

SWISSQUOTE

FINANCE AND TECHNOLOGY UNPACKED

BIOTECH
Genome editing
is gaining ground

MANAGEMENT
The CEO
compensation
controversy

ENERGY
The windfall
of nuclear
decommissioning



DOSSIER

FOCUS ON CHINA

30 firms loaded for bear

ISSN 2296-3278

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China will strike back



BY Marc Bürki,
CEO of Swissquote

2018 will be considered one of the darkest years for Chinese markets. Plagued by the trade conflict with the United States and sluggish growth, the Shanghai and Shenzhen exchanges lost nearly 30% of their value in one year, while the Nasdaq only fell 3%. But for many analysts, this downturn is a windfall for investors: the decline will be followed by a rebound!

p. 24 In the short term, however, **our dossier** explains that it would be wise to remain cautious. If by late March, no agreement is reached in the negotiations between the United States and China, retaliation between the two countries will start up again and the markets could fall once more. Considering the legendary unpredictability of Donald Trump, there's no doubt that volatility will continue, possibly even until the end of the US president's term.

But over a longer period, China's economic upswing seems inevitable. After learning by copying Western companies, the "factory of the world" is currently transforming itself into a fully-fledged research and development laboratory. From space conquest and new medicines to digital technologies and electric cars, in many industries, China is about to inch ahead of the United States.

p. 30 In our dossier, we selected **30 Chinese companies** that are at the forefront of their industries.

Regardless of the international climate, they will be supported by China's immense domestic market, which includes 1.4 billion people – one-fifth of the world's population. This is because, according to **Wu Jinzi** – CEO of biopharmaceutical company Ascleptis, whom we interviewed in this issue – Chinese people are increasingly inclined to spend money on their health, insurance and well-being, doing so gradually as their incomes rise.

p. 38

China, which alone is responsible for more than one-third of global growth, is currently transitioning from a model focused on exporting low-cost products towards a consumer economy. Another definite trend is that Chinese companies are producing ever more high value-added goods. This transformation – which is a matter of concern for Western countries annoyed by industrial espionage, technological theft and the government support that Chinese companies receive – will not be easy.

For new Chinese giants, such as Tencent, Alibaba, Baidu and Xiaomi, to expand even further internationally, Beijing has to make concessions, particularly regarding censorship and technology transfer, while simultaneously allowing their US counterparts (Google, Facebook and Amazon) to settle in China. It's a win-win situation!

Happy reading!

DOSSIER

China: the moment to invest?



SIG



ENERGY



BIOTECH



MANAGEMENT

TRAVEL



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PUBLISHER
Swissquote
Chemin de la Crétaux 33
1196 Gland - Switzerland
T. +41 44 825 88 88
www.swissquote.com
magazine@swissquote.ch

Manager
Brigitta Cooper

EDITORIAL

Editor-in-chief
Ludovic Chappex

Associate editor
Bertrand Beauté

Design director
Natalie Bindelli and Caroline Fischer
CANA atelier graphique
Route de Jussy 29 - 1226 Thônex
www.ateliercana.ch

Editorial staff
Bertrand Beauté, Stanislas Cavalier,
Ludovic Chappex, Gérard Duclos,
Blaise Duval, Salomé Kiner,
Martin Longet, Marie Maurisse,
Angélique Mounier-Kuhn, Philipp Müller,
Gaëlle Sinnassamy, Julie Zaugg

Layout
Natalie Bindelli, Caroline Fischer,
Coralie Meder (CANA atelier graphique)

Cover
Getty Images

Photography
Thierry Parel, AFP, Keystone,
Getty images, iStockphoto,
Newscom, Reuters

Editing (English version)
Ose Ayewoh, Marco Simon

Translation
Technicis Finance

PRINTING, BINDING AND DISTRIBUTION —
Stämpfli Ltd.
Wölflistrasse 1 - 3001 Bern
www.staempfli.com

ADVERTISING
Infoplus AG
Traubenweg 51, CH-8700 Küsnacht
hans.otto@i-plus.ch

WEMF
REMP 2018: 52,335 ex. Print run: 60,000 ex.



printed in
switzerland

SUBSCRIPTION
CHF 40 FOR 6 ISSUES
www.swissquote.ch/magazine

SIG COMBLOC / JEAN-PAUL PELLISSIER, REUTERS / ROBERTO FRANKENBERG / ISTOCK

SCANS

environment

SULZER CONSIDERS GREEN PLASTICS



Sulzer's production unit for manufacturing plant-based plastics.

Zurich-based Sulzer has partnered with TechnipFMC from the US and Futerro from Belgium to establish a network called "Planet" that offers turnkey solutions for companies that want to produce biodegradable green plastics. These three groups have mastered all the steps of the production process to create polylactic acid polymers, a material made from sugars found in plants. They will offer their clients a ready-to-use factory whose capacity could reach 100,000 tonnes of the plastic per year. — SUN — FTI



"We want the people of Gaza to have jobs, real jobs, because where there is prosperity, there can be peace"

Daniel Birnbaum, CEO of SodaStream, justifying the construction of a factory in Palestine.



Several scientists believe that intensive mining of the seabed would threaten biodiversity, including this Psychropotes longicauda.

PHILWEB

energy

TAKING ON THE DEEP SEA

The possibility of deep-sea drilling is moving ever closer. Approximately 30 companies have received a 15-year permit to mine in the Clarion-Clipperton Zone, a deep-sea plain spanning 4.5 million square kilometres in the middle of the Pacific Ocean. Located between Hawaii and Mexico, and ranging from 3,700 to 5,500 metres deep,

the region is full of nodules made up of rare metals (cobalt, manganese, copper, nickel). Some of the firms competing to extract these precious mineral clusters are DeepGreen Metals from Canada, ChinMetal from China, and Seabed Resources from the UK, which is owned by Lockheed Martin.

— LMT

health

CONSOLIDATIONS IN PHARMA

In early January, Japanese pharma group Takeda acquired Irish company Shire for \$56 billion, the largest foreign acquisition ever made by a Japanese company. At the same time, US groups Bristol-Myers-Squibb and Celgene were joining forces. These consolidations

distort the shaky health of the pharma industry, crippled by lack of innovation and the expiry of several key patents. Celgene has a portfolio of promising drugs to be used in oncology, whereas Shire specialises in rare diseases.

— 4502 — BMY — CELG

watchmaking

SWATCH WINS ITS FIGHT WITH TIFFANY'S



24%

The percentage of online sales in South Korea; the highest percentage in the world, exceeding that of China (23.7%) and the United States (13.7%).

In a final appeal, the Supreme Court of the Netherlands has decided in favour of Swatch Group in the case against US jeweller Tiffany & Co. Tiffany's must pay the Swiss group \$402 million plus legal fees. The case goes back to 2011, when Swatch ended a 20-year contract that was signed in 2007 between the two companies. They joined forces to develop a watch line under the Tiffany brand. Swatch was in charge of the design and production of the watch and Tiffany's was responsible for marketing. The Biel-based group claimed that Tiffany & Co. didn't use sufficient means to market the watch. — UHRN — TIF



Nick Hayek, CEO of Swatch, and Michael Kowalski, then CEO of Tiffany's, here in New York in 2007 at the time of their partnership.

CRAIG RUTTLE / KEYSTONE

RANKING

TOP 5 CITIES WITH THE MOST SHARED BIKES (in number of bikes)

1. HANGZHOU (CHINA) 66,500 TO 78,000
2. TAIYUAN (CHINA) 20,000 TO 41,000
3. PARIS (FRANCE) 20,000
4. SINGAPORE 19,000
5. LONDON (UK) 11,000

Source: www.icebike.org

TOP 5 STREAMING TV SERIES IN 2018 (according to a survey of 12 million viewers globally)

- 13 REASONS WHY: PART 2 (NETFLIX)
- MONEY HEIST (NETFLIX)
- ORANGE IS THE NEW BLACK (NETFLIX)
- BLACK MIRROR (NETFLIX)
- THE HANDMAID'S TALE (HULU)

Source: TV Time

TOP 5 LARGEST SUPERMARKET CHAINS (in number of locations)

1. 7-ELEVEN 46,000
2. SPAR 13,500
3. WALMART 11,088
4. ALDI 10,366
5. CARREFOUR 10,103

Source: www.worldatlas.com



-86%

The decrease in the number of plastic bags distributed by the seven largest supermarkets in England since the start of a 5-pence bag tax in 2015. Each of their customers now uses 19 bags per year, compared to 140 before the tax was introduced. The tax is expected to increase to 10 pence per bag starting in 2020.

e-commerce

AMAZON INCREASES ITS AERIAL FLEET



In the United States, Amazon promises its Prime members a two-day maximum delivery. To keep this promise, the e-commerce giant had to establish its own fleet of aeroplanes. Dubbed "Amazon Air", the freight company created in 2016 has just acquired 10 additional planes. The fleet is now up to 50.

It currently operates out of 20 different airports. Amazon plans to open new aerial hubs in Wilmington (Ohio), Fort Worth (Texas) and at Cincinnati/Northern Kentucky Airport (Kentucky). FedEx and DHL, whose revenue significantly depends on Amazon, are the primary losers in this expansion. — AMZN

industry

ABB IS BETTING ON ROBOTS



ABB Group CEO Ulrich Spiesshofer (right) with Hitachi President Hiroaki Nakanishi (2014).

TORU YAMAMAKA / AFP

ABB will sell off its power grids division to Hitachi for \$6.4 billion. This division, which builds transformers as well as transmission and electricity storage solutions, is the Swiss group's least profitable entity. Over the first nine months of 2018, it generated \$7.1 billion with a margin of 9.8%. In selling off this

division, ABB will reduce its footprint by one-fourth. This will allow the company to focus on robotics and automation systems, which are more dynamic sectors, as called for by activist investor Cevian Capital AB, which became one of ABB's main shareholders in 2015.

— ABBN



"Our biggest competitor isn't Booking, it's Google"

Mark Okerstrom,
CEO of travel reservation site Expedia.



₩150 million

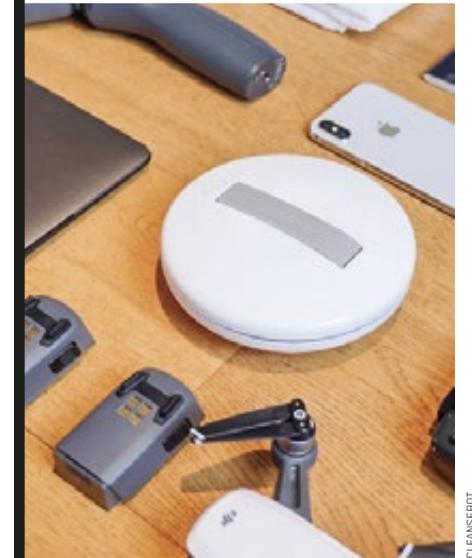
In South Korean won, the maximum amount that Japanese companies Mitsubishi Heavy and Nippon Steel are expected to pay each victim of their forced work programme implemented during World War II. The amount is equivalent to 132,000 Swiss francs. The plaintiffs' lawyers threatened to freeze the companies' Korean assets if they didn't agree to provide compensation.



"Regarding what the new guy should look like? I hope he looks like me"

Ivan Glasenberg,
Ivan Glasenberg, CEO of Glencore, who recently began the search for his replacement.

KICKSTARTER



CLEANSEBOT

THE DISINFECTING MINI ROBOT

The CleanseBot is a small, round white robot. It can fit in a pocket and be taken on trips. Equipped with ultraviolet lights, a system commonly used to purify air and water, it can disinfect a table, the top of a bed, or a light switch. These surfaces are often overrun with bacteria and viruses, especially in hotels and restaurants. The device only weighs 220 grammes and a single charge yields three hours of battery life. With all-terrain wheels and smart sensors, it can move on its own. It can also be hand-held if users wish to clean a particular object such as a smartphone screen. The CleanseBot is also for those who wish to clean household bacteria without using chemical cleaning products.

food

LINDT EXPERIMENTS WITH EXOTIC FLAVOURS



LINDT

Lindt & Sprüngli wants to increase its favour among millennials and its Asian clientele. To attract millennials, it launched a series of low-cost products priced at less than 10 Swiss francs. Among them include Lindor truffle balls sold individually or in mini packages. The Zurich-based chocolatier also created flavours that would appeal to Asian palates, such as matcha, mint and pistachio Lindor truffles. Lindt also increased its presence in airports to reach a wider range of clients, and now has more than 500 airport stores. — LISN

FUNDS RAISED
\$1,187,861

AVAILABLE
APRIL 2019

cannabis

NEW ACQUISITIONS IN THE CANNABIS INDUSTRY

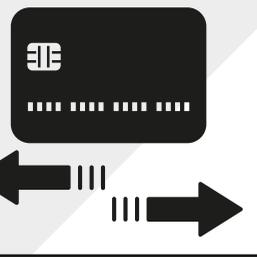


Alcohol and cigarettes are no longer profitable, as young people are increasingly turning away from these toxic substances. But cannabis is booming. This trend convinced Altria Group – a tobacco giant that markets Marlboro cigarettes in the US – to purchase a 45% share of Cronos Group, a Canadian vendor of mar-

ijuana-based products. The transaction, completed in December last year, came in at \$1.8 billion. Constellation Brands, which owns several beer brands, purchased a 38% share in Canopy Growth, another Canadian cannabis company, for \$4 billion.

— MO — CRON — STZ — WEED

ISTOCK



\$582 billion

The value of transactions that went through online payment service PayPal in 2018, which is four times higher than in 2012. Comparatively, purchases made with Visa credit cards total \$11 billion yearly.

geopolitics

EUROPEAN COMPANIES ABANDON IRAN

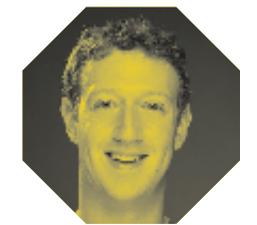


US President Donald Trump signs a document reinstating sanctions against Iran (8 May 2018).

SAUL LOEB / AFP

By re-imposing sanctions on Iran, US president Donald Trump sparked the exodus of many European groups that rushed to the country when it opened in 2015, following the signing of an agreement meant to end its nuclear programme. Airlines Air France-KLM Group

and British Airways announced they would no longer fly to Tehran. Total gave up operations at a gigantic gas field, leaving it open for Chinese company CNPC. Auto groups PSA from France and Siemens from Germany will also leave the country.



“We’re a very different company today than we were in 2016. We’ve fundamentally altered our DNA to focus more on preventing harm in all our services”

Mark Zuckerberg, CEO of Facebook, on data use scandals that affected the social network in 2018.

finance

UBS AND COMPANY LAUNCH A LOW-COST EXCHANGE

UBS joined a collective of nine banks, including Morgan Stanley, Bank of America and Fidelity, to launch a low-cost stock exchange. Dubbed MEMX or “Members Exchange”, it will provide simplified brokerage services at a reduced price. It is targeted at individuals and institutional clients, with the goal of competing with the three companies that now hold more than 60% of the volume of stock transactions in the United States: Nasdaq, the Chicago Board Options Exchange (CBOE) and the Intercontinental Exchange, which owns the New York Stock Exchange (NYSE). — UBSN

THE FLOP

Victoria’s Secret angels lose their wings

Not long ago, Victoria’s Secret dominated the lingerie market, with its daring lacy undergarments. Its annual fashion show was considered one of the industry’s biggest events. But the brand’s popularity has slumped recently. In the United States, its market share dropped from 33% to 24% between 2016 and 2018. Sales fell 9% annually during this period. And share prices of its

parent company L Brands max out at \$30, compared to \$100 three years ago. This downturn is the result of a series of brands, often sold exclusively online, that focus on comfort and unisex undergarments, such as Aerie, ThirdLove and LIVELY. It’s a strong message in the #MeToo era that is at odds with the skinny models and excessive femininity of Victoria’s Secret. — LB



€930 million

The amount that Dutch company Takeaway.com will pay to acquire the operations of rival Delivery Hero in Germany. This transaction is the end of a costly battle between the two groups to dominate the food delivery market in Germany.

food

A RIVER OF OAT MILK



ISTOCK

Plant-based milks continue to be popular, driven by the increase in the number of people allergic to dairy products and environmental concerns from consumers. Oat milk is the most successful. In the United States: sales increased 50% between July 2017 and July 2018, compared to 9% for the segment overall, according to Nielsen. This has piqued the interest of the major food companies. Pepsico is preparing to launch a range of oat milk. In late 2018, Nestlé launched two coffee smoothies that included the plant-based milk.

— PEP — NESN



“Many people talk about gas like it is a bridging fuel. I don’t take that view. I think it will be here to stay for a long, long time. I think it is the cleanest fossil fuel that we have”

Wan Zulkiflee,
CEO of Petronas.

airports
GATWICK FALLS INTO VINCI'S HANDS



ISTOCK

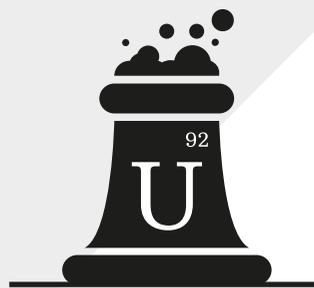
French group Vinci acquired a majority stake in Gatwick Airport for €2.9 billion (3.6 billion Swiss francs). This acquisition completes a portfolio that already includes 35 airport infrastructures around the world. It competes with a handful of companies originally associated with

a single airport that have specialised in airport hub management, such as the German Fraport and the French Groupe ADP, which both operate 26. Zurich Airport also adopted this model: in 2017, it acquired airports in Florianopolis, Brazil and Iquique, Chile. —◇◇



“THE QUEST FOR HARMONY IS NEVER-ENDING.” | BENJAMIN CLEMENTINE, MUSICAL ARTIST, WEARS THE VACHERON CONSTANTIN FIFTYSIX.

VACHERON CONSTANTIN | ONE OF NOT MANY.
GENÈVE



+41%

The increase in the price of uranium between April and December 2018. This growth is spurred by the demand for nuclear energy.

The IPO

DELL GOES PUBLIC ONCE AGAIN

In 2013, Dell delisted from the New York Stock Exchange. At the time, the PC maker’s revenue was in freefall, defeated by smartphones and cheaper competitors from Asia. Under the watchful eye of its shareholders, the company has reinvented itself. It invested \$13.6 billion in R&D and has become a digital services provider. This change was facilitated by the 2016 acquisition of EMC, a cloud computing expert, for \$67 billion.

As a result, its cashflow went from \$2.4 billion for the financial year ending in February 2017 to \$7.7 billion for the year ending in November 2018. It was time to hit the NYSE once again. To do so, Dell completed a sort of inverse merger, by transforming shares of VMware – a software manufacturer in which Dell holds a majority stake – into Dell shares. In late December, shares went public at \$46, valuing the company at \$16 billion. —◇◇ DELL

TRENDS



the figure

CHRISTIAN PETIT

A digital specialist leading Romande Energie

Title
CEO
of Romande
Energie

Age
55

Nationality
Swiss

Christian Petit will be the new head of Romande Energie starting in June 2019. Economist by training, Petit began his career at Debitel, a mobile telephone provider. When the company was acquired by Swisscom, Petit joined the mobile division in 2000. From 2007 to 2013, he was head of the private clients department, and then in 2014 he managed the Swiss telephone giant's commercial clients. In that role, Petit created a multi-channel client service and oversaw the integration of Veltigroup, a digital services provider acquired by Swisscom in 2014. Romande Energie, which in recent years has had to navigate a more liberal energy market and the transition to green energy, hopes to benefit from Petit's expertise in corporate transformation and digital innovation.



the innovation

SMARTPHONE

The smartphone of the future will be foldable

Mobile flip phones are making a huge comeback, but in a version adapted to the smartphone era. Several brands are preparing to unveil devices with a foldable screen. It can be folded up when using the phone for smaller tasks, or unfolded for a bigger screen similar to a tablet. In the larger version, two windows can be displayed side by side, just like on a computer screen. The Samsung X or F – the name hasn't been officially announced yet – is built to be foldable. It is expected to be released in spring 2019. The Motorola Razr V4 is also expected to have a foldable screen. LG, Apple and Huawei are also working on developing this technology. Google has announced that Android could soon function on a flexible screen. The biggest challenge for smartphone makers is to develop a flexible screen that can be folded and unfolded thousands of times without becoming damaged.

Company
Samsung

Launch
Spring 2019

Cost
Not communicated



the country

IRELAND

Population
4.9 million

Per capita GDP in 2017
\$76,889

Growth in 2018
7.8% (estimate)

Main economic sectors
pharma, technology, finance, aerial leasing

The Celtic tiger finds its fight once again

Before the 2008 economic crisis, Ireland was nicknamed the Celtic tiger due to its spectacular growth. But this country was one of the hardest hit by the recession that battered Europe 10 years ago. In particular, its real estate bubble burst, bringing Ireland to its knees. Nevertheless, the country of nearly five million residents began to make a comeback in 2013; an ambitious tax policy attracted corporate giants such as Google, Microsoft and Pfizer to build their European headquarters in Ireland. Growth was expected to

reach 7.8% in 2018 and 4.5% in 2019, which is more than double the growth expected in the Eurozone (1.9%), according to an estimate from the European Commission. And Brexit will make Ireland even more attractive: many companies currently based in London will undoubtedly choose Dublin to maintain their presence in the European Union. But this dependence on foreign firms also renders the Irish economy fragile. The EU is leading an intense campaign to pressure multinationals that optimise their taxes by placing their headquarters in

countries such as Ireland. This past autumn, Apple had to pay the Irish government \$14.3 billion in back taxes following an EU decision. Residents of Ireland, which have only marginally profited from this recovery, are also facing a serious housing crisis brought on by an influx of foreign workers employed by these international companies. The number of homeless families increased 20% since 2017.

ISTOCK

SIG sets out to conquer the packaging market

The discreet company from Schaffhouse has just come back onto the Swiss stock exchange, aiming to overtake market leader Tetra Pak. We take a look.

BY MARIE MAURISSE

The Swiss stock exchange welcomed a new arrival last autumn. SIG Combibloc successfully made one of the largest IPOs of the year on 28 September 2018, raising 3.8 billion Swiss francs. But this isn't the first IPO for the firm, based in Neuhausen in the canton of Schaffhouse. Until 2007, it was listed on the SMI. It went private that year when it was acquired by New Zealand magnate Graeme Hart, who sold the company in 2014 to investment firm Onex for €3.75 billion.

Founded in Switzerland in 1853, SIG Combibloc started by manufacturing railway materials and then firearms, before gradually specialising in packaging. In 2000, it decided to focus on producing aseptic packaging, which can preserve solid or liquid foods for approximately 12 months without refrigeration. The brand isn't flashy: it uses little marketing and has a discreet logo. But SIG is very present in the daily lives of millions of consumers, as it packages orange juice, flavoured water, and packs of milk, soup, biscuits, etc.

The numbers reflect this: between 2007 and 2017, the Swiss company's revenues increased by 40% at a stable rate of 4% per year. Gross operating profit rose from €236 million in 2007 to €455 million in 2017. But in the current more sluggish market environment, its net profit fell 5% in Q3 2018 to 27 million Swiss francs. The growth outlook for 2018 remains unchanged, however, at between 4% and 6% at constant exchange rates.

IN FIGURES

1,150

Number of machines in use around the world

270

Number of customer firms

35 billion

Number of cartons produced per year

5,000

Number of employees

1.7 billion

2017 revenue in euros

This curve was predictable, so why did the company decide to raise funds on the Swiss stock exchange? Not satisfied with just posting good earnings, SIG wants to compete with Tetra Pak, the market leader. To go further and higher. As Morgan Stanley said in its latest November 2018 analysis, SIG has high expectations for 2018-2019 and is aiming for a 29% profit margin. The group should reach or exceed this target, according to analysts.

SIG has high expectations for 2018-2019 and is aiming for a 29% profit margin

To do so, SIG is not counting on sales of its packaging machines, which generate only 10% of its revenues. For its customers, the company mainly supplies the raw material,

aseptic carton, to produce packaging. Customer contracts are signed for several years, guaranteeing the continuation of SIG's business model. The maintenance service is also very sophisticated, almost customised. "Our cash flow is very stable and predictable, which means we can pay out attractive dividends," says Andreas Hildenbrand, the group's spokesman.

Of SIG's total 5,000 employees, only 230 work in the Neuhausen headquarters, primarily in finance and purchasing. The other employees are spread across the globe, to be closer to its customers. The machines are produced in Linnich, Germany, and Suzhou, China, and the carton production plants are located in Germany, Austria, Brazil, Saudi Arabia, China and Thailand.

Its 270 customers worldwide include giants Nestlé, Pepsico and Unilever. They receive assistance from 550 field engineers who install and maintain the 1,150 machines ▸

currently in operation. Traditionally, the target markets for the Swiss firm were Europe, the Middle East and Africa (EMEA). But gradually it has successfully moved into China, North America, Brazil and Argentina. "Today, EMEA countries generate 45% of our revenues, compared with 75% ten years ago," says Hildenbrand. "Asia now accounts for one-third of our revenues and the Americas 20%. These two regions are driving our growth at present."

SIGs customers include giants Nestlé, Pepsico and Unilever

In these markets, hundreds of millions of people are gradually becoming part of the middle class, and have greater purchasing power. They now consume a wider variety of processed food products. In the streets of Sao Paulo and Mumbai, customers can buy juice to go, just like in New York. Emerging markets also have the weakest competition: in India, Tetra Pak sold 7 billion



Combibloc CEO Rolf Stangl at a press round in Zurich on 17 September 2018.

ARND WIEGMANN / REUTERS

packages in 2017, but SIG is gradually catching up with more than 2 billion packages sold, already accounting for 17% of the market. In these countries, SIG is also

testing new technologies, such as a chip that can trace its products in Brazil.

But there could be future trouble brewing for both SIG and Tetra Pak: packaging creates pollution and has consequences for climate change, which is an increasingly hot-button issue. Packaging manufacturers are under fire. SIG recently launched its "Signature" line, produced with 100% recyclable polymer materials. But so far this only accounts for a small fraction of the company's revenues. In Europe, currently 45% of SIG's packaging is recycled. This percentage is significantly lower in developing countries which lack recycling infrastructure.

The global decrease in milk consumption, particularly in Europe, could also hamper SIG's growth, according to Morgan Stanley, whose experts set a medium-term price target of 12.40 Swiss francs. ▲ SIG

ANALYST ADVICE

"SIG'S MODEL GENERATES CUSTOMER LOYALTY"

The Swiss company's profits were slightly less than expected for Q3, which according to SIG was primarily due to temporary de-stocking in Brazil and the significant depreciation of the Brazilian real-euro exchange rate. Nevertheless, the company maintains its 4% to 6% revenue growth guidance (in constant currencies) and its margin projection of 28% or more, which means SIG is expecting improved results in Q4 2018.

"SIG's operational model – setting up and maintaining machines on customers' sites and selling pack-

aging material – gives visibility regarding cash flow and generates customer loyalty," says Lars Kjellberg, analyst at Credit Suisse. "On the other hand, its geographic coverage is significantly weaker than that of its main competitor Tetra Pak. That's not a problem in itself, but SIG's relative dependence on emerging markets increases the risks – or potential gains. That said, its exclusive technology could be a weak point, given that the great majority of filling agents on the market use a different technology. That could make SIG less attractive as a supplier."



The Breitling Cinema Squad
Brad Pitt
Adam Driver
Charlize Theron

AIR
LAND
PREMIER
SEA

BREITLING
1884

#SQUADONAMISSIION

BREITLING BOUTIQUE
GENEVA • LAUSANNE • LUCERNE
ST. MORITZ • ZERMATT • ZURICH

Nuclear decommissioning: a radioactive gold mine

As many nuclear power plants are being shut down around the world, the plant decommissioning market will take off, but not without some serious challenges.

BY BERTRAND BEAUTÉ

An employee on the site of deconstruction of the nuclear reactor Siloé, in Grenoble in 2011.

THIERRY PAREL

The Mühleberg power plant, located in the northwest region of the canton of Berne, is splitting its last atoms. On 20 December 2019, the facility, which has provided electricity to Swiss residents since 1972, will close for good. This is the first plant closure in Switzerland, which will set off an entirely different course of events. This is because once a plant is shut down, a new, less impressive process is just beginning. The now-defunct radioactive plant needs to be decom-

missioned, which is an extremely lengthy and complex process.

According to energy firm BKW – which runs the plant and will foot the bill for the dismantling – the process will take 15 years and generate 200,000 tonnes of waste, 8% of which will be radioactive. The total cost for decommissioning amounts to 927 million Swiss francs, with an additional 1.43 billion francs for waste management. Companies which specialise in this industry are understandably thrilled.

“We’re positioning ourselves in every country that has nuclear plants reaching the end of their lifespan,” said Alain Vandercruyssen, director of the Dismantling and Services business unit at Orano, formerly Areva. Other companies are doing the same, such as Mitsubishi Heavy Industries in Japan, Westinghouse (a subsidiary of Toshiba) in the US and EDF in France. EDF is striving to become “the leading European player for nuclear power plant decommissioning”. Rosatom in Russia and CNNC in China could also offer

their services at a record low price, thanks to financial assistance from their respective governments.

Of course, Switzerland is certainly not the only country facing the tricky question of nuclear legacy. Globally, approximately 100 reactors are no longer operating and 200 more are expected to close in the next 15 years, which adds up to a €200 billion market by 2030. Decommissioning one reactor costs €500 to €750 million, according to figures from Orano. “With approx-

imately a dozen reactors already out of service, the United States has very strong potential,” said Vandercruyssen. “Germany and Japan are in the same situation. Other markets will follow, such as the European Union, South Korea and Taiwan.”

At Orano, the dismantling business employs 4,000, which is 25% of the company’s workforce

At Orano, the dismantling business employs 4,000, which is 25% of the company’s workforce, and generates annual turnover of €500 million. “We were involved with Fukushima, where we launched a mini submarine to map and decontaminate the area,” said Vandercruyssen. “In 2019, we’re going to cut the tanks at the Vermont Yankee plant in the United States and the Brunsbüttel plant in Germany.” In 2018, French electric utility EDF began decommissioning the Vandellòs 1 power plant in Spain and US group Westinghouse is working in Sweden and Germany.

SLOWLY SHUTTING DOWN

While prospects seem quite attractive, various dismantling players are wary of seeming too enthusiastic. “After the accident at Fukushima and after several countries decided to phase out nuclear energy, we were hoping that these decommissioning projects would begin on a large scale,” said Damien Orcel, head of development at Ginger Deleo, an engineering firm specialised in dismantling. “But it turns out the market is increasingly slower than expected, because the industry is particularly sluggish.”

A good example of this is Fessenheim, France’s oldest nuclear plant. ▶

THE EMBARRASSING QUESTION OF RADIOACTIVE WASTE



According to BKW, decommissioning the Mühleberg plant will generate 200,000 tonnes of waste, 8% of which will be radioactive. But the vast majority of materials will only be weakly active and can be decontaminated. In the end, only 2% of the waste will have to undergo a specific elimination procedure. Switzerland and BKW plan to store this waste – some of which will remain highly radioactive for thousands of years – in a deep geological storage repository. There's just one problem: no such facility exists in Switzerland. The Swiss Federal Nuclear Safety Inspectorate (ENSI) believes that this method will not be available to use until 2035 at the earliest. Until then, the waste will be stored in an intermediary storage facility (Zwilag) in Würenlingen.

Closing the plant – one of François Hollande's campaign promises in 2012 – was debated, studied and planned several times, then pushed back. The closure date is now set for 2022, barring another reversal. "Current French politics is geared more towards extending the operation of nuclear plants rather than decommissioning them," said Orcel.

The same situation is playing out in Germany: after a deliberate nuclear divestment policy was put in place, the government now plans to further stagger closing its nine reactors that are still operating. All nine were initially slated to close by 2022. In Switzerland, despite the 2017 vote that planned to end nuclear power, Axpo intends to continue running Beznau – the oldest operating nuclear plant in the world – until at least 2030. "By definition, decommissioning is a market that shifts over time, since operating a plant brings in money whereas decommissioning costs money," said an industry specialist. "So operators have every reason to prolong a plant's lifespan for as long as possible."

But even once a plant is closed, decommissioning doesn't necessarily begin right away. In Italy, the former Garigliano plant (160 km south of Rome) closed in 1978, but decommissioning didn't start until 2012, 40 years later. This is not a unique scenario: in France, five first-generation gas-cooled reactors have been abandoned for more than 20 years.

"Once the fuel is removed, the plant is no longer dangerous and there is no immediate need to speed along the decommissioning process," said Vandercruyssen. As a result, governments take their time, which leads to unexpected conflicts. Garigliano had to be "rebuilt" before being dismantled – restoring electrical systems and ventilation circuits before decommissioning resulted in additional costs. Now the site won't be dismantled until 2035, nearly 60 years after the plant ceased operations. Comparatively, Germany, which has been decommissioning the Greifswald plant in Pomerania since 1995, believes that its timely intervention has reduced decommissioning costs by 20%.

"The first nuclear plants were very different from one another, so much so that each facility was essentially a prototype"

Alain Vandercruyssen,
director of the Dismantling and
Services business unit at Orano

Another obstacle: nuclear plants that are currently being decommissioned are intrinsically old facilities, sometimes dating as far back as the 1950s. "That complicates the task because at that time no one was thinking about the end of the life cycle for these plants," said Muriel Firon,



A remote controlled robot by Orano, designed to intervene in a radioactive environment.

ORANO / MICHAULT

Vandercruyssen. "Second-generation reactors from 1960 to 1980 were much more standardized, so decommissioning can only industrialise when these reactors retire."

To safely manage the daunting radioactive legacy of the atom, industry players are developing state-of-the-art new technologies: drones, 3D scanners, robots able to enter radioactive areas, submarines, virtual reality, etc. "Innovation is paramount in this industry, as it limits radioactive exposure for workers," said Vandercruyssen. "Furthermore, we're working hard to develop simulation tools that can calculate the degree of radioactivity in the places we must go into or predict the amount of waste generated. The experience we're gaining now will be essential for future decommissioning work."

Because inexorably, the decommissioning business will continue to grow. "It's an enormous market that is attracting all the major players," said Orcel. In the canton of Berne, BKW plans to launch bids for tender for decommissioning work at the Mühleberg plant that its own employees cannot do. There will undoubtedly be many candidates. But Alpiq won't be one of them. In 2015, to much fanfare, the Solothurn energy producer announced its subsidiary Swiss Decommissioning in the hopes of gaining market share in the global decommissioning market. But faced with financial difficulties, the Swiss company had to sell off this entity to French giant Bouygues in 2018. ▲

head of restoration-decommissioning work at the French Alternative Energies and Atomic Energy Commission (CEA). Especially because the industry is experiencing a loss of knowledge. "People who worked in these plants and know them well have retired," said Orcel. "This creates a real problem, particularly in Germany."

REMOTE-CONTROLLED ROBOT Moreover, in the span of 50 years, the nuclear industry tested all types of reactors: gas-cooled, hard-water, boiling water, fast-neutron, pressurized water, etc. "The first nuclear plants were very different from one another, so much so that each facility was essentially a prototype," said



LIFE AND DEATH OF THE MÜHLEBERG POWER PLANT





Dossier prepared by
Bertrand Beauté,
Ludovic Chappex,
Martin Longet,
Angélique Mounier-Kuhn
and Julie Zaugg

DOSSIER

CHINA: is now the right time to invest?

Once eyed with distrust, shares of Chinese companies are now of growing interest to investors as China opens up to foreign capital.

BY BERTRAND BEAUTÉ AND LUDOVIC CHAPPEX

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- 46 China's flamboyant CEOs

China began its economic transformation just 40 years ago in December 1978. Under the impulse of Deng Xiaoping, the country quickly converted to a market economy, beginning an open policy that would transform China into a full-fledged “factory for the world”. Today, this openness continues. On 1 June 2018, certain A-shares, denominated in yuan on the Shanghai and Shenzhen exchanges, were listed on the leading index for emerging markets, the MSCI EM. For foreign investors, this type of IPO promises easier purchasing of Chinese equities. But is this market worth the risk? *Swissquote Magazine* explains in five points. ▶

1 **A market that has become vital**
No serious investor could ignore China. As the second largest economy in the world with the second largest stock market in the world (including Hong Kong), China is a giant that has public companies in all industries. The most well-known, such as Alibaba and Tencent, are on the New York and Hong Kong exchanges. But the Shanghai and Shenzhen exchanges are also home to gems that would be a shame to overlook, such as video game maker Youzu Interactive and insurer China Life Insurance (see company profiles on p. 30-37). “Chinese stocks have gained credibility and deserve a spot in long-term portfolios,” said Michel Longhini, CEO of Private Banking, Union Bancaire Privée, in an article in the Swiss daily *Le Temps*.

For a long time, Western investors didn't trust the Chinese market, as it seemed unreliable. According to figures by the journal *Les Echos*, foreign investors only held 2% of the local capitalisation, compared to 12% in Malaysia, 14% in the Philippines and 21% in India. To reverse this trend, Beijing has ramped up its initiatives hoping to open its financial markets. Including A-shares into the MSCI index on 1 June 2018 is a first step in this direction. According to estimates from investment bank JP Morgan, this inclusion will attract \$40 billion to Chinese markets in the coming months.

And that's just the beginning. After the MSCI, another stock index provider FTSE Russell announced in September 2018 that it would also include stocks from continental China in its benchmark indices starting in June 2019. According to FTSE Russell, this could attract \$10 billion in net cash flow to Chinese stocks. This influx of foreign funds should mechanically raise the Shanghai and Shenzhen

exchanges. But one should take heed. “The Chinese stock market is risky,” warned Meng Shen, director of investment bank Chanson & Co. “It's possible to find great opportunities to make money, but the performance of the main indices remains disappointing. There could be stocks with a 1,000% return over one year, but it's a gamble.”

2 **A calamitous 2018**
2018 will likely go down as one of the worst years in the history of the Chinese stock market. Weakened by trade tensions with the United States, the markets collapsed. During the 2018 calendar year, the Shanghai composite index lost 25%, the Shenzhen exchange fell 33% and the Hong Kong exchange was down 14% (see infographic on p. 43). That same year, the flagship index of the US markets, the S&P 500, only fell 5%.

For many analysts, low Chinese stocks are a good point of entry into this market. “The recent downturn could be seen as an opportunity to purchase shares of the most solid companies,” said Longhini, CEO of Private Banking, Union Bancaire Privée, in an article in *Le Temps*.

“The market is currently undervalued,” said Lu Li, analyst at Daxue Consulting. “The current valuation demonstrates the pessimism of investors. But there isn't much room for more of a drop. I think we will reach the bottom in the third or fourth quarter of 2019. But we can't predict when the rebound will occur.” This perspective is tempered by Meng Shen, director of Chanson & Co: “I don't think that Chinese A-shares will recover their entire value in 2019. We might see a slight recovery starting in March.”

This caution can be explained by the

uncertainty surrounding relations between China and the United States. After months of a trade war, the two countries declared a three-month truce in early December 2018, ending the mutually-established tariffs increase. While markets responded positively to this pause, the future is still hazy. If in three months, no agreement is reached between Beijing and

Washington on topics such as “forced” transfers of technology, intellectual property and cyber espionage, Washington has warned that import tariffs will be increased to 25%. The problem: “A complete trade agreement cannot be made in only 90 days,” said Shen. “I think that the two countries will establish a step-by-step agreement or a framework agreement that will be

followed by many negotiations.” In other words, the hatchet won't be definitively buried in late March. “The United States and China are playing a dangerous game, because the trade war isn't good for anyone,” said Shen. “But in this fight, Beijing has less bargaining chips than Washington. The United States is the main export market for Chinese manufacturing

companies, so the customs tariff is a massive weapon of destruction against the Chinese economy. If the issue isn't resolved, pressure on Beijing will increase even more.” Quoted by AFP, Iris Pang, an economist from ING, said “the stock market will largely depend on the progress of these negotiations. If the truce ends badly, retaliation will start up again ▶



THE NEW SILK ROAD

Launched in 2013 by President Xi Jinping, the Silk Road Economic Belt (Belt and Road Initiative) is an infrastructure project estimated at \$800 billion, which is unprecedented. This project aims to physically connect China, Southeast Asia, Central Asia, Europe and Africa via roadways, railways and maritime routes. According to a report from

UNCTAD (United Nations Conference on Trade and Development), the economic belt envisioned by Beijing is a gigantic market of 68 countries, with a total population of approximately 4.5 billion (62% of the global population) and a total GDP of around \$23 trillion, or one-third of the global economy. This immense project could have a

considerable impact on markets, benefiting the transport of raw materials and goods in particular. “The new silk roads are probably the biggest initiative that you're not paying attention to,” said Robert Friedland, executive co-chairman of mining group Ivanhoe Mines, at the FT Global Commodities Summit.

and the market will sink even further.” “I’m not very optimistic,” said Li. “Trump isn’t a politician; he’s a businessman who is only interested in maximising profits. On the other hand, China has demonstrated that it is no longer afraid of the trade war. Basically, China doesn’t have a lot of options, but the United States doesn’t either.”

3

Sluggish growth

China’s growth slowed throughout 2018, reaching its lowest point in 28 years. According to the Chinese national statistics bureau (BNS), the GDP increased “only” 6.6% last year – a number that many Western economies would envy, but far from China’s standards, as the country is accustomed to seeing double-digit growth annually. For Beijing, the cause of this slowdown is external: “Everyone is worried about the international situation,” said Ning Jizhe, director of the BNS. “There are many variables and uncertainties at play, and that has an impact on our economy.”

Analysts also say China’s internal weaknesses are to blame. Long buoyed by its gigantic local market, with more than 1.4 billion residents, consumption is down slightly. Car and mobile telephone sales, as well as shopping mall purchases, for example, fell in 2018, which could impact companies active in those industries such as auto manufacturer Geely and China Mobile. Furthermore, measures taken by the government to reduce the country’s colossal debt also contributed to the economic slowdown. For 2019, analysts believe growth will continue to slow and settle at around 6%. Nevertheless, there is little chance that growth will stop. The economy can fluctuate “within a reasonable range” but not “fall sharply”, confirmed Prime Minister

Li Keqiang in early January. Investing before the Chinese government implements measures to support growth could be a winning gamble.

4

Beijing’s interventionism

Faced with this slowdown, the Chinese government eased its policies in the second half of 2018 and also opted for fiscal measures such as lowering taxes in the hopes of boosting consumption. In 2019, Shen anticipates that the new mone-

tary easing signals will be published during the Chinese People’s Political Consultative Conference (CPPCC).

All these measures should help support the country’s markets. And if that’s not enough, Beijing won’t hesitate to directly support markets as it has numerous times in the past (see p. 44). The problem is that these interventions could lead to distortions and unhealthy speculation. “If you’re an investor and you know that the state will always bail out struggling companies, then you’re betting not only on the companies that will likely create value, but also on government interventions,” said Bing-Xuan Lin, finance professor at the University of Rhode Island.



ISTOCK

EXPENSIVE CENSORSHIP

In terms of freedom of expression, China stands out for its repressive policies, which have significant consequences for its markets. In March 2018 for example, Beijing decided to suspend the release of new video games in the country. This was a catastrophe for makers such as Tencent, which lost one-third of its value during that time, as well as Youzu Interactive. While the ban end-

ed in December 2018, this type of abrupt decision isn’t something that reassures investors. Many other companies could be sanctioned as well. In 2017, the three most popular social networks in China – WeChat messaging, microblogging site Weibo and search engine Baidu – were under attack from the government because they allegedly posted “illicit content” that “put national security at risk”.

5

Key industries

In 2015, the Chinese Premier launched the “Made in China 2025” initiative. This government action plan, inspired by the “Germany Industry 4.0” project, aims to support the improvement of the Chinese economy by reducing its dependence on foreign technologies. For example, currently the majority of Chinese smartphones are equipped with chips made by US company Qualcomm. In 2020, Beijing is aiming for products with 70% of the parts and materials coming from China, in 10 key industries (inset for list). But the plan goes even further: it wants to make China one of the three leading industrial countries in the world by 2049, the centennial of the People’s Republic of China. To achieve this, the initiative has several areas of focus: increasing investments in research and development, improving the automation of Chinese factories and developing strategic industries such as robotics and electronic chips. The industries affected by the “Made in China 2025” plan could be good investment opportu-

nities, since the Chinese government is supporting these significantly. But uncertainty still abounds. The “Made in China 2025” initiative is at the heart of the conflict with the United States.

To calm Uncle Sam, Beijing could replace, possibly as early as March 2019, the “Made in China 2025” initiative with another programme in which the desire to dominate the industrial sector is less of a focus. This approach could benefit China, which is looking to open up further to foreign investors, according to the *Wall Street Journal*.

While waiting for the China-US saga to end, analysts prefer to look at other stocks. “I recommend Chinese companies active in the gold business, the military industry and new technologies. But only companies that have real R&D resources, as well as intellectual property rights,” said Shen. According to Ben Cavender, analyst at China Market Research Group: “In these uncertain times, people are taking out insurance policies, so this industry has a very promising future. I recommend insurance companies such as China Life Insurance.”



ISTOCK

The 10 key industries in the “Made in China 2025” plan

1. New information technologies
2. Automated machine tools and robotics
3. Aerospace and aeronautical equipment
4. Ocean engineering equipment and high-tech shipping
5. Modern railway transport
6. Self-driving and green vehicles
7. Electrical equipment
8. Agricultural machinery
9. New materials
10. Biopharma and new medical products

30 winning companies



Many Chinese companies, often unknown giants, make a major impact in all industries. We feature some of the best.

BY BERTRAND BEAUTÉ, LUDOVIC CHAPPEX
AND MARTIN LONGET

DIGITAL

INDUSTRY

GETTY IMAGES

ALIBABA

The e-commerce giant

In 2014, Alibaba's debut on the New York Stock Exchange (NYSE) broke all records, valuing the Chinese e-commerce giant at nearly \$170 billion. Five years later, the group is expanding internationally, with an announcement in November 2018 that it is building a major logistics hub in Liège, Belgium, in order to expand its presence in Europe. Most analysts recommend purchasing shares. — BABA

AUTOHOME

The car seller

With its two sites che168.com and autohome.com.cn, Autohome is an online car sales platform that is very popular in China. Used by both private sellers and dealers alike, Autohome has an impressive collection of more than 22,000 vehicles and around 10 different applications for Android and iPhone. — ATHM

BAIDU

The other search engine

Nicknamed the "Chinese Google", internet giant Baidu, which is listed in New York, exceeded the symbolic threshold of 100 billion yuan in revenue in 2018 (€12.67 billion) – a record performance. But analysts are split – some recommend purchasing shares, while others are more prudent and say to hold off. Baidu, which holds a quasi-monopoly in China, is up against the authorities, which ordered the giant to suspend some of its services in January 2019 because of content deemed "vulgar". Furthermore, Google could eventually return to the



With the booming middle class in China, jewellery sales are expected to take off.

BEIJING KINGEE

The jewel of Beijing

Listed on the Shenzhen exchange, Beijing Kingee Culture Development specialises in designing, producing and distributing objects made of precious metals, primarily pure gold and silver. Its flagship products are jewellery, gold bars for investments and white jade goods. Beijing Kingee is expected to benefit from the expansion of the middle class in China. — 002721

Chinese market with its Dragonfly project. This would be a threat to Baidu's future growth.

— BIDU

BAOZUN

The e-commerce intermediary

In Western countries, Baozun isn't a household name. But in the next few years, the company could have the same status as a giant like Alibaba. Listed on the Nasdaq, Baozun provides e-commerce solutions. Many international companies such as Nike, Microsoft and Zara use this intermediary in order to avoid pitfalls specific to the Chinese market. Analysts recommend purchasing shares in Baozun, as the price has dropped by half since August 2018 and can only go up, they say. — BZUN

CHINA LIFE

Comprehensive insurance

According to a Swiss Re study from November 2018, China and emerging Asian countries will be the primary source of insurance demand in the coming years. With its counterpart Ping An, China Life Insurance, which is listed in New York and Shanghai, is expected to benefit from this boom. But the company, which posted \$95 billion in revenue in 2017, has to compete with Western groups such as Axa and Allianz, which are growing their presence in China. — LFC

HU JIANHUANG NU / AFP

CHINA MOBILE

The telephone operator

With 922 million customers reported in November 2018, China Mobile is the largest mobile telephone operator in the world in terms of number of subscribers. In 2017, the group generated \$117 billion in revenue, up by 4.5% in a year. And China Mobile, listed in New York and Hong Kong, isn't stopping there: with Huawei, it's actively preparing for the arrival of 5G in China. — CHL

CHINA MOLYBDENUM

Glencore's rival

This company, publicly listed on the Hong Kong exchange, is battling Glencore for dominance of cobalt in the Congo. It is the second-biggest global

producer of the metal, but also one of the main producers of tungsten, niobium, copper and, true to its name, molybdenum. Most analysts recommend purchasing shares. — 603993

CHINA NORTHERN

The rare earth expert

Listed in Shanghai, the discreet consortium China Northern Rare Earth is the top rare earth miner in the world, producing 60,000 tonnes per year – over one-third of the world's estimated annual production of 160,000 tonnes. Consumption of these metals, which are used in electric vehicles and electronics, among other sectors, is expected to continue growing in the coming years. — 600111

GEELY

Racing ahead

This auto manufacturer strikes fear into the hearts of Western brands. Founded in 1986 in Taizhou, the company used to make refrigerators. It wasn't until 1998 that it began producing cars. But the real shift was in 2010. In the midst of a full-blown crisis, the Chinese group, listed in Hong Kong, acquired Swedish brand Volvo. Then in 2017, it acquired iconic English race car company Lotus, followed by US start-up Terrafugia, which designs flying cars. February 2018 saw a big new development: Geely acquired a 9.6% stake in German auto giant Daimler, the parent company of Mercedes-Benz, becoming its primary shareholder. The goal of these acquisitions was to acquire technologies in order to break into Western markets. In 2017, Geely sold more than 800,000 vehicles in its domestic market. — 175



Geely workers on an engine production line in Baoji, northwest China, in 2016.

XINHUA / AFP

INNER MONGOLIA

The milk producer

Public company Inner Mongolia Yili Industrial Group is the largest dairy company in China. Listed in Shanghai, it also produces ice cream, frozen foods and noodles. — 600887

IQIYI

The Chinese Netflix

It was one of the most highly anticipated IPOs of 2018. In March, video platform iQiyi, a subsidiary of Baidu, went public on the Nasdaq, raising nearly \$2.3 billion in the process. The site offers a mix of free content, funded by advertisements, and original series for subscribers, making it a combination of YouTube and Netflix. iQiyi, which has 65 million subscribers – half as many as Netflix – has two sizeable rivals in China: Tencent's video service and Youku Tudou, Alibaba's platform. — 10

JINKOSOLAR

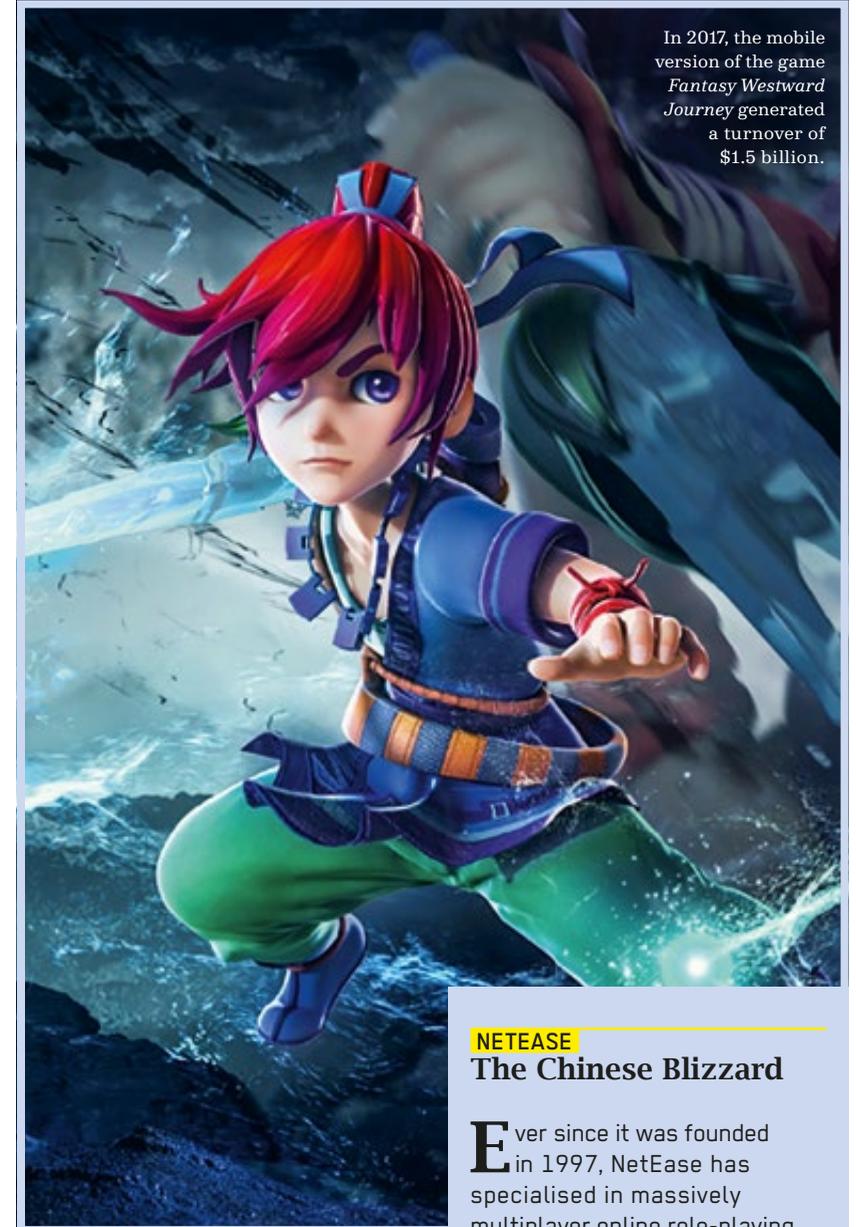
The solar energy expert

JinkoSolar is one of the world leaders in the photovoltaic solar energy industry. The company has offices around the world, including in Zug (Switzerland) and San Francisco (United States). Listed in New York, the company generated \$4 billion in revenue in 2017. It faces fierce competition from other Chinese public companies, such as Sungrow Power, GCL-Poly and Xinyi Solar, in an industry where a wave of concentration seems inevitable. — JKS

JD.COM

The other Alibaba

It's almost Alibaba's unknown little brother. But with more



In 2017, the mobile version of the game *Fantasy Westward Journey* generated a turnover of \$1.5 billion.

NETEASE

The Chinese Blizzard

Ever since it was founded in 1997, NetEase has specialised in massively multiplayer online role-playing games (MMORPGs), such as *Fantasy Westward Journey*. With mail.163.com, 126.com and yeah.net, NetEase is also the largest email provider in China. Like other Chinese web companies, NetEase had a difficult 2018: listed on the Nasdaq, its share price lost approximately 25% of its value over one year. But most analysts recommend purchasing shares; Barclays is targeting a price of \$300 compared to approximately \$250 as of late January this year. — NTES

than 300 million active users and \$55 billion in revenue in 2017, JD.com is one of the largest e-commerce platforms in the world. Chinese giant Tencent holds a 20% stake in the company, which specialises in high-tech products, electronics and drone delivery using one of the largest drone fleets in the world. Share prices are currently at a historic low, so many analysts believe it's a good time to purchase shares. — JD

Michael Yu Minhong, founder and CEO of New Oriental Education & Technology Group, at a public lecture in Xiangyang.



LI FUHUA / AFP

NEW ORIENTAL EDUCATION The teacher

Founded in 1993 by an English teacher to prepare students for the TOEFL and GRE exams, New Oriental Education quickly diversified to become the biggest private education company in China. Its services encompass the entire education sector, including textbook printing, online courses and pre- and post-school training. Most analysts recommend purchasing shares of this company listed in New York, believing it to be currently listed below its real value.

— EDUN

PING AN The insurance giant

With revenue of 975 billion yuan (\$145 billion) in 2017, Ping An is the largest insurer in the world. Listed in Hong Kong and Shanghai, the company is also active in banking and finance. — 601318

PETROCHINA The fallen oil king

Who remembers when, in 2007, more than 10 years before Apple and Amazon, PetroChina was the first company in the world to exceed the mythical threshold of \$1,000 billion in market capitalisation? Since then, the oil giant has fallen into a market abyss, losing more than

\$800 billion. Listed on exchanges in New York, Shanghai and Hong Kong, the group nevertheless had a promising 2018. In the first nine months of the year, revenue increased 17.3% compared to 2017, reaching 482 billion yuan (\$71 billion). — PTR

SINA.COM The information portal

Founded in 1998 and listed on the Nasdaq since 2000, Sina.com is the largest Chinese-language information and entertainment portal. It is also the parent company (and primary shareholder with Alibaba) of microblogging site Sina Weibo, considered the "Chinese Twitter". In 2017, Sina.com generated \$1.6 billion in revenue. — SINA

SINOPEC The unknown refiner

As the leading oil refiner in the world, Sinopec (also known under the name China Petroleum and Chemical Corporation) generated more than 2,360 billion yuan (\$348 billion) in revenue in 2017, which is more than giants like ExxonMobil (\$237 billion) and Shell (\$305 billion). While refining and chemicals are Sinopec's main activities, the group's revenue has been bolstered by solid Chinese demand in these sectors. Listed in Hong Kong, London, New York and Shanghai, this unknown giant is also benefiting from the accelerated transition from carbon to natural gas implemented by Beijing to reduce pollution. — 338

SINOPHARM Big pharma

With revenue exceeding \$40 billion in 2017, SinoPharm is the largest pharmaceutical company in China. Listed on the Hong Kong exchange since 2009, the firm has its own research and development labs, as well as a distribution network that extends across the country.

— 1099

SINA WEIBO The Chinese Twitter

In China, people don't use Twitter. They use Weibo. This microblogging social network

has more than 440 million active users per month, mostly from China, compared to 330 million users for its US-based rival. In its market, Weibo competes with Tencent (Tencent Weibo) and NetEase (Wangyi Weibo), which also have their own microblogging sites. Like other Chinese brands, Weibo – which is listed on the Nasdaq – is now eyeing international markets and is planning to launch services in various languages. But this ambition could be halted by Western concerns about surveillance and Beijing-mandated censorship for social networks. Most analysts recommend purchasing shares nonetheless.

— WB



Sinopec workers on a shale gas drilling rig in Chongqing (southwest China), in 2016.

LIU CHAN / AFP

TENCENT The new video games king

Valued at more than \$400 billion, Tencent is a major internet services player. Listed in Hong Kong, the company offers online payment solutions, instant messaging and social media. But Tencent owes part of its dominance to its video games division. Gaming brought in \$18 billion in revenue in 2017 – an increase of 50% over one year. Above all, this figure is significantly higher than the results posted by Sony PlayStation (\$10.5 billion) and Nintendo (\$3.7 billion). Even the mobile games revenue raised by Apple (\$8 billion) and Google (\$5.3 billion) pale in comparison to the Chinese giant. ✓ 700



Lei Jun, Xiaomi's founder.

WUHAN GUIDE INFRARED The surveillance pro

Listed on the Shenzhen exchange, Wuhan Guide Infrared develops, produces and sells infrared cameras and thermal imaging systems. Its products are mainly used by the army, particularly for infrared guidance, in surveillance equipment and by the medical industry. ✓ 002414

XIAOMI The smartphone manufacturer

Announced as one of the biggest events of 2018, Xiaomi's IPO on the Hong Kong exchange was a disappointment. The Chinese smartphone manufacturer only raised the equivalent of \$4.7 billion, valuing the group at \$50 billion, far below the ambitious target of \$100 billion set before the IPO. Since then, the share price has gradually decreased, despite increased sales. In 2017, Xiaomi sold more than 90 million smartphones around the world, making it the fourth-largest global manufacturer behind Samsung, Huawei and Apple. ✓ 1810

YIRENDAI Simplifying access to loans

Bringing investors and borrowers together in China is the challenge that Yirendai has taken on. Listed in New York, the company's platform allows people seeking funds to make an online request that could attract a lender. The platform then completes and secures the transaction. According to the company, Yirendai has facilitated approximately 100 billion yuan – approximately \$15 billion – in loans since it began operating in 2012. ✓ YRD

YOUZU The major player

In April, television series *Game of Thrones* will come to a close with the eighth and final season broadcast by HBO. Simultaneously, a massively multiplayer online role-playing game called *Game of Thrones: Winter is Coming* will also be released. Behind this latest blockbuster is Chinese video game producer Youzu Interactive, already known for games such as *League of Angels* and *Legacy of Discord-FuriousWings*. Analysts consulted by *Swissquote Magazine* recommend purchasing shares in Youzu, which is listed on the Shenzhen exchange. ✓ 002174

YUM CHINA Successful fast food

Listed in New York, Yum China operates KFC, Pizza Hut and Taco Bell in China. In 2017, it generated \$7.1 billion in revenue, up 8% over the year. It attracted investment fund Hillhouse Capital Group, which in 2018 became the head of a consortium to acquire the company. The offer of \$46 per share – valuing Yum China

at more than \$17 billion – was rejected in late August. This is one to keep an eye on. YUMC

ZTO The art of express delivery

In May 2018, Chinese online commerce giant Alibaba acquired 10% of the capital of logistics company ZTO Express – and the reason is that to deliver its packages across China and around the world, Alibaba needs a strong partner. The investment, valued at \$1.38 billion, will allow ZTO to improve its warehouse management and cross-border logistics thanks to innovative solutions based on new technologies. Most analysts recommend purchasing shares on the New York exchange. ✓ ZTO

58.COM Classified adverts and more

This platform is unknown in the West, and for good reason: the entire site is in Chinese. But 58.com is one of the largest classified ad sites for individuals and companies in China, covering hundreds of cities and every possible product imaginable. Buoyed by very good Q2 results that exceeded expectations, 58.com shares reached \$87 in July 2018 but dropped to \$50 at the end of the year. ✓ WUBA

AND ALSO...

IFLYTEK

Specialising in speech recognition and voice synthesis software, iFlyTek is working with juggernauts such as Alibaba and Huawei to develop Siri's (Apple) doppelgangers. ✓ 002230



Workers sort parcels at a ZTO Express distribution centre in Chengdu (2017).

CCSB / AFP

NIO

Car manufacturer dedicated to developing electric vehicles. ✓ NIO

SHENZHEN INOVANCE

Company specialised in the development and sale of industrial automation control products. ✓ 300124

SUGON

Active in the cloud computing industry, Sugon builds supercomputers. ✓ 603019

TASLY HOLDING GROUP

The firm produces generic drugs and wellness products. ✓ 600535

INTERVIEW

“China is now ready to spend money”

Chinese company Ascletris – one of the first biotechs in China – develops treatments for hepatitis. We interviewed CEO Wu Jinzi six months after its IPO.

BY JULIE ZAUGG, IN HONG KONG

After a long career in the United States dedicated to researching viral diseases, Wu Jinzi decided to go back to his native China to launch biotech firm Ascletris, listed on the Hong Kong exchange since July 2018. For *Swissquote Magazine*, he describes his surprising career path and the incredible potential of the Chinese healthcare market.

Why did you decide to leave the United States and come back to China in 2011?

At the time, I was vice president of HIV research at GlaxoSmithKline (GSK) in the United States. With my many years of experience in viral diseases, I knew that China had the largest population in the world affected by hepatitis C, for which there is no vaccine. There was a significant medical need that wasn't being met, as well as a vast market: 25 million people have hepatitis C

in China! So I decided to leave my job at GSK to create Ascletris and find a solution to this problem.

And did you succeed?

In June 2018, we put our first treatment, Danoprevir, on the market. It can cure 97% of people suffering from hepatitis C in 12 weeks. Comparatively, existing treatments have a success rate of 60% and take 12 to 18 months to take effect. So with Danoprevir we've made incredible progress. We've also just submitted an approval application to the Chinese government for another treatment for hepatitis C, and the cure rate is 99%.

In the medium term, we're also testing an antibody called PDL1. The idea is to use it to strengthen T lymphocytes so that they can fight the hepatitis B virus more effectively. This disease affects even more people: 86 million people are affected chronically, and that's just in China. There is no cure.

The bank JP Morgan predicted that the Chinese market for biological medicines – which your treatments are part of – would double by 2021, reaching \$52 billion. Can you explain this expansion?

The incredible economic growth that China has seen over the past 30 years has given rise to a middle class that can spend money to purchase medicine. The education level of the population has also increased. Chinese people therefore understand the importance of taking care of their health and, at the same time, are more ready to spend part of their income to do so.

Who are your main competitors in this promising market?

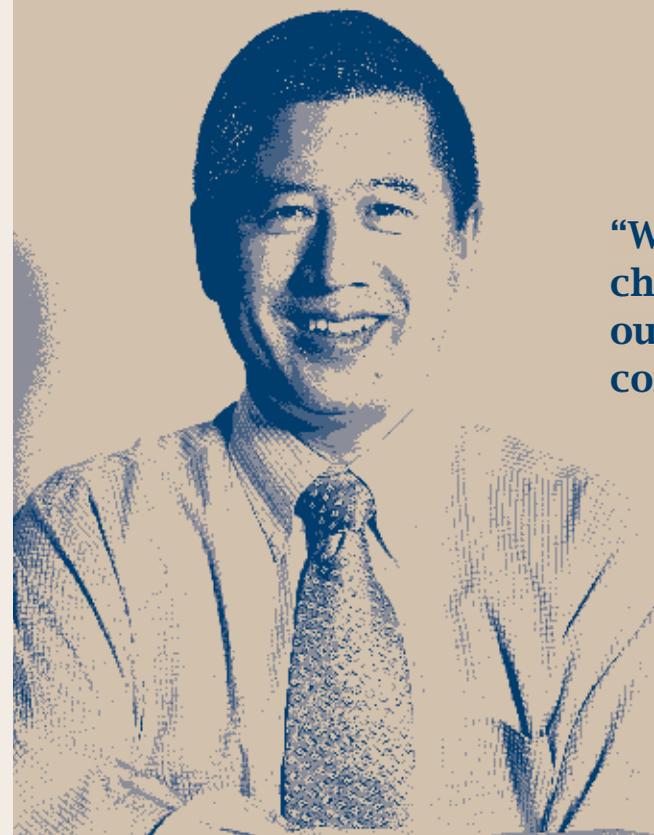
US-based Gilead Science has several treatments for hepatitis B and C on the market or in development. But Danoprevir costs 30% less than Solvadi, a similar product that Gilead put on the market in November 2017. AbbVie, Merck and Roche are also researching hepatitis treatments. But we're the only ones conducting clinical trials for this disease in China.

Do you have any advantages over your competitors?

Chinese patients gain access to new treatments years after patients in Western countries. The reason for this lag is simple: to approve a foreign drug in China, until very recently you had to redo all the clinical trials from phase I to phase III in China. The government didn't recognise results obtained elsewhere due to ethnic differences. This procedure could take anywhere from five to 10 years. This policy ended in July, but approving a foreign drug in China still takes quite a long time. Since we're conducting all our research here, we don't have to deal with that obstacle.

Does the government support the pharmaceutical industry?

The “Made in China 2025” policy,



“We're 30% cheaper than our Western competition”

THE SEA TURTLE

In the late 1980s, Wu Jinzi left his home country to pursue oncology studies at the University of Arizona. Upon receiving his PhD, he began his career with various positions at Hoechst Marion Roussel (now Aventis), Novartis and Immunex, which is now owned by Amgen. In 2004, he became the vice president of preclinical research at Canadian firm Ambrilia Biopharma, then joined GlaxoSmithKline in 2008. Like many other Chinese entrepreneurs, known as “sea turtles” because of their migratory career paths, he decided in 2011 at the age of 55 to return to China and create biotech company Ascletris. He benefits from the “Thousand Talents” programme implemented by the Chinese government to bring home the most promising talents via subsidies and support for their entrepreneurial projects.

announced in 2015, highlighted 10 particularly innovative sectors that get priority support from the government. Biotech is one of the 10. But as far as Ascletris is concerned, we haven't received any subsidies. Our research is funded entirely by investors. However, we benefit from measures put in place by the government to accelerate the approval of clinical trials and drugs. Several biological drugs (“biologics”) were

added to the list of treatments reimbursed by the state starting in 2015, and we benefit from that as well.

What are the main challenges for a biotech company targeting the Chinese market?

The population's average income is still relatively low. That forces companies to set the market price rather low for their drugs. This is an issue because biologics

like ours are extremely costly to develop. Fortunately, clinical trials are much less expensive to run in China compared to the Western world. That helps us keep our costs under control. We're 30% cheaper than our Western competition.

You decided to go public on the Hong Kong exchange in July last year. Why didn't you choose an exchange located in continental China?

Hong Kong has the advantage of being focused on the Chinese market while also keeping an international perspective, which guarantees access to foreign investors. The exchange also went through an ambitious reform in April 2018 to allow innovative pharmaceutical companies to go public, even if they had no revenue (see also p. 40). We were the first company to benefit from this new reform.

How's your share price doing?

Not too well, unfortunately! It's been going up and down these past few months. But that's not out of the ordinary for a biotech company. ▲

ASCLETIS TARGETS HEPATITIS

Founded in 2011 in Hangzhou, the city where Alibaba began, Ascletris develops several innovative treatments for hepatitis B and C, diseases that particularly affect people from China. Goldman Sachs, Chinese pharmaceutical company Tasly Pharmaceutical and billionaire Qi Jinxing, who made his fortune in real estate, are some of its initial investors. In 2018, Ascletris went public on the Hong Kong exchange, raising \$400 million. — 1672



PETER & GEORGINA BOWATER / NEWS.COM

HKEX, a popular choice for Chinese firms

Hong Kong's stock exchange grants Chinese companies access to international capital, and in April 2018 it passed an ambitious reform to attract tech giants.

BY JULIE ZAUGG, HONG KONG

On 27 October 2017, the very best of the city's finance pros met in the illustrious glass tower of the Stock Exchange of Hong Kong Limited (HKEX). Wearing the red jackets traditionally worn by floor traders, hundreds of locals in the fields of business and politics held a closing ceremony for the historical trading floor, which had been made obsolete by the rise in electronic trading. The ceremony was a happy ending to the 126 years of trading that took place there.

Saying goodbye to the trading floor has in no way tarnished the prestige of the HKEX, which for the past 10 years has been in the top five stock exchanges worldwide alongside the NYSE, NIKKEI, SSE and NASDAQ. "The HKEX was number one last year in funds raised during IPOs," highlights Julia Charlton, who runs a firm that specialises in initial public offerings. "By the end of the third quarter, \$31.1 billion had been raised in Hong Kong versus \$25.1 billion in New York," she adds.

The legendary Hong Kong Stock Exchange (HKEX) trading room is now a thing of the past.

The HKEX owes the bulk of its success to Chinese firms. The exchange has a number of major companies in its ranks that were created in China, such as Tencent, Lenovo, PetroChina, China Mobile and the insurer Ping An as well as banking establishments ICBC and CCB. "Of the top 20 IPOs in Hong Kong, all except one (editor's note: Hong Kong insurer AIA) were Chinese companies," reports an HKEX spokesperson. Chinese firms account for half of the 2,285 companies listed on the HKEX today and over two-thirds of its market capitalisation.

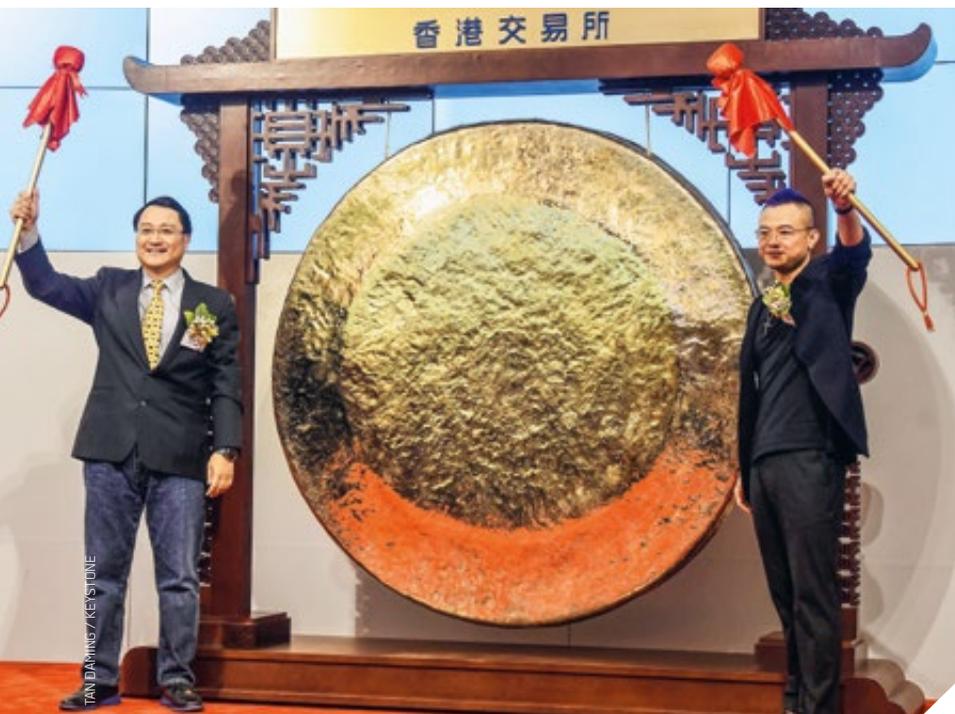
Why the boom? "Chinese companies choose to be listed on the HKEX because they can access a pool of international investors and capital while taking advantage of the cultural and geographic proximity of China," says David Cheng, a local lawyer who specialises in the stock market. They also enjoy conducting business in a system in which the rules are transparent and based on the rule of law, because according to Cheng, that's not always the case in China.

What's more, the HKEX is now putting the connections it made in 2014 with the Shanghai and Shenzhen stock exchanges to good use. New regulations authorise investors from each stock exchange to purchase shares on the others. This reform has removed barriers for Chinese traders who were looking to invest in firms listed on the HKEX, further expanding its reach.

Additionally, procedures take effect much faster in Hong Kong. "IPOs in Hong Kong rarely take longer than six months, versus two to three years in continental China," explains Peihao Huang, head of equity capital markets for Asia at UBS. It is worth noting that UBS, a Swiss bank that is particularly active in Asia, has sponsored 10% of

TOP 10 IPOs ON THE HKEX

1. **AIA**
29 October 2010
HKD 159 billion
(CHF 20.1 billion)
2. **Industrial and Commercial Bank of China**
27 October 2006
HKD 124 billion
(CHF 15.7 billion)
3. **Agricultural Bank of China**
16 July 2010
HKD 93 billion
(CHF 11.8 billion)
4. **Bank of China**
01 June 2006
HKD 86 billion
(CHF 10.9 billion)
5. **China Construction Bank Corporation**
27 October 2005
HKD 71 billion
(CHF 9 billion)
6. **Postal Savings Bank of China**
28 September 2016
HKD 59 billion
(CHF 7.5 billion)
7. **China Tower Corporation**
08 August 2018
HKD 54 billion
(CHF 6.8 billion)
8. **China Unicom**
22 June 2000
HKD 43 billion
(CHF 5.4 billion)
9. **Xiaomi Corporation**
09 July 2018
HKD 42 billion
(CHF 5.3 billion)
10. **Huatai Securities**
01 June 2015
HKD 38 billion
(CHF 4.8 billion)



Allen Wang (left), CEO of Babytree – China's largest online platform dedicated to maternity – sounds the gong at the entry of his company on the HKEX on November 27, 2018.

the companies listed on the HKEX over the past 10 years.

ALIBABA'S LOW BLOW

However, the former British colony is experiencing increasingly intense competition from the thriving Shanghai and Shenzhen exchanges, as well as from long-standing marketplaces such those in New York and London. "Companies know they can get higher valuations if they are listed in China (editor's note: see p. 44)," reveals Cheng. "Tech firms prefer the NASDAQ – a platform which is dedicated exclusively to them."

However, the HKEX was hit the hardest back in 2014 when Chinese e-commerce giant Alibaba decided to launch its IPO on the NYSE instead, cutting Hong Kong's exchange out of the biggest IPO in history. Tech groups may also look to the Shanghai exchange in the future. "The Chinese government just announced that it has created a trading platform specifically for this sector," Huang points out.

To beat the headwind, the HKEX initiated one of its most radical reforms last spring. The new regime enables companies with multiple classes of shareholding structures – a strategy that lets some shareholders, such as the company's founders, gain more voting rights – to list in Hong Kong.

The reform was met with instant success. Over the past few months, smartphone manufacturer Xiaomi, food delivery platform Meituan-Dianping and communications tower company China Tower each launched IPOs in Hong Kong, bringing in \$4.7 billion, \$4.2 billion and \$6.9 billion respectively.

The reform also allows biotech companies to list on the HKEX even if they aren't generating income yet. "This benefits companies with a number of promising products in the pipeline which haven't been able to market them yet," says Cheng. HIV treatment manufacturer Ascleptis Pharma and biosimilar specialist Innovent Biologics were among those to take advantage of the opportunity to list on the HKEX in light of its newly relaxed rules. ▽

FRAUD AND MISCONDUCT

Despite its wild success, the HKEX has a unique problem – backdoor listings. "That's when speculators create and list entities that are hardly more than an empty shell, and then sell them to companies that didn't qualify for listings on the Hong Kong exchange either because they fell short of the profit threshold or because they didn't want to wait to register three years of profitability like Hong Kong's rules require," explains David Cheng, a lawyer specialising in stock markets. Cheng reports that these shell companies are sold for up to HKD 500–600 million (CHF 64–76 million).

The banks in charge of checking the information submitted by companies looking to list on the HKEX have also slacked on their due diligence at times. In the autumn of 2017, China's market watchdog singled out 15 financial establishments, investigating them for providing "poor-quality services" for a series of IPOs.

And one of them was UBS. Fast-forward a few months, and UBS was hit with a fine for HKD 119 million (CHF 14 million) and its authorisation to sponsor IPOs was suspended for 18 months as a penalty for allowing China Forestry Holding – a Chinese forest development and timber company – to list in 2009. The company was delisted from the HKEX in 2011 and it is currently being liquidated.

THE STRONG CHINESE DRAGON

Despite a difficult 2018 full of tensions with the United States, the world's second-largest economic power continues to grow, supported in particular by its immense domestic market.

KEY FIGURES



3,430,000

The number of dollar millionaires in China in 2018, including 338 billionaires.



2,491

In billions of dollars, the volume of Chinese exports of goods and services in 2017.



2034

The year when China is expected to be the top consumer market in the world, ahead of the United States.

TOP 10 LARGEST GLOBAL CAPITALISATIONS

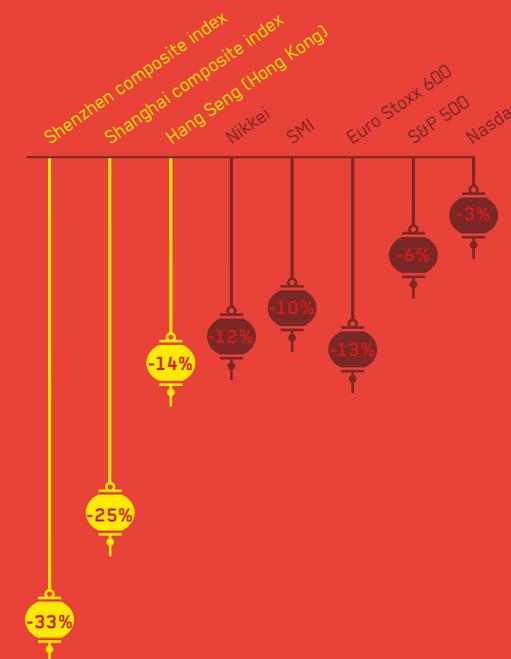
While no Chinese company was one of the biggest capitalisations in 2016, Alibaba and Tencent have now entered the top 10.

● China ● USA

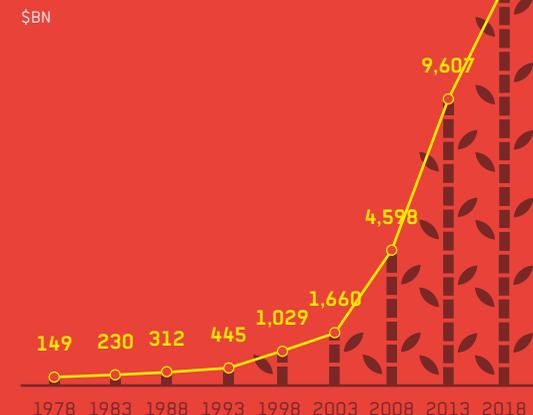
Company	Capitalisation as of 31 December, 2018
Alibaba	\$355 BN
Amazon.com	\$734 BN
Apple	\$749 BN
Berkshire Hathaway	\$503 BN
Facebook	\$376 BN
Google	\$726 BN
Johnson & Johnson	\$346 BN
JP Morgan Chase	\$320 BN
Microsoft	\$779 BN
Tencent	\$375 BN

A TERRIBLE YEAR FOR FINANCIAL MARKETS

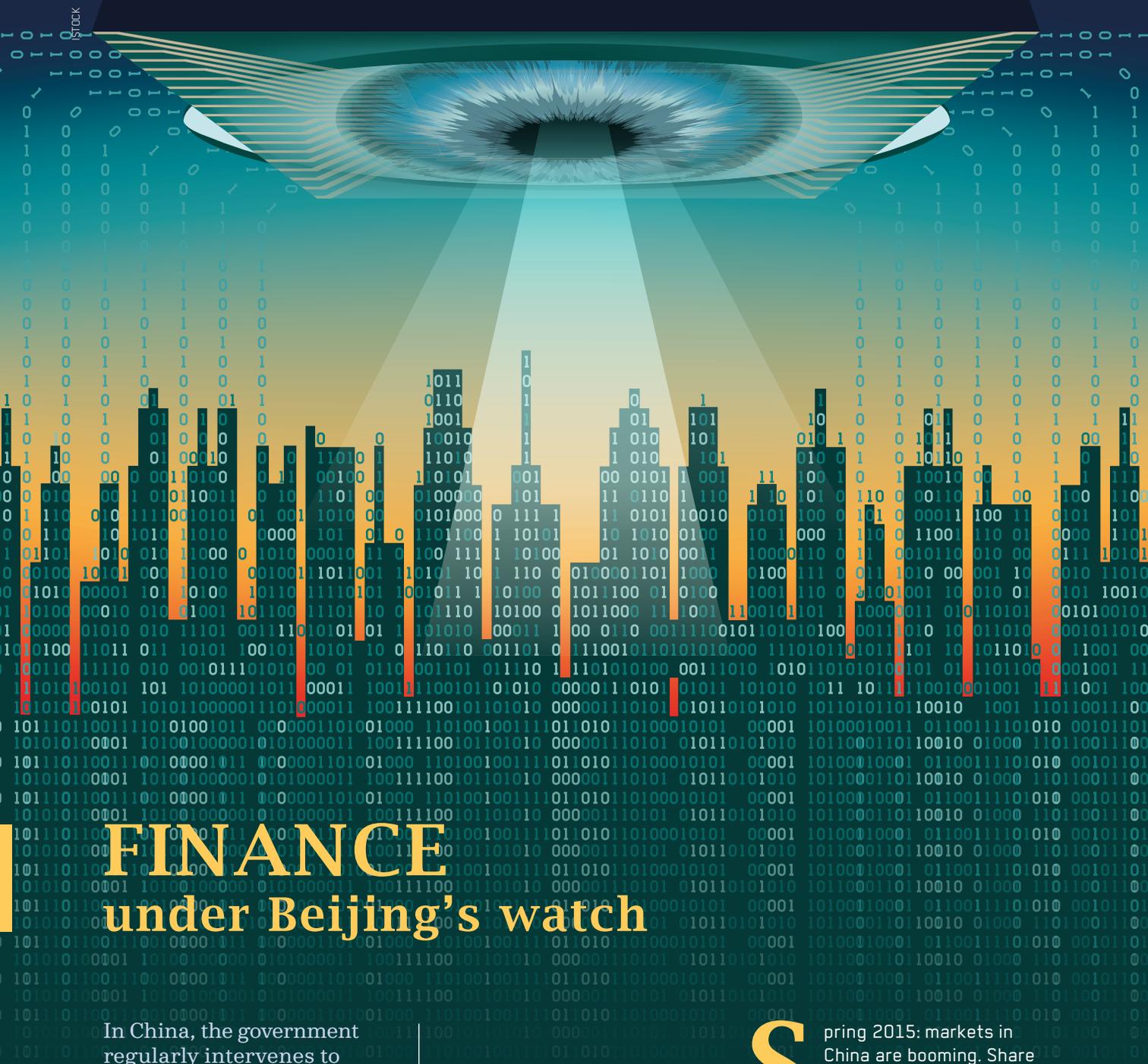
Chinese markets fell dramatically in 2018, much more than their Western counterparts.



CHINA'S INCREDIBLE GDP SURGE



Sources: Bloomberg Billionaires Index, FMI, McKinsey



FINANCE under Beijing's watch

In China, the government regularly intervenes to support the markets. It aims to avoid a crash, by any means possible, that could lead to political instability. Here are a few examples.

BY JULIE ZAUGG, HONG KONG

Spring 2015: markets in China are booming. Share prices went up 150% over one year. In the two previous years, the government did everything it could to motivate small investors to purchase stocks. More than 30 million new trading accounts were opened during the first five months of 2015. The boom was such that some individuals quit their jobs, sold their homes or borrowed heavily to be able to invest. "Interest rates

were lowered to facilitate loans, and brokerage firms were encouraged to offer margin financing to their clients," said Tomasz Bielinski, a researcher at University of Gdansk who studied the Chinese bubble.

At the height of the crisis, there was as much as 2 billion yuan (286 billion Swiss francs) in loans, four times higher than the previous year. But on 12 June 2015, the euphoria came to a brutal end. The Chinese exchanges fell drastically. In early July, the Shanghai exchange lost 30% of its value. On 24 August 2015, it dropped 8.5% in a single day. The catastrophe would lead to one of the most significant state interventions ever attempted for a stock market.

A group of state companies, nicknamed the "national team", was quickly established. "Their mission was to purchase shares from the 200 or 300 struggling companies that dominated the exchanges," said Thomas Gatley, expert in Chinese markets at research institute Gavekal Dragonomics. "Between June and July 2015, this state team spent nearly \$300 billion."

During that same period, big investors – those holding more than a 5% market share in a company – were forbidden to sell their shares for six months and listings were suspended. "To top it off, the state declared a moratorium on trading for 1,300 companies, which is equivalent to 45% of the market," said Bielinski.

Furthermore, some 200 people were arrested in the following months, including short-sellers, journalists covering the bubble bursting and a hedge fund manager, Xu Xiang, who was accused of contributing to market volatility by betting on forward stocks.

TRANSACTIONS UNDER SURVEILLANCE

Recently, Beijing intervened twice more. In October 2017, leading up to a crucial congress for the Communist Party, China began to monitor all transactions exceeding one million yuan (143,000 Swiss francs). The goal was to avoid any market volatility during the Communist Party congress, as the government wanted to project a stable image. Investors who were making risky ventures received warnings from the government. An investor based in the province of Guangdong received such a warning since he purchased and then sold \$325,000 worth of shares in a chain of shopping centres. A client of Haitong Securities, a brokerage firm based in Shanghai, received a 24-hour trading suspension after selling \$1 million in shares of a large bank.

In October of last year, Beijing became involved in the markets yet again

In October of last year, Beijing became involved in the markets yet again, when it became apparent that many companies had offered their shares as a guarantee in order to obtain loans. The poor performance of the Chinese markets in 2018 put these companies in danger. Approximately \$613 billion worth of shares would be at risk, according to Bloomberg. "Rather than deploying a

national team, this time the government chose to create local units in charge of making funds available to support struggling companies," explained Gatley. Comprising institutional players affiliated with the government, these units are currently operating in Beijing and Shenzhen.

China has a tendency to intervene to such an extent in the markets because it is terrified that they will fail. Approximately 85% of investors are individuals, who have often invested their life savings in the markets. "The government wants to make sure that these people don't lose too much money, since that could lead to political instability," said Bing-Xuan Lin, finance professor at the University of Rhode Island. A decline in prices could also affect the real economy, creating even more uncertainty for the Communist Party.

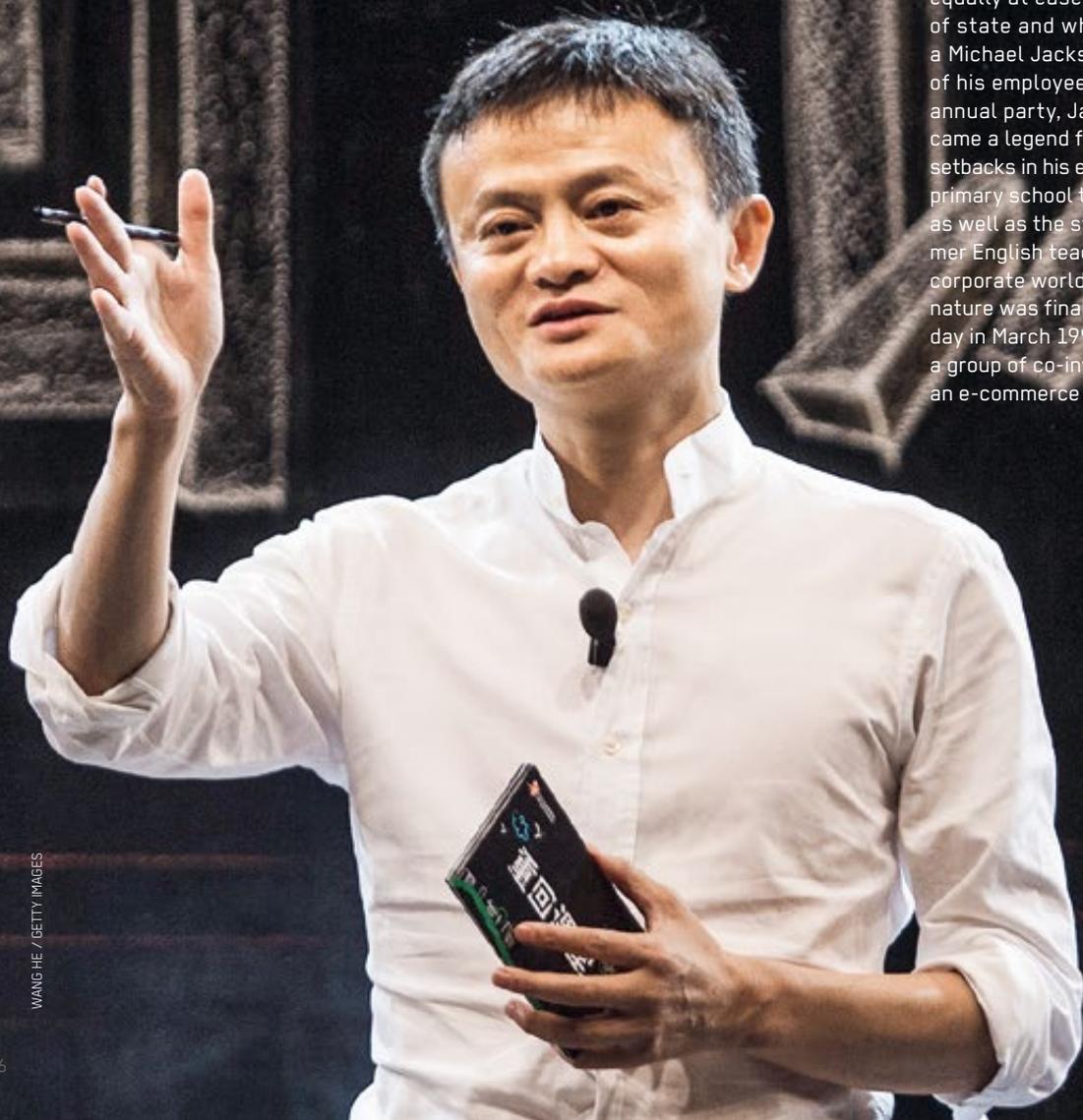
But this type of government activism does come with consequences. "This situation leads to distortions and unhealthy speculation: if you're an investor and you know that the state will always bail out struggling companies, then you're betting not only on the companies that will likely create value, but also on government interventions," said Lin. Listed companies will develop risky behaviour, such as taking on excessive debt, since they know that the government will always be there to save them.

And when the markets are virtually suspended, like in summer 2015, the companies that should pull out of the markets cannot, and those that should go public are unable to do so. Shareholders, who are told to sell their shares, end up losing confidence in the markets. "In the future, investors will no doubt put their money elsewhere," said Bielinski. ▽

FLAMBOYANT leaders

The best Chinese CEOs are rivals in talent, tenacity and charisma. We take a look at some key figures.

BY ANGÉLIQUE MOUNIER-KUHN



JACK MA

(Alibaba)

Emperor of e-commerce

“Triumph without peril brings no glory.” This quote from Pierre Corneille’s *Le Cid* could have easily come from Jack Ma himself, if he hadn’t already developed a mastery of aphorism in addition to his entrepreneurial genius. The proud chairman of Alibaba sums up his business philosophy in these words: “Today is difficult, tomorrow will be even more so. But the day after will be wonderful; most people don’t think far enough ahead to the day after.”

With an extroverted personality, equally at ease among heads of state and while dancing to a Michael Jackson song in front of his employees at Alibaba’s annual party, Jack Ma, 54, became a legend for the countless setbacks in his earlier life: first at primary school then at university, as well as the struggles the former English teacher faced in the corporate world. His opinionated nature was finally rewarded one day in March 1999, when Ma and a group of co-investors launched an e-commerce platform in a

Hangzhou apartment, similar to Bill Gates, who Ma likes to quote, and Microsoft’s beginnings in a garage.

The rest of the story has already gone down in history: in less than two decades, “Crazy Jack”’s creation has become a mastodon, with more than 600 million active clients around the world, while Hangzhou, a former imperial capital, has become a thriving hub for businesses and new technologies. The company, whose incredible debut on Wall Street in 2014 remains, to this day, the biggest IPO of all time (\$25 billion valuation), is extending its reach well beyond e-commerce to entertainment, cloud computing, financial services and online payments with the Alipay platform. During this time, Jack Ma saw his fortune soar between \$35 billion and \$40 billion dollars, based on developments and fluctuations of shares of Alibaba, of which Ma holds nearly 7% of the capital.

We thought we knew everything about this ultra-publicised, charismatic visionary who is forever an invited guest at international forums. Give or take a few minor details: the most well-known capitalist in China is... a member of the Communist Party of China, which was revealed in November by *Le Quotidien du Peuple*, refuting the belief that Jack Ma had no political attachments. Another semi-surprise, considering he turned 54 last September, is that Ma announced his decision to retire from Alibaba in September 2019 in order to focus on his philanthropic education projects. In 2013, the iconic visionary decided to step down from his position as CEO, but remains executive chairman. He intends to gradually pass on his duties to Daniel Zhang, current CEO, who will take on both positions when Ma retires. There’s nothing to be worried about, assures Ma: didn’t Alibaba, on its site, promise it would last for “at least” 102 years?



MA HUATENG

(Tencent)

Internet prodigy

He prefers to stay out of the spotlight. But Ma Huateng, known as Pony Ma – as his name means horse in Chinese – struggles to remain hidden. The co-founder and CEO of Tencent was recently named the best CEO in China by *Forbes* China. With a personal fortune estimated at \$35 billion, the forty-something was considered last year, by the same magazine, to be the richest man in China. He’s also become one of the most prestigious philanthropists.

Born in 1971 in Guangdong province, Pony Ma, a prodigal engineer, created Tencent with a few friends in 1998. The “T” of the “BATX” – the quartet with Baidu, Alibaba and Xiaomi which is the Chinese equivalent of the US GAF A companies – was smart to get involved in daily life in China by multiplying its online services: messaging (WeChat has more than one billion users), games, music, videos, online payments and e-commerce.

Pony Ma dreams of expanding his empire beyond China. While Tencent is still relatively unknown internationally, the company is increasing its influence by taking noteworthy stakes in companies like Snap and Tesla.



DONG MINGZHU

(Gree Electric)

Iron Lady

Sexagenarian Dong Minzhu is an icon in China. Since 2001, she has been the head of Gree, the largest air conditioner manufacturer in the world. “Sister Dong” is the incarnation of female perseverance. Named the most powerful businesswoman in China by *Forbes* magazine in 2017, the “iron lady” has already written two autobiographies about her career at the prosperous state company.

Gree was only a local SME in Zhuhai in Guangdong province when Dong began working there as a salesperson in 1990. Originally from Nanjing, Dong raised her son alone after the death of her husband. As her mother took care of the child, Dong put her heart and soul into the business, climbing the corporate ladder. She was promoted to sales director in 1996 and then deputy president the following year.

Under her leadership, Gree multiplied its commercial network and sales skyrocketed. Dong is well-known for her asceticism and rigour: she hasn’t taken a single day off during her career and is revered by her 80,000 employees. She came up with Gree’s road-map-like slogan: “Made in China, Loved by the World”.

**REN ZHENGFEI**

(Huawei)

Veteran of Chinese capitalism

Usually distant with the press, Ren Zhengfei, founder of equipment manufacturer Huawei, was the subject of much media coverage in late 2018. But it was actually his daughters who captured all the international attention. The oldest, Meng Wanzhou, 46 and financial director of Huawei, was arrested in December 2018 in Vancouver at the request of the United States, which accused the company of violating sanctions against Iran. The youngest, Annabel Yao, 21 and a student at Harvard, made a name for herself at the famous debutante ball in Paris.

Born in 1944, Ren is one of the creators of China's economic modernisation. An engineer by training, he joined the People's Liberation Army in the middle of the cultural revolution before founding Huawei in 1987 in Shenzhen, the epicentre of liberal reformism inspired by Deng Xiaoping.

Known for being inflexible, Ren built up Huawei to rival the biggest telecoms groups - with suspicions of collusion with the Chinese government. The company is now at the centre of the US-China tech rivalry. "We will reach the top of Everest," he wrote to his employees in 2018, "regardless of the challenges in our way."

**JEAN LIU**

(Didi Chuxing)

Woman successor

Jean Liu isn't exactly a self-made woman. The entrepreneurial talents of the CEO of Didi Chuxing, China's primary ride-share platform, are nonetheless just as highly praised in tech circles. This award-winning leader is part of the new generation of Chinese "disruptors": a relentless worker, brilliant and daring, she's also a mother of three children and fought breast cancer in the public eye.

Born in 1978, Liu comes from a business family: her father, Liu Chuanzhi, is none other than the founder of IT giant Lenovo. With degrees in computer science from Peking University and Harvard, she became the chief operating officer of Didi Dache in 2014, after about 10 years at Goldman Sachs.

A year later, she successfully led the merger with competitor Kuadi Dache. As the head of the new company renamed Didi Chuxing, she ran many successful fundraising efforts alongside prestigious partners such as Alibaba, Tencent and Apple. In 2016, she crafted a deal to merge with Uber's Chinese operations. Valued at nearly \$56 billion, the unicorn with 550 million users is looking to go public.

**WANG ZUJI**

(China Construction Bank)

Banker from the old boy's club

In 2018, *Forbes* magazine ranked Wang Zuji the third best CEO in China. The list evaluates CEOs based on the market performance of their company, profit developments and rate of return on assets. This is an honour for the sexagenarian who has been the head of China Construction Bank (CCB) since 2015. To lead one of the "big four" companies in the banking industry under state control in China, he had to be part of the old boy's club. With the equivalent of \$3,400 billion in assets, the establishment founded in 1954 and based in Beijing is the second largest bank in the world, according to Standard & Poor's.

Wang, who holds a degree in economics from the University of Jilin and has been a member of the Communist Party of China since 1985, worked at the China Development Bank before joining the government administration of Jilin province in north-east China. He was the vice-governor there from 2008 to 2012, before becoming co-president of the China Insurance Regulatory Commission until 2015. He was then named head of the CCB.

MADE IN CHINA 2025

INCREASING POWER

Supported by the Chinese government, 10 innovative economic sectors aim to free the country from its dependence on foreign imports. Swissquote analysts have created a certificate dedicated to this theme.

[SWISSQUOTE.COM/CHINA2025](https://www.swissquote.com/china2025)

In 2015, the Chinese Premier announced the "Made in China 2025" initiative. This government action plan, inspired by the "Germany Industry 4.0" smart industry project, encourages large-scale innovation across a number of strategic sectors.

The goal is to increase development and domestic production of high-value added components to 40% by 2020 and 70% by 2025. Target industries include robotics, biopharma, autonomous cars, aerospace, and new

materials. Chinese firms' decreasing reliance on imports should allow them to challenge Western tech giants. This is a clear and clever strategy from the Chinese government, and one that is also frustrating for other countries, as illustrated by the current trade tensions with the United States.

Even should the initiative get slightly revamped to accommodate protectionist concerns from the US, the government drive to support China's modernization will continue. ▲

ISIN: CH0434700248 SYMBOL: CHINTQ

10 TARGET INDUSTRIES

1. New information technologies, including artificial intelligence and quantum computing
2. Numerical control tools and robotics
3. Aerospace and aeronautical equipment
4. Ocean engineering equipment and high-tech shipping
5. Modern railway transport
6. Autonomous and green vehicles
7. Electrical equipment
8. Agricultural machinery
9. New materials
10. Biopharma and new medical products

FEAR IN RETAIL

Shaken by the e-commerce boom, supermarket brands are starting to fight back with technological investments and mergers. Their survival is at stake.

BY ANGÉLIQUE MOUNIER-KUHN

Jeff Bezos is a self-described “congenital optimist”. During the course of one day on 26 November 2018, the richest man in the world saw his fortune – made up primarily of Amazon shares – increase by \$6.3 billion, according to Bloomberg. That Cyber Monday, a marketing ploy that began 15 years ago to promote the e-commerce boom, shattered all forecasts in the United States. Sales were up 19% compared to the previous year, reaching nearly \$8 billion (source: Adobe Analytics). Amazon, which makes up half of all online retail sales in the US, won the lion’s share of these record sales.

In a sign of the times, another US retail giant declared bankruptcy a few weeks earlier: Sears was weighed down by years of strategic misguidance and losses. The news caused the media to wax poetic for yesteryear. The death of this department store veteran, which opened in Chicago at the end of the 19th

century, is proof of the consumption habit revolution that has hit traditional retailers hard – first large department stores and now supermarkets. According to the US Department of Commerce, online sales already make up 13.5% of total retail sales in the United States, compared to 4% in 2010 – and this inexorable growth is causing brick-and-mortar shops to close in waves as a result.

The industry was caught unawares by the magnitude of transformations over the last 10 years

Rather than call this an apocalypse – the preferred term used by US commentators to describe the constant bankruptcies and the desertification of big retail stores – Dominique Locher likens it to a tsunami. “The first wave was for >

'non-tangible' products that weren't tied to supply chains, such as books and music. While it varies by country, approximately 60% to 70% of books and music are now purchased online," says Locher, the former CEO of Migros subsidiary LeShop.ch, who is currently a board member of several foreign retail groups. "The second wave was for products such as electronics and clothing, where online sales reached at least 20% depending on the market. Then the third wave was food products."

This trend moves the balance of power in favour of the consumer. "Previously, consumers were stuck in a process dictated by brands and distributors," says the digital entrepreneur and investor. "With flyers delivered to every household and loyalty cards, the brand decided what consumers needed, and shop opening hours determined when customers could do their shopping." The flexibility of online shopping

was a game-changer. This new paradigm forced traditional brands to convert to the 'customer-centric' model that Amazon was founded on. This approach focuses on what customers need and want," says Markus Koch, Consumer & Industrial Products specialist at Deloitte Switzerland.

“Culture, process, IT systems, supply chains and data analysis – everything needs to be reworked”

Markus Koch, Consumer & Industrial Products specialist at Deloitte Switzerland

But there's a big, complex difference between selling a book on the internet and selling a salad, and improv-

sation just won't cut it. "The food product market is the ideal market for online sales," Locher says sarcastically. This very demanding market is causing some serious headaches for companies in the industry, which must manage fragile goods (eggs, fruit, wine, etc.) and cold chain constraints, while simultaneously guaranteeing the fastest possible delivery times. The weak growth of AmazonFresh, launched about 10 years ago, is proof of how difficult it is to compete with big box stores in this industry. To improve sales, Amazon recently began a brick-and-mortar approach. With the acquisition of organic supermarket chain Whole Foods and its 460 locations for \$13.7 billion in 2017, "Amazon strengthened its credibility in the food industry and secured a ground network that will allow it to deliver everywhere more quickly, while also getting a hold of customer data," says Frank Rosenthal, a Paris-based consultant and expert in business marketing.



HEADQUARTERS: BENTONVILLE, ARKANSAS (US)
EMPLOYEES: 2.2 MILLION
REVENUE (2017): \$500.3 BILLION
 WMT

WALMART

THE OTHER ONLINE GIANT

"Given the pace of disruption in the food retail landscape and the fact that the top players will reap the benefits of industry consolidation and increasing adoption of online grocery, we believe Walmart is best positioned to continue to take both mind and market share going forward," wrote Deutsche Bank in a recent note. Recommending investors to purchase shares, the bank estimates that Walmart - which has 11,000 stores in 28 countries - will almost keep pace with Amazon in the food e-commerce industry in the United States by 2025, with a 17% market share.

OCADO

THE MICROSOFT OF RETAIL SALES

Founded in 2000 and floated on the London Stock Exchange in 2010, UK online supermarket Ocado is becoming an internationally recognised tech firm that sells logistics solutions to traditional retail chains. According to some observers, its platform is impressive enough to emerge as the industry standard operational system, making Ocado the Microsoft of retail. Broker Peel Hunt recommends purchasing shares.



HEADQUARTERS: HATFIELD (UK)
EMPLOYEES: 12,799
REVENUE (2017): £1.433 BILLION
 OCDO

The Seattle giant's ambitions in the food sector exemplify traditional supermarket brands' fears, but in reality, these supermarkets are up against quite a number of obstacles. A recent McKinsey study showed that the industry was caught unawares by the magnitude of transformations over the last 10 years, in both the United States and Europe: in addition to changes in consumer habits and the surge in new technologies, price competition has become increasingly fierce. As a result, organic growth has slumped, margins are under pressure in an industry where they're already low, and share prices of public companies are in freefall. For example, French brand Casino's complex structure has become an easy target for short-sellers. And the worst is possibly yet to come, warns the consulting firm. According to McKinsey, unless there is a forceful pushback, by 2026, supermarket chains could lose between \$200 and \$700 billion in revenue (equivalent to 12% to 40% of their current profits) to discount brands, online sales and non-food players. As McKinsey

notes, "When the dust settles, half of all traditional retailers could disappear," such as the US regional brands that are closing one by one, or the 243 former Dia shops that Carrefour liquidated in France.

WALMART SETS AN EXAMPLE

Albeit with a delayed start, most large retail stores have actually already begun to prepare a response. "Culture, process, IT systems, supply chains and data analysis – everything needs to be reworked. But that doesn't mean the traditional players are doomed to disappear. The advent of television didn't kill film," said Koch. In the race for repositioning, which has seen a proliferation of mergers and alliances of all kinds, US giant Walmart has taken the lead, closely following advice from founder Sam Walton: "To succeed in this world, you have to change all the time." Via tech investments and acquisitions, such as Jet.com (a discount start-up targeted at millennials) in 2016, the Arkansas-based retailer has become the third-largest e-commerce retailer

in the US, with a market share of almost 5% and sales up more than 40% year on year. And Walmart's strategic transformation is happening around the globe: in India, Walmart acquired e-commerce giant Flipkart, whereas in the United Kingdom, its subsidiary Asda merged with Sainsbury's in the hopes of dethroning Tesco, the number one retailer in the region.

The US brand has become the perfect example of an "omni-channel" retailer, which is the most coveted concept in the industry. Customers can decide if they want to purchase online or in shops, have their goods delivered to their door or pick them up in the shop. This pick-up strategy aims to increase physical traffic in the supermarket. And what's more, the shop has to offer a "customer service" that meets regulars' expectations. "Practical shopping, such as for cat litter or bottled water, will increasingly be done online. Going to an actual shop will be for more fun purchases, impulse buys or fresh products," >



CARREFOUR

BETTING ON TRANSFORMATION

Investors celebrated the arrival of Alexandre Bompard as CEO of Carrefour in July 2017 – he is credited with having steered Fnac out of the red by implementing digital strategies. Six months later, Carrefour unveiled its transformation plan aimed at leaving behind the outdated supermarket model, making up for its slow start in e-commerce. The plan confirmed the brand’s ambition to become the “global leader in the food transition for everyone”. At the same time, the French group began new partnerships with web giant Tencent in China and Tesco in the UK. It remains to be seen when the plan will come to fruition. Dubbed “Carrefour 2022”, it seems to be a long-term endeavour. Nevertheless, HSBC recommends purchasing shares with a price target of €18.50.

HEADQUARTERS: BOULOGNE-BILLANCOURT (FR)
EMPLOYEES: 374,478
REVENUE (2017): €88.24 BILLION
 — CA

said Frank Rosenthal. Dutch chain Jumbo, which is preparing to open in Belgium, is doing extremely well with its “Foodmarkt”, which combines retail shopping with restaurants, as well as with its Jumbo City convenience stores, which devote much of their space to ready meals.

While it has no physical brick-and-mortar shop in the country, UK online supermarket Ocado excels in customer service thanks to its top-notch entirely automated logistics. Abroad, the company has partnerships with US giant Kroger, Sobeys in Canada and Casino in France – all brands eager to take advantage of Ocado’s tech expertise to boost online sales.

The food transition and the shift to eating well are also increasingly inspiring retailers. As part of its transformation plan launched in

early 2018, Carrefour increased its investments in digital technologies and is targeting consumers with its “Act for Food” campaign.

“Practical shopping, will increasingly be done online. Going to an actual shop will be for more fun purchases”

Frank Rosenthal, Paris-based consultant and expert in business marketing

Active in all the countries in which the brand operates, the campaign

has 10 initiatives, including an affordable 100% French organic offering, reducing food waste, banning about 100 controversial substances and selling forgotten varieties of fruit and vegetables. “It’s a way to capitalise on all the current trends while preparing for the long-term future, since the change in food habits is here to stay rather than being an ephemeral shift,” says Rosenthal.

While these initiatives are all a prerequisite for the survival of their brands, it is hard to imagine that just one or another of these strategies will be enough to compete with Amazon’s goal of hegemony. Some analysts are already predicting that Amazon will double its market capitalisation, reaching \$2 trillion by 2024. Jeff Bezos has reason to remain optimistic. ▲



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The genetic revolution is underway

Genome editing technologies will transform many industries, including healthcare, agriculture and livestock farming. Making these technologies available on an industrial scale raises concern, since they have the ability to change the face of humanity.

BY BERTRAND BEAUTÉ

“Revolutionary.” This word is often abused when discussing new technologies. But not this time. With the advent of genome editing tools that can modify DNA, the life sciences industry is on the brink of an unprecedented transformation. It is a shift to a new world, of which we’re already seeing the early stages. Cows without horns, muscular sheep, and harmless mosquitoes are just a few of the creatures that are the fruits of this dizzying scientific advance.

“We’re living a revolution that has only just begun,” said Hervé Ronin, partner at investment bank Bryan, Garnier & Co. “These technologies have already completely transformed the research sector. Now, they’re moving beyond laboratories and

taking over industries. There is enormous potential.”

“When the results of the first clinical trials come in, the capitalisation of these companies will go way up if the trials are successful”

Hervé Ronin, of the investment bank Bryan, Garnier & Co

How can such enthusiasm be explained? Imagine that human DNA is a book containing 3.2 billion letters. One spelling error could make an entire sentence incomprehensible,

which could potentially induce a cancer or a genetic disease. “Genetic editing tools work kind of like an editor proofreading a manuscript,” said Denis Duboule, geneticist at the University of Geneva (UNIGE) and École polytechnique fédérale de Lausanne (EPFL). “The tools can edit DNA however they want, such as removing one word or replacing it with another without touching the rest of the sentence.”

Obviously, this technology sparks a lot of hope in the medical field, as it could cure certain genetic diseases and cancers, as well as the HIV virus and other retroviruses. Several public biotech companies such as Collectis, CRISPR Therapeutics and Sangamo have begun clinical trials (see company profiles starting on p. 59). “Prelim-▷



inary results are very promising,” said Hervé Chneiweiss, research director at CNRS, the French National Centre for Scientific Research. “Perhaps I am too optimistic, but I believe the first treatments will be available on the market by 2020.”

COWS WITHOUT HORNS

“From an investment standpoint, it’s a fascinating industry because the curable potential of these new treatments is huge,” said Ronin. “When the results of the first clinical trials come in, the capitalisation of

these companies will go way up if the trials are successful. I recommend Sangamo and CRISPR Therapeutics in particular. For the time being, these two companies stand out. They are a few months ahead of the competition.” Less advanced, US-based biotechs such as eGenesis and Revivicor have used this technology to “humanise” pig foetuses. The goal is to produce pigs whose organs can be transplanted into humans without a risk of rejection or illness.

“It’s not a niche market; in fact, it’s worth hundreds of billions of dollars”

Hervé Chneiweiss, research director at CNRS

But genome editing isn’t limited to just the medical industry. “Since DNA is present in all organisms, including plants and animals, there are many applications for this technology, particularly for livestock farming and seed growing,” said Chneiweiss. “It’s not a niche market; in fact, it’s worth hundreds of billions of dollars.”

Recombinetics, a US-based biotech, created a variety of cows without horns in order to reduce the potential for injuries when raising the animals. Calyxt develops genetically-modified seeds, the notorious “new GMOs” (see inset on p. 61). Its first product is expected on the market in 2019: a soy oil that contains less saturated fatty acids (which raise cholesterol) and more oleic acids that are good for heart health (read our interview with the founder of Calyxt on p. 62). While they are a little behind, industry giants – Monsanto, Bayer and Dupont – have acquired patents in various genome editing technologies in order to keep up with the oncoming wave.

Released in 1997, the somewhat prophetic film *Gattaca* describes a world in which it becomes possible to choose the genotype of one’s children – an outcome that new genetic tools make possible.

DR

VARIOUS GENOME EDITING TECHNIQUES



THE OLDEST

Discovered in the late 1980s, meganucleases were the first genome editing tools developed. They recognise very long sequences of DNA, making it possible to edit the genome very precisely. But they’re extremely complex to handle. Only two companies – Collectis and Precision Bio-Sciences – use this method.



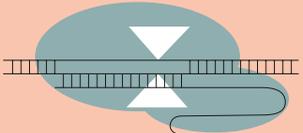
THE LEAST KNOWN

Developed in 2003, zinc finger nucleases (ZFN) are slightly less complicated to use than meganucleases, but they can sometimes generate off-target cleavage of the genome. US company Sangamo Biosciences uses ZFN to develop treatments.



THE MOST ADVANCED

Identified in 2010, TALEN (transcription activator-like effector nucleases) are used by Collectis to develop cancer treatments and by Calyxt to produce genetically-modified seeds.



THE MOST WELL-KNOWN

The discovery of the CRISPR-Cas system in 2012 led to a major wave. This system has three key advantages: simplicity, which makes genome modification accessible to all, speed and cost (approximately 10 times less than other methods). The only problem is that the CRISPR-Cas system generates undesired genome modifications. For advocates, this is simply an issue due to the fact that the technology is so new, but for critics, it is a showstopping defect for medical use.

COMPANIES TO WATCH

EDITAS

With seven drug candidates in its pipeline, Editas Medicine, which uses the CRISPR method, has a robust portfolio. Moreover, it was the first company active in the field to launch a clinical trial in 2017 with its EDIT-101 treatment for a rare form of genetic blindness. But a delay was announced in 2018 due to “production problems”. The trial could finally begin this year.

FOUNDED: 2013

HEADQUARTERS: CAMBRIDGE (US)

EMPLOYEES: 112

CAPITALISATION: \$1.25 BN

EDIT

GENOWAY

A small Lyon-based company, GenOway creates genetically modified lab mice using CRISPR-Cas9 technology. This is a booming sector for drug testing, so the company has a promising potential outlook. In December 2018, the company signed a partnership with German giant Merck.

FOUNDED: 1999

HEADQUARTERS: LYON (FR)

EMPLOYEES: 100

REVENUE (2017): €9.9 M

CAPITALISATION: €14.43 M

ALGEN

CRISPR THERAPEUTICS

CRISPR Therapeutics focuses on developing treatments for serious illnesses by using its genetic editing technology CRISPR-Cas9. It is the most advanced company using the CRISPR tool, because its CTX001 treatment for haemoglobinopathies is the first drug using CRISPR-Cas technology to begin a clinical trial (the company is currently recruiting patients). In its portfolio, CRISPR Therapeutics has other drug candidates in the pre-clinical stages targeting various types of cancer.

FOUNDED: 2013

HEADQUARTERS: ZUG

EMPLOYEES: 100

CAPITALISATION: \$1.82 BN

CRSP

A HIGH-RISK INDUSTRY

In another sector, scientists are experimenting with modifying certain yeasts to produce biofuel. That’s the good news, however there’s a “but”. Several, in fact. From a medical standpoint, researchers have discovered that genome editing techniques aren’t as precise as they were claimed to be. Let’s go back to our book analogy: “If you want to change one word in a Microsoft Word document, the easiest way to do so would be to run a character search, then copy and paste,” said Chneiweiss. “But if you search for the verb ‘to have’ in a book, you’ll get thousands of results and possibly make the change somewhere you shouldn’t have.” In July 2018, a study published

by scientific journal *Nature* demonstrated that there were many more unintended modifications – known as “off target” modifications – than expected, which could lead to cancers.

Following this news, the stock of CRISPR Therapeutics, for example, fell 20%. “After the euphoria that followed the results of animal testing, the *Nature* article slightly put off investors. But since then, share prices are back up,” said Anne Moore, who follows the health industry for investment bank Bryan, Garnier & Co. “These tools are still developing. That means the road to having the first treatment on the market will be chaotic. There will be positive and negative developments. It is a high- ▶

He Jiankui, a professor at the University of Shenzhen (China) said in November 2018 that he created the world's first gene-edited babies. The announcement has been seen by the scientific community as crossing an ethical red line.



ANTHONY WALLACE / AFP

risk investment because nobody knows which company or which technology will come out on top." But experts remain unanimous: "Even though there are challenges to overcome, genome editing will cure diseases," said Moore.

ERADICATING A SPECIES

But the burning ethical question remains: what will we do when all the technical problems are resolved? "These tools are extremely powerful and must be used with caution," said Chneiweiss, CNRS research director and also president of the ethics committee at Inserm (French National Institute of Health and Medical Research). "In Argentina and Uruguay, for example, experimental farms are modifying the genomes of sheep and calves to increase their muscle size in order to produce twice as much meat. From an economic perspective, this makes a lot of sense. But what kind of life will these augmented animals

have and what will the quality of meat be for consumers?"

Genetic modification of humans is, understandably, the most pressing ethical concern

In 2018, a British research team from the Imperial College of London, financed by the Bill & Melinda Gates foundation, were able to eradicate, in a laboratory, a population of anopheles, the mosquito that carries malaria, by modifying the genome of

a few insects. Over a few weeks, or less than about 10 generations, the lab anopheles died out.

The idea seems commendable: each year, malaria causes 450,000 deaths, a majority of which are very young children. Eradicating the mosquito that carries the illness could save many lives. "But what would be the consequences for biodiversity?" asked Chneiweiss. "Mosquitoes are pollinating insects that feed larvae and fish. Eradicating an entire species could have uncontrollable effects on our ecosystem. Especially since this won't be limited to just mosquitoes. Similar work is being done with invasive plant species."

Genetic modification of humans is, understandably, the most pressing ethical concern. In March 2015, researchers published warnings in prestigious scientific journals *Nature* and *Science*: genome editing must

not be used on humans except for classic genetic therapies. In other words, we must only modify the defective cells of a person, and not embryos, which could result in transmitting modifications to future generations. Despite this warning, Chinese researcher He Jiankui announced in November 2018 the birth

of twins, Lulu and Nana, whose DNA was modified to protect them against potentially contracting the AIDS virus. "For the international community, this scandal has to be a major shock," said Chneiweiss. "We must urgently begin international discussions on this subject in order to control the possible uses of genome editing." ▲

BUSINESS VERSUS PRECAUTIONS: THE BATTLE OF "NEW GMOs"

Are the "new GMOs" just regular GMOs? The question is quite divisive. On 28 March 2018, US Secretary of Agriculture Sonny Perdue announced that the USDA (US Department of Agriculture) would not regulate new varieties of plants developed with genome editing technologies. The varieties will be considered natural foods and consumers will have no way to distinguish them from a wild plant. The European Court of Justice (ECJ) took the opposite position. In July 2018, it decided that the "new GMOs" will be regulated just like the older ones.

Little known to the general public because they're not yet on the market, new GMOs are organisms whose genome has been changed by controlled gene modification using a genome editing technique. This is different from inserting an external gene into the genome, as in traditional GMOs.

For the industry, the regulatory framework is essential. If these new types of plants are considered to be just like the "old GMOs", they must undergo a long and costly market authorisation process. So companies must convince governments to take a welcoming stance. "The seed industry is doing some

intense lobbying," said Yves Bertheau, research director at the French National Museum of Natural History in Paris and specialist on the subject. "For example, the industry no longer uses the term 'genetic modification' as it has negative connotations, but rather 'editing' or 'correcting' the genome. That suggests that the DNA of plants is imperfect and must be improved upon."

An internal seed lobby document, titled "How to talk about plant breeding innovation" and read by *Swissquote Magazine*, describes the strategy industry players use to convince governments. Example: "By 2050, there will be 9.7 billion people living on the planet and not enough food to feed them all." Or another: "These methods are based on the same principles that farmers and botanists have used for thousands of years."

These arguments don't convince Bertheau, who believes that the ECJ made a wise decision: "I'm not saying that these new GMOs are toxic, but we don't have enough perspective. When in doubt, it seems to me that genetic modifications, which are fast, radical and often irreversible, must be considered with caution."

ILLUMINA

For investors looking for safety, Illumina is a company to watch. The emergence of treatments based on genome editing will require infrastructure to "read" patient DNA. As a supplier of DNA sequencing machines and accessories, Illumina will play "a major role" according to analysts from KBC Asset Management, regardless of which genome editing technologies and companies come out on top.

FOUNDED: 1998
HEADQUARTERS: SAN DIEGO (US)
EMPLOYEES: 5,500
REVENUE (2017): \$2.7 BN
CAPITALISATION: \$45 BN

— ILMN

INTELLIA

With its partnerships with Novartis and Regeneron, Intellia Therapeutics is developing seven treatments using CRISPR-Cas9 technology, particularly for genetic diseases and certain types of cancers. The company is cautious and does not expect to begin a clinical trial until 2020.

FOUNDED: 2014
HEADQUARTERS: CAMBRIDGE (US)
EMPLOYEES: 200
CAPITALISATION: \$611 M

— NTLA

SANGAMO

A pioneer in genome editing, US company Sangamo Therapeutics is unique in that it uses the ZFN method. It is currently running several phase I clinical trials and has a dozen drug candidates in its pipeline. It seems to have a leg up on the competition.

FOUNDED: 1995
HEADQUARTERS: RICHMOND (US)
EMPLOYEES: 180
CAPITALISATION: \$1.16 BN

— SGM0

INTERVIEW

“Genome editing will transform our lives”

A pioneer of genetic reprogramming, researcher André Choulika founded Collectis, a public company that develops revolutionary cancer treatments. He also founded agriculture biotech firm Calyxt, which develops modified food products via genome editing. We interview this serial entrepreneur.

BY BERTRAND BEAUTÉ

AN INGENE-IOUS MAN

In 2016, *Vanity Fair* ranked André Choulika the 22nd most influential French citizen in the world. That's quite an extraordinary honour for a scientist. Born in Lebanon in 1965, Choulika left Beirut as an adolescent when the country was in the middle of a civil war. He began a new life in France, where he was a brilliant student. A science baccalaureate followed by a master's thesis in the laboratory of François Jacob (winner of a Nobel Prize and the father of genetic research) led him to a post-doc at Harvard in the United States. In 1999, he founded Collectis – where he is still the CEO – which was a pioneer in emerging genome editing technologies. A decade on, in 2010, he founded Calyxt, which specialises in agricultural biotechnologies. He is currently the chairman of the board of directors.

Genome editing is often presented as a revolution. Do you think that's an exaggeration, given the unfulfilled promises of gene therapy?

Absolutely not. These tools are a real technological revolution for the entire planet that will keep us busy until the end of the 21st century. In the next 30 to 50 years, half of all the food that humans eat will be made from genetically modified seeds. There will be a wide range of genetic treatments in medicine. And synthetic products will replace materials such as wood and textiles... The tidal wave is coming.

There was an international outcry in November 2018, when a Chinese researcher announced that babies were born with genomes modified by the CRISPR-Cas9 technique. Does that temper your enthusiasm at all?

The CRISPR-Cas9 technology has been the subject of incredible media hype, which is what resulted in this abuse of technology. Some people want their few minutes of fame, as Andy Warhol said. But this researcher's work doesn't serve any purpose, and I'm not concerned about his foolishness. When Dolly the sheep

was born in 1996, everyone was scared clones would suddenly multiply. In the end, nothing went wrong because creating a clone doesn't do anything. That's exactly what happened with this researcher.

But what does worry me are all the self-proclaimed experts in genome editing that are speaking to the media. They make promises they are unable to keep, saying that this technology will be able to cure all genetic diseases. There are patients that are waiting and hoping for these cures. Sadly, my fear is that patients will once again be disappointed by these promises because, let's be honest, we're not going to cure Duchenne muscular dystrophy or cystic fibrosis in the immediate future. One day, probably, but it will take time.

What are the first treatments that Collectis is putting on the market?

Likely a treatment for a type of childhood leukaemia. The product is called UCART19 and Servier has acquired the exclusive licence. It genetically modifies immune cells from healthy donors, T lymphocytes, so that the modified cells recognise the patient's cancerous cells and destroy them. The first patient, a girl from the UK, was treated in June 2015 on compassionate use grounds. At the time, her life expectancy was only a few weeks. Now, she's starting school and the phase I clinical trial should finish up soon. The drug could be on the market by 2022.

You're the chairman of Calyxt, which is developing genetically modified seeds. How are these different from GMOs?

GMOs are made by adding foreign DNA to a plant. Essentially, we take a gene from one species, for example a bacterium, and transfer it to corn. When we edit the genome, we're specifically modifying an existing gene in order

to improve the plant's nutritional qualities. This process exists in nature. We're just helping it along in order to speed up the selection of plants that offer the best nutritional qualities for consumers.

Once again, Europe has shot itself in the foot

But the European Court of Justice decided that these “new GMOs” should be treated like the old ones, that is, subject to the same regulations...

Once again, Europe has shot itself in the foot. For agriculture biotechnologies, the Commission took a stance that is as restrictive as it is incomprehensible, and it will delay innovation. That's why I founded Calyxt in the United States. More than half of all planted land area around the world is planted with GMOs. No side effects have been found. So how dangerous can it be? The only problem with current GMOs is that they're not offering anything to consumers. Big companies like Monsanto have developed a Nespresso-type system – they're selling GMO seeds to sell their pesticides. That doesn't benefit consumers or the environment at all. Calyxt is here to change that paradigm. Starting this year, we will be the first to market an ingredient modified by genetic editing. It's a soy oil rich in good fatty acids that has no trans fats. This is an example of actually offering something to consumers, because this could potentially reduce the risk of developing cardiovascular diseases.

Aren't you afraid that industry giants will react and compete with your products?

In the pharma industry, all the big pharmas have genome editing in

COMPANIES TO WATCH

CALYXT

This US company develops genetically-modified food using TALEN technology, such as soy oil that is low in bad fats and wheat with increased fibre. These “new GMOs” are said to be good for consumers' health.

FOUNDED: 2010

HEADQUARTERS: MINNESOTA (US)

EMPLOYEES: 35

REVENUE (2017): \$508,000

CAPITALISATION: \$370 M

CLYXT

COLLECTIS

With its cancer treatment UCART19 currently in a phase I clinical trial, Collectis, which uses TALEN technology, could be the first company to put a genome editing-based treatment on the market. Collectis also has three other drug candidates at the pre-clinical stage.

FOUNDED: 1999

HEADQUARTERS: PARIS (FR)

EMPLOYEES: 81

REVENUE (2017): €25 M

CAPITALISATION: €623 M

COLLS

their portfolios through patents or agreements with biotech firms that do it. Novartis, for example, works with Intellia, and Servier has been partnered with Collectis for nearly five years.

The biotech agriculture industry, however, is floundering a bit. With Calyxt, we're moving a lot faster than other companies. It's a sector that has never had its economic model disrupted. The same companies – Bayer, BASF, Monsanto and Dupont – have dominated the market for a century. It's time for a new player to come in and break the paradigm like Tesla did for the auto industry. I think that new player will be Calyxt. ▽

CEO salaries: forever in the spotlight

In the United States, CEO pay keeps climbing higher and higher, but in Switzerland, compensation for leaders of publicly listed companies has stabilised since the 2008 crisis.

BY ANGÉLIQUE MOUNIER-KUHN



Among Swiss firms, Roche's CEO Severin Schwan wins the highest paid CEO award, earning the equivalent of 12.9 million euros, ahead of UBS CEO Sergio Ermotti (12.5 million euros).

PATRICK STRAUB / KEYSTONE

CEO salaries are a never-ending source of debate. The controversy was perhaps at its peak during the 2008 crisis, when the “packages” for Daniel Vasella, CEO of Novartis, and Marcel Ospel, head of UBS, were stupefying. Sky-high salaries were said to have encouraged short-term positions and excessive risk-taking among CEOs, as well as accelerated the crisis, according to incensed shareholders. This led to the implementation of regulations in several countries; in Switzerland, the Minder initiative of 2013 bans “excessive compensation”.

One of the most well-known CEOs, Carlos Ghosn, was jailed in Tokyo, accused of under-declaring his revenue as CEO of Nissan. This led to a new round of questions: what mysterious motivation causes the wealthiest CEOs to always want more money? What is real and what is fake in this ultra-competitive international CEO market that forces companies to overbid for the biggest names? It's difficult to understand the secretive, complicated world of base salaries, bonuses, stock incentive plans and other perks.

Carlos Ghosn himself didn't hesitate to mention that he was paid less

than many of his counterparts, with an annual salary of approximately €15 million as CEO of Renault-Nissan that always angered participants at the general meetings. But what were his criteria for compensation? Indeed, General Motors CEO Mary Barra made \$22 million in 2017. But it must be said that since the omnipotent Ghosn became CEO of Renault in April 2005, the share price has dropped 14% (-1.1% yearly, or +1.86% including dividends). Over the same period, BMW shares were up 112% (+9.57% yearly including dividends), while CEO Harald Krueger, who has held the position since 2015, made “only” €9 million in 2017.

Management salaries don't guarantee good performance for the company

“For us, as we represent retirement funds, CEO salaries are a key element of the alignment between the interests of management and that of shareholders,” said Vincent Kaufmann, director of Ethos, Swiss foundation for sustainable development. But academic research shows that management salaries

don't guarantee good performance for the company. Far from it, in fact. One of the studies, published by researchers from the University of Utah, Purdue and Cambridge in 2016, stirred up quite a bit of controversy. “CEOs that are confident and are paid more than their counterparts tend to get involved in activities such as over-investment and value-destroying mergers, which lead to considerable losses for shareholders,” according to the study. In 2017, the head of corporate governance research at MSCI bluntly observed that “in more than 60% of the 423 companies of MSCI USA, the effective cumulative salary

of the CEO from 2006 to 2015 is not in line with the total shareholder return (TSR).”

This iconoclastic researcher titled his report “Out of Control”, which resonates yet again in today's world. Indeed, in 2018, the United States implemented a measure as part of the post-crisis Dodd-Frank regulation that requires public companies to publish the ratio between CEO salary and median salary. Thrill-seekers will enjoy this: Equilar, the company that compiled this data, revealed that Frank Bisignano, CEO of First Data, a payment terminal management company, makes ▶



Frank Bisignano,
CEO of First Data

He makes 2,028 times more...



Douglas McMillon,
CEO of Walmart

He makes 1,188 times more...



Margaret Georgiadis,
ex-CEO of Mattel

She made 4,987 times more...

... than the median salary.

over \$100 million, which is 2,028 times more than the median salary for employees. Douglas McMillon, CEO of Walmart, pockets \$22 million annually, which is 1,188 times the median salary. It gets worse: Margaret Georgiadis, who resigned after just over a year as CEO of struggling toy manufacturer Mattel, made 4,987 times more than the median salary of an employee.

“With the end of the bull market, it will be interesting to see how salaries will change”

Vincent Kaufmann, director of Ethos

This pace of growth doesn't seem to be slowing down any time soon. Last summer, think tank Economic Policy Institute stated that the overall salaries for CEOs of the 350 largest US companies had increased by 17.6% over a year in 2017. Salaries have increased 71.7% since 2009. “The upward trend was supported

by the healthy stock markets in recent years,” said Vincent Kaufmann. “With the end of the bull market, it will be interesting to see how salaries will change.”

Comparatively, Swiss companies seem like paragons of moderation: top management salaries are only a few hundred times more than median salaries. They are stable, and sometimes even declining: according to the PwC annual study, the total median compensation for CEOs on the SMI fell 29.5% to 5.5 million francs in 2017, compared to the previous year. “This one-year decline is due mostly to technical factors. But salaries have remained largely unchanged since 2009. And certainly there are no longer salaries exceeding 20 million Swiss francs like before,” said Remo Schmid, Partner in People & Organisation at PwC. The Minder legislation is indeed in effect. “In many countries, salaries are subject to a vote at the general meetings. But Switzerland and France are the only countries in which shareholders have a say regarding the salaries of top management,” said Kaufmann. Even just the fact that this regulation exists is a deterrent: in 2017, a few days before the general meeting, rather

than incur a shareholder veto, management at Credit Suisse decided to reduce the planned bonus by 40%, since there were heavy losses the year before in 2016.

However, Schmid believes that Swiss CEO pay won't remain low over the long term. He believes that beyond the amount of the salary itself, the composition of that pay is an issue. The fixed portion usually only makes up 30% at most. “In most Swiss companies, the pay system is too complex. It's not sufficiently aligned with the interests of shareholders and not aligned much at all with strategic interests, which doesn't bode well for long-term corporate success,” said Schmid.

In 2017, Norway's central bank, which oversees the most powerful sovereign fund in the world, required companies to get rid of complex salary structures and implement a simpler compensation system. The fund has already made waves during general meetings, voting against increases for the CEOs of Tesla, Disney, Peugeot and Vinci. Managements everywhere are taking notice: Norges Bank holds shares in more than 9,000 companies around the world. ▽

ROBO- ASSET- OPTIMISER.

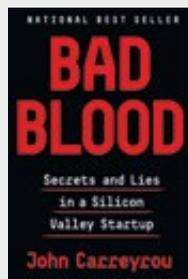
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TO READ, TO DOWNLOAD



CHF 20.-

BAD BLOOD

SECRETS AND LIES IN A SILICON VALLEY STARTUP

By John Carreyrou
(Alfred A. Knopf, 2018)

Massive fraud spread to the highest echelons of the government. A prime example was former Vice President Joe Biden's official visit to a laboratory fabricated for the occasion. This is the mind-boggling story of Theranos, a biotech start-up in Silicon Valley. Its charismatic CEO Elizabeth Holmes was dubbed the "female Steve Jobs" and Theranos was slated to revolutionise the medical industry by replacing blood tests with a simple pinprick. Valued at \$10 billion in 2014, the company ceased operations on 31 August 2018. In this book, Carreyrou of the *Wall Street Journal* - who began the investigation into the scandal - brilliantly recounts the wilful blindness surrounding Theranos.



CHF 20.-

SHAPING

THE FUTURE OF THE FOURTH INDUSTRIAL REVOLUTION

By Klaus Schwab and Nicholas Davis
(Penguin, 2018)

In this book, founder and Executive Chairman of the World Economic Forum, Klaus Schwab has written a practical, concrete guide that serves to complement his previous work, *The Fourth Industrial Revolution*. According to Schwab, the fourth industrial revolution that results from artificial intelligence and the permanent interconnectedness of humans and objects will overhaul the way we live, think and move, and will make the world more secure and more intelligent. But it will also result in major challenges for society, especially in terms of future job losses.



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FASTER, MORE SECURE SURFING

Every connection to a distant server needs to link a human address, such as google.com, to an IP address, by consulting an internet directory. That is called a DNS request. Simple but effective, Cloudflare's 1.1.1.1 app does only one thing: replace the internet provider's DNS server with its own service. This results in faster, encrypted searches that don't leave a history log.



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HEIMDALL PARENTAL CONTROL

PROTECTING THE KIDS

Heimdall is a very advanced parental control app that can block children from visiting certain sites, installing or using certain apps and calling or messaging after a specified time. The paid version offers even more features, such as device geolocalisation.



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ENDEL

CUSTOMISE YOUR MUSIC

A new productivity app, EnDel stands out among competitors thanks to complex algorithms that create personalised music for users to improve their concentration and well-being. Based on neuroscience research, the app promises a 6.3x concentration increase and a 3.6x anxiety decrease, based on real figures.



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SWISS SNOW REPORT

SKI WITH PEACE OF MIND

The go-to seasonal app Swiss Snow Report provides accurate, real-time information about Swiss ski resorts: snow cover, hours of sunlight, opening hours and prices, as well as local webcams for a fantastic view of the ski areas. All information is presented in a modern, elegant format.



HOW LONG IS FOREVER?

HYT
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TRAVEL

Montevideo, the capital of days gone by

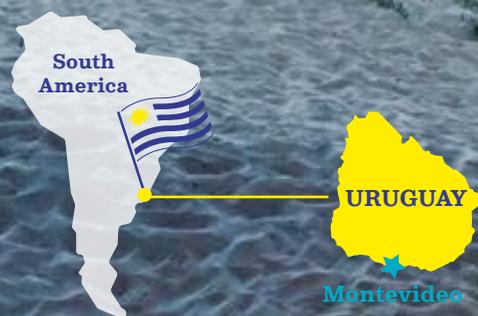
With 3,460,000 inhabitants, Uruguay is the smallest Hispanic country in South America. Saved from mass tourism thanks to the appeal of its vast neighbours Argentina, Peru and Brazil, it has long been a secret paradise for European retirees who value the quality of life it offers. Let's take an old-fashioned stroll through a timeless capital.

BY SALOMÉ KINER

Visitors often cross the Rio de la Plata and dock at the Uruguayan capital to escape the hustle and bustle of Buenos Aires. And rightly so. Montevideo is more discreet and laid-back than its colossal neighbour and is ranked as one of the safest cities in the world. Thanks to its political stability, the well-being of its inhabitants and its financial strategies, it has long carried the nickname “the Switzerland of the Americas”, and Uruguay also shares our coun-

try's penchant for peacefulness. Montevideo might not have the same buzz as large megacities, but it does have an old-fashioned charm with colonial architecture, urban beaches, culinary curiosities and lush parks.

This charming splendour of days gone by is especially evident along the Avenida 18 de Julio. This long avenue stretches for three kilometres from the Plaza Independencia, which marks the boundary of the old town, up to the Obelisk of Montevideo ▷



Ramirez beach,
Montevideo.

on Artigas boulevard. Immediately bringing to mind the decorative glitz and glam of the 1920s, this avenue is home to the majority of the city's historic buildings, such as the Palacio Municipal, Palacio Díaz, Palacio Salvo, Palacio Santos, the Cine Rex – a true gem in the city's architectural and cultural crown – and the Café Montevideo. Legend has it that *La Madrugada*, one of the great tango songs, was composed on this terrace, once frequented by local politicians and artists. Although now interspersed with the buildings of big commercial brands, this artery – the backbone of the city – still has flashes of its Spanish heritage, from its tree-lined squares to its bookshops and antique stores.

Montevideo's street food enthusiasts congregate at the Mercado del Puerto, recognisable by the white smoke released into the sky by its barbecue stands. Food lovers huddle around, impatiently waiting to enjoy marinated meat, seafood and breaded cod, a local speciality. This is also a great place to try a *jesuita*, a sweet and savoury appetiser stuffed with ham and cheese, and then give in to a dulce de leche cake or pounce on an empanada, the ultimate South American donut.

After mingling with this hungry crowd, our tour of Montevideo continues with a visit to the many municipal parks. The Parque del Prado, home to the Juan Manuel Blanes Fine Arts Museum and a large botanical garden, is the ideal place to understand what *maté* culture really means; every bench is buzzing with people chatting and

passing around calabashes and metal straws known as “bombillas”.

Just a few steps away is the Los Yuyos bar, which describes itself as the oldest establishment in the city. Impeccably preserved with its wood decor and rustic feel, Los Yuyos is famous for its grilled food, but more so for its large menu of cañas, a drink made from sugar cane – to be consumed in moderation! The evening is a chance to let your taste buds sample another Montevideo institution: the Museo del Vino. This shop and bar is ideal for tasting local wines while listening to blues, jazz and tango concerts.

The perfect activity to match the city's leisurely atmosphere is a stroll along the Rambla. This 22-kilometre avenue runs along the coast and the Rio de la Plata, with access to several beaches. The beaches in the city centre are too close to the port and therefore aren't recommended for swimming. A bit further out is the beach of Carrasco, a former seaside resort and popular holiday destination of the local well-to-do. ▀



Evening tango at the Museo del Vino.

JÜRGEN BOETHLING / ALAMY STOCK PHOTO



ISTOCK

ESCAPE TO CABO POLONIO, THE VILLAGE THAT TIME FORGOT



Should you have a few extra days, a trip along the Uruguayan coast to the village of Cabo Polonio is a must. While a deep nostalgia for the Roaring Twenties and colonial grandiloquence can be felt in Montevideo, Cabo Polonio is a one-way trip to an age that's a hybrid between a hippie revolution and a pre-industrial lifestyle. Once a refuge for smugglers, this cape is now a protected site. It is cut off from modernity and tourism by a barrier of natural dunes, making it difficult to access.

Fishermen's huts and small houses draw their water from wells and generate their own electricity. Only a hundred or so fishermen and craftsmen live here year-round, accompanied by a handful of dreamers in search of an alternative way of life.

Every night, dozens of people gather on the beach to watch the sunset. Because of the lack of street lighting, the

skies of Cabo Polonio are spectacularly clear. During the day, you can walk around the bottom of the lighthouse to see the colony of sea lions basking in the sun.

GETTING THERE

Montevideo is 260 km from the Puerta del Polonio terminal, accessible by the Nunez bus or by hire car. Four-wheel drive vehicles leave the Puerta del Polonio terminal every hour. The eight-kilometre journey across the dunes lasts 30 minutes and costs around seven Swiss francs.

PLACES TO STAY

Minimalist huts can be rented in the village of Cabo Polonio. The Las Brisas hotel, 30 km away, has all the usual comfort options and large windows overlooking the bay.

Las Brisas de la Pedrera boutique hotel
Starting at 250 Swiss francs per night for two people

PLACES TO STAY

Formerly the biggest hotspot for Uruguayan high-society nightlife, the Casino Carrasco hotel opened in 1921. Now run by the Sofitel group and included on the national heritage list, this impressive building, overlooking the Rio de la Plata, promises to take you on a journey through time.

Sofitel Montevideo Casino Carrasco & Spa
Starting at 150 Swiss francs per night for two people

In the heart of the historic centre, fully decorated in all the glory of the Uruguayan arts, the Alma Historica Boutique Hotel is home to 15 luxury rooms in an old family house.

Alma Historica Boutique Hotel
Starting at 200 Swiss francs per night for two people



ISTOCK



AUTO

A scooter masquerading as a car

Quadro's tilted four-wheeler is the only vehicle of its kind that can be operated with a driving licence. Our journalist put it to the test.

BY PHILIPP MÜLLER

by Swiss company Quadro Vehicles based in Vacallo (TI) – was introduced in late 2014 but was updated last year. Just as surprisingly, it's the only vehicle with tilting wheels that can be operated with a motorcycle permit (starting with category A) or driving licence.

Like its counterparts with three tilting wheels – the Piaggio MP3, Peugeot Metropolis, Quadro Tre and Yamaha Tricity – the Qooder is designed to be safer than a classic two-wheel motorcycle and much less cumbersome than a car. It is ideal for city life and has no real competition, unless

you count mini cars such as the Renault Twizy (see inset).

In all driving conditions, this bizarre two-seater was comfortable, safe and even fun!

Stability is one of Qooder's main advantages. In all driving conditions, this bizarre two-seater was comfortable, safe and even fun! You can tilt at your leisure while turning. If one wheel is in the air, there's almost

always at least one other still on the ground. The transmission has a differential motor, so there's plenty of rear traction. It's even possible to ride easily on unstable terrain, such as a gravel or dirt road leading up to a cottage.

On the motorway, the Qooder remains stable at the maximum speed allowed in Switzerland. If you need to go faster, it can be done with the powerful nearly 400 cc engine. Here is where you can feel a difference compared to the previous version, which was not as lively above 100 km/h. And since the disk brakes slow down all four wheels, decelerating is quite effective.

URBAN AND PRACTICAL

It also seems difficult to tip over the Qooder when stopped. Keeping pressure on the brake keeps the vehicle upright without having to put your feet down. The size makes it possible to weave in and out of urban traffic; although not as easy as with a classic scooter, it can be done. The Qooder doesn't take up any more space than a large motorcycle when parked.

The two rear wheels mean that the storage space is less spacious. The storage space is just deep enough to hold a helmet with a chinstrap. There

is also a compartment in the front and a USB port to recharge a smartphone or laptop. The 14-litre fuel tank is large enough to travel a little over 200 km on a full tank.

There's only one area where the Qooder is slightly lacking: lighting. The front headlight, when dipped, seemed weak. We recommend changing the bulb.

Yet the Qooder experience doesn't end there. Quadro's new CEO Paolo Gagliardo has already announced an electric version that will be available very soon. ▽



RENAULT TWIZY

Like the Quadro Qooder, this mini electric car also stands out due to its unique concept. It is an automatic two-seater with a small roof and seat belts. The cabin isn't completely enclosed, unless you purchase the side windows that come separately. The advertised range is approximately 100 km with batteries charged at 100%. Renault stated that 1,400 vehicles were sold in Switzerland since the Twizy went on the market. Price ranges from 9,900 to 18,200 Swiss francs depending on the model and selected accessories. From CHF 9,900.-

THE (NOT QUITE) COMPETITOR



ENGINE: 400 CC, 32.3 HP
AVAILABLE: RED, WHITE, BLACK, GREY AND BLUE
WEIGHT: 281 KG
PRICE: STARTING AT CHF 12,185

Despite its four wheels, it's not a quad, because it tilts while turning like a scooter. But it's not a scooter either, because it has four wheels. The Quadro Qooder – made

BOUTIQUE

A SCRAMBLER FOR CYCLISTS

The latest from California brand Lithium Cycles, the Super 73 SG1 is joining the trend of all-terrain electric bicycles with a vintage motorcycle look. But the Super 73 adds lots of originality and fun! Designed like a scrambler, it has a top speed of 25 km/h and a range of 90 km. Its small-diameter wheels (20 inches) provide excellent handling and it is equipped with hydraulic brakes, mud-guards, torque sensor and front and back LED lights.

super73.fr
CHF 3,399.-



FOR DIY LOVERS

Basel-based manufacturer Wohngest makes luxurious toolboxes out of solid wood from regional fruit trees (pear, walnut or plum). Each box holds everything you need for DIY: 24 tools – including a Swiss army knife and a set of screwdrivers – made from the same wood as the case and held in place by magnetic retainers.

wohngest.ch
From CHF 2,600.-

DIGITAL AND HANDMADE

The Kiyola KF-10 digital piano is the result of a collaboration between Japanese instrument maker Roland and wood furniture designer Karimoku. Handmade from solid oak or hazel wood, the instrument boasts a refined minimalist style and the latest sound-modelling and touch detection technologies from Roland.

roland.com
From CHF 4,789.-



WELL DONE

Say goodbye to overcooked, or for that matter undercooked, meat. Wireless thermometer Meat It is placed directly in the meat and saves you from culinary disasters. This smart kitchen tool is equipped with sensors, so all you need to do is select the desired cooking level using the app. Whether roasting, on the barbecue or cooking in a pan, Meat It guarantees that your meat will be perfectly done without having to watch it.

meat-it.co
CHF 99.-

BREITLING FOR AROUND TOWN

Before the 1940s, Breitling mainly supplied watches for the military. But then it launched Premier, its first mainstream line of timepieces. Nearly 80 years later, this legendary collection is making a comeback with five new models, three chronographs and two automatics that echo the brand's classic aesthetic standards. The Swiss watchmaker is known for its aviation and dive pieces, but the Premier line emphasises "everyday elegance".

breitling.com
From CHF 4,200.-



POCKET SURVIVAL KIT

A veteran of the US Army Special Forces, Jeff Kirkham has designed a survival kit the size of a credit card that can be kept in a wallet. Weighing only 12 grams, the Wilderness Survival Card contains nine fish hooks, one arrowhead, one awl, two sewing needles, four snare locks, one saw blade and a pair of tweezers. Better safe than sorry...

readyman.com
CHF 12.90



A VERY GREEN JUMPER OF THE FUTURE

Start-up Hopaal has created the "jumper of the future", which only uses 50 litres of water to make rather than the average 7,000 litres for a regular jumper. No chemical products or pesticides are used and the jumper is made entirely from recycled materials. Available in grey or navy blue, it is made in France, as are all the products from this ethical brand.

hopaal.com
CHF 136.-

BOUTIQUE

GEEK

ULTRA HIGH DEFINITION RIGHT IN YOUR LIVING ROOM

Samsung takes technology up a notch or four by packing its high-end QLED television (code name QE65Q900R, 65" version) with jaw-dropping 8K resolution. That's 7,680 x 4,320 pixels. While virtually no one is producing native 8K format – 4K has practically just hit the market – the Korean brand has a draw. Thanks to its upscaling feature, Samsung's star TV automatically displays all content in 8K, enhancing the sharpness and texture of any image. Behemoth 75" and 85" variants of the same model are also available.

samsung.com
From CHF 3,999.-



AUGMENTED EAR PLUGS

Bose's new Sleepbuds fit snugly into the ears to mask surrounding noise and keep sleepers sleeping. At 1.4 grams, these ultra lightweight wireless earbud-like plugs can also play soothing sounds that you can set to turn off or to wake up, as desired.

bose.com
CHF 298.-

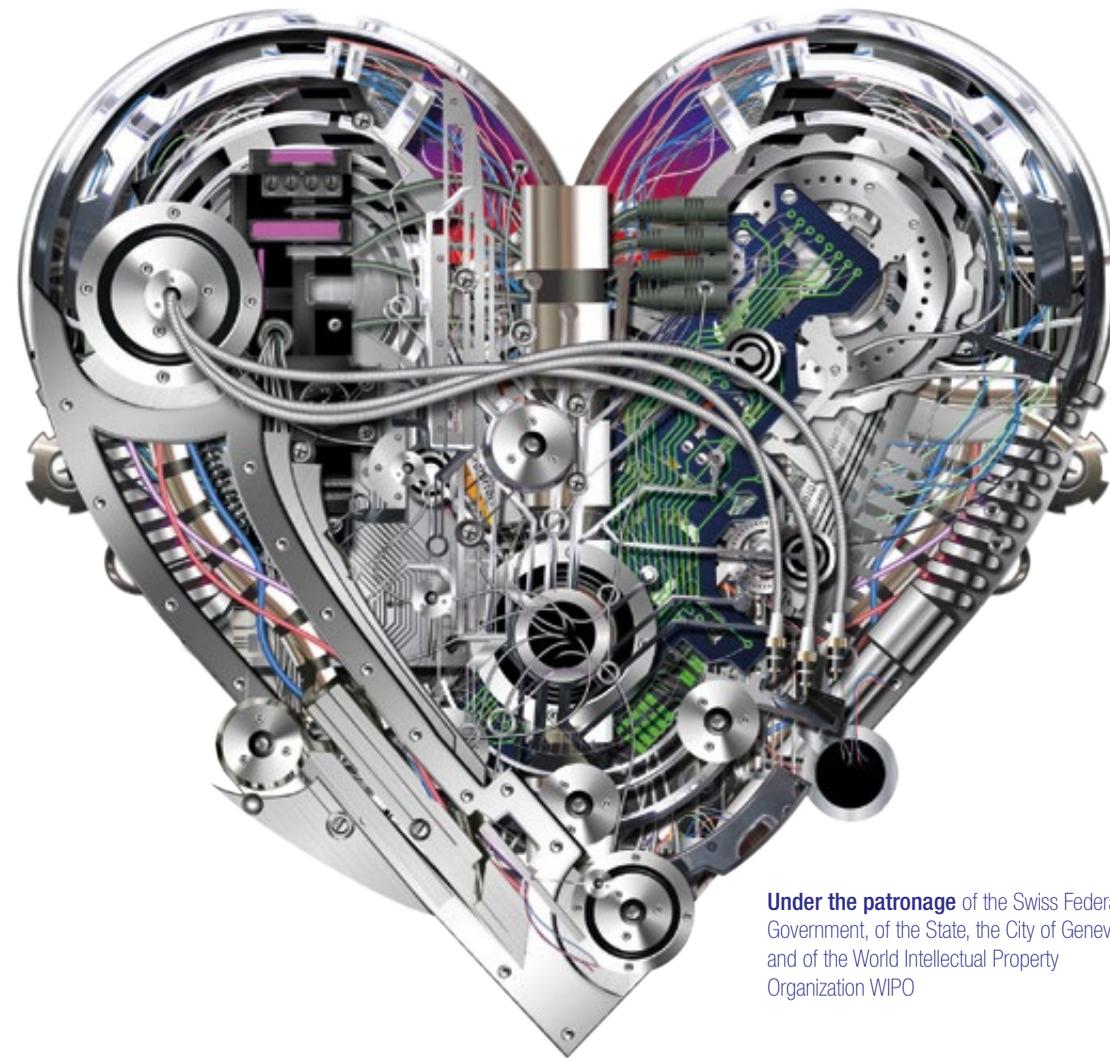


CONNECTED LOCKS

The Austrian brand Nuki has come up with its Smart Lock solution to let you lock your front door without touching a key. Connected to your smartphone via an app, the system is easily installed. No need to replace the original cylinder: Smart Lock is mounted over the section of the lock outside the door. It runs on batteries and replicates the movement of the key turning inside the lock. A lifesaver when your arms are loaded down. An add-on feature, Bridge, can be used to monitor lock activity remotely.

nuki.io
CHF 259.-

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INVENTIONS-GENEVA.CH

TRIED AND TESTED

A COLD
SHOWER AT
THE CINEMA

BY GÉRARD DUCLOS

4DX technology wants to replace traditional cinema, promising fans they can experience films as if they were actually in them. As long as you like rain and bumper cars.

It's a dream as old as cinema itself: viewers experiencing a film with all five senses, as if they were right there. After 3D cinema, the 4DX standard is on the way, expected to finally provide a technical solution to film-makers' age-old ambitions. The South Korean technology is already nearly 10 years old, but it has only just started to become available in our cinemas. In fact, at the moment it's only available in five locations in Switzerland. 4DX technology requires specially-equipped cinemas that can deliver multiple special effects: dynamic chairs, water and rain effects, fog, lightning and various smells.

At the time of our test, only *Aquaman* was available in 4DX in Romandy. It is a pure action film that lends itself well to this technology. The cinema was quite full and the majority of the audience was very young. On first glance, there are no stark differences between a 4DX and a regular cinema, besides the seats with footrests and light-up buttons. And the price, of course: it was around 15 Swiss francs more than a regular ticket if you

also choose the 3D option, which we did.

Younger viewers loved it, whereas the few older ones seemed less convinced

The room darkened and went silent... and then we were suddenly hit in the back almost to the point of falling out of the seat, while a jet of cold water hit us in the face. Here we go! Smoke, fog and lightning were quickly added to the demonstration of effects, as the film starts off very intensely. As the name indicates, *Aquaman* is a feature film in which virtually all the action takes place either in or around water, so of course wetness was a particularly present effect throughout this spectacularly third-rate film. Unless, tired of being doused with frigid water, frozen spectators end up deactivating this feature by pressing a button on the seat.

The rest of the film is a series of blows to the back, the seat shaking wildly in every direction based on the action in the film and the very frequent fights that break out, with no regard to the protagonists: spectators feel hits to the bad guys as well as to the good guys. All of this is accompanied by a few lightning strikes and other smoke jets that sometimes cover the screen for a few seconds, but I don't think we were missing anything, to be honest. Younger viewers loved it, whereas the few older ones seemed less convinced. We finished the film exhausted, as if we just got off a ghost train at a bad amusement park, but with fewer emotions.

In conclusion, 4DX is in essence a demonstration of wanting to physically immerse viewers in a film, since actually doing so is still a pipe dream, at least for the time being. Jets of freezing water and a moving seat don't make the experience genuinely believable. It's true that films aren't yet designed with 4DX in mind, and there will certainly be improved special effects in the years to come, as film-makers become more aware of this technology. ▽

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L.U.C LUNAR ONE

The 43 mm-diameter L.U.C Lunar One is a perpetual calendar model with a big date and an orbital moonphase. This 355-part automatic L.U.C 96.13-L movement is powered by a micro-rotor. Proudly developed, produced and assembled in our Manufacture, it showcases the full range of watchmaking skills cultivated within the Maison Chopard.

Chopard

THE ARTISAN OF EMOTIONS - SINCE 1860