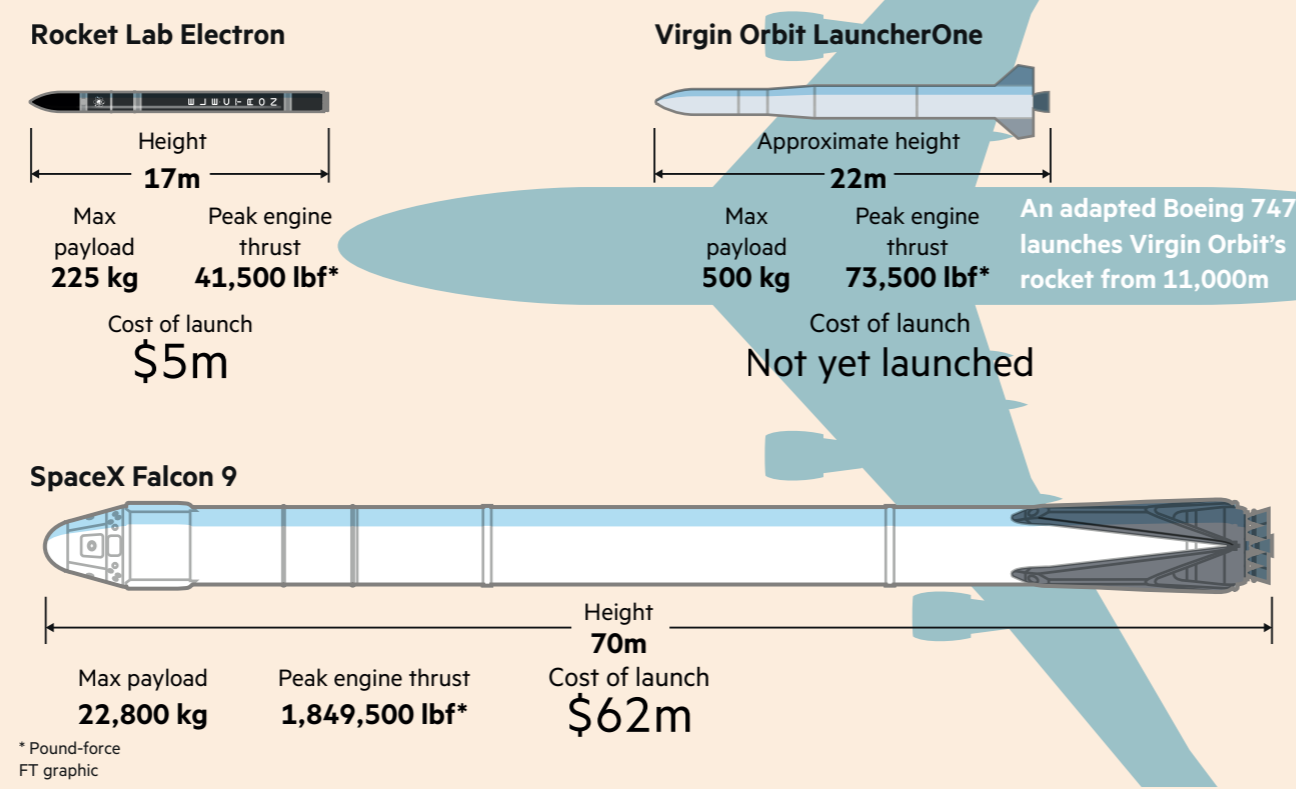
Yet one in 20 space launches ends in failure, according to XL Catlin, an insur-

ance underwriter, and delays are common due to technical challenges and bad weather. This month a multibillion-dollar spy satellite built by Northrop Grumman, which was launched by SpaceX, failed to reach orbit and was assumed to have been lost. In May the first test launch of Rocket Lab's Electron rocket failed to reach orbit due to a technical fault.

Another risk factor is that companies are not making money on space, according to BofAML, which says it is difficult to achieve due to the high levels of capital expenditure required to access the industry, delays and launch failure. SpaceX is “not currently profitable and may never be”, it says.

However, experts say Sunday's successful Rocket Lab launch, which cost just \$5m, could mark a significant breakthrough. “For the smallsat and nanosatellite industry, this changes everything,” Spire's Ms Barna says. “Now we have our own private ride if we want it – to where we want, when we want.”

To keep costs down Rocket Lab uses carbon composite materials in its rockets rather than aluminium, which is a heavier and costlier material. Electric motors and lithium batteries drive the turbo pumps in the engine, rather than the more complex and expensive gas generators used in traditional rockets. The company 3D prints its engines, which dramatically reduces the time it takes to build each rocket.



#### Speed read

**Nano niche** Miniature satellites have become cheap to build and easier to deploy, with the ability to mine big data

**Satellite business** The likes of Australia and New Zealand aim to encourage space businesses

**Burning fuel and money** Bank of America Merrill Lynch says few companies are making money on space

“Price is an important aspect but the most important thing [for potential clients] is frequency. The US went to space 21 times last year. We are licensed to launch every 72 hours over the next 30 years,” says Mr Beck.

#### Gaining access

New Zealand's remote location on the edge of the Pacific Ocean and lighter air traffic make it ideal for regular rocket launches, requiring fewer airspace closures than in US skies. The trajectory of a launch from the site at Mahia, on the east coast of the country's North Island, takes the Electron over open water and is well suited to putting satellites into a north-to-south orbit around the poles.

“We have the right geography and the launch angles to access space at a very high frequency,” says Peter Crabtree, head of the New Zealand Space Agency. “And now we have a great regulatory regime in place, which has been developed in close co-operation with the space industry.”

Mr Beck was a big driver behind the Wellington-based agency and the new regulations, which enable frequent launches. He re-registered Rocket Lab as a US company in 2013, as it began attracting significant funding from Silicon Valley. But he realised frequent launches from the US would be difficult given the busy airspace and views New Zealand as the alternative.

The decision to carry out launches from New Zealand required the government to establish a regulatory regime that conformed to US Federal Aviation Administration rules and needed Washington and Wellington to sign a bilateral treaty enabling the transfer of sensitive technologies between the two countries.

“If you write that in your business plan it's a pretty tough call. But the treaty was signed in one and a half years,” says Mr Beck. He puts the success down to Wellington's willingness to lobby Washington, the country's membership of the Five Eyes intelligence network and a US government that saw the advantage in frequent low-cost launches from a partner country.

Rocket Lab has worked with the US defence department on engine projects and has attracted undisclosed funding from Lockheed Martin. The company, which is valued at NZ\$1.4bn (\$1bn) having raised NZ\$200m, has also caught the eye of US venture capitalists eager to tap into a fast-growing sector.

“Beck is the closest person I've seen that could be compared to Elon Musk,” says David Cowan, partner at Bessemer Venture Partners, which manages \$4.5bn of investments, including stakes in Rocket Lab and Spire. “Every time we have a board meeting I'm simply blown away by his inventions.”

Bessemer, one of the world's oldest venture capital companies, was among the first to embrace the space industry. And also one of the first to make money from a sector that requires significant upfront investment and patience to allow companies to generate revenues. In 2014 Bessemer cashed out its investment in SkyBox, a satellite imaging company bought by Google for \$500m, to focus on the potential of space.

“This was a defining moment for the industry. The exit attracted a lot of attention from the VC community and gave partners confidence in the space industry,” says Mr Cowan. “Up to that point many people thought we were crazy investing in the sector.”

Richard Rocket, his real name, a co-founder of research company NewSpace Global, says the main thing holding back the industry is access, rather than price. He says there are about 50 companies around the world trying to build rockets specifically for small satellites and predicts that: “You are going to see a swathe of customers across the board wanting to access space.”

Additional reporting by Richard Waters in San Francisco

FT Online video  
How Rocket Lab is bringing down the cost of launching satellites  
ft.com/video





## Comment

### America's journey into tribalism

AMERICA

Edward Luce



**B**race yourselves for a controversial observation: many US politicians are decent people. There – I've said it. Few Americans seem to agree. The public's trust in their leaders is hitting an all-time low. Other than Brazil and Greece, no democracy has such contempt for its system. The US is at the other end of the spectrum to China, where faith in government leads the world, according to Edelman's global trust barometer. "Nobody trusts anybody round here," says Lindsey Graham, the Republican senator. "And most Americans don't trust any of us." Can we blame them? At least partly, yes. The US government is of the people, by the people and for the people. Mistrust comes from the people too. Wash-

ington's breakdown mirrors growing divisions in society – between white and non-white, graduates and non-graduates, city and hinterland, young and old. American politics has become a winner-takes-all game. Yet the constitution is built to work only when there is compromise. President Donald Trump can go to Davos this week because Chuck Schumer, the Senate Democratic leader, agreed to reopen the US government. He could close it again when funding runs out in less than three weeks. Yet Mr Trump now taunts him as "Cryin' Chuck".

What would Mr Trump be calling him if the Democrats had not caved in? The chances are no better today for a deal than yesterday. Almost eight out of 10 Republicans think immigration is too high; fewer than three out of 10 Democrats agree. One party is overwhelmingly white. The other is majority non-white. Mr Trump says he would be happy with more incomers from Norway. But he draws the line at Africa. It is not as if the two can find common ground somewhere in between – Mexico for example. Most of the so-called

Dreamers are Hispanic. These are the people from whom Mr Trump wants to "take America back". It follows that Cryin' Chuck will have no better luck at protecting them early next month than he did this week.

Evaporation of trust is corroding politics across the west. But it is most toxic in the US. No other democracy is heading towards a majority-minority future.

**Washington's breakdown mirrors divisions in society yet the constitution only works with compromise**

The world has yet to see what happens to a society when its majority ceases to be one. No other country has seen such a collapse in support for public service.

Mr Trump will tomorrow sing America's virtues to the world's biggest investors in Davos. Back home he is obliterating America's ability to govern itself. In no other serious democracy is its head of government accusing the main law

enforcement bodies, judiciary and the intelligence agencies of bias. Supposedly neutral appointees are required to show personal loyalty to the president.

Probably the last institution Mr Trump has not criticised is the US military. That is no accident. Alone among America's institutions, the armed forces enjoy high public trust. Almost three-quarters have confidence in the military, according to Gallup. No other comes close to winning half of America. Congress is barely at double digits. Mr Schumer should not have closed the US government unless he was prepared to hold fast. Within 72 hours he had changed his mind. In between, Mr Trump tweeted that Democrats were "holding the military hostage over their desire to have unchecked illegal immigration". Say what you like about Mr Trump, but he knows where to find the jugular. Which American, hand on heart, would prefer an illegal foreigner to a citizen soldier?

But this is a dangerous journey. In a nation of tribes, only the warriors command respect. What happens if they lose it? A few months ago, I was sitting

on a flight next to a young black woman in army uniform. A middle-aged white man walked back from business class to offer his seat. She politely refused. "Thank you for your service," he said. Had she been a teacher, a lawmaker, a nurse or a central bank governor, nobody would have thanked her – let alone offered their seat.

A generation ago, the US military was the most hated institution in America because of the Vietnam war. Today people flatter the uniform.

Other public bodies should be studying how the Pentagon went from zero to hero. But the example runs both ways. If Mr Trump were to turn on the military, for example, there would be few places to hide. Likewise, if the army were to lose its confidence in elected politicians, the republic would be in trouble. We are closer to that point than many realise. The greatest bulwark between the US republic and a descent into tribalism are the men and women in uniform. We should ponder the implications of that. They are not reassuring.

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### The secretive seediness of The Presidents Club

FINANCE

Patrick Jenkins



**I**t is three and a half months since The New York Times accused film producer Harvey Weinstein of a long history of sexual abuses. That, in turn, triggered a broader scandal that rocked Hollywood, inspired the #MeToo fightback against such harassment and even sparked a brief reckoning with past misdemeanours by UK members of parliament.

The City of London – that weird mix of cutting-edge high finance and cave-man misogyny – was never going to be far behind. The Financial Times's exposé of sexual misconduct at The Presidents Club annual dinner hints at a persistent culture of bad behaviour among the elite of London's financial and business community. Although the event is centred on the bigwigs of the property industry, over the years it has drawn in bankers, politicians and other segments of the UK establishment.

Many aspects of this year's dinner were a throwback to the worst practices of the 1970s and 1980s: the men-only guest list, the obligatory "sexy shoes" and "tall, thin and pretty" criteria for the female-only hostesses, the casual groping and sexual harassment, the questions about prostitution. So much of it is unsavoury and all of it is an anachronistic embarrassment to Europe's leading financial centre, not to mention the five-star Dorchester Hotel which hosted the event. How can women in business hope for fair treatment on pay and working conditions if their managers exhibit such iniquitous

**The FT's exposé hints at a persistent culture of bad behaviour among London's financial and business elite**

sexism in their spare time?

It is particularly distasteful that The Presidents Club event mixed the dreadful behaviour it facilitated with securing sponsorship from big name brands such as WPP, raising large amounts of money for worthy children's charities, and fostering links with the establishment.

The organisers can rightly point to a proud record of charitable donations, but it is perfectly possible in this day and age to raise the money in such a way that does not degrade or exclude women. Charities including Great Ormond Street Hospital, which returned donation money to The Presidents Club following the FT's revelations, cannot have known the true nature of the event. The club has since said it is to disband.

This year's auction boasted an eclectic mix of lots, including a night out at Soho's Windmill strip club as well as a combined prize of lunch with foreign secretary Boris Johnson and afternoon tea with Bank of England governor Mark Carney (winning bid: £130,000).

For these individuals to be associated with such an unpleasant event is at the very least bad public relations. They must question how and why they became involved. The BoE, for its part, has denied offering tea with Mr Carney as a prize.

To be fair, the FT's undercover team did hear expressions of outrage from some attendees, possibly first-timers, who were shocked at the tone of proceedings and the behaviour of the guests around them. But those who felt uncomfortable should regret not speaking out. Many of the attendees expressed shock at the FT's disclosures – but even those who were unaware of the most unacceptable behaviour cannot have been totally ignorant of the style of the event and the excesses it might encourage. The near-naked dancers were a bit of a giveaway.

When the host of this year's auction welcomed diners to the "most un-PC event of the year", he got a roar of laughter from the floor. Being un-PC is seen as a badge of honour among swaths of the City, particularly veterans from its middle ranks for whom equal rights for women are inimical and the promotion of diversity is faddish. If the City is to prosper despite the looming disruption of Brexit, it will be by offering an enlightened welcome to talented financiers of all backgrounds and both genders, not by perpetuating the secretive seediness that The Presidents Club appears to represent.

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### Africa must scale the Magic Mountain

AFRICA

David Pilling



**T**here is a great upheaval, not to say a full-scale revolution, going on in southern Africa. This week, the spearheads of that change are setting out their stall in Davos. The new leaders of three of Africa's most established liberation movements – in Angola, South Africa and Zimbabwe – will use a visit to the Swiss Alps to try to persuade the assembled money-wads that their countries are back in business.

The best known of the three is Cyril Ramaphosa. Having supplanted Jacob Zuma as president of the African National Congress – though not yet as president of South Africa – expectation is high that he can reverse the rot of the Zuma years.

Mr Ramaphosa, whose party is ideologically split, has moved quickly to prod the ANC in a new direction. Sensing the shifting tide, the ANC's national executive committee is seeking to ease Mr Zuma from the state presidency. If it acts quickly enough, it could even clear the way for Mr Ramaphosa, a former union boss turned wealthy businessman, to make the state of the

nation address in two weeks' time. Mr Ramaphosa, who was Mr Zuma's deputy, has been criticised for being overly cautious. But following his narrow victory in ANC elections in December, he has moved swiftly. In his first big speech, earlier this month, he excoriated his own party for allowing corruption to eat away at its moral core. He has cleared out the board of Eskom, the state power utility, appointing a strong, competent chairman.

Meanwhile, Mr Zuma has been obliged to allow a judicial inquiry into "state capture", the alleged manipulation of his government by crony business interests. The Gupta family, who are at the centre of those allegations, have had assets seized and seen the prosecutor's noose tighten.

Perhaps the African leader who will attract most interest in Davos is Emmerson Mnangagwa, aka the Crocodile, who in November ousted Robert Mugabe as president of Zimbabwe after 37 years in the wings. So grateful is the international community to see the back of Mr Mugabe that it has been strangely reticent to point out that Mr Mnangagwa owes his position to a military coup.

The new president's task is, in some ways, easier than Mr Ramaphosa's. Zimbabwe has reached rock bottom. It has no currency, no relations with multilateral bodies and precious little foreign direct investment. Yet Zimbabwe is one of Africa's potential success stories. It has good, if dilapidated, infrastructure,



a manufacturing base and a long history of agriculture at scale.

Most important, it has one of the best-educated populations on the continent. Several million of its most talented have gone abroad to seek opportunity and many are just waiting for the right signal to bring their know-how and money back home.

Mr Mnangagwa could quickly nudge things in the right direction. He needs to convince the world that elections, to be held by June, are free and fair. He will also have to establish a stable business environment.

So far, Mr Mnangagwa, no cuddly liberal under Mr Mugabe, has been more impressive rhetorically than in practice. His inaugural speech would not have

**The economic imperative means that southern Africa is now a place investors would do well to watch**

sounded out of place at Davos. But subsequent cabinet appointments suggest he wants to consolidate power around Zanu-PF party and the army.

Least known of the three new leaders is João Lourenço, president of Angola. So far, he has been the most daring. Mr Lourenço was the handpicked successor of José Eduardo dos Santos, who had run oil-rich Angola – Africa's third-biggest economy – like a family business for 38 years.

Mr Lourenço had been widely expected to be a dos Santos stooge. It has not turned out like that. Since he became president in September, he has removed both of Mr dos Santos's children from senior positions, including Isabel, Africa's richest businesswoman, who was head of state oil company Sonangol. Like Mr Ramaphosa, he has talked about combating corruption and extending economic development to the impoverished majority. Like Mr Mnangagwa, he has begun to woo foreign investors, particularly the oil majors.

In all three cases, there is a business element to the story. All three new leaders want to attract foreign investment. Mr Lourenço knows that existing oil wells will soon start running dry. Mr Mnangagwa needs multilateral institutions to work out an arrears deal so money can start flowing again. He also needs to convince investors that Zimbabwe is a place where it is safe to put one's money to work.

Mr Ramaphosa, too, is desperate to get his country's economy going again. Without more job-creating industry and a healthier tax base, he will have nothing to work with to satisfy the pent-up expectations of the black majority.

The economic imperative means that southern Africa is now a place investors would do well to watch closely. Yet amid all the flurry of change, one thing remains constant. The three liberation parties that brought us to this point are not going anywhere.

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### Foster children's talent as a primary concern

OPINION

Anne-Marie Slaughter

**P**rofessor Klaus Schwab inaugurated the 2015 session of the World Economic Forum at Davos with an article declaring a "new era of 'talentism'" – where human imagination and innovation are the driving forces behind economies, as opposed to capital or natural resources".

Let us imagine a world in which we really did value talent more than capital. It would look very different, at least in the US.

To begin with, all children would be enrolled in high-quality early education programmes from birth through to the age of eight – these are the critical years of brain development – to allow them to achieve their full potential. The budget for education, life-long but with a particular emphasis on the early years, would be as important as the defence

budget. Early education providers, from daycare workers to kindergarten and elementary schoolteachers, would be trained to a high level, certified and well paid. Men would take those jobs as well as women, just as in the 18th century men were quite happy to be hired as tutors for well-to-do children, or at least to well-to-do boys, from the ages of six or seven up. Their 21st-century equivalents would value developing young brains as much as coaches and athletic instructors value developing sporting potential.

Businesses would push their governments to invest in early education programmes as a vital input into the economy, essential to their ability to recruit the talent they need. The US military is ahead in this regard.

In the words of one retired major-general, "military leaders like me firmly back investments in quality early childhood care and education programmes. For us," he told me, "it is an issue of military readiness and, ultimately, our nation's safety and security."

In a system of talentism, though, such verbal support would translate into tax dollars. Leading corporations such

as Amazon would be canvassing the quality of early education in any community being considered for its next headquarters.

Under-represented minorities, middle-aged women returning full time to the work force after raising children, and older people seeking part-time jobs would all be viewed as untapped pools of talent. Employers would look for

**Schoolteachers from kindergarten onwards should be highly trained and well paid**

undiscovered human brainpower the way investors now search for undiscovered start-ups. Recruiters and hiring managers would take risks on people, just as venture capitalists do on companies, looking for the human equivalent of "unicorns" – the one in 10 or one in 100 supremely talented people.

We would all actively fight our own biases, recognising that they often block our ability to see and use talent

even when it is right in front of us.

Perhaps the fullest expression of talentism would be a society-wide measure watched just as closely as today's stock market. As early education expert Lisa Guernsey puts it: "The stock market is a snapshot of the present only. It tells us nothing about whether our institutions – the foundations of our society – are investing in human intelligence and the fostering of talent." Why not have a human capital index to track the progress of such investments? It would be a better measure of the health, prosperity and power of a society.

The idea is not so far-fetched. The world has the Human Development Index, created by the UN Development Programme as an alternative to the tyranny of global gross domestic product (GDP) measurements. Its goal is "to emphasise that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone". The index is based on a compound of life expectancy, knowledge and a "decent standard of living". In the 2016 index, Norway was (predictably) first, but second (less predictably) was Australia.

The point, however, is that it is perfectly possible to develop measures of inputs to human talent development and to track them. Individual countries could easily develop their own Human Capital Indexes.

Creative, quirky, unexpected and unpredictable human talent will not be automated any time soon. All the more reason for us to find and develop it.

If all of this is what the transition from capitalism to "talentism" would require, then presumably sessions on all these topics will be eagerly attended in Davos. How to shift the foundations of the economy, transform institutions, change deeply embedded cultural norms – and all on a scale comparable with the transition from the agricultural to the industrial age? Yet for all the talk of the "fourth industrial revolution", the sessions on the technological transformation of different industries and the need for a much more skilled workforce, talentism will continue to take a back seat to capitalism on the World Economic Forum agenda.

*The writer is president of New America and an FT contributing editor*

## Suez: muddying the water

For a company whose core business includes purifying water, Suez's communications with investors have been anything but crystal clear.

After the market closed on Tuesday, the French group said earnings before interest and tax for 2017 would be €1.2bn. That is just €2m below the 2016 level and slightly above most forecasts. In response, the company shed more than €1bn market value yesterday morning. The divergence from consensus forecasts for net income – about €50m, at the adjusted profit level – is more pronounced. But even this does not explain the 16 per cent drop in the price. Nor do other justifications: relatively modest costs associated with terminating contracts in Morocco and India, and moving its Spanish headquarters out of Catalonia.

Two other issues have polluted Suez's reputation. Around half its annual operating profit comes from water supply in Europe, much of it to municipalities. Many of these long-term contracts feature prices linked to inflation, which has been unusually low. Along with weak volume growth, this has made for anaemic revenue rises, a problem common to others in the sector such as compatriot Veolia.

Partly in response, Suez acquired a 70 per cent stake in GE Water last year for €2.2bn in cash. This increased its exposure to non-European corporate clients. Cross selling them other services was meant to energise revenue growth. Shareholders poured €750m into the company's coffers to help fund the deal. Yet at an investor day in December, and again in Tuesday's statement, Suez appeared to row back on its optimism for GE Water. This does little for management credibility.

At least the dividend, which has not changed since 2010 and is only thinly covered by accounting profits, does not look immediately threatened. Around €1bn of free cash flow can easily fund the €400m payout. Net debt of three times earnings (before interest, tax, depreciation and amortisation) does not yet look too onerous either.

Engie, the French power generator, holds 32 per cent of Suez. Six of its directors sit on the Suez board. It has in the past rejected the idea of a full

takeover, but not a change in the size of its holding. Even if it does not snap up more Suez shares – they are below the €14 a share at which they were spun off in 2008 – it should use its influence to improve disclosure at its associate.

## WH Smith/SSP: Swann to watch

Seasoned FTSE 250 boss Kate Swann clocked up a decade at UK newsagent WH Smith before moving on to SSP, the world's second-biggest concession caterer. She was right to swap books and pens for sandwiches. The two companies both published a set of tolerable results this week. But SSP has the better long-term prospects.

Both groups are good at what they do – which is charging customers steeply for food and other impulse purchases while they are trapped in railway stations and airports. WH Smith is still bearing the fruits of Ms Swann's time in the hot seat. A trading update for the near half-year to January 20 showed sales again driven by the travel side of the business that she championed.

High-street stores, meanwhile, look uncared for. This is intentional. Tight cost controls and a repositioning from newspapers to stationery have kept operating profit margins up even as sales have slowed. But this side of the business is running out of ink. Travel is the real winner and accounts for two-thirds of group operating profit.

Sales in shops at railways, hospitals, airports rose 7 per cent over the period. Most of this growth, however, came from new openings. Like-for-like sales rose 3 per cent. This business model has an obvious expiration date. The UK has a finite number of stations, airports and hospitals. WH Smith is enlarging concessions at some and adding extra stores to others. Sooner or later it will run out of new locations.

The answer is to expand overseas. But this costs money and adds risk. SSP is further along the same curve. More than half its profits come from outside the UK. Net debt is modest – equal to earnings before standard deductions. That gives scope for more acquisitions.

The catch, as always at travel concessions, is the price. SSP trades at 29 times earnings. WH Smith is at just 12 times. SSP's growth is largely priced in. But if it can combine with a large

## ECB/bond prices: leave no fingerprints

The tone at today's monetary policy meeting is likely to reflect an environment of steadily rising inflation. Rising bond yields support this – but do not expect any significant reversals of policy at this stage of the cycle.

### Bond market



Sources: Bloomberg; Thomson Reuters Datastream

Here comes European Central Bank president Mario Draghi on little cat feet, hoping to charge round the waiting press corps without giving anything away. Expect equivocation at today's rate-setting meeting; yes, the eurozone economy is doing well. No, not well enough to warrant an early tapering to the stimulus. That would vex the market.

Bond investors may insist on being vexed regardless. Yields rose earlier this month after the Bank of Japan appeared to be slowing its long-dated bond purchases. Bond king Bill Gross declared a bear market in US Treasuries. But was the shift real? Governor Haruhiko Kuroda denies the BoJ has made a policy change. Investors are suspicious of such

competitor, and boost its negotiating power with landlords, it would be worth even more.

## Lithium stocks: salt panned

Investors are rightly taking steep projections of demand for lithium from battery makers with a pinch of salt. Australian miners of the briny stuff have seen stocks sell off an average of 12 per cent since Monday last week.

The context is that shares in Pilbara Minerals and Altura Mining have more than doubled since September, though they have yet to start selling the metal. Rival Orocobre gained two-fifths in the same period. Its share price has held up

disavowals. Central bank governors have good reason to creep silently away from their market stimulus programmes. Panic would reverse the positive effects.

Now that the US central bank is shrinking its balance sheet, the worry is that the ECB and Bank of Japan will halt their own programmes sooner than expected. This, however, is unlikely. Global expectations for inflation are not perfectly synchronised. In the US the 10-year inflation break-even rate is above 2 per cent. In Germany it is closer to 1.3 per cent. Bond yields in Europe are unlikely to catch up with US Treasuries near-term.

There has, however, been a material shift in global yields as the era of QE

compared with rivals. Last week Toyota Tsusho, the trading arm of the Japanese conglomerate, paid a 17 per cent premium for a 15 per cent stake.

Car battery technologies rely on the material. But investors should stay clear of producers' shares at these levels. In October, Macquarie analysts projected 45 per cent demand growth until 2020, but expect it to outstrip supply two years later. They think half of lithium demand in 2022 might come from electric vehicle batteries – 10 times the share last year. Past estimates have tended to be over optimistic.

High share prices are underpinned by such bullishness. Pilbara, which mines rock deposits for the metal, is expected to become one of the largest producers along with Orocobre, which extracts the metal more cheaply from

winds down. Central bank stimulus resulted in \$14tn of global bonds trading at a negative yield in 2016.

Now the total is less than \$10tn. But the moves have been relatively steady. Some perspective is also required. The yield on 10-year Treasuries is 2.6 per cent. That may be double the record low yield in 2016 but it remains half the level it was before the financial crisis.

This all helps equities. The FTSE 100 trades at 15 times forward earnings, the S&P 500 at 19 times and the EuroStoxx50 at 14 times – all above average. Providing bond yield increases are gradual and accompanied by inflation that supports earnings, equity valuations need not be undermined.

salt flats in Argentina. Toyota Tsusho already owns a quarter of this project and the new funds will be used to boost capacity to three times the 2018 target.

Orocobre's contract prices increased 3 per cent in the most recent quarter with an operating margin of two-thirds. But price rises have slowed. Supply gains must ultimately bring it down. The sector's recent volatility highlights nervousness. The miner's shares trade at 35 times forward earnings, two-fifths above Galaxy Resources, but far below Pilbara and Altura. Mineral Resources trades at half that multiple and already produces substantial tonnages.

The hype about lithium stocks will continue, despite production ramping up. Strategic investors such as Toyota Tsusho need the metal at any price. Stock market investors do not.

## United Continental: flyover country

Understanding Middle America has always been a route to political success in the US. The laggard airline United Continental believes it is also the way to commercial riches. Late on Tuesday, UAL set out plans to catch up with rivals American Airlines and Delta. Investors were unenthused: the shares of all three nosedived yesterday.

UAL said that it would expand routes between its interior hubs of Chicago, Denver and Houston and smaller American cities.

The idea is that a large group of customers would opt for UAL so they could connect from those three cities to long-haul destinations.

UAL put annual forecast capacity growth, in term of available seat miles, at a whopping 4 to 6 per cent. But inefficient growth is the original sin of the airline industry. The stock price rout reflected fears of the financial damnation that can follow.

United and Continental joined forces in 2010. Similar consolidation by Delta and American was extremely lucrative. UAL's was plagued by technical and operational errors leading to much weaker profitability. Current chief executive Oscar Munoz was appointed after UAL was implicated in a political scandal in New Jersey.

Mr Munoz says that targeting midcontinent hubs is the way to regain lost ground. Spoke destinations such as Rochester, New York are more profitable than, say, flights between New York and Chicago.

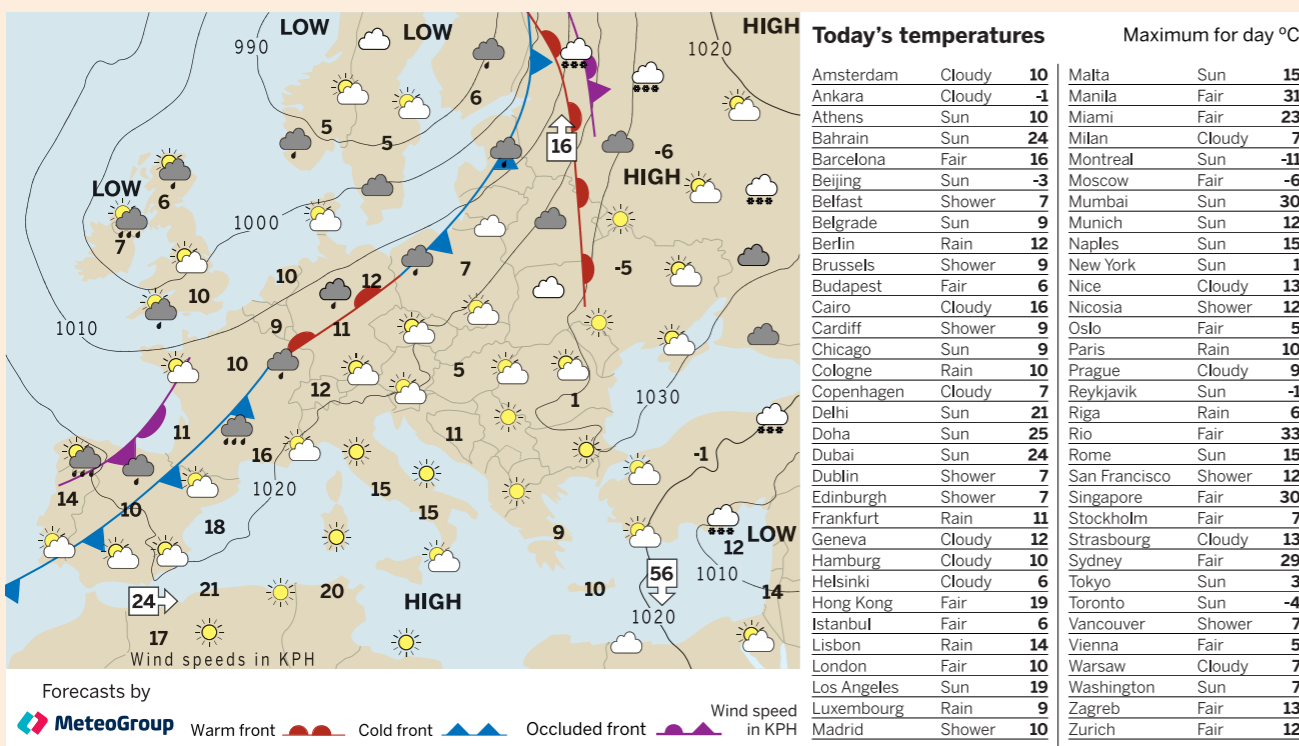
These face competition from discount airlines. He claimed earnings would grow 25 per cent between 2018 and 2020.

The sell-off was hardly surprising. US airline investors recall the regular brushes with Chapter 11 that expansionary policies brought in the past. Even the harsh sell-off is hardly surprising. Delta and American followed UAL down in anticipation of a price war. Mr Munoz must execute his strategy better than predecessors executed theirs to prove sceptics wrong.

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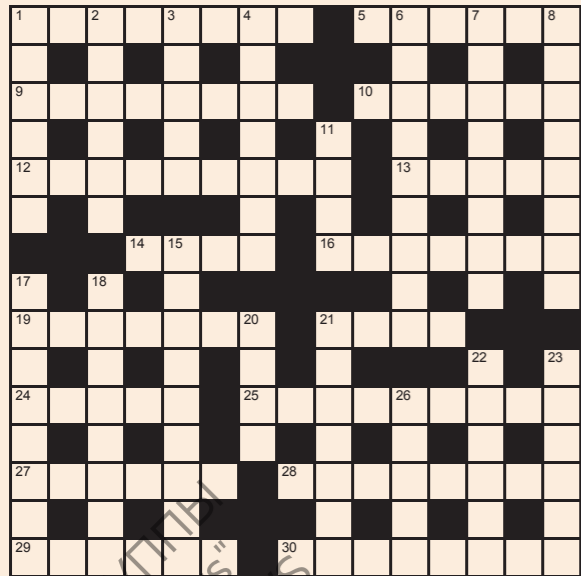


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## JOTTER PAD

### ACROSS

- Stairs concealing an opening over a door (8)
- Controller of fluid the swine fed to drunkard (6)
- Article in newspaper that's refreshing (8)
- Vehicle rounds bend before a shock (6)
- 30 perhaps put on, weapon outside (9)
- Energy member invested in exclamation of wonder (5)
- Avoid meat (4)
- Black cloud follows close to itinerant, one going on foot (7)
- Hoarding bread, state accumulated wealth (7)
- Bleat as cow? (4)
- Harrow's principal in lovely, comfortable job (5)
- Cold packed in ice, dates awfully dry (9)
- Home rule initially welcomed by former PM (6)
- Musician squeezing one box that hisses (3,5)
- Over ebbing river, spot fleet (6)
- By the sound of it, more than one thief curses (8)

### DOWN

- Shape of sky assuming line that's familiar (6)
- Nine, perhaps, a shade under ten, ultimately (6)

- Close lead of champion forsaken (5)
- Fish dined on the waterfront (7)
- Somebody manufacturing green soap (9)
- Food lover, chap into fruit (8)
- Educators see Sr Guevara crying? (8)
- Change somewhat overrated, I think (4)
- Unfortunately less hot, the tuna red raw (9)
- Vessel like this supporting a plant (8)
- Modern resort with English in prison (5,3)
- Pool top, snooker's third (4)
- Baton is used in defence (7)
- Publication with something to digest in flier (6)
- Suit – Scottish footballing outfit? (6)
- City that may rise and fall (5)

Solution 15,764

```

S A W E E D O U B L O N
R O G E R G A B E
O B O L U S S H I L L I N G
W D D A E L L E A
S E S T E R C E F O R T I N T
E T T A S E
R E A L S O V E R E I G N S
T M U S D R
T E N B O N O T E C E N T
E T T A R A E R R
R U P H A H S T O T I N K I
A E O V E I B E
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# Companies & Markets

## FINANCIAL TIMES

**Business case CBI needs more support from Europe on trade**  
INSIDE BUSINESS, PAGE 12



**Sage Group**  
6.5%  
768.2p

**Mitie**  
5.6%  
174.7p

**Inmarsat**  
4%  
498.7p

**Gold**  
\$12  
\$1353

**Dollar index**  
0.9%  
89.30

**Xetra Dax**  
1.1%  
13414

**10yr Treasury**  
3bp  
2.65%

**Dollar/yen**  
1%  
¥109.18

# Russian groups rush to issue debt

◆ Borrowing costs lowest since 2014 ◆ Looming US Treasury list could stymie fundraising

**HENRY FOY** — MOSCOW  
**ROBERT SMITH** — LONDON

Some large Russian companies are scrambling to tap international capital markets before Washington releases a new list of Kremlin-connected figures that could include powerful executives.

The companies are seeking to benefit from borrowing costs that have fallen to levels unseen since Moscow's annexation of Crimea in 2014 and the first wave of EU and US sanctions levied in response.

Amid strong demand for emerging market assets and Russia's emergence from a brief recession caused by the fall

in oil prices, companies including Phos-Agro and Polyus have found no shortage of buyers for recent debt issues.

This week, Polyus, the country's largest gold producer, plans to sell a \$500m bond, and Rusal, the aluminium producer, and Alfa-Bank are marketing new issues. The four companies are not subject to US or EU sanctions but are owned or controlled by Russian billionaires or their families.

Analysts say many are worried that their presence on the list that the US Treasury is preparing for release by the end of the month could create difficulties for fundraising in the west.

"I think it's very unlikely we're going

to see any specific sanctions, and yet the Russian elite seem to be very worried that being named in the oligarch report could limit their access to western financing," said Tim Ash, emerging markets senior sovereign strategist at BlueBay Asset Management.

But demand for PhosAgro's recent \$500m sale of paper suggests that western investors are not particularly concerned about Russia's wider risk profile.

Europe's largest phosphate fertiliser company sold a eurobond with a maturity of five and a quarter years at 3.949 per cent, its lowest coupon, to refinance a 2013 eurobond priced at 4.2 per cent.

Of the buyers, 7 per cent were from

'Being named in the oligarch report could limit their access to western financing'

Russia, 41 per cent the US, 23 per cent the UK and 29 per cent continental Europe, said a person familiar with the deal.

"This was the first eurobond by a Russian corporate in 2018, and it showed that international demand for Russian company debt is still very strong," said the person, who could not be named. "This had the highest level of international demand of any eurobond PhosAgro has placed."

Controlled by the Guriev family, 19.35 per cent of the company is owned by Vladimir Litvinenko, Vladimir Putin's campaign manager for the 2000 and 2004 elections.

## Short View



Miles Johnson

One interesting footnote to the seismic events in the US and UK in the past two years is that the price action of certain markets has become increasingly politicised.

Donald Trump has taken to Twitter several times to celebrate the strong performance of the US stock market as a barometer for his performance as president. Meanwhile in the UK, the value of the pound against the dollar and euro has been used by both supporters and critics of Brexit to support their views that the British economy is either falling apart or destined for greatness.

This week, the pound hit its highest level against the US dollar since the Brexit vote. While this would appear to indicate that deeply pessimistic investor sentiment towards the UK has begun to turn, the increase has perversely been terrible news for holders of large UK-listed shares.

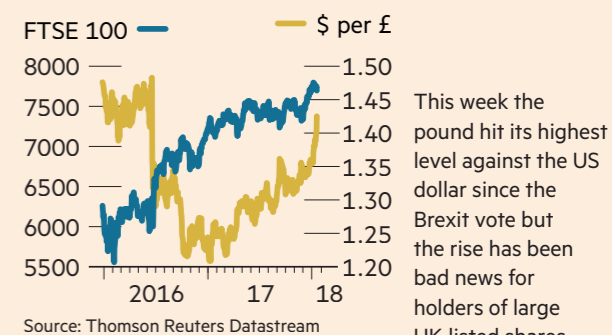
The FTSE 100 is now down since the start of the year, in spite of a barnstorming start for many other equity markets. That is because its constituents' US dollar earnings have lost value when translated back into pounds.

The FTSE 100's reliance on US dollars has been widely noted but less attention has been paid to just how little UK-based business matters to the country's benchmark stock index. Nobody should try to politicise the performance of the FTSE 100 as it is barely a UK index at all.

Terry Smith, the British fund manager, recently observed that the FTSE 100 is "dominated by what I would regard as uninvestable companies", such as struggling utilities and resource groups, and also noted how irrelevant UK sales are to most of these British "national champions". Drugmaker GlaxoSmithKline, the FTSE 100's sixth-most valuable member, makes just 3.8 per cent of its sales in the UK, while Japan is a larger market than Britain for rival AstraZeneca. Vodafone makes 14.5 per cent of its sales in Britain, less than in Germany.

As such, it is not just the value of the US dollar that drives the FTSE 100. Anyone deciding to hold the index should become less preoccupied by what happens in the UK, which accounts for about 3 per cent of global gross domestic product, and accept they are taking a bet on the rest of the world.

### UK stocks and sterling



miles.johnson@ft.com

## Cabin pressure US airlines tumble on price war fears

The spectre of a fresh price war sent stocks in leading US airlines tumbling yesterday after United Continental said it would boost seat capacity and tackle low-cost competitors on price, write Pan Kwan Yuk in New York and Patti Waldmeir in Chicago.

United shares fell more than 10 per cent amid fears over the effect the moves would have on profit margins, and the broad sell-off wiped close to \$10bn off the value of the US's four largest carriers by lunchtime trading in New York.

United said on Tuesday that it planned to lift capacity at a faster than expected rate of 4 to 6 per cent a year for the next three years. Scott Kirby, United's president, said "the best way to compete with a low-cost carrier is to master prices". He added: "Half our revenue comes from customers that are mostly shopping on price and we cannot ignore half of our revenue and we can't let our low-cost carriers have price advantages in our hubs."

Shares in Delta Air Lines were down more than 6 per cent, while Southwest Airlines fell nearly 5 per cent. American Airlines lost more than 8 per cent. Lex page 10



Timothy Fadok/Bloomberg

# Chipmaker Qualcomm fined €997m by EU for exclusive-use payments to Apple

**JIM BRUNSDEN AND ROCHELLE TOPLINSKY** — BRUSSELS

Brussels has hit the US chipmaking giant Qualcomm with a €997m fine for abusing its dominant market position by paying Apple to use its chips exclusively in its smartphones and tablets.

Margrethe Vestager, European competition commissioner, said that Qualcomm's arrangement with Apple amounted to illegal foreclosing of the market that had held back innovation and contributed to the company's rise.

The case concerns billions of euros in payments to Apple, but Ms Vestager said that Apple was not seen as being involved in wrongdoing and that the focus in the case was exclusively on

Qualcomm. "No rival could effectively challenge Qualcomm in this market, no matter how good their products were," she said.

Qualcomm said it "strongly disagrees" with the decision and would appeal in the European courts.

The EU investigation is one of several antitrust inquiries that the company has faced in different countries. The fine related to payments made by Qualcomm to Apple in exchange for buying all of its "baseband chipsets" from the company between 2011 and 2016. The chipsets are essential to the functioning of smartphones and other devices.

The fine imposed yesterday amounts to 4.9 per cent of Qualcomm's turnover in 2017.

Apple is also pursuing court cases against Qualcomm around the world, accusing the chipmaker of "exclusionary tactics and excessive royalties" that it alleges have cost it billions of dollars.

Ms Vestager said that Intel had been one victim of Qualcomm's payments to Apple. Intel "really wanted to challenge Qualcomm, and this was made, for this very important customer, impossible", she said, adding that the arrangement had "definitely" contributed to Qualcomm's dominance.

Don Rosenberg, executive vice-president of Qualcomm, said the company was confident that the payments to Apple "did not violate EU competition rules or adversely affect market competition or European consumers".



## Tax havens retain allure for large US tech groups

The US tax reforms will not prompt big American tech groups to drop their reliance on overseas tax avoidance strategies or create more jobs in the US, say tax experts. They believe parts of the legislation could lead to some companies shifting assets offshore.

Analysis ► PAGE 12

### Companies / Sectors / People

Companies	Value	Companies	Value	Sectors	Value	People	Value
Alfa-Bank	11	Dell	2	Aerospace & Defence	10	Bradway, Robert	13
Alibaba	14	Delta	10	Airlines	10	Chaussade, Jean-Louis	14
Alphabet	12	Eli Lilly	13	Automobiles	14,18	Cook, Tim	12
Altura Mining	10	Engie	10	Banks	18,19	Fink, Larry	12
Amazon	12	Face++	14	Basic Resources	10	Hayes, Greg	12
American Airlines	10	Fiat Chrysler	18	Construction	19	Jimenez, Joe	13
Amgen	13	Flextronics	12	Energy	14	Li, Xu	14
Apple	11,12	Hogan Lovells	13	Financial Services	18	Li, Charles	18
AstraZeneca	11	Honda	14	Financials	18,20	Litvinenko, Vladimir	11
Aurora Cannabis	12	PhosAgro	11	Industrial Goods	12	Marks, Michael	12
Baidu	14	Pilbara Minerals	10	Industrials	12	Munoz, Oscar	10
Bank of America Merrill Lynch	13	Planet Labs	7	Media	19	Musk, Elon	7
Bessemer	7	Polysius	11	Mining	10	Narasimhan, Vas	13
Biogen	13	Puma	13	Pharmaceuticals	12,13	Novakovic, Phebe	12
BlackRock	12	Qualcomm	11,14	Property	19	Polman, Paul	12
Boeing	7	Roche	13	Retail	10	Rosenberg, Don	11
CannMed Therapeutics	7	Rockwell Collins	12	Retail & Consumer	10	Swann, Kate	10
Canopy Growth	12	Rusal	11	Support Services	15	Vasella, Daniel	13
Celgene	13	SSP	10	Technology	11,12,14	Vounatsos, Michel	13
Clivis	13	Sage	19	Travel & Leisure	19	Vvyvan, Claire	2
Constellation Brands	12	Sandoz	13	Utilities	14		
		SoftBank	12				
		SpaceX	7				
		State Street Global Advisors	20				
		Suez	10,14				
		Tencent	14				
		Tesaro	13				
		Tesla	7				
		Toyota Tsusho	10				
		UAL	10				
		UnionPay	14				
		United Continental	10				
		United Technologies Corp	12				
		Veolia	10,14				
		Vivo	14				
		Vodafone	11				
		WH Smith	10				
		WPP	9				
		iFlytek	14				

**FT FINANCIAL TIMES**

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## COMPANIES

## Financials

## UK blue-chips lose the gift of giving

Donations from Britain's biggest companies drop, despite efforts by bosses

SARAH GORDON — LONDON

Charitable giving by the UK's largest listed businesses has continued to fall, despite growing calls for more corporate social responsibility from a number of corporate bosses.

Research by the Charities Aid Foundation found that total donations, in absolute terms, by FTSE 100 companies fell more than a quarter between 2013 and 2016, to £1.9bn. Donations have fallen 11 per cent since 2014.

Larry Fink, chief executive of BlackRock, which has \$6.3tn under management, told companies this month that the time had come for a new model of

shareholder engagement. "To prosper over time, every company must not only deliver financial performance but also show how it makes a positive contribution to society," he wrote in a letter to large companies predominantly in the US, UK, France and Germany.

Klara Kozlov, head of corporate clients at CAF, said she believed corporate giving helped increase trust between business and society. "It is vital that civil society can work with businesses to show how partnership between charities and business can benefit both, as well as greatly enriching society," she said. "Unfortunately the downward trajectory for corporate giving continues, with fewer companies replenishing a depleted pool of money donated to charitable causes."

The decrease in charitable giving between 2015 and 2016 was seen across

six of the 10 industries represented in the FTSE 100 index, and the number of companies donating at least 1 per cent of their pre-tax profits also fell, with only 26 companies donating at least this amount in 2016.

CAF said that, in the eight years it had been evaluating annual report data on charitable giving by the FTSE 100, aggregate revenues had increased 14 per cent while donations had increased 1 per cent.

Six companies had made charitable donations in spite of a pre-tax loss. Although revenues have declined for both the financial and telecommunications sectors, the decline in donations was greater than the fall in revenues.

But the combined percentage of pre-tax profit donated across the index rose, due to a handful of companies giving more, with the top 10 donors accounting

26  
Number of UK groups that gave 1% of pre-tax profits in 2016

68%  
Percentage of total donations coming from the top 10 donors

for 68 per cent of total donations in 2016, led by pharmaceutical companies.

Josh Hardie, deputy director-general of the CBI business lobby, said the fact that the combined percentage of profit donated had risen showed businesses were committed to charitable giving.

"[Our] members are increasingly investing in sustainable partnerships that involve not just money and goods, but expertise and time too," he said. "While this can be harder to measure, it's more valuable to the many charities these firms work with."

CAF analysed the annual corporate responsibility reports from 2009 to 2017 of each FTSE 100 company as of September 12, 2017. Donations of money, time, management services and in-kind donations were included but in some cases the type of donation was not specified.

## INSIDE BUSINESS

## EUROPE

Sarah Gordon



## Businesses across EU would do well to back CBI on customs union

On Monday, the UK's CBI business group made an impassioned plea for Britain to remain in the customs union after Brexit. Staying in an arrangement where there is a single set of tariffs for goods imported from outside the EU, and tariff-free trade within it, would be a "practical, real-world answer" towards solving some of the complex challenges in phase two of the negotiations, including the Irish border question, argued director-general Carolyn Fairbairn.

It is debatable whether remaining in the customs union would, in fact, mean a "soft" border could be retained between Northern Ireland and the Republic of Ireland, since there would still need to be checks on the movement of people if the UK left the single market. But it was a brave call, nevertheless.

The vast majority of British companies have made it crystal clear that, as far as possible, they want business as usual in their trade with the rest of Europe after the country leaves the EU, even if that means a high degree of alignment with the bloc's rules. But despite doing what is her job — representing the views of CBI members — Ms Fairbairn was subjected to the usual barrage of criticism from those who regard continued membership in either the customs union or the single market as a betrayal of those who voted for Brexit.

The CBI, like many other organisations that continue to believe in the benefits of EU membership, is not arguing for a reversal of the referendum vote. But it is trying to insert the voice of exporters, in particular, into the debate. Business voices across the continent should be raised in its support. Staying in the customs union, while no panacea, would go a considerable way to preserving trading relationships, and with them jobs and investment, in a post-Brexit Europe.

Advisers to the government have presented case studies of how EU manufacturers, retailers and others would be affected by tariffs and product controls at borders. During the manufacturing process, a modern car and its 30,000 or so component parts often travel across borders multiple times. Indeed, slowing down supply chains by disrupting border processes would be likely to have almost as big an impact on other countries trading with the UK as on the UK itself.

This is because, for the vast majority of industries in Europe, the additional economic activity generated within those chains is larger than the direct output it supports. A visit to the Airbus military aircraft factory in Spain, which uses wings imported from the UK, clearly demonstrates the importance of the ecosystem of manufacturers, academics and recruiters clustered around the facility.

Recent research by Oxford Economics suggests that the impact of a hard Brexit on Europe's non-UK supply chains could amount to as much as €62bn in gross output lost in 2020. It calculates that the biggest effects would be felt in Ireland and the Czech Republic, but Hungary, the Netherlands and Denmark could also take a 1 percentage point hit.

More than one-fifth of the UK's supply chain is in the rest of the EU. Outside a customs union, suppliers will face higher costs getting goods in and out of the UK, not just because of tariff barriers, but because of what, for many, is a bigger worry — the increased paperwork, and therefore cost, of border controls.

The CBI is not the only voice in the UK warning on this. Business advisers to the government have already provided telling examples. One leading UK retailer, which imports 200,000 different products from the EU a year, currently files no customs declarations. The company believes it would be subject to a five- to tenfold increase in border documentation in the event of a hard Brexit where Britain leaves the customs union. Others, including one industrial manufacturer, are weighing whether it would make sense to pay any new tariffs rather than attempt to track and certify origin in the hope of accessing any preferential rates under a future trade agreement.

Companies face difficult choices but their added costs will end up being felt by customers, in the form of higher prices, or employees, whose jobs will be relocated or lost. Given the risks, more business voices across Europe should be backing the CBI and publicly arguing the case for as much of the trading status quo ante to be maintained as possible.

sarah.gordon@ft.com

## Industrials

## UTC expects to repatriate at least \$3bn in earnings

PATTI WALDMEIR — CHICAGO

United Technologies Corp expects to repatriate at least \$3bn in overseas earnings and use it to pay down debt from its acquisition of Rockwell Collins because of the US tax changes enacted last month, Greg Hayes, the chief executive, said yesterday.

The deal to buy the aviation systems and cabin equipment maker Rockwell Collins for \$30bn was announced last September and included about \$7bn in net debt. But tax reform also hit UTC earnings for the fourth quarter of 2017, with the company taking a \$690m one-off charge due to the impact of the bill.

Adjusted earnings per share came in ahead of market expectation for the quarter ended December 31 at \$1.60, up 2 per cent on the period a year earlier. But earnings per share fell to \$0.50 on an unadjusted basis largely due to a \$0.90 per share charge due to tax reform.

UTC also said it will make a cumulative net cash payment through 2026 of \$1.5bn on previously earned foreign income as a result of the new tax law.

General Dynamics also said yesterday that it took a \$119m one-off hit in the fourth quarter because the cut to the US corporate tax rate included in the new law made its deductions from old losses less valuable. That amounted to 40 cents per share, leading to an adjusted earnings per share of \$2.50.

Phebe Novakovic, General Dynamics' chief executive, said on an earnings call that the company's US tax rate was now equal to or slightly lower to the rates that the company paid overseas.

She said the additional cash would not significantly change the company's direction. "I don't see a particular change in the strategy... but tax reform provides us additional free tax flow. A happy event," she said.

At UTC, Mr Hayes stressed the positive benefits of tax reform. "We now see a line of sight to bring back at least \$3bn, maybe a tiny bit more, and a lot more than \$1bn a year for the next couple of years so we'll be able to pay off the Rockwell debt a lot faster," he told analysts.

"And the deal looks a lot better... because of the lower tax rate, Rockwell is primarily US domestic income" so the cut in the US corporate tax rate from 35 to 21 per cent "looks pretty darned good", he said. He also set 2018 earnings per share guidance at \$6.85 to \$7.10 which he said included the effects of tax reform.

## Regulation. Silicon Valley

## Tax havens retain allure for US tech

Apple's one-off payment and investment at home unlikely to end overseas arrangements

RICHARD WATERS — SAN FRANCISCO

The US tax overhaul will not prompt the country's big tech companies to drop their reliance on overseas tax avoidance strategies or create more jobs at home, according to experts.

The legislation, passed late last month, includes a set of provisions designed to limit avoidance and end the incentive to use tax havens to shelter profits. It was also meant to encourage US companies to bring patents and other intellectual property sheltered in havens back to the US, in turn leading to more research and development jobs at home.

Last week, Apple said it would make a \$38bn one-off tax payment and invest more than \$30bn to expand its US operations in the wake of the rule changes. The iPhone maker said the investments would be part of a \$350bn "direct contribution" to the US economy over the next five years.

Apple has been a high-profile target of Donald Trump, who has publicly criticised the company and other big US tech businesses for relying on overseas manufacturing. Mr Trump claimed credit for the move even as Tim Cook, Apple chief executive, said the new tax regime was only partly responsible.

With many of Silicon Valley's biggest companies reporting on quarterly earnings next week, including Alphabet, Microsoft and Amazon, greater clarity on their plans might be forthcoming.

But experts say some parts of the legislation could end up having the opposite effect, leading companies to shift more of their assets and jobs offshore.

"The bill is biased in favour of offshore real investment, which is a completely perverse result when the intention was to bring jobs back to the US," says Ed Kleinbard, a law professor at the University of Southern California.

Referring to the anger stirred up by the way many US tech companies have moved profits to tax havens, he says: "Europe in particular is fed up with their stateless income gaming — but that will still be going on."

The tax law includes provisions to discourage US companies from trying to shift profits out of the country — something they might be tempted to do now that foreign profits are largely outside the reach of the US Treasury, says David Yasukochi, a tax partner at BDO, the accountancy firm.

These include a levy on any foreign



Brendan Smialowski/AFP/Getty Images

Some of the games 'may make the double Irish Dutch sandwich look like child's play'

Chris Sanchirico, University of Pennsylvania

profits above a fixed, tax-free return that companies will be allowed to earn on their tangible assets, such as plant and equipment. Known as the GILTI tax, this is meant to reflect excess profits earned from a company's "intangibles", such as the patents and other IP of tech and pharmaceutical groups.

But the levy rate is only half the new US corporation tax rate, and companies can credit taxes they pay overseas against this US liability. Mr Kleinbard says this will encourage them to keep as much of their profits in tax havens as they can, lowering their overall foreign taxes to a level where they can fully offset the minimal GILTI tax, but no more.

The tax could also lead tech groups to ship more jobs overseas, according to Chris Sanchirico, a law professor at the University of Pennsylvania. That is because they will have an incentive to add to their offshore facilities such as factories — and the jobs associated with them — since this will boost their "tangible" assets outside the US and shelter more of their profits from tax.

Along with other features of the act, this will "greatly complicate what is an already astoundingly complex corner of US tax law", Mr Sanchirico says. Referring to two notorious structures for avoiding tax, he says: "I think there is little doubt that the new law will open up a host of new complicated games, some of

which may make the double Irish Dutch sandwich look like child's play."

A second feature of the legislation is designed to encourage companies to return their patents and other intangibles to the US, by charging the same low tax rate on exports that they would pay on the GILTI tax.

This "foreign derived intangible income" has stirred up opposition from other countries. They argue it is an unfair export subsidy for US businesses, since they will face a lower tax on exports than they do selling the same products at home.

Tax experts say US companies would not bring intangibles home as a result of the FDI, since they would still benefit from keeping them in tax havens to lower their offshore profits.

"I don't see any great movement of intangible assets back to the US," says Bob Willens, an accounting expert in New York. "People will stay the course."

Mr Kleinbard says: "Trillions of dollars of IP remains trapped outside the US."

He and others believe this also means no jobs related to creating new IP will return to the US from overseas, though some say most of the work already happens in the US, regardless of where the IP is officially housed.

"You can't come back, if you never left," says Mr Sanchirico.

\$38bn  
One-off tax payment to be made by Apple

\$30bn  
Sum Apple is to invest to expand US operations

## Technology

## 'Constructech' start-up Katerra raises \$865m

RICHARD WATERS — SAN FRANCISCO

A US company that is trying to revolutionise homebuilding by applying lessons learned in the electronics world has raised \$865m in an investment round led by SoftBank's Vision Fund.

The two-year-old start-up, called Katerra, aims to take over all aspects of supply-chain management and construction for home developers, much as Taiwanese manufacturer Foxconn assembles the iPhone for Apple.

"It's a huge industry and there's nobody in it like us," said Michael Marks, chairman and co-founder. The company, which operates from a factory in Arizona, already has \$1.3bn of orders and hopes to build another four or five facilities by the end of next year, he said.

Mr Marks was one of the founders of the outsourced manufacturing model underpinning the modern electronics industry, having spent 13 years as head of contract manufacturer Flextronics before leaving to become an investor a decade ago. Others directors include Jim Davidson, one of the founders of tech buyout firm Silver Lake, and John Hui, head of strategy at Foxconn.

The construction industry has been one of the least influenced by IT-related productivity improvements. That has led to the emergence of a wave of so-called "constructech" companies using software to try to streamline operations, as well as attempts to standardise construction using modular techniques.

By trying to take on all aspects of a huge industry it puts at \$12tn globally,

Katerra has bitten off far more. The services it claims to offer extend from handling the architecture and engineering process at the start of a new development to manufacturing standardised parts such as door frames and other components in its own factory before assembling them on site. Mr Marks said this meant the company could integrate the entire process, resulting in efficiencies not otherwise available.

Katerra hopes to drive down costs by ordering materials for multiple developments at once, giving it negotiating leverage over suppliers.

The comparisons with the outsourced electronics industry only run so far, however. Buildings must be designed to fit a particular site and meet local requirements, Mr Marks conceded.

## Pharmaceuticals

## Canada cannabis group pays C\$1.1bn for rival

ANNA NICOLAOU — NEW YORK

Aurora Cannabis has agreed to buy rival marijuana grower CanniMed Therapeutics for C\$1.1bn (US\$880m) — the largest deal yet in Canada's budding industry ahead of the drug's expected legalisation in the country this year.

Aurora, which produces cannabis in the Rocky Mountains of Alberta, has been building up a stake in CanniMed, after the company rejected its unsolicited takeover offer last year.

The combination will "establish a best-in-class cannabis company with operations across Canada and around the world", said Terry Booth, Aurora's chief executive.

The deal comes as shares in Canadian

marijuana producers have soared on the back of the country's move towards legalising recreational cannabis this year — which would make it the first G7 country to do so and the second in the world after Uruguay.

Aurora's stock has more than quadrupled in the past six months, from \$2.70 in July to \$14.89 yesterday. Shares in rival Canopy Growth have climbed more than 300 per cent in the same time, to \$35.88 a share.

Aurora, founded in 2006, has been producing marijuana to be sold for medicinal purposes. Like other Canadian growers, the federal government's plans to legalise recreational marijuana have boosted its prospects.

The Canadian Imperial Bank of Commerce estimates that the marijuana

industry could achieve \$10bn in annual sales in the country, while federal and provincial governments would reap up to \$5bn in taxes.

CanniMed had previously agreed to buy another grower, Newstrike Resources, which is backed by Canadian rock band Tragically Hip. CanniMed has terminated the agreement and will pay Newstrike a \$9.5m break fee.

Justin Trudeau, prime minister, advocated the legalisation of marijuana throughout his election campaign in 2015.

His Liberal party has aimed to do so by summer, with the pitch that legalising, taxing and regulating the drug would make it safer and crack down on the black market, which Statistics Canada values at \$6bn.

## COMPANIES

## Drugmakers on hunt for deals after tax tonic

Pharma groups prepare for round of tie-ups fuelled by US sector's cheaper access to overseas cash

DAVID CROW AND  
JAMES FONTANELLA-KHAN — NEW YORK

For more than 36 years, pharmaceutical executives have descended on San Francisco in January for the JPMorgan healthcare conference, known as the Davos of the pharmaceuticals world, using the event as an opportunity to meet rivals and cook up deals.

This year, the pace of those discussions was more frenetic than it has been for a decade, according to lawyers and bankers who attended the meeting — and many are predicting the tentative talks will morph into a bumper crop of mergers and acquisitions in 2018.

"It's as active a period as I can remember in many, many years, probably since before 2008," says Mike Silver, a corporate lawyer at Hogan Lovells, who has been advising healthcare companies on deals for almost four decades.

Large drugmakers are "flush with

"There is a set of players that seems to be willing to pay very outsize valuations"

cash", he says, and have a renewed sense of optimism following President Donald Trump's tax reforms, which have made it cheaper to access billions of dollars of cash that was parked overseas.

Mr Silver advised Celgene, the US biotech group, on its \$9bn acquisition of cell therapy company Juno, which was announced this week.

"A lot pops up after the JPMorgan conference... and then gets announced a few weeks after. So you should expect more soon," he says.

This year has got off to the strongest start for healthcare and M&A since at least 2007: almost \$50bn of deals have been announced since the start of January, according to Thomson Reuters.

But executives at large drugmakers warn that over-exuberance — which has ruined many good parties — could damp deal activity. Specifically, they say that valuations for the innovative biotech companies they would like to buy are too high.

This opinion is supported by the data: buyers of healthcare companies have agreed to pay an average premium of 81 per cent, according to data provider Dealogic — well above the 42 per cent typically paid in 2017.

"The smaller companies that have yet to generate sales or revenues are still very expensive relative to companies that have approved [drugs]," says Robert Bradway, chief executive of Amgen, the world's largest biotech group.

Mr Bradway's company is expected to repatriate as much as \$39bn in overseas cash, but he urges caution about splurging it on expensive deals — especially when potential target companies can secure higher valuations from private investors.

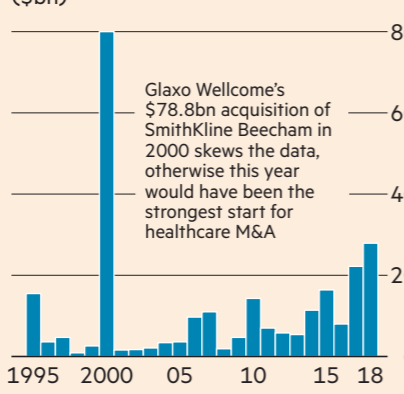
## In the M&amp;A lab



Qilai Shen/Bloomberg

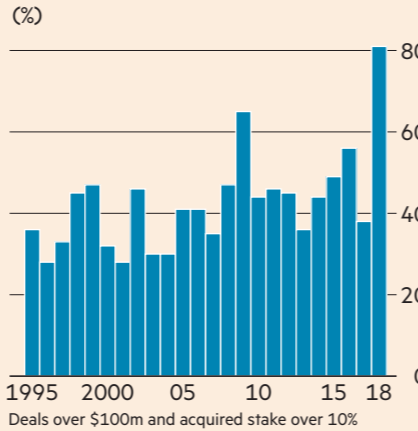
## Healthcare M&amp;A bonanza

Deal value, year to Jan 22 (\$bn)



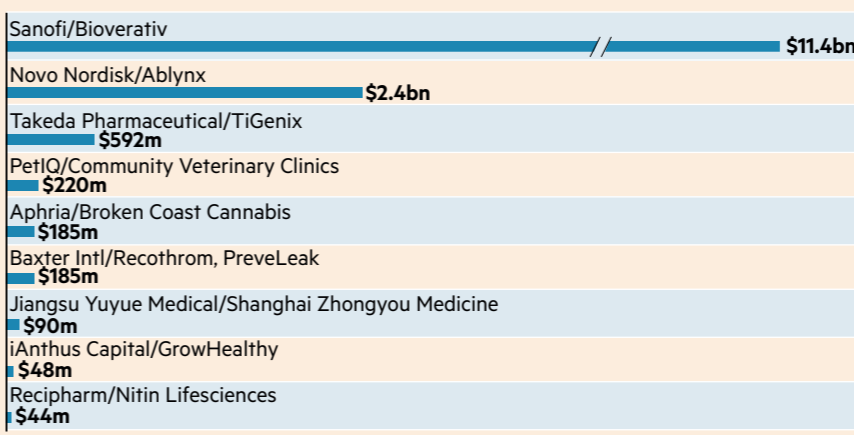
Sources: Thomson Reuters; Dealogic; Bloomberg

Valuations: average one-month premium (%)



Deals over \$100m and acquired stake over 10%

Selected deals in 2018 (deal value)



"A large number of the venture-backed companies are able to attract capital at valuations in private financings that exceed what I would ascribe the M&A value to be," he says. "The terms of trade for innovative companies is still relatively favourable."

Jeff Stute, co-head of global healthcare investment banking at JPMorgan, says many innovative biotech deals that have gone public have had "strong stock performances" and that "whenever they've needed to raise capital the equity markets have been quite receptive". "So there is no real pressure for any of these companies to sell," he adds.

Not all executives at large drugmakers agree that potential targets are too expensive.

Michel Vounatsos, chief executive of Biogen, a large biotech company focused on neuroscience, says the valuations reflect what has been a "stellar" year for biology, citing advances in treating Huntington's disease, migraine, multiple sclerosis and spinal muscular atrophy.

"At this stage, I don't think valuations are too high," he says.

"We are screening different targets all the time, be they pre-clinical or small-to-mid-sized companies, and we did not reach the point of saying 'no' because of the valuation."

Some industry executives say a buyer's willingness to overpay depends in large part on how desperately they need to replenish their drug pipelines.

\$16bn

Value of deals announced by Celgene so far this year

\$39bn

Overseas cash that Amgen is expected to repatriate

Celgene, which has announced deals worth up to \$16bn so far this year, is often identified as something of a "distressed buyer" given that it is barreling towards a big patent cliff.

Revlimid, its top cancer medicine, accounts for almost two-thirds of revenues, but will face competition from cheaper generic rivals from 2022 at the latest.

The New Jersey-based group paid a premium of about 90 per cent for Juno, while its purchase of privately held Impact Biomedicals raised eyebrows given that its main asset, fedratinib, has had a chequered history.

"There is a set of players that seems to be willing to pay very outsize valuations," says one executive at a large pharma group.

"A couple of deals Celgene has done seem to be quite expensive. It's hard to believe they're justifiable."

## Pharmaceuticals

## Novartis forecasts five years of growth as profits rise

RALPH ATKINS — BASEL  
SARAH NEVILLE — LONDON

Novartis has entered a five-year growth phase following two years of declining sales, the incoming chief executive of the Swiss pharmaceuticals company has declared after reporting a stronger than expected turnaround in 2017.

The drugmaker has been hit by patent expiries on some of its best-selling medicines, including its Gleevec cancer drug. But Vas Narasimhan said that 12 "major" product launches by 2020 would "fuel the next growth phase for the next five years".

His comments came as Novartis beat analysts' expectations with net sales of \$12.9bn in the final three months of 2017 — 2 per cent higher than the same period a year earlier, at constant currencies. For the full year, sales of \$49.1bn were also up 2 per cent — reversing falls in 2015 and 2016.

The impact of Gleevec's patent expiry was more than offset by the "strong performance" of new growth drivers such as Cosentyx, for psoriasis, and Entresto, for heart failure, Novartis said.

Upcoming launches included LutATHERA, a cancer treatment that was acquired with last year's purchase of the

French nuclear medicines business Advanced Accelerator Applications.

Core operating income rose 5 per cent in constant currencies to \$3.2bn in the fourth quarter, but was flat for the full year at \$12.85bn.

Mr Narasimhan, 41, previously head of drugs development at the group, takes over on February 1 from Joe Jimenez, who has been chief executive for eight years. Mr Jimenez restructured and streamlined the Basel-based drugmaker following its rapid global expansion through mergers and acquisitions under his predecessor Daniel Vasella.

Novartis also reported a return to growth at Alcon, its underperforming eyecare business, where sales rose 4 per cent last year. Novartis hopes to spin off and list Alcon, which could be worth more than \$25bn, but has delayed any move until 2019.

Novartis expected sales in 2018 to grow at a "low to mid-single digit" rate, with core operating income rising at "mid to high" single digits. Jeffrey Hol-

ford, an analyst at Jefferies, said the guidance was "strong versus consensus expectations". Novartis's share price was up 2.7 per cent at \$Fr85.86 by lunchtime in Europe.

Mr Narasimhan said Novartis was reassessing the future of its generics and biosimilars unit, Sandoz, whose generic pills business has come under heavy pricing pressures in the US. He said Sandoz, a division with \$10bn sales globally, had seen double-digit growth in biosimilars — copycat biologic drugs — and was a leader in differentiated products.

But he added: "In the US we are reassessing what is the best path going forward, which you would expect of us given the significant price decreases we have had." While it had not decided what this review would mean, the company was "committed to the Sandoz portfolio, particularly in biosimilars and differentiated generics, where we believe Sandoz is uniquely positioned to add value".

Mr Narasimhan said Novartis would continue its strategy of bolt-on acquisitions, especially of innovative medicines companies. But he indicated that the Swiss group had no plans to sell its 36.5 per cent stake in a consumer joint venture with GlaxoSmithKline or its 6 per cent stake in its rival Roche.



Vas Narasimhan: Novartis to press on with strategy of bolt-on acquisitions

Global leverage  
Big Pharma's pitch  
to potential sellers

So why would small and mid-sized biotech groups sell themselves to Big Pharma if they are able to raise oodles of cash from private investors and public markets?

One reason is that many such companies are good at developing medicines, but struggle when tasked with building sales forces to commercialise their products.

"I suspect there are a few public companies today that have had to go to market with their medicines that didn't necessarily anticipate having to market medicines," says Darren Carroll at Eli Lilly, who acts as the company's chief dealmaker.

Mr Carroll declined to name the companies, although investors sometimes point to a trio of cancer biotechs — Tesaro, Clovis and Puma — as examples of single-product groups that are still independent despite being widely tipped as takeover targets. All three have brought their drugs to market independently, but there have been doubts about the strength of their launches, while reliance on a single product has led to a choppy ride for shareholders in recent months.

Jeff Stute at JPMorgan, argues that it often makes sense for smaller biotechs to sell to larger drugmakers. "Most smaller biotech companies are worth significantly more inside a Big Pharma structure, because they have... the sales and distribution capability that would be quite difficult and expensive for a biotech company to build."

Thomas Sheehan at Bank of America Merrill Lynch says for the founders of smaller biotech companies — and the venture capitalists who have backed them from the start — it can be a tough call to decide when to sell.

"You can either market the drug on your own or sell it," he says. "The former is very challenging, but can be incredibly rewarding economically. The latter option can help you to bring your drug to market rapidly by leveraging the global capabilities of a large biotech or pharma company."

## Contracts &amp; Tenders

GOVERNMENT OF MAHARASHTRA PUBLIC WORKS DEPARTMENT PUBLIC WORKS CIRCLE, NANDED PUBLIC WORKS DIVISION, NANDED. E-TENDER NOTICE NO. 28 FOR 2017-18 (IInd Call) NOTICE INVITING BID				
Bid/Package No. AU-105		Year 2017-18		
Subject: Hybrid Annuity Mode AU-105 to Up gradation of Road.				
The Government of Maharashtra had entrusted to the Authority the development, maintenance and management of State highways and Major District Roads of State of Maharashtra. The Authority had resolved to augment the existing roads in the State of Maharashtra by improvement thereof (The "Project") on "Hybrid Annuity" basis and has decided to carry out the bidding process for selection of a private entity as the Bidder to whom the Project may be awarded.				
Brief particulars of the Project are as follows				
Sr. No.	Hybrid Annuity Mode Package No.	Name of Work	Length (in Km.)	Estimated Project cost (Rs. in Crores)
1	AU-105	[AU-105] Construction of Two Lanning with paved shoulder from district border Loha-Kandhar-Mukhed-Ekklara-Khanapur-Narangal-Sagrol-Biloli-Kundalwadi-Dharmabad to State Border Road, MSH-16 & SH-268 Dist. Nanded under Hybrid Annuity (MSH-16 from Khanapur Phata km 371/900 to Kundalwadi km 419/00 and SH-268 from Kundalwadi km 67/300 to State Border km 89/00).	68.800	186.45

- All information of e-tendering is available on the following websites / Notice Board  
I. <http://www.mahapwd.com> (informatory notice)  
II. <http://mahatenders.gov.in>
- The complete bid document can be viewed / downloaded from E-procurement portal from 20/01/2018 to 03/02/2018 (up to 15:00 Hrs. IST). Bid must be submitted online only.
- The e-procurement portal is given below - <http://mahatenders.gov.in>
- e-Tender Schedule is as given below:

Sr. No.	Event Description	Date
1	Invitation of RFP (NIT) (Download period of online tender).	From 20/01/2018 at 10:00 Hrs. to 03/02/2018 at 15:00 Hrs. (IST).
2	Last date for receiving queries for Pre-Bid.	Upto 25/01/2018 up to 15:00 Hrs. (IST).
3	Pre - Bid meeting.	25/01/2018 in the Office of the Chief Engineer, Public Works Region, Aurangabad.
4	Bid Lock (Technical and Financial Bid Last date and time).	03/02/2018 at 22:01 Hrs. (IST).
5	Last date & Time for online superhash Generation & Bid Log.	05/02/2018 at 00:05 Hrs
6	Control Transfer of Bid.	05/02/2018 at 00:06 Hrs to 06/02/2018 @ 00:06 Hrs.
7	Physical submitting of Bid Security / POA etc. (as per clause 2.1.1.2 of RFP).	Any of the following places within 72 Hrs. (during office hours) after Bid Lock at office of the 1. Chief Engineer, Public Works Region, Aurangabad, Adalat Road, Behind Old High Court Building, Aurangabad. 2. Superintendent Engineer, Public Works Circle, Nanded, Bankam Bhavan, Near Nanded Club, Sheha Nagar, Nanded. 3. Executive Engineer, Public Works Division Nanded.
8	Opening of Technical Bids.	On dated 06/02/2018 in the office of the Superintendent Engineer, Public Works Circle, Nanded, Bankam Bhavan, Near Nanded Club, Sheha Nagar, Nanded. (If possible)
9	Declaration of Eligible / Qualified Bidders.	09/02/2018 (If possible)
10	Opening of Financial Bid.	09/02/2018 from 18:00 Hrs. (IST) to 17:50 Hrs. (IST) (If possible).

- Note:-
  - Bid submitted through any other mode shall not be entertained. However, Bid Security, proof of online payment of cost of bid document, Power of Attorney and joint bidding agreement etc. as specified in Clause 2.1.1.2 of the RFP shall be submitted physically by the Bidder as stated above. Please note that the Public Works Department reserves the right to accept or reject all or any of the Bids without assigning any reason whatsoever.
  - Other terms and conditions are detailed in online e-tender form. Right to reject any or all online bid of work, without assigning any reasons thereof, is reserved with Department.

Sd/-  
(V. T. Bade)  
Executive Engineer,  
Public Work Division, NANDED

## Utilities

# Suez shares take a tumble after profit warning

French water and waste group struggles for growth in European market

DAVID KEOHANE — PARIS

Shares in the French utility Suez suffered a fall of nearly 17 per cent in Paris yesterday after the company warned that its 2017 profits would come in much lower than expected and admitted that its European water business was not growing.

The water and waste group had said after markets closed on Tuesday that full-year earnings before interest and tax would come in at €1.28bn, down 2 per cent compared with the previous year and below estimates.

Net income is expected to be €300m, more than 10 per cent below what analysts had been forecasting.

Suez also cut its 2018 forecasts, citing issues in its international businesses.

Jean-Louis Chaussade, Suez chief executive, said he was "surprised by the reaction of the market" and that it did not "value enough that the group is growing".

Suez said the fourth-quarter profit fall was because of €45m of "specific expenses" stemming from political turmoil in Spain and "with the decision to terminate two services contracts, in Morocco and India, due to operational difficulties".

Suez added that, excluding those costs, "annual organic growth in ebit would have been in line with the 1.4 per cent trend" reported at the end of September.

In March last year, Suez agreed to buy General Electric's water unit for \$5.4bn and analysts at Barclays said that "2017 can be characterised as a transition year for the group".

On Tuesday, Suez also forecast ebit growth of 10 per cent and organic ebit growth of 3 per cent in 2018, again below consensus expectations in part because of a weaker outlook for

revenue growth from the international division.

Suez said "that revenue growth from the international division should be weaker than previously anticipated, likely being closer to 4-6 per cent rather than the 6-8 per cent previously guided for mainly due to weaker construction activities", said Barclays.

Mr Chaussade said: "We are talking about a company that will grow."

"In 2018, we of course will grow organically and thanks to the acquisition of GE water. The growth of 10 per cent at ebit level and of 3 per cent at organic ebit level is not too bad in the business we are in."

"I think the growth we have at international level we have to boost but it is

"People are being a little bit dramatic. I think I have been quite rapid to disclose to the market the reality"

already good. We can do better, especially if we see a recovery and there are parts of the world where we see a recovery."

Analysts remained sceptical. "Given the scale of Suez's profit warning and just a month after its [investor day concerning GE Water] in December, we expect management credibility to deteriorate," said Ahmed Farman at Jefferies.

Mr Chaussade said: "In my view people are being a little bit dramatic. I think I have been quite rapid to disclose to the market the reality."

Suez will report its full-year numbers on March 1.

Separately, Suez's French competitor Veolia said "operational difficulties announced by Suez have no relation to the group's activities" and that it "fully confirms the guidances previously communicated to the market".

Veolia stock closed 3.8 per cent lower. See [Lx](#)

## COMPANIES

## Technology. Surveillance

# China face scan start-ups capture a lead

SenseTime and rivals race ahead helped by vast data sets and state disregard for privacy

BEN BLAND — HONG KONG

The police department in Chongqing, a sprawling metropolis of more than 30m people in south-west China, had long struggled to make use of its many CCTV cameras, catching just a handful of suspects a year using human efforts.

But when it deployed the facial recognition software produced by SenseTime, one of China's leading artificial intelligence start-ups, it was able to nab 69 suspects in just one month, according to the company.

"It's impossible for people to monitor all the cameras in China," says Xu Li, the chief executive and co-founder of SenseTime.

"But by turning the original video into structured data, it makes it much easier to store and search so you can find, for example, a woman in a white T-shirt with a blue bag with a BMW next to her," he adds.

Building on its large and growing business with the government in the world's most technologically advanced police state, SenseTime has raised \$450m from investors including venture capitalist IDG Capital and chipmaker Qualcomm and claims a valuation of more than \$2bn.

SenseTime, which is talking to investors about its next funding round and contemplating an eventual initial public offering, is one of a crop of artificial intelligence companies that have grown rapidly in China thanks to strong government backing, the large data sets created by the vast population and minimal concerns about privacy.

The nascent industry is being driven by a combination of pure-play AI companies such as SenseTime, its highly valued rival Face++ and voice recognition company iFlytek, as well as the three giants of the Chinese internet, Alibaba, Baidu and Tencent.

"SenseTime and its competitors can grow so fast compared to elsewhere in the world because video surveillance is a big deal in China, the government controls the budget and there's a huge budget for it so they can manage society," says Justin Niu, a partner at IDG,



'Smile to pay': a customer uses a face-recognition payment terminal at a KFC-owned restaurant in Hangzhou — Reuters

which was one of SenseTime's early investors.

Mr Xu says China's scale gives its AI companies a big advantage over their rivals elsewhere. "Size means everything," he says. "We have processed 500m identities for facial recognition. US companies can't test on so many customers."

SenseTime helped one customer alone, China Mobile, carry out facial verification for 500m customers.

SenseTime is rolling out its computer vision capabilities in a number of other sectors from virtual reality mobile apps to fully automated retail stores, where cameras will record the products customers pick up and charge their electronic wallets using facial recognition.

The company, which is incorporated in Hong Kong but does the bulk of its business in mainland China, is also moving into autonomous driving, partnering with Honda last month.

Mr Xu says SenseTime has an advantage in employing more than 100 PhD holders in computer vision, including himself.

The company's strategy is to match this academic capability with the power of its business partners, from Chinese police departments like that in

"We have processed 500m identities for facial recognition. US companies can't test on so many"

Guangzhou, with which it operates a joint research laboratory, to mobile phonemakers such as Oppo and Vivo and payment companies like UnionPay.

Currently just 13 per cent of its revenue comes from outside China but Mr Xu wants to expand the international business, with a subsidiary in Japan and plans to open an office in Singapore as

well as a research and development centre in the US.

But Paul Haswell, a lawyer at Pinsent Masons in Hong Kong who specialises in technology, warns that the adoption of facial recognition will be much slower outside of China because of worries about privacy and data security.

"Outside China there is justifiable concern as to how data will be collected and what happens to it," he says. "Many consumers in the west would be nervous of having their face, identity and personal data stored together on a server in China."

Mr Xu argues that SenseTime's algorithms can be used to collect data securely, but adds that his bigger concern is identifying new industries where the company can replace or improve on labour intensive processes traditionally done by humans.

"If you don't surpass humans, there's no way forward."

Additional reporting by Nicole Liu

## Contracts &amp; Tenders

**GOVERNMENT OF MAHARASHTRA**  
OFFICE OF THE EXECUTIVE ENGINEER  
PUBLIC WORKS DIVISION NO. 1, CIVIL LINES, CHANDRAPUR.

महाराष्ट्र शासन  
**NOTICE FOR HYBRID ANNUITY MODE [HAM] (ONLINE) TENDER**  
E-TENDER NOTICE NO. 2 (2nd CALL) / FOR 2017-18  
NOTICE INVITING BID

Email: [chandrapur1.ee@mahapwd.com](mailto:chandrapur1.ee@mahapwd.com) Phone No: 07172-250245

**Subject: Hybrid Annuity Mode, Package No. NAG-142, NAG-143-  
Upgradation of Roads under Public Works Circle, Chandrapur.**

1. The Government of Maharashtra had entrusted to the Authority the development, maintenance and management of State highways and Major District Roads of State of Maharashtra. The Authority had resolved to augment the existing roads in the State of Maharashtra by improvement thereof (The "Project") on "Hybrid Annuity" basis and has decided to carry out the bidding process for selection of (a private entity) as the Bidder to whom the Project may be awarded.

**Brief particulars of the Project are as follows:**

Sr. No.	Hybrid Annuity Mode Package No.	Name of Works	Length (in Km.)	Estimated Project cost (Rs. in Crores)
1				
1	NAG-142	Improvement to Bhoeygaon Gadchander Jiwati Length 21 KM (SH-373).	21 KM	185.53 (Excluding GST)
		Improvement to Gadchander Patan Wani Length 53 KM (SH-373).	53 KM	
2	NAG-143	Improvement to Padoli Datala Dewada Shioni Hadasti Rajura KM 35.500 (SH-372).	35.5 KM	205.17 (Excluding GST)
		Improvement to Pawani Wansadi Length 30KM (MDR-15).	30.0 KM	

2. All information of e-tendering is available on the following Websites / Notice Board  
I. <http://www.mahapwd.com> (informationary notice)  
II. <http://pww.maharashtra.etenders.in> (subportal - <http://pww.maharashtra.etenders.in>)

3. The complete bid document can be viewed / downloaded from e-procurement portal from as per e-tender schedule uploaded on e-portal. Bid must be submitted online only.

4. The e-procurement portal is given below - <http://pww.maharashtra.etenders.in> (subportal - <http://pww.maharashtra.etenders.in>)

5. E-Tender Schedule is as given below:

Sr. No.	Event Description	Date
1	Invitation of RFP (NIT) (Download period of online tender).	As per e-tender schedule uploaded on e-portal.
2	Last date for receiving queries for Pre-Bid.	As per e-tender schedule uploaded on e-portal.
3	Pre - Bid meeting.	As per e-tender schedule uploaded on e-portal in the Office of the Chief Engineer, P. W. Region, Nagpur.
4	Authority response to queries for Pre-Bid Meeting.	As per e-tender schedule uploaded on e-portal.
5	Bid Due Date (Technical and Financial Bid Last date and time).	As per e-tender schedule uploaded on e-portal.
6	Last date & time for online Superhash Generation & Bid Lock.	As per e-tender schedule uploaded on e-portal.
7	Control Transfer of Bid.	As per e-tender schedule uploaded on e-portal.
8	Physical submission of Bid Security / POA etc. (as per clause 2.11.2 of RFP).	At any of the following places within 72 Hrs. after Bid Lock at office of the 1. Chief Engineer, P. W. Region, Banglow No. 39/1, Opp. Ladies Club, Civil Lines, Nagpur. 2. Superintending Engineer, Public Works Circle, Civil Lines, Chandrapur. 3. Executive Engineer, Public Works Division, No. 1, Civil Lines, Chandrapur. 4. Executive Engineer, Public Works Division, No. 2, Mul Road, Chandrapur.
9	Opening of Technical Bids.	As per e-tender schedule uploaded on e-portal in the office of the Superintending Engineer, Public Works Circle, Chandrapur (Maharashtra).
10	Declaration of Eligible / Qualified Bidders.	As per e-tender schedule uploaded on e-portal.
11	Opening of Financial Bids.	As per e-tender schedule uploaded on e-portal.

6. Note:-  
a) Bid submitted through any other mode shall not be entertained. However, Bid Security, proof of online payment of cost of bid document, Power of Attorney and joint bidding agreement etc. as specified in Clause 2.11.2 of the RFP shall be submitted physically by the Bidder on or before as per e-tender schedule uploaded on e-portal. Please note that the Public Works Department reserves the right to accept or reject all or any of the Bids without assigning any reason whatsoever.  
b) Other terms and conditions are detailed in online e-tender form. Right to reject any or all online bid of work, without assigning any reasons thereof, is reserved with Department.

Outward No: 406/D-4(1)/Tender/2017-18 Dated: 20/01/2018  
Sd/-  
Executive Engineer  
Public Works Division No.1,  
CHANDRAPUR.

**GOVERNMENT OF MAHARASHTRA**  
OFFICE OF THE EXECUTIVE ENGINEER  
PUBLIC WORKS DIVISION NO. 2, MUL ROAD, CHANDRAPUR.

महाराष्ट्र शासन  
**NOTICE FOR HYBRID ANNUITY MODE [HAM] (ONLINE) TENDER**  
E-TENDER NOTICE NO. - 65 FOR 2017-18 (SECOND CALL)  
NOTICE INVITING BID

Email: [chandrapur2.ee@mahapwd.com](mailto:chandrapur2.ee@mahapwd.com) Phone No: 07172-252256

Due to no response to following works online E-Tender process (Second Call) is invited by Executive Engineer, Public Works Division No. 2, Chandrapur.

**Subject: Hybrid Annuity Mode, Package No. NAG-139, NAG-140 and NAG-141-  
Upgradation of Roads under Public Works Circle, Chandrapur.**

**Brief particulars of the Project are as follows:**

Sr. No.	Hybrid Annuity Mode Package No.	Name of Work	Length (in Km.)	Estimated Project cost (Rs. in Crores) Excluding GST
1				
1	NAG-139	1. Improvement to Mul Gondpipari Road (MSH-9), Length 41.00 Km. 2. Improvement to Gondpipari Podsa Road (SH-369), Length 24.960 Km (Part-II) (SECOND CALL)	65.960	200.22
2	NAG-140	1. Improvement to Hiwara Darur Vithalwada Road (MDR-48) and Wadholi Aksapur Road (MDR-19), Length 32.460 Km (Part-I). 2. Improvement to Gondpipari Podsa Road (SH-369), Length 12.740 Km (Part-II) (SECOND CALL)	45.20	135.57
3	NAG-141	Improvement to Chandrapur Junona Pombhurna Navegaon More Road (SH-371) (SECOND CALL)	49.00	94.91

1. All information of e-tendering is available on the following Websites / Notice Board  
I. <http://www.mahapwd.com> (informationary notice)  
II. <http://pww.maharashtra.etenders.in> (subportal - <http://pww.maharashtra.etenders.in>)

2. The complete bid document can be viewed / downloaded from E-procurement portal AS PER ONLINE SCHEDULE. Bid must be submitted online only.

3. The e-procurement portal is given below - <http://pww.maharashtra.etenders.in> (subportal - <http://pww.maharashtra.etenders.in>)

4. Note:-  
a) Bid submitted through any other mode shall not be entertained. However, Bid Security, proof of online payment of cost of bid document, Power of Attorney and joint bidding agreement etc. as specified in Clause 2.11.2 of the RFP shall be submitted physically by the Bidder AS PER ONLINE SCHEDULE. Please note that the Public Works Department reserves the right to accept or reject all or any of the Bids without assigning any reason whatsoever.  
b) Other terms and conditions are detailed in online e-tender form. Right to reject any or all online bid of work, without assigning any reasons thereof, is reserved with Department.

Outward No: 267/D-3(2)/Tender/2017-18 Dated: 19/01/2018.  
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MARKET DATA

FT500: THE WORLD'S LARGEST COMPANIES

Table with 10 columns: Stock, Price, Day, Chg, High, Low, Yld, P/E, MCap. Lists major companies from Australia, Brazil, Canada, China, Europe, Hong Kong, India, Israel, Japan, Korea, Latin America, Middle East, and the UK.

FT 500: TOP 20

Table with 10 columns: Close price, Prev, Day change, Week change, Month change. Lists top 20 FT 500 companies.

FT 500: BOTTOM 20

Table with 10 columns: Close price, Prev, Day change, Week change, Month change. Lists bottom 20 FT 500 companies.

INTEREST RATES: OFFICIAL

Table with 10 columns: Country, Rate, Current, Since, Last, 2016, 2017, 2018. Lists official interest rates for various countries.

INTEREST RATES: MARKET

Table with 10 columns: Over, Change, One, Three, Six, One. Lists market interest rates for various terms.

COMMODITIES

Table with 10 columns: Energy, Price, Change, Agri/Livestock & Cattle Futures, Price, Change. Lists commodity prices and changes.

COMMODITIES: INDEX-LINKED

Table with 10 columns: Price, Yield, Prev, Month, Value, Stock, Market, No of. Lists index-linked commodity prices and yields.

COMMODITIES: TEN YEAR GOVT BONDS

Table with 10 columns: Country, Yield, Bid, Bond, Spread, Bid, Bond, Spread. Lists ten-year government bond yields and spreads.

COMMODITIES: SPREADS

Table with 10 columns: Country, Spread, Bid, Bond, Spread, Bid, Bond, Spread. Lists spreads for various commodities.

BONDS: HIGH YIELD & EMERGING MARKET

Table with 10 columns: Jan 24, Red, Coupon, Ratings, Bid, Bid, Day's, Mth's, Spread, US, US. Lists high yield and emerging market bond data.

BONDS: BENCHMARK GOVERNMENT

Table with 10 columns: Jan 24, Red, Coupon, Bid, Bid, Day's, Wk chg, Month, Year, US, US. Lists benchmark government bond data.

BONDS: VOLATILITY INDICES

Table with 10 columns: Jan 24, Day Chng, Prev, 52 wk high, 52 wk low. Lists volatility index data.

GILTS: UK CASH MARKET

Table with 10 columns: Jan 24, Price, E, Red, Day, Week, Month, 52 Week, Amnt. Lists UK cash market data.

GILTS: UK FT35 ACTUARIES INDICES

Table with 10 columns: Price Index, Jan 24, Day's, Total, Return, Return, 1 year, Yield. Lists UK FT35 actuaries indices.

GILTS: UK FT35 ACTUARIES INDICES

Table with 10 columns: Fixed Coupon, Jan 24, Day's, Total, Return, Return, 1 year, Yield. Lists UK FT35 actuaries indices.

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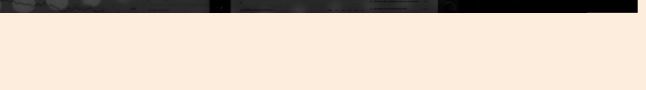
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COMPANIES & MARKETS





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Table listing various managed funds including Algebris Investments, Dragon Capital, The Antares European Fund Limited, Aspect Capital, Eurobank FMC-LUX, CG Asset Management Limited, Cedar Rock Capital Limited, Charles Schwab Worldwide Funds, Chartered Asset Management Pte Ltd, Cheyne Capital, Dodge & Cox Worldwide Funds, and Hermes.

Table listing various managed funds including Invesco, Morgan Stanley Investment Funds, Natixis Investment Managers, Kames Capital VCIC, and Northwest Investment Management.

Table listing various managed funds including Odey Asset Management, Ram Active Investments, Robeco Asset Management, Toscafund Asset Management LLP, and Natixis International Funds.

Table listing various managed funds including E.I. Sturdza Strategic Management Limited, Superfund, Trosca, Treeport, Tree Top Asset Management S.A., Trojans Investment Funds, UBS Asset Management, and Value Partners Group Limited.

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## MARKETS &amp; INVESTING

## Commodities

## Brexit delays Hong Kong-LME tie-up

European regulator has dragged its feet over deal, says exchange chief

EMMA DUNKLEY — HONG KONG

Brexit has stalled plans for an exchange tie-up between Hong Kong and London as the European regulator has dragged its feet on approving the deal, says the head of the Hong Kong stock exchange.

Charles Li, chief executive of Hong Kong Exchanges and Clearing, said he "cannot even have a conversation" with regulators about London-HK Connect "because of Britain's exit from Europe".

Li Li said the problem lay in the links that it wanted to create between the clearing houses it owned in London and Hong Kong.

"The London regulator has no issue.

The European regulator says, 'Why do I want to spend time reviewing your application because . . . the UK will leave the EU in about a year's time, so what's the point for me to approve it, and then you no longer need me?'"

"So we have to sort of put this on the shelf because of Brexit . . . I think sometime this year we'll begin to talk with the Bank of England."

The HKEX said that LME Clear, the clearing body for the London Metal Exchange, was regulated by the Bank of England, and at the European level by the European Securities and Markets Authority.

Esma declined to comment.

Mr Li said that if Brexit occurred in an "orderly" fashion, he hoped to finish negotiations with the BoE this year, so that the deal was ready by March 2019 when "we only have one regulator".

The connect plans were unveiled in 2015. The scheme is meant to allow investors to trade, clear and settle products listed on the LME, the centre for industrial metals trading, in Hong Kong.

HKEX, which bought the LME in 2012 for £1.4bn, is attempting to forge a closer link between the metals exchange and China, the biggest importer of commodities, where companies need to hedge their risks via the futures market.

The connect plans were put on hold in 2016 because of uncertainty over Brexit following the UK's vote. But HKEX is facing another delay as regulators in London and Europe are at odds as a result of the UK's impending withdrawal from the EU.

The latest challenge raises questions over other plans for connections between London and China.

Last year Philip Hammond, the UK

HKEX wants to forge a closer link between the metals bourse and China, the biggest importer of commodities

chancellor, visited China, where both sides agreed to finalise the London-Shanghai Stock Connect soon.

The plan to link the British and Chinese stock markets will enable investors to buy Shanghai-listed groups through the London exchange and vice versa.

HKEX has launched stock and bond connects with exchanges in China, allowing international and Chinese investors to trade securities in each other's markets.

One person close to the Hong Kong exchange said London-Hong Kong Connect was a "long-term goal" and other matters had taken priority in the past couple of years.

HKEX has been focusing on changing its listing rules to entice more companies to list on its exchange, as competition to win blockbuster initial public offerings heats up.

## INSIGHT

Alberto Gallo



## Brussels needs a clear reform plan to keep euro-phoria on track

The European crisis is over. Five long years after the 2011 double-dip recession and Mario Draghi's "whatever it takes" pledge, the eurozone recovery is finally real. The euro area will grow at nearly 2 per cent in 2018, according to IMF forecasts — and this time the periphery is joining the expansion. More surprising than macroeconomic data has been the change in investor sentiment.

Just a year ago, Eurosceptics were discussing how, not if, the eurozone would break up. Today, investors are piling into Spanish, Portuguese, Italian and Greek debt. Rating agencies are distributing upgrades. Greek government bond yields have fallen from more than 10 per cent in 2016, the same as Ecuador and Ghana at the time, to less than 4 per cent today. Is this euro-phoria justified?

Negotiations in Germany could soon deliver a grand coalition, with the SPD opposition finally opening up the government to more fiscal stimulus and co-operation. Unlike in the UK and the US, where inequality fuelled protest votes, populists lost in France, Spain, the Netherlands and Germany. Chances for the anti-euro Five Star Movement to form a government following Italy's March elections are below 5 per cent, according to our estimates. With stable politics and improving economics, the bulls say, the stars appear aligned for a stronger EU.

Beyond the optimism, however, lies a crucial crossroads for Europe. Its leaders have a short window of time to reform and strengthen the union. They must not waste it. Like every year, policymakers are meeting in Davos to discuss themes ranging from sustainable capitalism, and inequality to how to predict the next financial crisis. This time around, however, there are at least three reasons why the agenda should carry a much higher sense of urgency.

First, the global recovery is nearly 10 years long. While Europe is trailing, the cylinders of growth may start overheating in the US and other major economies, bringing in monetary tightening. Second, the ECB will probably start removing accommodation this year as its president and key members of its governing council approach the end of their mandates. Third, absent any rebalancing, growing divides between rich and poor mean that the anti-euro vote may win at the next electoral cycle.

## The first task is to strengthen umbrella institutions before the storm

Like a football team trying to defend a fragile one-nil first-half lead, Europe needs concrete solutions to maintain low tail risk and sustain growth momentum. The most urgent task is to strengthen its umbrella institutions before the next storm. Turning the European Stability Mechanism into a monetary fund able to act independently in an emergency would be a first step to reduce tail risk. A common deposit guarantee fund is also necessary as a firewall to cement the banking union.

After that, Europe needs to play offence. Absent population growth and with high costs to absorb immigration, improving productivity and social mobility are the only ways to make debt sustainable in the currency union. For too long, prolonged monetary easing by the ECB has been a substitute for investment in education, infrastructure and defence. The current plan by European Commission president Jean-Claude Juncker remains one of rhetoric backed by little capital: €20bn, or 0.18 per cent of eurozone GDP. To move the needle of growth, one would have put on the table at least three times the money.

Finally, after a decade of crisis that left one in two young citizens without a job, Greece needs a break from the creditors' straitjacket with a debt restructuring and an investment programme to kick-start growth. Italy, which holds elections on March 4, requires deeper reforms. The most important are unlogging the justice system, consolidating mid-tier banks and reducing oversized entitlements in the public pension system. With a clear reform road map, Europe's policymakers would live up to investor optimism and even bring further upside to the euro and European equities. These remain about 3-5 per cent undervalued against fundamentals, according to our models.

In the Odyssey, Ulysses ties himself to the mast and orders his sailors to put wax in their ears to keep his ship on course and hear the sirens' songs without falling into temptation. Unlike Ulysses, EU policymakers have enjoyed the ECB QE music over the past few years, but deviated from the reform course to focus on their respective electoral cycles. It is now for them to steer the ship more towards Europe, or crash into the rocks at the next storm.

Alberto Gallo is head of macro strategies at Algebris Investments and portfolio manager for the Algebris Macro Credit Fund

## Selected opportunities

remain but a rising tide will

no longer lift all boats

GABRIEL WILDAU — SHANGHAI  
EMMA DUNKLEY — HONG KONG

Maybe it was just a dream — or a nightmare.

As the Chinese stock market's 2015 boom and bust fades from memory, investors are in a mood to buy. China stocks both on the mainland and in Hong Kong outperformed the S&P 500 last year, as economic growth accelerated for the first time since 2010.

The Shanghai Composite on Tuesday surpassed its level at the end of 2015, just before China's regulator implemented a circuit breaker that magnified a rout in the opening week of 2016.

The agency's chairman — who failed to curb the 2015 bubble and championed the circuit breaker — has been sacked, and the "national team" of state investors that he deployed to rescue the market has quietly retreated. It is almost possible to pretend that the whole thing never happened.

But investors warn that benchmark indices are unlikely to repeat last year's performance, as corporate profit growth slows and valuations leave less room for such outsized share gains.

China's "old economy", especially real estate and infrastructure spending, has powered growth since early 2016. But both are expected to slow this year, as policymakers seek to restrain runaway house prices and excessive borrowing by local governments.

"Property earned explosive profits in the last two years, but we're cautious right now," said Liang Rui'an, general manager at DJ Capital, a Shanghai-based hedge fund.

"These are cyclical sectors that are very sensitive to policy and liquidity. We also think the golden period for commodities has passed."

To be sure, the year got off to a fast start.

The Shanghai Composite has suffered only one losing day so far in 2018 and closed at a fresh two-year high yesterday. The Hang Seng China Enterprises index, which tracks China groups traded in Hong Kong, closed at a 30-month high.

Last year's "regulatory windstorm" by the banking regulator has hammered the bond market by discouraging the use of borrowed money for bond investment. That makes stocks more attractive by comparison.

The latest shadow bank rules focus on eliminating implicit guarantees on wealth management products that



Aly Song/Reuters

'Valuations don't have the same room to rise as last year. In 2018, the driver will be profits'

Gao Lianjun,  
Yize Investment

banks market to depositors as a higher-yielding alternative to traditional deposits. Regulators are concerned about systemic risk from products that promise fixed returns, regardless of how their underlying assets perform.

Some investors say that the end of implicit guarantees on WMPs — which are mostly made up of credit assets — will reduce their competitiveness relative to equity products. Some truly risk-free WMPs will stay, but yields will fall.

Tao Yu, partner at Brilliance Asset, a Beijing-based hedge fund, said: "From a certain perspective, the rules are beneficial to equity products because the risk-free rate will decline, so equity assets will be more appealing to investors."

Moreover, valuations for mainland and Hong Kong-traded shares are still reasonable, though no longer cheap. Trailing 12-month price/earnings ratios are 10.6 and 16.1 respectively for the HSCE and Shanghai Composite versus 24.8 for the S&P 500, according to Thomson Reuters data.

But one-off factors from last year are largely priced in, investors say.

An aggressive campaign by state plan-

nery to shutter excess manufacturing capacity and promote industry consolidation fuelled last year's commodities rally, underpinning a broader reflation. Net income at mainland-listed companies in the materials sector rose 136 per cent, according to Wind Info.

Such profit growth is not likely to continue this year.

Alex Wolf, senior emerging markets economist at Aberdeen Standard Investments, said: "The slowdown — if and when it materialises — will probably affect the industries that saw the most resurgence last year and those that are impacted by slowing fiscal stimulus and credit growth."

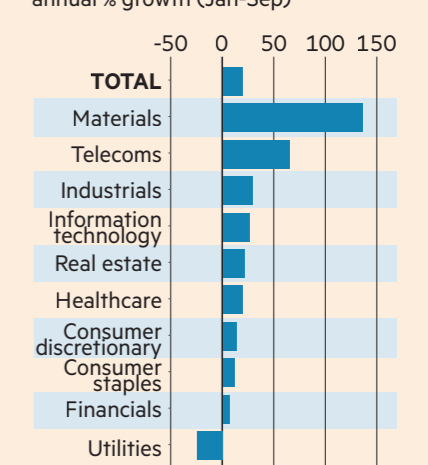
"How this affects equities is not entirely straightforward, because some listed companies can win from industry consolidation and those that are hurt might not be listed."

**136%**  
Rise in net income last year for mainland-listed materials groups

**16.1**  
Trailing 12-month price/earnings ratio for Shanghai Composite

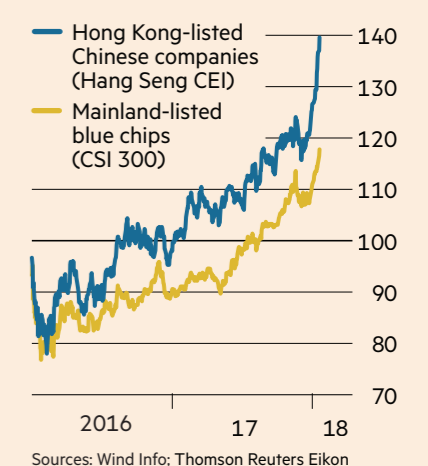
## China listed-company profits jumped in 2017

Net income growth by sector, annual % growth (Jan-Sep)



## China stocks on the rise

Dec 31 2015=100



Sources: Wind Info; Thomson Reuters Eikon

Gao Lianjun, general manager at Yize Investment, a Shanghai-based hedge fund, said: "Valuations don't have the same room to rise as last year. In 2018, the driver will be profits."

Mr Gao favours financials this year, as well as consumption sectors including online retail, education, and pharma.

Monetary policy and financial regulation will also create headwinds this year. Rules to control shadow banking are expected to squeeze liquidity and hamper credit growth. After a years-long cat-and-mouse game between regulators and shadow bankers, the latest rules are seen as the toughest yet.

Last, the highly momentum- and retail-driven nature of China's stock market means that animal spirits play an outsized role.

"After such an outperformance year-to-date, it would be natural to see Chinese equities taking a breather during early 2018," said Caroline Yu Maurer, head of greater China equities at BNP Paribas Asset Management in Hong Kong.

*Additional reporting by Yizhen Jia in Shanghai*

## Equities

## Goldman warns of Italian political risk

NICHOLAS MEGAW

Goldman Sachs warned yesterday that investors in eurozone markets had grown too complacent about political risks in Italy, the currency area's third-largest economy.

Italy goes to the polls on March 4, with the outcome unpredictable and potentially messy.

Goldman thinks the most likely outcome is a "hung parliament and a broad coalition government of left, right and centre parties", but analyst Silvia Ardagna noted that "the road to such an outcome could be quite bumpy".

Despite the uncertainty, Italian stocks

have been some of the biggest risers amid an upswing in markets this month. The FTSE MIB has been the best-performing benchmark in Europe in January, up more than 8 per cent, led by shares in Fiat Chrysler, up 30 per cent.

Bond markets have been similarly unshaken by the impending vote.

The premium investors demand to hold Italian government debt over Bunds briefly climbed after the election date was revealed in December, but it has since reverted to its downward trend.

The spread between yields on Italy's 10-year bonds and equivalent German debt has fallen to its lowest level since

October 2016 at around 1.3 percentage points. The measure began the year at 1.63 percentage points.

Ms Ardagna said that "it seems to us that the market is complacent" about the risks of an anti-European or right-wing coalition that could "undo some of the reforms that have improved the outlook for public finances".

Last year's presidential election in France had a greater impact on markets in the months before the vote.

However, Ms Ardagna noted that the biggest moves came in the two to three weeks before the election, suggesting that "there is scope for a repricing of Italian assets in the coming month".

## Commodities

## Gold price rallies on weaker US dollar

HENRY SANDERSON

The price of gold was on track to close at its highest level since August 2016 yesterday after statements from the US Treasury secretary, Steven Mnuchin that a weaker dollar is "good for trade".

Gold rose as high as \$1,355 a troy ounce in London trading — a rise of more than 1 per cent — as the dollar index slumped to its lowest level in three years. "Gold is in thrall to the dollar, full stop," said David Govett, head of precious metals at brokerage Marex Spectron.

The metal has rallied 9 per cent since mid-December on the back of a weaker dollar, which makes gold more attrac-

tive for overseas buyers. Earlier this month the precious metal notched up its longest winning streak since the end of the gold standard in 1971 — admittedly on the strength of a fairly shallow rally — building on a 13 per cent gain during last year.

The dollar fell sharply yesterday after Mr Mnuchin spoke, with the euro climbing to a high of \$1.24, while the pound broke through \$1.42.

"The greenback will remain a key driver of sentiment for traders of the yellow metal ahead of President Trump's visit to the World Economic Forum in Davos on Friday," analysts at Accendo Markets said. Gold's price rise

has been supported by buyers of the metal through exchange traded funds. Holdings of gold ETFs have risen to their highest level since May 2013, according to data compiled by Bloomberg.

Other precious metals have also benefited from dollar weakness this year. Platinum, which is used in jewellery and catalytic converters for cars, is up 9 per cent in the year to date to trade at \$1,011.83 a troy ounce.

Silver, however, has been left behind due to concerns about the impact of President Donald Trump's decision to put tariffs on imports of solar cells. Silver paste is a key ingredient in solar photovoltaic cells.

## MARKETS &amp; INVESTING

## TRADING POST

Michael Hunter

How will UK stocks fare in 2018?

London's stock market faces a resurgent pound, whose almost 5 per cent gain against the dollar this year makes it the second-best performer against the US currency. It is a rebound that erodes the advantage that UK-listed companies earning revenue in foreign currency have enjoyed during the pound's broad weakness since the Brexit vote in 2016.

The FTSE 100 blue-chip index has so far lagged behind its global peers. By contrast, hopes that negotiations on the UK's exit from the EU will deliver a friendlier outcome for the economy have been supportive of those stocks more dependent on the UK economy.

Analysts at Liberum forecast "continued strength in the labour market, a halt in the mortgage approvals decline, and more encouraging signs for growth in the first half of 2018."

As far as sectors of the stock market go, the broker is "bullish on banks, housebuilders and real estate".

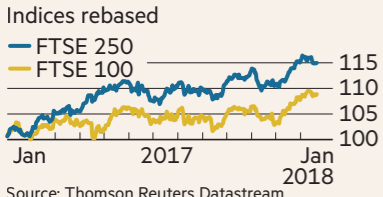
Its "top picks" list for the year includes Land Securities, the commercial landlord; OneSavingsBank, the mid-cap lender, and Galliford Try, the residential developer.

Commercial broadcaster ITV and pub operator Greene King are also included. James Ashley, an analyst at Liberum, argues that traditional defensive sectors, and consumer staples in particular, will struggle.

"We see little reason for the retail sector to trade above its long-term average valuation," he says.

michael.hunter@ft.com

## UK stocks



## Global overview

# Greenback loses further ground while US stocks run out of steam

DAVE SHELLOCK

## What you need to know

- Dollar index slides to three-year low
- US Treasury secretary speaks favourably of weaker US currency
- Wall Street looking tired after record-setting run
- Currency effects weigh on European bourses
- WTI crude breaches \$65 a barrel

## Hot topic

The recent sell-off in the dollar shifted up a gear as comments from Steven Mnuchin, the US Treasury secretary, added to concerns about President Donald Trump's protectionist trade policies.

Mr Mnuchin broke with tradition as he backed the trend for a weak dollar, saying it was good for US trade in the short term. "This is about an America First agenda, but America First does mean America working with the rest of the world," Mr Mnuchin said.

Neil Wilson, senior market analyst at ETX Capital, made the point that the "strong dollar" doctrine was one that markets were used to. "To a degree we are entering relatively uncharted waters when the US government is not at least paying lip service to that."

Mr Mnuchin's remarks — at the World Economic Forum in Davos — came just a day after the US imposed tariffs on imported washing machines and solar cells, a move that heightened worries over trade tensions with China, in particular.

"Market participants will be closely scrutinising upcoming comments from President Trump at Davos, and in his State of the Union address, to assess if trade will be a more important policy focus this year ahead of the midterm elections," said Lee Hardman, currency analyst at MUFG.

"The US dollar sell off has been relentless since the middle of last month, and there appears no clear catalyst on the



AI and robotics challenge businesses: FT.com/video  
The FT's Rana Foroohar points to the challenges that AI and robotics pose to businesses in terms of ethics and privacy

horizon to turn the tide in the near-term.

"It is notable that the US dollar has continued to weaken over the last month or so even as US yields have moved higher. It highlights that the US dollar has become less sensitive to Federal Reserve rate hike expectations and the performance of the US economy."

The dollar index was down 0.9 per cent and below the 90 level for the first time since late 2014.

The US currency was down 1.2 per cent against the yen at a four-month low of ¥109.01 while sterling — up a hefty 1.6 per cent — was above \$1.42 for the first time since the UK's referendum on EU membership in 2016.

said Michael Underhill, chief investment officer at Capital Innovations.

A weak dollar is also a headwind to small companies that tend to be more domestically focused. The Russell 2000 index of small-caps was underperforming with a decline of 0.6 per cent at midday.

The dollar index dropped nearly 10 per cent last year and was down nearly 1 per cent yesterday.

Some large, well-known US multinationals were able to stay in the black. **Coca-Cola** was up 0.4 per cent at \$47.65 while **Cisco Systems** was also 0.4 per cent higher at \$42.26.

Financial stocks were also among the day's gainers, with a rise of 0.4 per cent as yields on US Treasuries pushed higher. Rising rates enable banks to charge more on their loans.

Earnings growth in the fourth quarter was also tailwind for the overall market in spite of some tax reform-related charges that investors were generally dismissing as one-time items. A blended rate of forecast and actual earnings calculated by FactSet showed earnings rose 11.6 per cent a share year on year in the fourth quarter, taking the full-year number to just shy of 10 per cent for companies in the S&P 500.

**GE** was off nearly 3 per cent to \$16.41 after announcing an inquiry into accounting practices that evoked bitter memories of the bookkeeping scandals at the start of the last decade.

## Freeport McMoRan

Share price (\$)



Indices	Close	Day's change
S & P 500	2838.10	-1.03
DJ Industrials	26273.57	62.76
Nasdaq Comp	7423.47	-36.82
Russell 2000	1204.70	-8.35
VIX	11.50	0.40
US 10 yr Treas Bd	2.62	-0.04
US 2 yr Treas Bd	2.04	-0.03

indicating a tough stance on international trade weighed on sentiment.

At midday in New York, the S&P 500 was down 0.1 per cent at 2,837.14, while the Dow Jones Industrial Average was up 0.3 per cent. The tech-heavy Nasdaq Composite was off 0.5 per cent.

**Barrick Gold** and **Goldcorp** were bucking the downdraft to add 1.9 per cent to \$15.11 and 1.4 per cent to \$14.99, respectively. **Freeport-McMoRan** was up 0.3 per cent but has rallied 3.5 per cent since the start of the year.

"A continuation of a soft dollar will help things like emerging markets, energy as well as materials, both industrial metals and precious metals,"

said. The broker's poll found that, while the outlook for the second half remains uncertain, buyers expect ITV's net advertising revenue to grow 2 per cent in 2018 compared with a market consensus of no growth.

It repeated a 210p price target on ITV shares ahead of full-year results next month from the broadcaster, which will be the first for new chief executive Carolyn McCall.

Alphavalue analysts were also positive on ITV, largely on the value of its Studios business. "While the domestic ad market remains a shambles (our model factors in a further 3.2 per cent decline for 2018), the group's studio capabilities are worth a bundle and should be increasingly attractive for a potential bidder," they said.

ITV closed 2.3 per cent higher at 168p. Sterling strength hurt the broader market as the FTSE 100 lost 1.1 per cent, down 88.40 points to 7,643.43. **Sage**, down 6.5 per cent to 768.2p, was the day's sharpest blue-chip faller after a trading update disappointed.

"Recurring revenue looks to have delivered its weakest performance for five years," which "raises the ongoing question of why we are seeing no overall top-line impact from what is now nearly

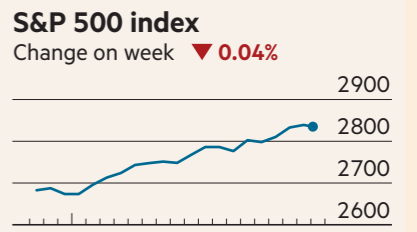
three years of sales and marketing investment", said Numis, which downgraded Sage to "hold".

**IQE** lost 5 per cent to 115p on reports of very weak demand for Apple's flagship iPhone X, whose 3D camera sensor uses wafers supplied by the Welsh group. Short sellers including Marshall Wace and Coltrane Asset Management have targeted IQE, with nearly 16 per cent of its free float loaned out, Markit data show.

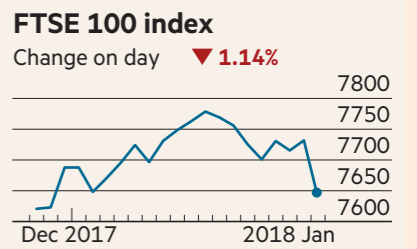
A revival of takeover speculation lifted **London Stock Exchange** 5 per cent to £39.88. Christopher Hohn at TCI, the activist hedge fund that last year failed to oust LSE chairman Donald Brydon, told investors last week that sector consolidation was inevitable and the exchange is a probable target for either CME Group or Intercontinental Exchange, Sky News reported.

Depth-sensing cameras are here to stay, but Apple will probably make sure its future models are cheaper than the \$999 iPhone X by relying on multiple suppliers, said Mirabaud. "Until such time as Apple reports numbers and we get a reset of the supply-chain estimates, to try and add to positions in any of the 3D chain feels like trying to catch the proverbial knife," the broker said.

## Markets update



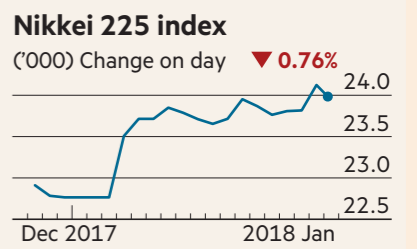
**US equities** Wall Street proved unable to sustain its early upward momentum, that was in part driven by the sliding dollar, with the technology and energy sectors leading the retreat



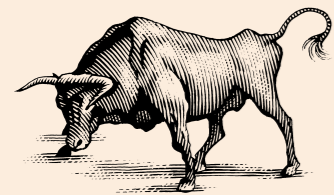
**UK equities** Renewed strength for the pound against the dollar — and to a lesser extent the euro — helped drive the FTSE 100 to its lowest level for three weeks



**European equities** Technology was the day's worst-performing sector in the Eurofirst 300, with utilities not far behind after a profit warning from Suez drove its shares down 16 per cent



**Japanese equities** The Nikkei eased back from a 26-year high as the yen's persistent strength against the dollar unsettled exporters' shares



## Wall Street

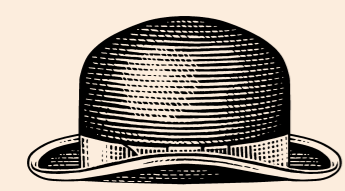
Barrick Gold and Coca-Cola buck downward trend

Nicole Bullock

Gold miners were among Wall Street's outperformers yesterday amid prospects of the US targeting a weaker dollar, accounting trouble at General Electric and rising yields on US Treasury bonds.

Among the day's big news, US Treasury Secretary Steven Mnuchin told the World Economic Forum in Davos that a weak dollar was good for American trade.

The news should be ostensibly supportive for the benchmark S&P 500 index of multinational companies, many of which do significant business outside the US, but word of faulty accounting at GE and comments from US commerce secretary Wilbur Ross



## London

ITV lifted by hopes of upgrade to advertising outlook

Bryce Elder

ITV outperformed a sagging London market yesterday amid hopes of an upgrade to advertising forecasts.

A survey of UK media buyers by Credit Suisse found unexpected optimism about the outlook for 2018. Momentum from the fourth quarter had carried into the new year, with the football World Cup underpinning confidence of a first-half recovery, it

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# Markets & Investing

## FINANCIAL TIMES

### SMART MONEY

John Authers



## Fears over LatAm populism overdone as stocks play catch-up

The world economy is enjoying a synchronised advance, and markets are enjoying the ride. But one region is missing out: Latin America. This could be a pivotal year for the entire region. Brazil, Mexico, Colombia, Costa Rica and Paraguay all have elections for head of state this year, as does Venezuela (although there has to be some doubt over whether that one will take place). Even Cuba will have a new head of state, whose surname will not be Castro.

This could be significant as foreign investors have a long and undistinguished history of over-reacting to Latin American political developments. The arrival of a populist autocrat in power often leads to a collapse in confidence (and the sad history of Venezuela over the past 20 years shows why that might be).

Most of the time, however, angry-sounding populists tend to behave more sensibly once they are in power. The most spectacular example by far was the rally for Brazil after Luiz Inácio Lula da Silva (Lula) was first elected in late 2002. Treated in advance as an Armageddon scenario, it turned out that Lula was pragmatic in power, while the commodities boom took shares in Brazil to the moon. From November of 2002, when Lula wrapped up the presidency, to December 2007, the MSCI Brazil index gained more than 1,000 per cent. This was triple the rise in the emerging markets as a whole.

What are the chances that the continent's continuing love-hate relationship with populist *caudillos* creates a buying opportunity like that this year?

It cannot be ruled out, although something as dramatic as the Lula rally of 2002 is hard to imagine. Latin America is not compellingly cheap at present, trading at a trailing price/earnings multiple of 17.7, according to MSCI. The p/e for emerging markets as a whole is 15.1. Brazil is through the worst of the horrendous political mess that saw the impeachment of former president Dilma Rousseff and has started an economic recovery, but this has been greeted over-exuberantly in markets. Buying in early 2016 would have led to a profit of 160 per cent by now.

Countries south of the Panama Canal are almost all exposed to China, so continued growth there will help perceptions of Brazil and the Andean economies, and another slowdown would be harmful. Mexico remains acutely exposed, in more ways than one, to the US — particularly at present to the risk that the US could decide to withdraw from Nafta, the free-trade agreement. Moves in the biggest building blocks of the world economy could drown out any political excitement in the region itself.

But the region is still palpably missing out on the excitement elsewhere. Since the election of Enrique Peña Nieto in Mexico in July 2012 ignited the last wave of optimism, Mexico and Brazil are down 11 and 14 per cent respectively, while emerging markets are up 32 per cent.

There is room for them to move forward a long way in a hurry, and room for plenty of confusion and volatility in the coming months as the two most important elections are impossible to call at this point. Mexico has a single-round election, so presidents can and do win election with less than half of the electorate. The frontrunner is Amlo — Andrés Manuel López Obrador, twice narrowly defeated before, a former mayor of Mexico City and the champion of the left. He is charismatic and messianic, and a victory for him would alarm the markets.

He is up against the unpopular incumbent and formerly hegemonic PRI party, which has an experienced technocrat in the race, José Antonio Meade, while in a weird development forced by the electoral system, the traditional parties of right and left have jointly nominated the 58-year-old Ricardo Anaya Cortés. All three candidates are capable of winning a third of the vote, and therefore all three might win.

Mexico has been a model of fiscal and monetary probity since its last major financial crisis in 1994, so an Amlo victory could scare the markets.

However, he does have a track record in government, having been the mayor of Mexico City for six years, and showed himself to be competent and pragmatic in the job; and the situation he now faces looks very similar to 2006, when he appeared to be a long way ahead and eventually lost narrowly after he made the election about him. He may well not win, but if he does he would not be as frightening as many assume.

Meanwhile, Brazil's election is wide open, as its corruption scandal has claimed the scalps of many potential candidates. The frontrunners are Lula himself, providing he can quash a prison conviction for corruption, and Jair Bolsonaro, who has risen to the top of the polls with aggressive hard-right rhetoric. This is not healthy. But again, the chances look decent that Brazil will emerge with a viable president, with some kind of a mandate to act (thanks to the two-round system), which has been almost wholly lacking for the last four years of political turmoil.

World markets are producing lots of excitement but few bargains at present. For those with a strong constitution and a preparedness to be opportunistic, a dramatic year in Latin American politics might well offer this year's closest approach to a bargain.

john.authers@ft.com

### Analysis. Equities

## Mifid II poised to hasten slow death of analysts

Overhaul is likely to see sellside jobs axed but new data offer potential opportunities

MILES JOHNSON

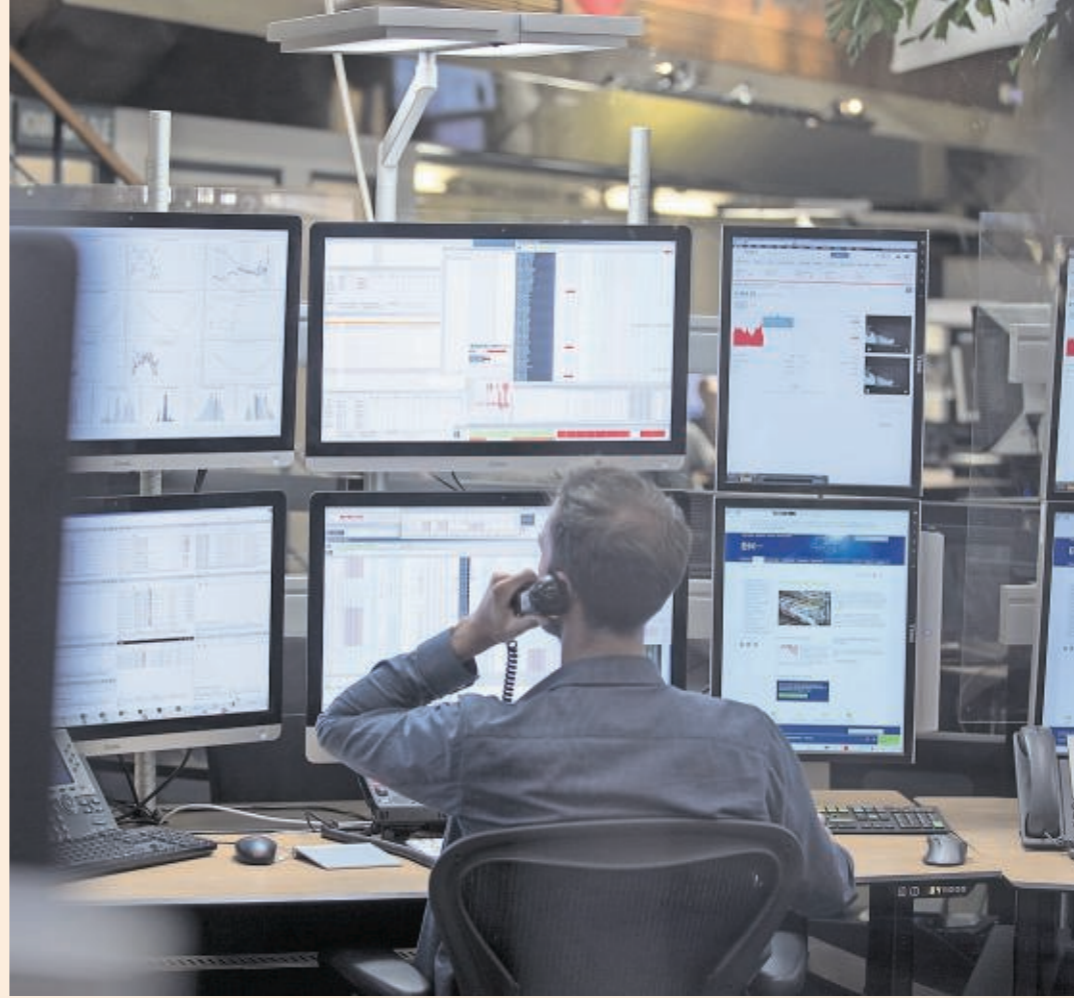
The slow death of the investment banking analyst has been predicted for years, with critics arguing that investment houses would increasingly refuse to pay for large amounts of so-called sellside research into listed companies.

Now that European regulations are expected to hasten this process, not everyone is unhappy about it. Bankers have bemoaned the likely job losses that the reforms, part of a wider regulatory overhaul known as Mifid II, will trigger within the armies of sellside analysts who have been subsidised by trading revenues generated when clients act on their buy and sell recommendations.

One of the aspects of Mifid II that has garnered the most attention has been the "unbundling" of research costs from trading ones, which mean that asset managers must make specific payments for company analysis to show they are not being incentivised to trade.

But a rising number of stockpickers anticipate Mifid II reforms will provide them with an edge in unearthing undervalued investments. Others expect to be able to use data sets that Mifid II requires trading platforms to release each quarter to build up information on wider market positioning and liquidity in fixed income markets that was previously impossible to acquire.

Jacobo Llanza, chief executive of Alantra Asset Management and manager of its small and medium company-focused pan-European EQMC Fund, argues the likely reduction of analysts' coverage of companies will provide ample opportunities for investors like himself. "It will take several years to know what the consequences of Mifid will be but we think it is likely that brokers in Europe will abandon coverage of many more small and mid-cap



A rising number of stockpickers anticipate Mifid II reforms will provide them with an edge in unearthing undervalued investments

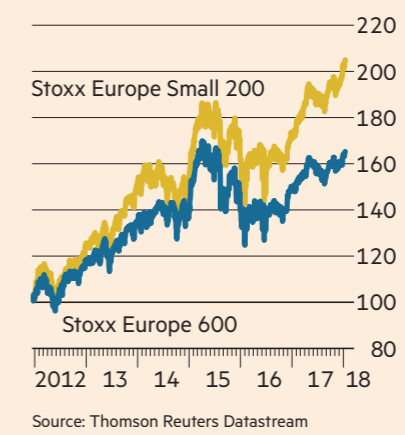
companies," he says. "This is an opportunity for investors that are looking at these companies."

Mr Llanza, who is based in Spain, has specialised in taking concentrated positions in smaller European companies that he believes are high quality, but mispriced and largely left untouched by sellside analysts. This approach has seen his EQMC fund compound its returns at an annual rate of just under 20 per cent, making it one of the best performing funds of its type in Europe.

Many of the EQMC fund's holdings are in the UK, where Mr Llanza has ploughed a rich seam of highly profitable companies which were indiscriminately sold off following the Brexit vote.

### European stocks

Indices rebased



### Capital markets

## US bull run creates first \$300bn ETF

JOHN AUTHERS AND JOE RENNISON — NEW YORK  
ROBIN WIGGLESWORTH  
HOLLYWOOD, FLORIDA

The bull market in US stocks has created the first \$300bn exchange-traded fund. Assets at State Street Global Advisors' SPDR S&P 500 fund passed the milestone on Monday, almost exactly 25 years after it started trading.

Almost universally known by its ticker symbol of SPY, the fund was the first ETF to be launched, and owes the landmark to the enduring popularity of the S&P 500 as a benchmark, as well as to the current strong performance of the US market and the shift to passive investing.

"It's a pretty special number," said Jim Ross, the chairman of State Street's SPDR business. "We have a growing market, even an accelerating one, and we've seen inflows. I look forward to it hitting \$400bn and \$500bn."

Nick Good, co-head of State Street's global SPDR business, said: "SPY continues to be relevant. It continues to be the most heavily traded security in the world."

Even though there are now more than 3m stock market indices that could be used as the basis for ETFs, the S&P 500 alone accounts for \$500bn in assets.

The second and fourth largest ETFs, with market caps of \$153.7bn and \$90.3bn and offered by BlackRock's iShares division and Vanguard, respectively, also track the S&P 500.

SPY gathered \$6.2bn in new inflows in 2017. The competing BlackRock and Vanguard ETFs attracted

inflows of \$30.3bn and \$15bn, respectively, according to ETFGI, a London consultancy.

These ETFs both carry total expense ratios of 4 basis points, which compares with the 9bp annual charge for SPY.

SPY's inflows for the month so far have reached \$12bn, and the fund has been propelled to its landmark by a 6 per cent gain in the index since the start of the year.

It is also a prime beneficiary of the so-called Trump rally: its assets under management passed \$200bn on election day in 2016 and has grown at an annual equivalent rate of 42 per cent since.

SPY's domination of the market trading volume is even greater than its share of assets, in part because institutions tend to use it more than they use the other S&P 500 ETFs.

Mr Good said the fund was increasingly being used instead of futures contracts on the index; State Street claims that it accounts for 25 per cent of daily trading volume in all ETFs, equivalent to the volumes of the next 18 largest ETFs combined. It is sufficiently liquid that an average of 3,250 shares change hands each second.

State Street pointed out that the fund had reached the \$300bn landmark a matter of days before the anniversary of its first trade, on January 29 1993.

Since then ETFs, which track an index but can be traded minute by minute through the day on a stock exchange, have proved far more successful than traditional closed-end mutual funds in attracting flows of funds from investors.

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