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GLOBAL 2000 BIGGEST COMPANIES • BLOCKCHAIN 50

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## Asia

THAILAND'S  
50 RICHEST

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**PETCH OSATHANUGRAH**  
IS AMPING UP ABROAD

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**Forbes**  
ASIA

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**“THIS IS A COMPANY FROM 120 YEARS AGO. NOW, IT LOOKS YOUNG, LIKE ME.”**

—**Petch Osathanugrah,**  
CEO, Osotspa

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BRENT LEWIN FOR FORBES ASIA

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**“WE ASPIRE TO DO MORE, AND OVER TIME WE CAN BUY ANOTHER BUSINESS DOWN THE ROAD.”**

—**Daniel Schwartz**,  
Executive chairman of  
Restaurant Brands International



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**“WE ENVISIONED IT AS AN AGGREGATION OF OPPORTUNITIES.”**

—**Ankiti Bose**,  
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**IN CORSA MODE, THE URUS IS LIKE A CANNONBALL BLAZING THROUGH THE STREETS.**



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## Lessons From **Lists**



**F**orbes is known for its lists. The most famous are those of the world's wealthiest people, yet Forbes Asia also features other notable lists, such as this issue's Global 2000 ranking of the world's 2,000 best big companies. Later on in the year we'll also have the Best Under a Billion list, of the 200 best performing companies with sales under \$1 billion, and the Fab 50 list of the 50 best large companies, both for the Asia-Pacific region. It's worth delving into our screening process for these company lists, since our methodology is what sets our lists apart from those found elsewhere. For others, a ranking based on a single metric is enough, for example, companies ranked by sales or profits. The issue with a single metric is that it can be one-dimensional. Any company can goose its sales, for example, by lowering prices, and thus get a higher score on a list looking only at sales.

By contrast, Forbes takes an approach that is harder to explain and implement, but produces a better quality of rankings. The company lists in Forbes and Forbes Asia are typically based on composite scores using multiple metrics. For example, the Global 2000 list's methodology looks at a company's revenues, profits, assets and market value. These four metrics are all taken into account to derive the final scoring of the 2,000 companies. It is much harder for companies to game this approach, as artificially increasing sales by lowering prices would normally result in reduced profits. When added together, the higher score in one area will be offset by a poorer score in another.

Taking these four metrics together leads to a powerful filtering of companies, with only the highest quality ones making the final cut. Only those managing well across all the metrics—sales, margins, assets and market value—will rise to the top of our Global 2000 list. These companies are doing well across a range of metrics, implying they have a more robust and sustainable business model than those excelling in only one metric.

To top it off, these lists get both digital and human screenings. Once the computer has sorted the results by raw numbers on a quantitative basis, human editors provide the final quality control on a qualitative basis. They check for issues such as firms with good results but lackluster reputations, and other issues that don't show up in figures on a spreadsheet. When the final tally is made, the distilled product is not just a tally of one-dimensional wonders, but also a more accurate representation of real-world champions.

**Justin Doebele**  
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# CAPITALISM AIN'T KAPUT

BY STEVE FORBES, EDITOR-IN-CHIEF

HARDLY A DAY goes by without some eminence from business or finance proclaiming with furrowed brow and seeming sorrow that capitalism is in crisis and must be overhauled if it is to survive and not be replaced with some variant of socialism. Inequality, climate change, obscene levels of corporate profits, stagnant wages, soaring healthcare costs, crushing levels of student debt, rampant Wall Street greed, high-tech monsters and much more are all laid at the feet of an allegedly heartless, unresponsive capitalistic system.

It ain't so. Contrary to all this highbrow hand-wringing, the problem is bad government policies and, worse, a fundamental misunderstanding of free markets. It's time for a reality check regarding this much-maligned system.

Capitalism, free enterprise, free markets—whatever you label our system—is moral because one succeeds by meeting the needs and wants of other people. An entrepreneur tries to discern needs people don't know they have until a product or service is introduced to the market. Think Steve Jobs and the iPhone and iPad. Businesspeople try to persuade you to buy what they offer. Unless the government gets involved, there is no coercion. Countless people are trying to come up with ways to make everyone's lives better. If they succeed, they might (gasp!) get rich, but we are all better off.

Ever more sophisticated supply chains rise up, which work precisely because no tsar or central planner is in charge.

**Government mistakes—not inherent flaws in free markets—are at the root of every economic crisis in modern times.** The Great Depression was triggered by the draconian Smoot-Hawley Tariff Act, which imposed higher taxes on thousands of import items, triggering a global trade war that devastated economies. This felony was compounded when countries—Germany, Britain and the U.S. were the worst offenders—substantially raised taxes in the teeth of a sharp downturn.

The terrible inflation of the 1970s was the result of the Federal Reserve and other central banks repeatedly printing too much money. The crisis of 2008–09 sprang from the U.S. deliberately weakening the dollar, which set off a flight to hard assets such as housing.



**High taxes are growth-killers.** Taxes are a burden. Countries that keep the burden light do better than those that don't. After it recovered from WWII, Europe had growth rates comparable to or even better than those of the U.S. But in the 1970s the weight of taxation became heavier and heavier with the imposition of VATs and higher effective income tax rates. Result: microscopic paces of expansion.

Every time the U.S. has enacted big tax cuts, its economy has blossomed. The economy's post-Obama pickup came from the 2017 tax reduction and deregulation.

Excessive regulations hurt. Regulatory expert Philip Howard cites a typical example: An upstate New York apple orchard is subject to 5,000 rules from 17 different programs. Regulations cost the U.S. some \$2 trillion a year. On average, a manufacturer pays \$2,000 to \$4,000 in annual taxes per worker; its regulatory burden is \$20,000 to \$35,000. Is it any wonder that manufacturing has suffered until recently?

**Don't blame student debt on free enterprise. Government is the villain.** With the best intentions Washington created programs to help people pay for college, primarily Pell Grants and student loans. Studies from the New York Fed and others confirm that the more money colleges collected via these schemes, the more students were charged.

**High-priced healthcare is not a failure of capitalism.** Free markets are the solution here, not more government control. Ours is a third-party healthcare system: government (primarily Medicare and Medicaid), insurance companies and large employers, not consumers. Hospitals' revenues depend on how well they negotiate with third parties, not on how well they please their patients. What a drug company charges for a medicine is far smaller than what you see reflected on a hospital bill. A big chunk of the price charged goes to pay pharmaceutical benefit managers. Discovering in advance what a procedure might cost is a Herculean effort.

In normal markets, if you make an advance in productivity, competitors will likely follow suit quickly. Not so in healthcare or higher ed.

The Surgery Center of Oklahoma posts all of its prices online. It has topflight surgeons; its overhead is low, by industry standards; and the cost of an operation is a fraction of that charged at traditional hospitals and clinics because patients pay cash in advance. (Prices are higher if a patient wants the center to file their insurance claim.) Yet it has few imitators. Why? Because there is no consumer market. Since third parties foot most of the bill, most patients have no incentive to compare quality and prices, and would be hard put to do so even if they wanted to.

Take electronic records. Every dry cleaner and gas station has had them for 20 years. But not healthcare providers: There was no competitive advantage. Then Washington decided to mandate them but did so destructively, in a manner worthy of the defunct Soviet Union.

Purdue University president Mitch Daniels has frozen tuitions since he took office in 2013. He has enacted numerous efficiencies, so that to attend this prestigious institution a student today pays less than a student did six years ago. By the way, Daniels has *boosted* the number of Purdue's tenured professors.

But just as with the case of the Surgery Center of Oklahoma and other hospitals, there's no stampede of colleges and universities urgently following Purdue's example.

**Free markets reduce poverty.** Real incomes per person have risen over 50-fold since we achieved independence. Before the Industrial Revolution, which capitalism made possible, individual incomes in the world grew imperceptibly. Today, despite all the economic policy mistakes, poverty is plummeting. Over the past 20 years, 1 billion people have escaped abject poverty.

**Free markets always turn scarcity into abundance, today's luxuries into tomorrow's common products.** Among countless examples is the handheld phone. The first cellphone of the early 1980s—which could only make calls—was as large as a shoe box, weighed as much as a brick, had barely an hour of battery life and cost \$3,995. Today there are billions of cellphones, and most have the capability that a supercomputer had a couple of decades ago.

The same happy phenomenon of getting more for less would happen in healthcare if certain free-market reforms were enacted, such as nationwide shopping for medical insurance and removing restrictions on medical savings accounts.

**Inequality?** Wages, until recently, had stagnated since the financial crisis of 2008, and they hadn't been improving much in the decade before then. Once again, the problem was faulty government actions.

Investment is the *sine qua non* for progress, and more investment takes place when money has a stable value. Until the 1970s the dollar had been fixed to gold, and the U.S.

economy had grown as no other nation's ever had before. But since then our average growth has declined 25% or more. And guess what: Income growth hasn't been as robust as when we were on the gold standard, either.

Another factor: relentlessly rising medical costs. Employer-provided insurance counts as part of an employee's compensation. Even though compensation has risen, the cash part has lagged. Not helping, either, has been the surge in federal payroll taxes, labeled "FICA" on your paycheck stub. With a regime of low taxes, a trustworthy dollar and a patient-oriented healthcare system, *cash* wages would rise very nicely.

**Profits are essential.** They are moral. Without them, the economy stagnates and regresses. The economist Joseph Schumpeter famously coined the phrase "creative destruction." Vibrant economies need enormous amounts of new capital to move forward. Change constantly destroys old capital—look at what the internet did to the value of legacy newspaper and magazine publishers—which must be replaced. Capital is needed to finance startups (most fail) and expansions as well as the productivity improvements of existing businesses. Capital comes from profits and savings. In that sense profit is a *cost* of doing business.


**More and more young people want to work for outfits that are not "just" business.** This is one of the great virtues of capitalism: The system seamlessly adjusts to people's wants and expectations. Wise companies quickly pick up and respond to these changes. *Forbes* has written frequently about these companies and the individuals pioneering their efforts.

**Some people in business do bad, amoral or unethical things.** Yes, they do, but that's not something unique to capitalism. People were guilty of bad behavior long before Adam Smith penned his capitalist classic, *An Inquiry into the Nature and Causes of the Wealth of Nations*, in 1776. Moreover, in an open, free-market and democratic system, the bad ones are usually flushed out, unlike in authoritarian or socialist regimes.

**Socialism never works.** It always leads to blood, tyranny and tears, as can be seen today in Venezuela, Cuba and North Korea and in the recent past in the Soviet Union, Maoist China and communist Cambodia (where, in less than four years, the regime slaughtered more than one fourth of the population).

**What about the "socialism" of Scandinavia and Europe?** They are not socialist in the sense that the government owns and runs the economy. Many of these countries have elaborate welfare programs, restrictive labor laws and overtaxation. But all this is beginning to change.

What self-styled American socialists overlook is that countries like Sweden have been scaling back government. Sweden has been cutting taxes. It has no inheritance tax, and it allows school choice, which is anathema to Bernie Sanders and his ilk. As for the rest of the EU, the average rate of economic growth since the crisis of 2008 has been minuscule, less than half that of the U.S.

More to the point, capitalism creates the wealth that makes welfare states possible. That's why more and more Europeans are looking at pro-capitalist reforms, such as low taxes, to gin up their economies. 



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# China is Growing Consumption, Not Debt



**T**he gloom over China's economic slowdown got gloomier when China's government repeatedly dashed expectations that it would open up the lending spigot as it did before. Anticipating what China's government will do based on what it did in the past is just wrong, like driving by looking into the rearview mirror. The fact is that China has no stomach for a new, debt-fueled investment binge after having just painfully reined in its shadow bank-

ing sector. More importantly, it doesn't need one. Domestic consumption, especially in services catering to urban households, has become a much more powerful engine of growth. That changes everything.

Even though China's services sector still accounts for only about half of GDP, its rapid transformation has turned it into a driving force behind job and income growth. China today leads the world in becoming a digital economy and is furthest along in becoming a cashless society. E-commerce transactions in China account for more than 40% of the global total; the value of mobile payments reached \$8.6 trillion last year, dwarfing the \$112 billion in the U.S. In 2017, 68% of China's internet users made mobile digital payments, compared with only 15% in the U.S., according to the McKinsey Global Institute. China's services sector is being revolutionized by mobile digital micropayments, instant credit verification, and innovative consumer apps.

Not surprisingly, Chinese consumers are keen to embrace new technology, spawning a wave of ambitious entrepreneurs and investors. Tech- and data-driven startups are proliferating, bolstered by a wave of investment. China's massive market means it is easy to expand fast. As a result, competition is intense and the cycle of creative destruction accelerating. Knowledge-intensive services are now growing faster in China than labor-intensive ones, according to the OECD.

**Chinese consumers are keen to embrace new technology, spawning a wave of ambitious entrepreneurs and investors.**

Even though the trade war is dampening business sentiment, consumer confidence rose in the second half of 2018. This divergence between business and consumer sentiment represents a major break from the past, signaling a new growth trajectory powered by consumer spending. To that end, stimulus measures the government introduced earlier this year were calibrated to reinforce this trend by cutting income taxes and banks' reserve requirements—without encouraging a return to massive lending booms. This new growth trajectory could eliminate China's current account surplus as Chinese consumers spend more on imports. Overseas travel, a form of service import, is growing so fast that Chinese tourists are now the No. 1 visitors to many popular destinations. The disappearance of China's current account surplus will mean the end of the so-called global savings glut, which could bring worldwide investment and savings into better balance, and with it a more stable global economy. **F**



Cashless payment, such as Alipay and WeChat, is widely used in China—even in meat stalls in a wet market.

**Yuwa Hedrick-Wong is Chief Economics Commentator for *Forbes Asia*. He is also a visiting scholar at the Lee Kuan Yew School of Public Policy, National University of Singapore. Having worked as an economist across the Asia-Pacific, Europe, Middle East and Africa in the past 25 years, he regularly writes columns about the global economy for *Forbes Asia*. Email: [yuwa.hedrick.wong@gmail.com](mailto:yuwa.hedrick.wong@gmail.com).**

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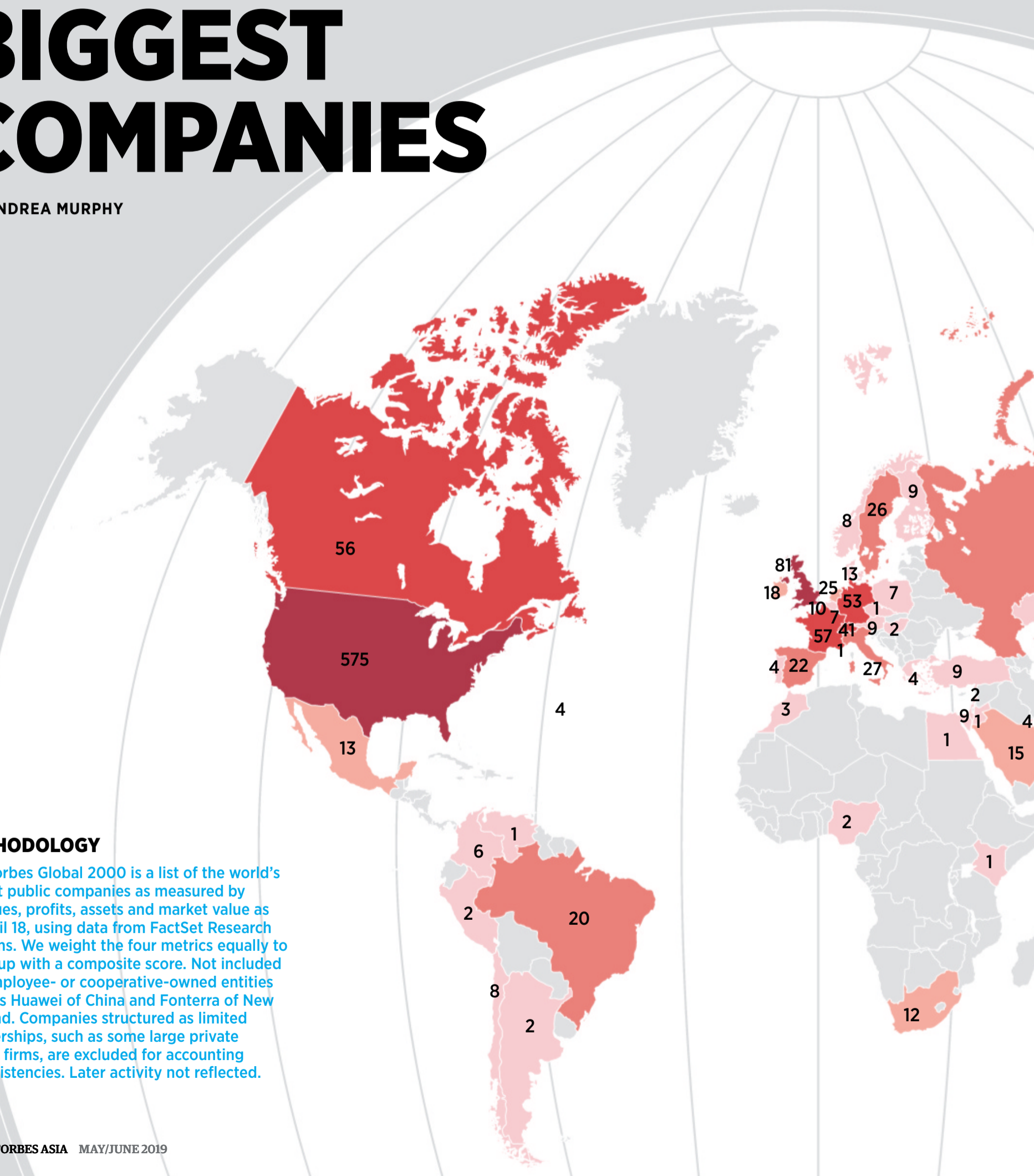


# THE WORLD'S BIGGEST COMPANIES

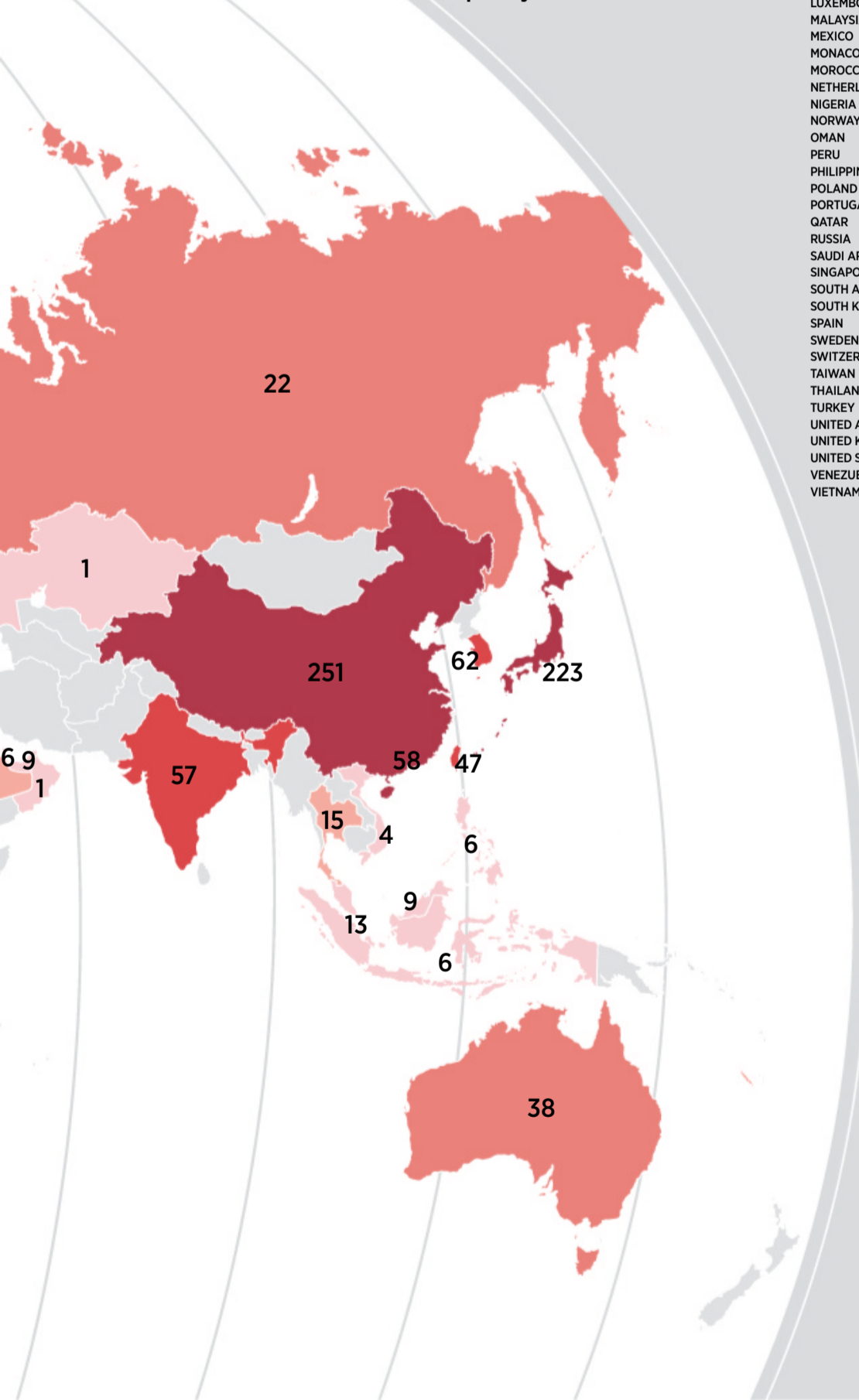
BY ANDREA MURPHY

## METHODOLOGY

The Forbes Global 2000 is a list of the world's largest public companies as measured by revenues, profits, assets and market value as of April 18, using data from FactSet Research Systems. We weight the four metrics equally to come up with a composite score. Not included are employee- or cooperative-owned entities such as Huawei of China and Fonterra of New Zealand. Companies structured as limited partnerships, such as some large private equity firms, are excluded for accounting inconsistencies. Later activity not reflected.



China continues to sit atop the Global 2000, our annual ranking of the largest listed companies. The Industrial and Commercial Bank of China took the top spot for the seventh consecutive year. After being runner-up for the past six years, China Construction Bank slipped to No. 3 as JPMorgan Chase moved to No. 2. Companies from China and Hong Kong account for 309 entries on the 2019 list, up from 291 last year, thanks largely to 13 newcomers that vaulted onto the list after IPOs. Most notable was Chinese smartphone maker Xiaomi, debuting at No. 426. Regionally, the Asia-Pacific leads the 2019 list with 790 companies—40% of the list—with a combined market value of \$15.5 trillion. Combined, the 2019 Global 2000 companies took in \$41.2 trillion in revenues, earned \$3.4 trillion in profits, hold \$186.7 trillion in assets and represent \$56.8 billion in market capitalization. All these metrics but assets rose in the past year.



COUNTRY AND TERRITORY CODES

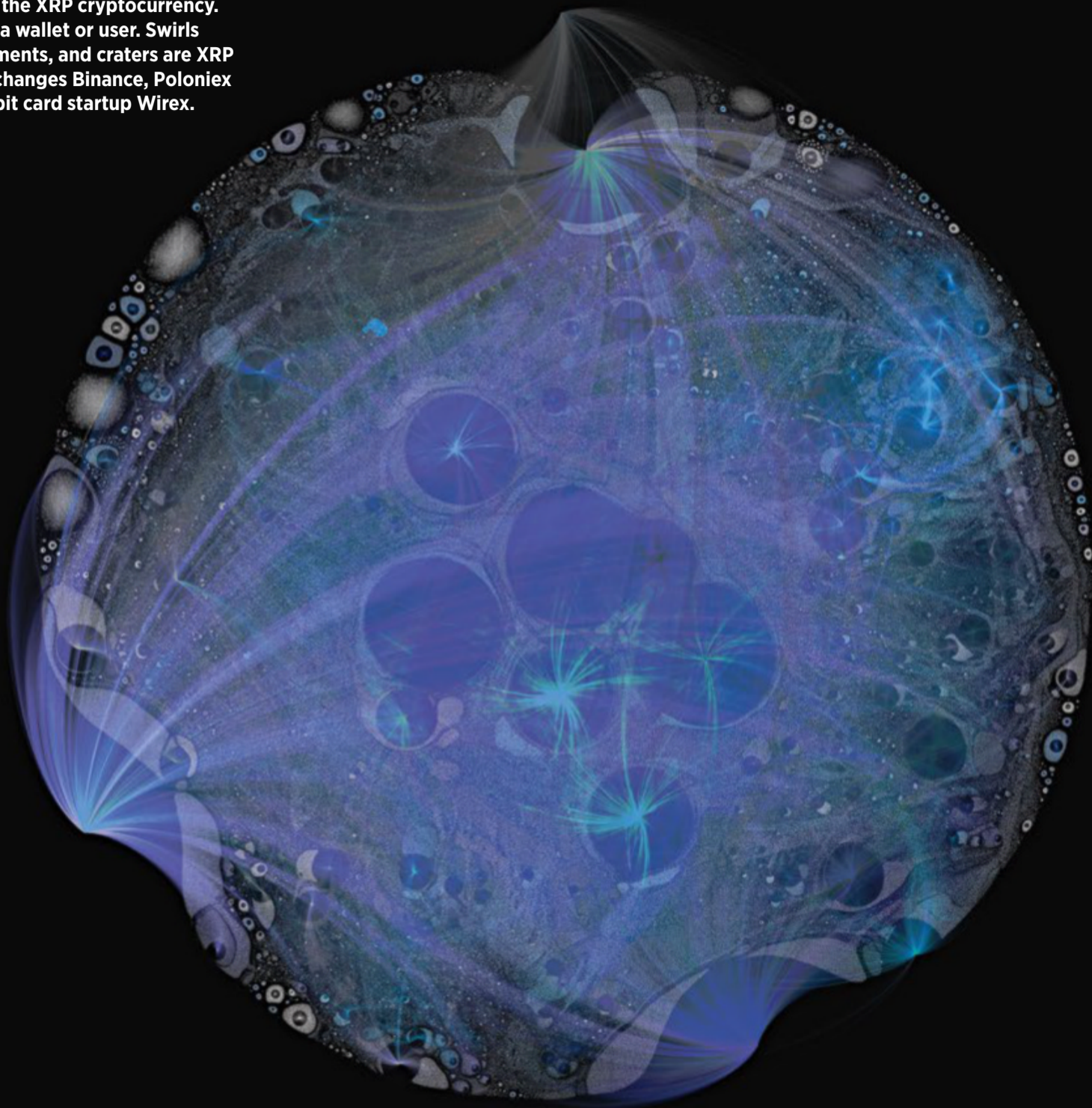
ARGENTINA	AR
AUSTRALIA	AU
AUSTRIA	AS
BAHRAIN	BN
BELGIUM	BE
BERMUDA	BU
BRAZIL	BR
CANADA	CA
CHILE	CH
CHINA	CN
COLOMBIA	CO
CZECH REPUBLIC	CZ
DENMARK	DE
EGYPT	EG
FINLAND	FI
FRANCE	FR
GERMANY	GE
GREECE	GR
HONG KONG	HK
HUNGARY	HU
INDIA	IN
INDONESIA	ID
IRELAND	IR
ISRAEL	IS
ITALY	IT
JAPAN	JA
JORDAN	JO
KAZAKHSTAN	KZ
KENYA	KE
KUWAIT	KU
LEBANON	LE
LUXEMBOURG	LU
MALAYSIA	MA
MEXICO	MX
MONACO	MC
MOROCCO	MO
NETHERLANDS	NE
NIGERIA	NI
NORWAY	NO
OMAN	OM
PERU	PE
PHILIPPINES	PH
POLAND	PL
PORTUGAL	PO
QATAR	QA
RUSSIA	RU
SAUDI ARABIA	SU
SINGAPORE	SI
SOUTH AFRICA	SA
SOUTH KOREA	KO
SPAIN	SP
SWEDEN	SW
SWITZERLAND	SZ
TAIWAN	TA
THAILAND	TH
TURKEY	TU
UNITED ARAB EMIRATES	AE
UNITED KINGDOM	UK
UNITED STATES	US
VENEZUELA	VZ
VIETNAM	VE

# THE TOP 100

1	● ICBC	CN
2	▲ JPMORGAN CHASE	US
3	▼ CHINA CONSTRUCTION BANK	CN
4	▲ AGRICULTURAL BANK OF CHINA	CN
5	▲ BANK OF AMERICA	US
6	▲ APPLE	US
7	▲ PING AN INSURANCE GROUP	CN
8	▲ BANK OF CHINA	CN
9	▲ ROYAL DUTCH SHELL	NE
10	▼ WELLS FARGO	US
11	▲ EXXONMOBIL	US
12	▲ AT&T	US
13	▲ SAMSUNG ELECTRONICS	KO
14	▲ CITIGROUP	US
15	▼ TOYOTA MOTOR	JA
16	▲ MICROSOFT	US
17	▲ ALPHABET	US
18	▼ VOLKSWAGEN GROUP	GE
19	▲ CHEVRON	US
20	▼ VERIZON COMMUNICATIONS	US
21	▼ HSBC HOLDINGS	UK
22	▲ PETROCHINA	CN
23	▼ ALLIANZ	GE
24	▲ BP	UK
25	▲ TOTAL	FR
26	▼ BERKSHIRE HATHAWAY	US
27	▼ CHINA MOBILE	HK
28	▲ AMAZON	US
29	▼ WALMART	US
30	▲ SANTANDER	SP
31	▲ CHINA MERCHANTS BANK	CN
32	▼ UNITEDHEALTH GROUP	US
33	▲ COMCAST	US
34	▼ BNP PARIBAS	FR
35	▼ SINOPEC	CN
36	▲ SOFTBANK	JA
37	▼ DAIMLER	GE
37	▲ JOHNSON & JOHNSON	US
39	▼ BANK OF COMMUNICATIONS	CN
40	▲ GAZPROM	RU
41	▲ RBC	CA
42	▲ NESTLE	SZ
43	▼ MITSUBISHI UFJ FINANCIAL	JA
44	▲ INTEL	US
45	▲ GOLDMAN SACHS GROUP	US
46	▲ TD BANK GROUP	CA
47	● SBERBANK	RU
48	▲ MORGAN STANLEY	US
49	▲ BOEING	US
50	▲ PETROBRAS	BR
51	▼ NIPPON TELEGRAPH & TEL	JA
52	▲ ROSNEFT	RU
53	▲ PROCTER & GAMBLE	US
54	▼ PFIZER	US
55	▲ INDUSTRIAL BANK	CN
56	▲ GENERAL MOTORS	US
57	▼ BMW GROUP	GE
58	▼ ITAÚ UNIBANCO HOLDING	BR
59	▲ ALIBABA	CN
60	▲ IBM	US
60	▲ NOVARTIS	SZ
60	▼ POSTAL SAVINGS BANK OF CHINA (PSBC)	CN
63	▲ FACEBOOK	US
64	▼ SIEMENS	GE
65	▲ SHANGHAI PUDONG DEVELOPMENT	CN
66	▲ JAPAN POST HOLDINGS	JA
67	▼ SUMITOMO MITSUI FINANCIAL	JA
68	▼ BANCO BRADESCO	BR
69	▼ ANHEUSER-BUSCH INBEV	BE
70	▲ WALT DISNEY	US
71	▲ RELIANCE INDUSTRIES	IN
72	▲ CITIC	HK
73	▲ SONY	JA
74	▲ CISCO SYSTEMS	US
74	▲ TENCENT HOLDINGS	CN
76	▼ HONDA MOTOR	JA
77	▼ ENEL	IT
78	▲ UNITED TECHNOLOGIES	US
79	▼ COMMONWEALTH BANK	AU
80	▲ CHINA STATE CONSTRUCTION ENGINEERING	CN
81	▲ DOWDUPONT	US
82	▲ EQUINOR	NO
83	▲ AMERICAN EXPRESS	US
84	▼ METLIFE	US
85	▼ AXA GROUP	FR
86	▲ PEPSICO	US
87	▲ BANK OF NOVA SCOTIA	CA
88	▲ ROCHE HOLDING	SZ
89	▼ ING GROUP	NE
90	▲ LLOYDS BANKING GROUP	UK
91	▲ ENI	IT
92	▲ ORACLE	US
93	▼ CHINA CITIC BANK	CN
94	▲ CHINA EVERGRANDE GROUP	CN
95	▲ UBS	SZ
96	▲ AIRBUS	NE
97	▲ LUKOIL	RU
98	▼ PRUDENTIAL FINANCIAL	US
99	▼ BASF	GE
100	▼ SAIC MOTOR	CN

▲ UP ▼ DOWN  
 ● UNCHANGED ● NEW  
 ASIA PACIFIC COMPANIES ARE IN RED TYPE  
 †FORMERLY STATOIL

What does a blockchain look like?  
Using Google's BigQuery, a Danish  
designer created this visualization of the  
blockchain for the XRP cryptocurrency.  
Every speck is a wallet or user. Swirls  
represent payments, and craters are XRP  
whales like exchanges Binance, Poloniex  
and crypto debit card startup Wirex.



# GOOGLING BLOCKCHAIN

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In the late 1990s, Google transformed the Web by creating a fast, accurate and easy-to-use search engine. Now it could do the same for the blockchain.

BY MICHAEL DEL CASTILLO

# WHAT IS AVAXHOME?

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brand new books, trending movies,  
fresh magazines, hot games,  
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Protect your downloadings from Big brother

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All languages

Brand new content

One site



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It's a balmy 27 degrees on a mid-December day in Singapore, and something is puzzling Allen Day, a 41-year-old data scientist. Using the tools he has developed at Google, he can see a mysterious concerted usage of artificial intelligence on the blockchain for Ethereum. Ether is the world's third-largest cryptocurrency (after bitcoin and XRP), and it still sports a market cap of some \$11 billion despite losing 83% of its value in 2018. Peering into its blockchain—the distributed database of transactions underpinning the cryptocurrency—Day detects a “whole bunch” of “autonomous agents” moving funds around “in an automated fashion.” While he doesn't yet know who has created the AI, he suspects they could be the agents of cryptocurrency exchanges trading among themselves in order to artificially inflate ether's price.

“It's not really just single agents doing things on their own,” Day says from Google's Asia-Pacific headquarters. “They're forming with other agents to have some larger group effect.”

Day's official title is senior developer advocate for Google Cloud, but he describes his role as “customer zero” for the company's cloud computing efforts. As such it's his job to anticipate demand before a product even exists, and he thinks making the blockchain more accessible is the next big thing. Just as Google enabled (and ultimately profited) from making the internet more usable 20 years ago, its next billions may come from shining a bright light on blockchains. If Day is successful, the world will know whether blockchain's real usage is living up to its hype.

Last year Day and a small team of open-source developers quietly began loading data for the entire Bitcoin and Ethereum blockchains into Google's big-data analytics platform, BigQuery. Then, with the help of outside developer Evgeny Medvedev, he created a suite of sophisticated software to search the data.

In spite of a total lack of publicity, word of the project spread quickly among crypto-minded coders. In the past year, more than 500 projects were created using the new tools, trying to do everything from predicting the price of bitcoin to analyzing wealth disparity among ether holders.

When it comes to cloud computing, Google is far behind Amazon and Microsoft. Last year Google pocketed an estimated \$3 billion in revenue from cloud services. Amazon and Microsoft, meanwhile, generated about \$27 billion and \$10 billion, respectively.

Day is hoping that his project, known as Blockchain ETL (extract, transform, load), will help even the playing field. But even here Google is trying to catch up. Amazon entered blockchain in a big way in 2018 with a suite of tools for building and managing distributed ledgers. Microsoft got into the space in 2015, when it released tools for Ethereum's blockchain. It now hosts a range of services as part of its Azure Blockchain Workbench. But while Amazon and Microsoft are focusing on making it easier to build blockchain apps, Day is focusing on exposing how blockchains are actually being used, and by whom.

“In the future, moving more economic activity on chain won't just require a consensus level of trust,” says Day, referring to the core validating mechanism of blockchain technology. “It will require having some trust in knowing about who it is you're actually interacting with.” In other words, if blockchain is to go mainstream, some of its beloved anonymity features will have to be abandoned.

A native of Placer County, California, Day got his first computer at the age of 5 and a few years later started writing simple programs. A fascination with volcanoes and dinosaurs turned his interest to life sciences, and he ultimately graduated from the University of Oregon with a dual degree in biology and Mandarin in 2000. From there he headed to UCLA to pursue a doctorate in human genetics and helped build a computer program to browse the genome.

It was at UCLA where Day began relying on distributed computing, a concept that is core to blockchains, which store their data on a large network of individual computers. In the early 2000s Day needed to analyze the massive amounts of data that make up the human genome. To solve this problem he hooked many small computers together, vastly increasing their power.

“Distributed-systems technology has been in my tool kit for a while,” Day says. “I could see there were interesting characteristics of blockchains that could run a global supercomputer.”

Hired in 2016 to work in the health and bioinformatics areas of Google, Day segued to blockchains, the hottest distributed-computing effort on the planet. But the talents he had honed—sequencing genomes for infectious diseases in real time and using AI to increase rice yields—were not easily applied to decoding blockchain.



Before joining Google's cloud team in Singapore and becoming its de facto blockchain evangelist, genetics Ph.D. Allen Day attended the Academy of Magical Arts in Los Angeles.

Before Day and Medvedev released their tools, just searching a blockchain required specialized software called “block explorers,” which let users hunt only for specific transactions, each labeled with a unique tangle of 26-plus alphanumeric characters. Google's Blockchain ETL, by contrast, lets users make more generalized searches of entire ecosystems of transactions.

To demonstrate how customers could use Blockchain ETL to make improvements to the crypto economy, Day has used his tools to examine the so-called hard fork, or an irrevocable split in a blockchain database, that created a new cryptocurrency—bitcoin cash—from bitcoin in the summer of 2017.

This particular split was the result of a Hatfield and McCoy “war” within the bitcoin community between a group who wanted to leave bitcoin as it was and another who wanted to develop a currency that, like cash, was cheaper and faster to use for small payments. Using Google's BigQuery, Day dis-


covered that bitcoin cash, rather than increasing so-called micro-transactions, as the defecting developers claimed, was actually being hoarded among big holders of bitcoin cash. “I'm very interested to quantify what's happening so that we can see where the legitimate use cases are for blockchain,” Day says. “Then we can move to the next use case and develop out what these technologies are really appropriate for.”

Day's work is inspiring others. Tomasz Kolinko is a Warsaw-based programmer and the creator of a service that analyzes smart contracts, a feature of certain blockchains that is designed to transparently enforce contractual obligations like collateralized loans but with less reliance on third parties, like lawyers. Kolinko was frustrated with his blockchain queries.

In December, Kolinko met Day at a hackathon in Singapore. Within a month of the meeting, Kolinko was using Google's tools to search for a smart contract feature called a “selfdestruct,” designed to limit a contract's life span. Using his own software in conjunction with Day's, Kolinko took 23 seconds to search 1.2 million smart contracts—something that would have taken hours before. The result: Almost 700 of them had left open a selfdestruct feature that would let anyone instantly kill the smart contract, whether that person was authorized or not. “In the past you couldn't just easily check all the contracts that were using it,” Kolinko says. “This tool is both the most scary and most inspiring I've ever built.”

Day is now expanding beyond bitcoin and ethereum. Litecoin, zcash, dash, bitcoin cash, ethereum classic and dogecoin are being added to BigQuery. Independent developers are loading their own crypto data sets on Google. Last August, a Dutch developer named Wietse Wind uploaded the entire 400 gigabytes of transaction data from Ripple's XRP blockchain, another popular cryptocurrency, into BigQuery. Wind's data, which he updates every 15 minutes, prompted a Danish designer named Thomas Silkjaer to create a heat map of crypto flows. The resulting colorful orb reveals at a glance more than a million crypto wallets, including big exchanges like Binance and London's crypto debit card startup Wirex, which are neck deep in XRP transactions.

“Google has been a bit of a sleeping giant in blockchain,” says BlockApps CEO Kieren James-Lubin, who is partnering with Google to sell enterprise blockchain apps. In addition to Day's work, Google has filed numerous patents related to the blockchain, including one in 2018 to use a “lattice” of interoperating blockchains to increase security, a big deal in a world where untold millions of crypto have been stolen by hackers. The company is also pushing its developers to build apps on the Ethereum blockchain, and Google's venture arm, GV, has made a number of significant investments in crypto startups.

The giant, it seems, is waking up. 

COMPANY	COUNTRY CODE	2018 RANK	RANK CHANGE	COMMERCIAL			
360 SECURITY TECHNOLOGY	CN	1380	▲	ADVANZ PHARMA	CA	1744	●
3I GROUP	UK	1184	▲	ADYEN	NE	1792	●
3M	US	216	▼	AECOM TECHNOLOGY	US	1474	▲
77 BANK	JA	1633	▼	AEGON	NE	460	▼
AAC TECHNOLOGIES	CN	1959	▼	AENA	SP	869	▼
AAREAL BANK	GE	1780	▼	AEON	JA	620	▼
ABB	SZ	282	▼	AERCAP HOLDINGS	IR	1123	▼
ABBOTT LABORATORIES	US	197	▲	AEROPORTS DE PARIS	FR	1020	▲
ABBVIE	US	167	▼	AES	US	693	▲
ABSA GROUP	SA	661	●	AFLAC	US	223	▼
ABU DHABI COMMERCIAL BANK	AE	784	▲	AGC	JA	952	▼
ABU DHABI ISLAMIC BANK	AE	1473	▲	AGEAS	BE	605	▲
ACCENTURE	IR	248	▲	AGILE GROUP HOLDINGS	CN	991	▲
ACCIONA	SP	1653	▼	AGILENT TECHNOLOGIES	US	1094	▲
ACCOR	FR	1041	▲	AGL ENERGY	AU	1120	▲
ACTIVISION BLIZZARD	US	679	▲	AGNC INVESTMENT	US	1277	▼
ADANI PORTS & SP EC ZONE	IN	1706	▼	AGRICULTURAL BANK OF CHINA	CN	4	▲
ADECCO	SZ	1037	▼	AHLI UNITED BANK	BN	1282	▲
ADIDAS	GE	430	▲	AIA GROUP	HK	113	▼
ADIANT	IR	1760	▼	AIB GROUP	IR	770	▼
ADOBE	US	505	▲	AIR CANADA	CA	1578	▼
ADVANCE AUTO PARTS	US	1354	▲	AIR FRANCE-KLM	FR	950	▲
ADVANCED INFO SERVICE	TH	1211	▲	AIR LEASE	US	1902	▼
ADVANCED MICRO DEVICES	US	1417	▲	AIR LIQUIDE	FR	268	▼



### Reliance Industries 71

India's largest company climbed from No. 83 last year as its shares have rallied 40% in the past year amid optimism over its telecommunications and retail businesses. The stock also got a boost from reports that Saudi Aramco is in talks with Reliance to buy a stake in the group's refining and petrochemical businesses. The company declined to comment on the reports. Its chairman Mukesh Ambani, 62, Asia's richest man, added \$6 billion this year to his net worth amid the stock rally. Reliance reported 45% growth in revenues, to 6.3 trillion rupees (\$90 billion), for the year ended March 31, 2019, while net profit rose 13% to 396 billion rupees. Its mobile communications unit Jio is gearing up to launch a fiber-to-home broadband internet service this year. To bolster its broadband offering, Jio in October acquired majority stakes in New Delhi's Den Network and Mumbai's Hathway Cable for \$710 million, giving it access to nearly 27,000 local cable operators across India. Reliance Retail also expanded its own retail shops by 4.3 million square feet to 22 million square feet last year and is reportedly preparing for an IPO this year. Reliance Retail representatives declined to comment on the report. —Anuradha Raghunathan

INDRANIL MUKHERJEE/AFP/GETTY IMAGES; DAVID BECKER/GETTY IMAGES

### Sony 73

Sony, which jumped in the rankings from No. 86 last year, has had a good run since clawing its way back into the black in 2016. Profits have been boosted by strong sales from its PlayStation videogame business and from image sensors for smartphones and cameras. The company last month reported a record net profit for the year ending March 31 of roughly 916 billion yen (\$8.2 billion), up 87% from the previous year and beating its own forecast of 835 billion yen. Revenue also rose 1.4% to roughly 8.7 trillion yen. Contributions from image sensors, games and financial services lifted operating margins to 10.3% from 8.6% the year before. That offset more than 97 billion yen in losses at Sony's cellphone business. Sony has announced plans to merge the money-losing unit with its camera and TV businesses. But continued losses there, it predicted, will likely pull net profit in the current financial year down to 500 billion yen. —James Simms



ALPHABET	US	17	▲	ARCONIC	US	958	▲	AVERY DENNISON	US	1584	▲
ALPHA BANK	GR	1666	▼	ARES CAPITAL	US	1632	▲	AVIC CAPITA	CN	1299	▲
ALPHABET	US	17	▲	ARISTA NETWORKS	US	1733	▼	AVIC INTL. HOLDINGS	CN	1974	●
ALROSA	RU	1327	▲	ARKEMA	FR	1205	▼	AVIS BUDGET GROUP	US	1662	▼
ALSTOM	FR	963	▲	AROUNDTOWN	LU	570	▲	AVIVA	VZ	232	▼
ALTICE EUROPE	NE	1095	▼	ARROW ELECTRONICS	US	914	▲	AVNET	US	1702	▼
ALTICE USA	US	976	●	ASAHI GROUP HOLDINGS	JA	520	▼	AXA GROUP	FR	85	▼
ALTRIA GROUP	US	210	▲	ASAHI KASEI	JA	603	▼	AXIATA GROUP	MA	1796	▼
ALUMINUM CORP OF CHINA	CN	924	▲	ASE TECHNOLOGY HOLDING	TA	898	▲	AXIS BANK	IN	741	▼
AMADEUS IT GROUP	SP	951	▲	ASHTREAD GROUP	UK	1239	▼	AYALA	PH	1236	▼
AMAZON	US	28	▲	ASIAN PAINTS	IN	1832	▲	B3	BR	1486	▲
AMBANK GROUP	MA	1904	▲	ASML HOLDING	NE	393	▲	BAE SYSTEMS	US	477	▼
AMCOR	AU	1151	▲	ASR NEDERLAND	NE	1022	▼	BAIC MOTOR	CN	927	▲
AMEREN	US	854	▲	ASSA ABLOY	SW	1219	▼	BAIDU	CN	297	▲
AMÉRICA MÓVIL	MX	189	▲	ASSOCIATED BANC-CORP	US	1959	▼	BAJAJ AUTO	IN	1503	▲
AMERICAN AIRLINES GROUP	US	373	▼	ASSOCIATED BRITISH FOODS	AU	550	▼	BAJAJ FINSERV	IN	1107	●
AMERICAN ELECTRIC	US	317	▲	ASSURANT	US	1422	▼	BALL	US	947	▲
AMERICAN EQUITY INVESTMENT	US	1449	▲	ASTELLAS PHARMA	JA	602	▲	BÂLOISE GROUP	SZ	967	▼
AMERICAN EXPRESS	US	83	▲	ASTRAZENECA	UK	237	▼	BANCA MEDIOLANUM	IT	1729	▼
AMERICAN FINANCIAL GROUP	US	982	▲	ASUSTEK COMPUTER	TA	1971	▼	BANCA MPS	IT	1528	▼
AMERICAN INT'L. GROUP	US	462	▼	AT&T	US	12	▲	BANCA POPOLARE DI SONDRIO	IT	1796	▼
AMERICAN TOWER	US	543	▲	ATHENE HOLDING	BU	781	▼	BANCO BPM	IT	1332	▼
AMERICAN WATER WORKS	US	1110	▲	ATLANTIA	IT	610	▼	BANCO BRADESCO	BR	68	▼
AMERIPRISE FINANCIAL	US	372	▲	ATLAS COPCO	SW	700	▼	BANCO COMERCIAL PORTUGUESO	PO	1583	●
AMERISOURCEBERGEN	US	412	▲	ATLIASSIAN	UK	1737	●	BANCO DAVIVIENDA	CO	1610	▲
AMETEK	US	1284	▲	ATMOS ENERGY	US	1731	▼	BANCO DE CHILE	CH	1728	▼
AMGEN	US	175	▲	ATOS	FR	775	▲	BANCO DE SABADELL	SP	1112	▼
AMP	AU	1540	▼	ATTIJARIWAFI BANK	MO	1143	▼	BANCO DO BRASIL	BR	154	▼
AMPHENOL	US	861	▲	AU OPTRONICS	TA	1878	▼	BANCOLOMBIA	CO	732	▲
ANADARKO PETROLEUM	US	587	▲	AUTODESK	US	1605	▲	BANDAI NAMCO HOLDINGS	JA	1488	▲
ANALOG DEVICES	US	683	▲	AUTOLIV	SW	1909	▼	BANGKOK BANK	TH	756	▲
ANDHRA BANK	IN	1900	▲	AUTOMATIC DATA PROCESSING	US	356	▲	BANK AUDI	LE	1475	▼
ANGANG STEEL	CN	1102	▼	AUTONATION	US	1545	▼	BANK CENTRAL ASIA	ID	553	▲
ANGLO AMERICAN	UK	261	●	AUTOZONE	US	783	▲	BANK HAPAOALIM	IS	959	▼
ANHEUSER-BUSCH INBEV	BE	69	▼	AVALONBAY COMMUNITIES	US	964	▲	BANK LEUMI	IS	883	▲
ANHUI CONCH CEMENT	CN	407	▲								
ANNALY CAPITAL MANAGEMENT	US	1114	▼								
ANSYS	US	1749	●								
ANTA SPORTS PRODUCTS	CN	1401	▲								
ANTARCHILE	CH	933	▲								
ANTHEM	US	141	▼								
ANTOFAGASTA	UK	1484	▼								
ANZ	AU	120	▼								
AON	UK	571	▲								
AOZORA BANK	JA	1766	▼								
APACHE	US	1260	▼								
APPLE	US	6	▲								
APPLIED MATERIALS	US	435	▲								
APTIV	IR	740	▼								
ARAB BANK	JO	1439	▼								
ARAB NATIONAL BANK	SU	1003	▲								
ARAMARK	US	1163	▼								
ARCA CONTINENTAL	MX	1419	▼								
ARCELORMITTAL	LU	195	▼								
ARCH CAPITAL GROUP	BU	952	▲								
ARCHER DANIELS MIDLAND	US	327	▼								

▲ UP ▼ DOWN  
● UNCHANGED ● NEW  
ASIA PACIFIC COMPANIES ARE IN RED TYPE



BANK MANDIRI	ID 481 ▲	BOMBARDIER	CA 1310 ▼
BANK MUSCAT	OM 1651 ▲	BOOKING HOLDINGS	US 370 ▲
BANK NEGARA INDONESIA	ID 835 ▲	BOOZ ALLEN HAMILTON HOLDING CORP	US 1976 ●
BANK OF AMERICA	US 5 ▲	BORGWARNER	US 1142 ▲
BANK OF BARODA	IN 1226 ▼	BOSTON PROPERTIES	US 1108 ▲
BANK OF BEIJING	CN 284 ▼	BOSTON SCIENTIFIC	US 557 ▲
BANK OF CHANGSHA	CN 1228 ●	BOUYGUES	FR 424 ▼
BANK OF CHENGDU	CN 1240 ▲	BP	UK 24 ▲
BANK OF CHINA	CN 8 ▲	BPER BANCA	IT 1384 ▼
BANK OF CHONGQING	CN 1355 ▼	BRAMBLES	AU 1365 ▲
BANK OF COMMUNICATIONS	CN 39 ▼	BRASKEM	BR 912 ▼
BANK OF EAST ASIA	HK 970 ▼	BRENNTAG	GE 1260 ▲
BANK OF GANSU	CN 1430 ▲	BRIDGESTONE	JA 326 ▼
BANK OF GUIYANG	CN 1203 ▲	BRIGHTHOUSE FINANCIAL	US 856 ▲
BANK OF HANGZHOU	CN 1008 ▲	BRISTOL-MYERS SQUIBB	US 266 ▲
BANK OF INDIA	IN 1334 ▼	BRITISH AMERICAN TOBACCO	UK 102 ▼
BANK OF IRELAND	IR 956 ▲	BROADCOM	US 178 ▲
BANK OF JIANGSU	CN 421 ▲	BROADRIDGE FINANCIAL	US 1807 ▲
BANK OF JINZHOU	CN 796 ▲	BROOKFIELD ASSET MNGMT	CA 118 ▲
BANK OF JIUJIANG	CN 1817 ●	BROWN-FORMAN	US 1241 ▼
BANK OF KYOTO	JA 1617 ▼	BT GROUP	UK 275 ▲
BANK OF MONTREAL	CA 134 ▲	BUNGE	US 1125 ▼
BANK OF NAGOYA	JA 1921 ▼	BUNZL	UK 1337 ▲
BANK OF NANJING	CN 554 ▲	BURBERRY GROUP	UK 1961 ●
BANK OF NEW YORK MELLON	US 177 ▼	BUREAU VERITAS	FR 1874 ▲
BANK OF NINGBO	CN 532 ▲	BURELLE	FR 1733 ●
BANK OF NOVA SCOTIA	CA 87 ▲	BURLINGTON STORES,	US 1657 ▲
BANK OF QINGDAO	CN 1810 ▼	BYD	CN 737 ▼
BANK OF QUEENSLAND	AU 1901 ▼	C.H. ROBINSON	US 998 ▲
BANK OF SHANGHAI	CN 347 ▲	CABOT OIL & GAS	US 1708 ●
BANK OF TIANJIN	CN 1178 ▲	CADENCE DESIGN	US 1892 ●
BANK OF XI'AN	CN 1759 ●	CAESARS ENTERTAINMENT	US 1533 ▲
BANK OF ZHENGZHOU	CN 1412 ▼	CAIXABANK	SP 343 ▼
BANK OZK	US 1990 ▼	CALTEX AUSTRALIA	AU 1601 ▼
BANK PEKAO	PL 1172 ▼	CAMPBELL SOUP	US 1359 ▼
BANK RAKYAT INDONESIA (BRI)	ID 363 ▲	CANADIAN APARTMENT PROPERTIES	CA 1978 ●
BANKIA	SP 943 ▼	REAL ESTATE INVEST. TRUST	CA 190 ▲
BANKINTER	SP 1127 ▼	CANADIAN IMPERIAL BANK	CA 388 ▲
BANORTE	MX 473 ▲	CANADIAN NAT'L. RAILWAY	CA 342 ▼
BANQUE CANTONALE VAUDOISE	SZ 1635 ▲	CANADIAN NATURAL RESOURCES	CA 828 ▲
BANQUE CENTRALE POPULAIRE	MO 1855 ▼	CANADIAN PACIFIC RAILWAY	CA 1396 ▼
BANQUE SAUDI FRANSI	SU 904 ▲	CANADIAN TIRE	CA 1805 ●
BAOSHAN IRON & STEEL	CN 270 ▼	CANADIAN UTILITIES	IN 1289 ▼
BARCLAYS	UK 187 ▲	CANARA BANK	JA 301 ▼
BARRATT DEVELOPMENTS	UK 1384 ▲	CANON	FR 670 ▼
BARRICK GOLD	CA 1084 ▼	CAPGEMINI	US 130 ▲
BARRY CALLEBAUT	SZ 1795 ▲	CAPITAL ONE FINANCIAL	SI 890 ▲
BASF	GE 99 ▼	CARDINAL HEALTH	US 717 ▼
BASLER KANTONALBANK	SZ 1822 ▲	CARLSBERG	DE 794 ▲
BAWAG GROUP	AS 1424 ▼	CARMAX	US 739 ▲
BAXTER INTERNATIONAL	US 617 ▲	CARNIVAL	US 312 ▼
BAYER	GE 164 ▼	CARREFOUR	FR 664 ▲
BAYWA	GE 1709 ▲	CATCHER TECHNOLOGY	TA 1961 ▼
BB&T	US 259 ▼	CATERPILLAR	US 121 ▲
BBMG	CN 1054 ▲	CATHAY FINANCIAL	TA 295 ▼
BBVA BANCO CONTINENTAL	PE 1886 ▼	CATHAY PACIFIC AIRWAYS	HK 1285 ▲
BBVA-BANCO BILBAO VIZCAYA	SP 135 ▼	CATTOLICA ASSICURAZIONI	IT 1499 ▲
BCE	CA 341 ▼	CBOE GLOBAL MARKETS	US 1984 ▼
BCI-BANCO CREDITO	CH 1080 ▲	CBRE GROUP	US 723 ▲
BDO UNIBANK	PH 1018 ▲	CBS	US 560 ▲
BECTON DICKINSON	US 355 ▲	CDW	US 954 ▲
BED BATH & BEYOND	US 1997 ▼	CECONOMY	GE 1522 ▼
BEIERSDORF	GE 960 ▲	CELANESE	US 1060 ▲
BEIJING CAPITAL DEVT.	CN 1416 ▲	CELGENE	US 316 ▲
BEIJING ENTERPRISES	HK 1048 ▲	CELLTRION	KO 1773 ▼
BEIJING SHOUGANG	CN 1485 ▲	CEMEX	MX 975 ▼
BENDIGO & ADELAIDE BANK	AU 1765 ▼	CEMIG	BR 1836 ●
BERKELEY GROUP HOLDINGS	UK 1969 ▼	CENCOSUD	CH 1518 ▼
BERKSHIRE HATHAWAY	US 26 ▼	CENOVUS ENERGY	CA 985 ▼
BERRY GLOBAL GROUP	US 1802 ▲	CENTENE	US 476 ▼
BEST BUY	US 599 ▲	CENTERPOINT ENERGY	US 986 ▼
BHARAT PETROLEUM	IN 628 ▲	CENTRAL BANK OF INDIA	IN 1768 ▼
BHARTI AIRTEL	IN 852 ▼	CENTRAL JAPAN RAILWAY	JA 249 ▲
BHP GROUP	AU 109 ▼	CENTRICA	UK 1004 ▼
BID CORP.	SA 1981 ▼	CENTURYLINK	US 741 ▼
BIOGEN	US 422 ▲	CERNER	US 1279 ▼
BJ'S WHOLESALE CLUB	US 1920 ●	CEZ GROUP	CZ 964 ▼
BLACKROCK	US 214 ▼	CGI GROUP	CA 974 ▲
BLOM BANK	LE 1535 ▲	CGN POWER	CN 675 ▲
BLUESCOPE STEEL	AU 1318 ▲	CHANG HWA BANK	TA 1501 ▲
BMW GROUP	GE 57 ▼	CHARLES SCHWAB	US 240 ▲
BNK FINANCIAL GROUP	KO 1421 ▲	CHAROEN POKPHAND FOODS	TH 1220 ▲
BNP PARIBAS	FR 34 ▼	CHARTER COMMUNICATIONS	US 205 ▼
BOE TECHNOLOGY GROUP	CN 641 ▼	CHECK POINT SOFTWARE	IS 1302 ▲
BOEING	US 49 ▲	CHEMOURS	US 1534 ▼
BOHAI LEASING	CN 1375 ▲	CHENIERE ENERGY	US 905 ▲
BOK FINANCIAL	US 1625 ▲		
BOLIDEN	SW 1478 ▼		



### Hon Hai Precision 123

While billionaire Terry Gou campaigns for Taiwan's presidency, the Taipei-based tech firm he controls is looking to reduce its exposure to Apple and to China-U.S. trade frictions. Hon Hai in March reported a 7% decline in 2018 net profit, to 129 billion Taiwan dollars (\$4.2 billion), on 5.3 trillion Taiwan dollars in revenue, a 13% increase. But Hon Hai (also known as Foxconn) generates nearly half its sales supplying a single customer, Apple, from factories in China. Gou last year identified the China-U.S. trade war as the company's biggest challenge. With demand for iPhones and iPads faltering—and Beijing and Washington bickering over a trade deal—Hon Hai's shares dropped 13% in the past year, helping send its Global 2000 ranking down to 123 from 105 last year. Gou has already sought for several years to lessen Hon Hai's dependence on Apple. In 2016, Hon Hai took a 66% stake in Japanese flat-panel display maker Sharp and last year bought Belkin, a U.S.-based maker of tech gear such as Wi-Fi routers and keyboards. In 2017, it started making mobile phones for Nokia. It's also investing \$10 billion to build a factory in Wisconsin to make flat-panel displays for smartphones, tablets and PCs. Construction is scheduled to start this year, with commercial production to follow in 2020. —Ralph Jennings

CHESAPEAKE ENERGY	US 1347 ▼	CHINA MERCHANTS PORT HOLDINGS	HK 1461 ▲	CHINA ZHESHANG BANK	CN 493 ▲
CHEVRON	US 19 ▲	CHINA MERCHANTS SECURITIES	CN 938 ▼	CHINA ZHONGWANG HOLDINGS	CN 1782 ●
CHIBA BANK	JA 1363 ▼	CHINA MERCHANTS SHEKOU INDUSTRIAL	CN 379 ▲	CHIPOTLE MEXICAN GRILL	US 1808 ●
CHIMERA INVESTMENT	US 1864 ▼	ZONE HOLDINGS	CN 114 ▼	CHONGQING CHANGAN AUTO	CN 1642 ▼
CHINA AGRI-INDUSTRIES	HK 1888 ▲	CHINA MINSHENG BANKING	CN 114 ▼	CHONGQING RURAL BANK	CN 1453 ▼
CHINA AVIATION OIL	SI 1695 ▲	CHINA MOBILE	HK 27 ▼	CHOW TAI FOOK JEWELLERY	HK 1333 ▲
CHINA CINDA ASSET MNGMT	CN 443 ▼	CHINA MOLYBDENUM	CN 1270 ▼	CHRISTIAN DIOR	FR 143 ▲
CHINA CITIC BANK	CN 93 ▼	CHINA NATIONAL BUILDING	CN 559 ▲	CHUBB	SZ 137 ▼
CHINA COAL ENERGY	CN 826 ▲	CHINA NATIONAL CHEMICAL	CN 1695 ▲	CHUBU ELECTRIC POWER	JA 681 ▼
CHINA COMM. CONSTRUCTION	CN 180 ▼	CHINA NATIONAL NUCLEAR POWER	CN 893 ▼	CHUGOKU BANK	JA 1635 ▼
CHINA COMM. SERVICES	CN 1502 ▲	CHINA ORIENTAL GROUP	HK 1800 ▼	CHUGOKU ELECTRIC POWER	JA 1339 ▼
CHINA CONSTRUCTION BANK	CN 3 ▼	CHINA PACIFIC INSURANCE	CN 140 ▼	CHUNGHWA TELECOM	TA 807 ▼
CHINA DEVELOPMENT BANK FINANCIAL	CN 1818 ●	CHINA PETROLEUM ENGINEERING	CN 1926 ▼	CHURCH & DWIGHT	US 1458 ▲
LEASING LTD	TA 1170 ▲	CHINA RAILWAY CONSTRUCTION	CN 200 ▲	CIELO	BR 1478 ▼
CHINA DEVT. FINANCIAL	TA 1170 ▲	CHINA RAILWAY GROUP	CN 198 ▼	CIFI HOLDINGS GROUP	CN 1145 ▲
CHINA EASTERN AIRLINES	CN 768 ▼	CHINA RAILWAY SIGNAL & COMMUNICATION	CN 1811 ●	CIGNA	US 149 ▲
CHINA ENERGY ENGINEERING	CN 749 ▲	CHINA REINSURANCE GROUP	CN 757 ▲	CIMAREX ENERGY	US 1916 ▼
CHINA EVERBRIGHT BANK	CN 151 ▼	CHINA RESOURCES CEMENT HOLDINGS	HK 1630 ●	CIMB GROUP HOLDINGS	MA 659 ▼
CHINA EVERGRANDE GROUP	CN 94 ▲	CHINA RESOURCES GAS GROUP	HK 1591 ●	CINCINNATI FINANCIAL	US 1394 ▼
CHINA FORTUNE LAND DEVT.	CN 544 ▲	CHINA RESOURCES LAND	HK 267 ▲	CINTAS	US 1047 ▲
CHINA GALAXY SECURITIES	CN 1163 ▲	CHINA RESOURCES PHARMACEUTICAL	HK 877 ▲	CISCO SYSTEMS	US 74 ▲
CHINA GAS HOLDINGS	HK 1019 ▲	GROUP	HK 1170 ▼	CIT GROUP	US 1505 ▲
CHINA GEZHOUBA	CN 948 ▼	CHINA SHENHUA ENERGY	CN 152 ▼	CITIC	HK 72 ▲
CHINA GRAND AUTOMOTIVE SERVICES	CN 968 ▼	CHINA SHIPBUILDING INDUSTRY	CN 1052 ▲	CITIC SECURITIES	CN 456 ▲
CHINA HONGQIAO GROUP	CN 921 ▼	CHINA SOUTHERN AIRLINES	CN 713 ▼	CITIGROUP	US 14 ▲
CHINA HUARONG ASSET MANAGEMENT	CN 860 ▼	CHINA STATE CONSTRUCTION	CN 80 ▲	CITIZENS FINANCIAL GROUP	US 535 ▼
CHINA INT'L. CAPITAL	CN 1237 ▲	ENGINEERING	CN 80 ▲	CITRIX SYSTEMS	US 1580 ●
CHINA INT'L. MARINE	CN 1165 ▲	CHINA STEEL	TA 773 ▲	CJ CHEILJEDANG	KO 1033 ▲
CHINA INT'L. TRAVEL SERVICE	CN 1265 ▲	CHINA TAIPING INSURANCE	HK 505 ▲	CJ CORPORATION	KO 1166 ▼
CHINA JINMAO	HK 1028 ▲	CHINA TELECOM	CN 168 ▲	CK ASSET HOLDINGS	HK 448 ▼
CHINA LIFE INSURANCE	CN 105 ▼	CHINA TOWER	CN 682 ●	CK HUTCHISON	HK 157 ▼
CHINA LIFE INSURANCE (TAIWAN)	TA 1256 ▲	CHINA UNICOM	HK 251 ▲	CLEVELAND-CLIFFS	US 1868 ●
CHINA LONGYUAN POWER	CN 1676 ▼	CHINA VANKE	CN 124 ▲	CLOROX	US 1137 ▲
CHINA MENGNIU DAIRY	HK 1228 ▲	CHINA YANGTZE POWER	CN 434 ▼	CLP HOLDINGS	HK 518 ▼
CHINA MERCHANTS BANK	CN 31 ▲			CME GROUP	US 545 ▼
CHINA MERCHANTS EXPRESSWAY NETWORK	CN 1826 ●			CMS ENERGY	US 923 ▲
& TECHNOLOGY HOLDINGS	CN 1826 ●			CNH INDUSTRIAL	UK 480 ▲

▲ UP ▼ DOWN

● UNCHANGED ● NEW

ASIA PACIFIC COMPANIES ARE IN RED TYPE

CNPC CAPITAL	CN 654 ▲	DANGOTE CEMENT	NI 1530 ▲	ENCANA	CA 1134 ▲	EXXONMOBIL	US 11 ▲	FIRST DATA	US 600 ▼
COAL INDIA	IN 583 ▲	DANONE	FR 244 ▼	ENEL	IT 77 ▼	F.N.B.	US 1859 ▲	FIRST FINANCIAL HOLDING	TA 1083 ▲
COCA-COLA	US 133 ▲	DANSKE BANK	DE 339 ▼	ENGIE	FR 227 ▼	F5 NETWORKS	US 1934 ●	FIRST HORIZON NATIONAL	US 1453 ▲
COCA-COLA EUROPEAN PARTNERS	US 621 ▲	DAQIN RAILWAY	CN 637 ▼	ENI	IT 91 ▲	FACEBOOK	US 63 ▲	FIRST PACIFIC	HK 1746 ▲
COCA-COLA HBC	UK 621 ▲	DARDEN RESTAURANTS	US 1132 ▲	ENN ENERGY HOLDINGS	CN 1434 ▲	FAIRFAX FINANCIAL	CA 766 ▼	FIRST QUANTUM MINERALS	CA 1586 ▲
COGNIZANT	SZ 1315 ▲	DASSAULT AVIATION	FR 1082 ▼	ENTERGY	US 604 ▲	FALABELLA	CH 695 ▼	FIRST REPUBLIC BANK	US 774 ▲
COLGATE-PALMOLIVE	US 524 ▲	DASSAULT SYSTEMES	FR 1208 ▲	EOG RESOURCES	US 319 ▲	FANGDA CARBON NEW MATERIAL	CN 1837 ▼	FIRSTENERGY	US 586 ▲
COLOPLAST	US 556 ▼	DATANG INT'L. POWER	CN 1040 ▲	EPIROC	SW 1531 ●	FANNIE MAE	US 352 ▲	FIRSTSTRAND	SA 445 ▲
COLRUYT	DE 1361 ▲	DAVITA	US 1313 ▼	EQUINIX	US 1180 ▲	FANUC	JA 789 ▼	FISERV	US 966 ▼
COMCAST	BE 1364 ▲	DB INSURANCE	KO 1024 ▼	EQUINOR	NO 82 ▲	FAR EAST HORIZON	HK 1428 ▼	FLEETCOR TECHNOLOGIES	US 1249 ▲
COMERICA	US 33 ▲	DBS	SI 213 ▲	EQUITY RESIDENTIAL	US 1232 ▼	FAR EASTERN NEW CENTURY	TA 1684 ▲	FLEX	SI 1442 ▼
COMMERCE BANK	US 810 ▲	DCC	IR 1414 ▲	ERDEMIR	TU 1661 ▼	FAST RETAILING	JA 479 ▲	FLUOR	US 1713 ▼
COMMERCIAL BANK FOR INVESTMENT & DEVELOPMENT OF VIETNAM	US 1828 ●	DEERE & COMPANY	US 194 ▲	ERICSSON	SW 719 ▲	FASTENAL	US 1246 ▲	FMC	US 1856 ▼
COMMERCIAL BANK OF QATAR	US 1954 ▼	DELEK GROUP	IS 1954 ▼	ERSTE GROUP BANK	AS 391 ▲	FASTIGHETS BALDER	SW 1622 ▲	FOCUS MEDIA INFORMATION TECHNOLOGY	CN 1300 ▼
COMMERCIAL INTERNATIONAL BANK	US 470 ▼	DELL TECHNOLOGIES	US 470 ▼	ESSEX PROPERTY TRUST	US 1627 ▲	FEDEX	US 184 ▼	FOOT LOCKER	US 1671 ●
COMMERZBANK	US 203 ▲	DELTA AIR LINES	US 203 ▲	ESSILORLUXOTTICA	FR 383 ▲	FEMSA	MX 429 ▼	FORD MOTOR	US 110 ▼
COMMONWEALTH BANK	TA 1243 ▲	DELTA ELECTRONICS	TA 1243 ▲	ESSITY AB	SW 724 ▼	FERGUSON	UK 815 ▼	FORMOSA CHEMICALS	TA 609 ▼
COMMUNITY HEALTH SYSTEMS	JA 256 ▼	DENSO	JA 256 ▼	ETISALAT	AE 384 ▲	FERRARI	IT 1190 ▲	FORMOSA PETROCHEMICAL	TA 539 ▼
COMPAL ELECTRONICS	JA 793 ▼	DENTSU	JA 793 ▼	E-TRADE FINANCIAL	US 838 ▲	FERROVIAL	SP 1133 ▼	FORMOSA PLASTICS	TA 758 ▲
COMPANHIA BRASILEIRA DE DISTRIBUICAO	GE 547 ▼	DEUTSCHE BANK	GE 547 ▼	EUROBANK ERGASIAS	GR 1676 ▼	FIAT CHRYSLER AUTOMOBILES	UK 171 ▼	FORTESCUE METALS GROUP	AU 935 ▼
COMPTON ELECTRONICS	GE 672 ▲	DEUTSCHE BOERSE	GE 672 ▲	EVERBRIGHT SECURITIES	CN 1688 ▼	FIBI HOLDINGS	IS 1918 ▼	FORTIS (CANADA)	CA 771 ▲
COMPASS GROUP	GE 413 ▼	DEUTSCHE LUFTHANSA	GE 413 ▼	EVEREST RE GROUP	BU 1308 ▲	FIBRA UNO	MX 1860 ●	FORTIVE	US 743 ▲
CONAGRA BRANDS	GE 1679 ▼	DEUTSCHE PFANDBRIEFBANK	GE 1679 ▼	EVERGY	US 1155 ●	FIDELITY NATIONAL FINANCIAL	US 1327 ▼	FORTUM	FI 823 ▼
CONCHO RESOURCES	GE 208 ▼	DEUTSCHE POST	GE 208 ▼	EVERSOURCE ENERGY	US 629 ▲	FIDELITY NATIONAL INFORMATION	US 686 ▼	FOSHAN HAITIAN FLAVOURING AND FOOD	CN 1234 ▲
CONCORDIA FINANCIAL GROUP	GE 116 ▼	DEUTSCHE TELEKOM	GE 116 ▼	EVONIK	GE 624 ▼	FIFTH THIRD BANK	US 469 ▼	FOSUN INTERNATIONAL	CN 416 ●
CONCOPHILLIPS	GE 820 ▲	DEUTSCHE WOHNEN	GE 820 ▲	EVRAZ GROUP	UK 829 ▲	FINANCIAL STREET HOLDINGS	CN 1830 ▲	FOUNDER SECURITIES	CN 1769 ▲
CONSOLIDATED EDISON	US 627 ▲	DEVON ENERGY	US 627 ▲	EXELON	US 202 ▼	FINANCIERE DE L'ODET	FR 1005 ▼	FOX	US 696 ●
CONSTELLATION BRANDS	BE 1074 ▼	DEXIA	BE 1074 ▼	EXOR	NE 273 ▼	FINATIS	FR 1526 ▼	FRANKLIN RESOURCES	US 919 ▲
CONSTELLATION SOFTWARE	AU 1507 ▲	DEXUS	AU 1507 ▲	EXPEDIA GROUP	US 993 ▲	FINCOBANK	IT 1715 ▲	FRAPORT	GE 1853 ●
CONTEMPORARY AMPEREX TECHNOLOGY	KO 1700 ▲	DGB FINANCIAL GROUP	KO 1700 ▲	EXPEDITORS INTERNATIONAL	US 1212 ▲	FIRST ABU DHABI BANK	AE 333 ▲	FRASERS PROPERTY LIMITED	SI 1663 ▲
CONTINENTAL	UK 283 ▼	DIAGEO	UK 283 ▼	EXPERIAN	IR 1209 ▲	FIRST CITIZENS BANK	US 1741 ▲	FREDDIE MAC	US 367 ▲
CONTINENTAL RESOURCES	US 1021 ▲	DIAMONDBACK ENERGY	US 1021 ▲	EXTRA SPACE STORAGE	US 1896 ▼			FREEPORT-MCMORAN	US 401 ▲
COPART	CN 1972 ●	DIGITAL CHINA GROUP	CN 1972 ●					FRESENIUS	GE 258 ▼
CORE-MARK HOLDING	US 1289 ▲	DIGITAL REALTY TRUST	US 1289 ▲					FRONTIER COMMUNICATIONS	US 1564 ▼
CORNING	US 339 ▲	DIGITAL REALTY TRUST	US 339 ▲					FUBON FINANCIAL	TA 349 ▼
CORPORATION BANK	US 815 ▲	DISCOVER FINANCIAL SERVICES	US 815 ▲					FUJIFILM HOLDINGS	JA 522 ▼
COSCO SHIPPING	US 562 ▼	DISCOVERY	US 562 ▼					FUJITSU	JA 515 ▲
COSMO ENERGY HOLDINGS	UK 1880 ▼	DISH NETWORK	US 562 ▼					FUKUOKA FINANCIAL GROUP	JA 1321 ▲
COSTAR GROUP	NO 337 ▼	DIXONS CARPHONE	UK 1880 ▼					FUTURE LAND DEVELOPMENT HOLDINGS	CN 875 ▲
COSTCO WHOLESALE	US 560 ▲	DNB	NO 337 ▼					FUYAO GLASS INDUSTRY GROUP	CN 1725 ●
COTY	US 943 ▼	DOLLAR GENERAL	US 560 ▲					FUYO GENERAL LEASE	JA 1999 ▼
COUCHE TARD	US 290 ▲	DOLLAR TREE	US 943 ▼					GAIL INDIA	IN 1186 ▲
COUNTRY GARDEN HOLDINGS	US 290 ▲	DOLLAR TREE	US 943 ▼					GALAXY ENTERTAINMENT	HK 836 ▼
COVESTRO	CN 618 ▼	DOMINION RESOURCES	US 290 ▲					GALLAGHER	US 1049 ▲
COVIVIO	KO 1292 ▼	DONGFENG MOTOR GROUP	CN 618 ▼					GALP ENERGIA	PO 778 ▲
CP ALL	US 1305 ▼	DOOSAN	KO 1292 ▼					GAP	US 981 ▼
CPFL ENERGIA	US 81 ▲	DOVER	US 1305 ▼					GARANTI BANK	TU 777 ▼
CPI PROPERTY GROUP	AE 851 ▲	DOWDUPONT	US 81 ▲					GARMIN	SZ 1395 ▲
CREDICORP	DE 1977 ●	DP WORLD	AE 851 ▲					GARRETT MOTION	SZ 1845 ●
CREDIT ACCEPTANCE	DE 1977 ●	DRILLING COMPANY OF 1972	DE 1977 ●					GAZPROM	RU 40 ▲
CREDIT AGRICOLE	NE 731 ▼	DSM	NE 731 ▼					GD POWER DEVELOPMENT	CN 1179 ▼
CREDIT BANK OF MOSCOW	DE 1012 ▲	DSV	DE 1012 ▲					GEBERIT	SZ 1492 ▲
CREDIT SUISSE GROUP	US 526 ▲	DTE ENERGY	US 526 ▲					GECCINA	FR 1072 ▼
CREDITO EMILIANO	US 512 ▲	DUBAI ISLAMIC BANK	AE 926 ▲					GEELY AUTOMOBILE HOLDINGS	HK 647 ▲
CRH	US 263 ▼	DUKE ENERGY	US 183 ▼					GEMDALE	CN 837 ▲
CROWN CASTLE INT'L.	TA 1121 ▲	DXC TECHNOLOGY	US 513 ▼					GENERAL DYNAMICS	US 235 ▲
CROWN HOLDINGS	JA 250 ▼	E.ON	GE 263 ▼					GENERAL ELECTRIC	US 389 ▼
CRRC	US 1244 ▼	E.SUN FINANCIAL	TA 1121 ▲					GENERAL INSURANCE CORPORATION OF INDIA	IN 1551 ▲
CSC FINANCIAL	US 877 ▼	EAST JAPAN RAILWAY	JA 250 ▼					GENERAL MILLS	US 452 ▲
CSL	US 1912 ▼	EAST WEST BANCORP	US 1244 ▼					GENERAL MOTORS	US 56 ▲
CSN	UK 877 ▼	EASTMAN CHEMICAL	UK 877 ▼					GENERALI GROUP	IT 144 ▼
CSPC PHARMACEUTICAL GROUP	US 1912 ▼	EASYJET	UK 1912 ▼					GENUINE PARTS	US 812 ▲
CSX	IR 361 ▼	EATON	IR 361 ▼					GENWORTH FINANCIAL	US 1225 ▲
CTBC FINANCIAL	US 533 ▲	EBAY	US 533 ▲					GEORGE WESTON	CA 744 ▼
CTRIIP.COM INTERNATIONAL	US 512 ▲	ECOLAB	US 512 ▲					GF SECURITIES	CN 894 ▼
CULLEN/FROST BANKERS	US 512 ▲	ECOPETROL	CO 300 ●					GILEAD SCIENCES	US 199 ▼
CUMMINS	FR 269 ▼	EDF	FR 269 ▼					GIVAUDAN	SZ 1186 ▲
CVS HEALTH	US 778 ▼	EDISON INTERNATIONAL	US 778 ▼					GJENSIDIGE FORSIKRING	NO 1599 ▲
CYBG	US 633 ▼	EDP-ENERGIAS DE PORTUGAL	PO 633 ▼					GLAXOSMITHKLINE	UK 147 ▲
D.R. HORTON	US 1200 ▲	EDWARDS LIFESCIENCES	US 1200 ▲					GLENCORE INTERNATIONAL	SZ 107 ▼
DAELIM INDUSTRIAL	SZ 1867 ▼	EFG INTERNATIONAL	SZ 1867 ▼					GLOBAL PAYMENTS	US 1403 ▼
DAI NIPPON PRINTING	FR 716 ▲	EIFFAGE	FR 716 ▲					GOLDCORP	CA 1975 ▼
DAI-ICHI LIFE INSURANCE	JA 1350 ▲	EISAI	JA 1350 ▲					GOLDMAN SACHS GROUP	US 45 ▲
DAIICHI SANKYO	MX 1508 ▲	EL PUERTO DE LIVERPOOL	MX 1508 ▲					GOODMAN GROUP	AU 1253 ▲
DAIKIN INDUSTRIES	JA 1351 ▲	ELECTRIC POWER DEVELOPMENT	JA 1351 ▲					GOODYEAR	US 1111 ▲
DAILY MAIL & GENERAL TRUST	SW 1455 ▼	ELECTROLUX GROUP	SW 1455 ▼					GPT GROUP	AU 1653 ▲
DAIMLER	US 1007 ▼	ELECTRONIC ARTS	US 1007 ▼					GRASIM INDUSTRIES	IN 1217 ▼
DAISHI HOKUETSU FINANCIAL GROUP	BR 657 ▲	ELETROBRÁS	BR 657 ▲					GREAT EAGLE HOLDINGS	HK 1707 ▼
DAITO TRUST CONSTRUCTION	US 238 ▲	ELI LILLY	US 238 ▲					GREAT WALL MOTOR	CN 842 ▼
DAIWA HOUSE INDUSTRY	AE 827 ▲	EMAART PROPERTIES	AE 827 ▲					GREE ELECTRIC APPLIANCES	CN 260 ▲
DAIWA SECURITIES	KO 1432 ▼	E-MART	KO 1432 ▼					GREENLAND HOLDINGS GROUP	CN 320 ▲
DALI FOODS GROUP	CA 1341 ●	EMERA	CA 1341 ●					GREENTOWN CHINA HOLDINGS	CN 1369 ▲
DANAHER	US 439 ▲	EMERSON ELECTRIC	US 439 ▲					GRIFOLS	SP 1129 ▼
	AE 510 ▲	EMIRATES NBD	AE 510 ▲					GRUPA LOTOS	PL 1990 ●
	CA 1717 ▼	EMPIRE	CA 1717 ▼						
	CH 1481 ▲	EMPRESAS CMPC	CH 1481 ▲						
	SZ 1582 ▲	EMS-CHEMIE HOLDING	SZ 1582 ▲						
	UK 1016 ●	EN+ GROUP	UK 1016 ●						
	CA 174 ▲	ENBRIDGE	CA 174 ▲						
	GE 809 ▼	ENBW-ENERGIE BADEN	GE 809 ▼						



**PTT 165**

PTT's ranking slipped from 156 as weak global oil prices dented profits and sent shares of Thailand's largest energy company down 15% in the past year. PTT's net profit dropped 12% in 2018 to 120 billion baht (\$3.8 billion), even as revenue climbed 16% to 2.4 trillion baht. PTT, which is majority-owned by Thailand's government, has been trying to reduce its exposure to volatile prices for crude by investing in alternative energy sources and buying assets outside Thailand as its own oil reserves dwindle. PTT unit Global Power Synergy is investing 391 billion baht to build a clean fuels production facility and an environment-friendly power plant in eastern Thailand. The facilities are due to be completed in 2023. PTT plans to invest 73 billion baht over the next five years, according to a company representative, to produce natural gas, build gas pipelines and other infrastructure across Thailand as the country seeks to reduce its carbon footprint. In March, its unit PTT Exploration & Production agreed to buy Murphy Oil's Malaysian oil and gas assets for \$2.1 billion. —Suzy Nam

▲ UP ▼ DOWN  
● UNCHANGED ● NEW  
ASIA PACIFIC COMPANIES ARE IN RED TYPE

GRUPA PZU	PL 684 ▲	HOST HOTELS & RESORTS	US 1157 ▲	IBERIABANK	US 1924 ●	INFINEON TECHNOLOGIES	GE 780 ▲	KAJIMA	JA 903 ▼
GRUPO ACS	SP 489 ▲	HOYA	JA 1102 ▲	IBM	US 60 ▲	INFORMA PLC	UK 1844 ●	KANGMEI PHARMACEUTICAL	CN 1634 ▼
GRUPO AVAL	CO 672 ▲	HP	US 279 ▼	ICA GRUPPEN	SW 1519 ▲	INFOSYS	IN 643 ▲	KANSAI ELECTRIC POWER	JA 510 ▼
GRUPO BIMBO	MX 1306 ▲	HSBC HOLDINGS	UK 21 ▼	ICBC	CN 1 ●	ING GROUP	NE 89 ▼	KANSAS CITY SOUTHERN	US 1598 ▼
GRUPO BOLIVAR	CO 1756 ▼	HUA NAN FINANCIAL	TA 1267 ▲	ICICI BANK	IN 400 ●	INGERSOLL RAND	IR 585 ▲	KAO CORP	JA 645 ▲
GRUPO CARSO	MX 1964 ●	HUADIAN POWER INT'L.	CN 1279 ▲	IDBI BANK	IN 1732 ▼	INNER MONGOLIA BAOTOU STEEL	CN 1015 ▲	KASIKORNBANK	TH 669 ▲
GRUPO DE INVERSIONES SURAMERICANA	CO 1922 ▼	HUANENG POWER INT'L.	CN 746 ▼	IDEMITSU KOSAN	JA 638 ▲	INNER MONGOLIA YILI INDUSTRIAL GROUP	CN 811 ▲	KAWASAKI HEAVY INDUSTRIES	JA 1476 ▲
GRUPO ELEKTRA	MX 1230 ●	HUATAI SECURITIES	CN 798 ▼	IDEX	US 1995 ●	INNER MONGOLIA YITAI COAL	CN 1721 ▼	KB FINANCIAL GROUP	KO 276 ▼
GRUPO INBURSA	MX 1118 ●	HUAXIA BANK	CN 265 ▲	IDEXX LABORATORIES	US 1762 ▲	INNOLUX	TA 1934 ▼	KBC GROUP	BE 254 ▼
GRUPO MEXICO	MX 594 ▼	HUIZHANG BANK	CN 817 ▲	IHI	JA 1574 ▼	INPEX	JA 892 ▲	KDDI	JA 170 ▼
GS ENGINEERING	KO 1548 ▲	HUMANA	US 357 ▼	IHS MARKIT	UK 1358 ▼	INSURANCE AUSTRALIA GROUP	AU 1109 ▼	KEIYO BANK	JA 1820 ▼
GS HOLDINGS	KO 1009 ▲	HUNAN VALIN STEEL	CN 1242 ▲	IIDA GROUP HOLDINGS	JA 1426 ▼	INTACT FINANCIAL	CA 1043 ▲	KELLOGG	US 652 ▲
GUANGDONG INVESTMENT	HK 1628 ▼	HUNTINGTON BANK	US 689 ▲	ILLINOIS TOOL WORKS	US 521 ▲	INTELL	US 44 ▲	KEPPEL	SI 1353 ▲
GUANGZHOU AUTOMOBILE GROUP	CN 658 ▲	HUNTINGTON INGALLS INDUSTRIES	US 1268 ▲	ILLUMINA	US 1104 ▲	INTER RAO	RU 1189 ▼	KERING	FR 362 ▼
GUANGZHOU BAIYUNSHAN	CN 1558 ●	HUNTSMAN	US 1483 ▼	IMPERIAL BRANDS	UK 359 ▲	INTERACTIVE BROKERS GROUP	US 1060 ▼	KERRY GROUP	IR 1101 ●
GUANGZHOU R&F	CN 761 ▼	HUSKY ENERGY	CA 674 ▲	INCHCAPE	UK 1969 ▼	INTERCONTINENTALEXCHANGE	US 467 ▲	KERRY PROPERTIES	HK 1433 ▼
GUANGZHOU RURAL COMMERCIAL BANK	CN 995 ▲	HYAKUGO BANK	JA 1712 ▲	INCYTE	US 1997 ●	INTERNATIONAL AIRLINES	UK 428 ▼	KESKO	FI 1978 ▼
GUDANG GARAM	ID 1448 ▲	HYAKUJUSHI BANK	JA 1827 ▼	INDIABULLS HOUSING FINANCE	IN 1778 ▼	INTERNATIONAL FLAVORS & FRAGRANCES	US 1850 ●	KEURIG DR PEPPER	US 563 ▲
GUNMA BANK	JA 1649 ▼	HYATT HOTELS	US 1787 ▲	INDIAN BANK	IN 1886 ▲	INTERNATIONAL PAPER	US 441 ▼	KEYCORP	US 527 ●
GUOSEN SECURITIES	CN 1151 ▼	HYDRO ONE	CA 1365 ▲	INDIAN OIL	IN 288 ▼	INTERPUBLIC GROUP	US 1149 ▲	KEYENCE	JA 752 ▲
GUOTAI JUNAN SECURITIES	CN 730 ▼	HYUNDAI ENGINEERING	KO 1500 ▼	INDIAN OVERSEAS BANK	IN 1957 ▼	INTERSTATE GROUP	US 1149 ▲	KEYSIGHT TECHNOLOGIES	US 1937 ●
H LUNDBECK	DE 1899 ▼	HYUNDAI GLOVIS	KO 1666 ▼	INDITEX	SP 289 ●	INTESA SANPAOLO	IT 130 ▼	KIA MOTORS	KO 447 ▲
H&M - HENNES & MAURITZ	SW 595 ▼	HYUNDAI HEAVY INDUSTRIES	KO 1318 ▼	INDORAMA VENTURES	TH 1202 ▲	INTL FCSTONE	US 1622 ▼	KIMBERLY-CLARK	US 558 ▼
HACHIJUNI BANK	JA 1595 ▼	HYUNDAI MARINE & FIRE	KO 1273 ▼	INDUSIND BANK	IN 1042 ▲	INTUIT	US 832 ▲	KINDER MORGAN	US 335 ▲
HAIDILAO INTERNATIONAL HOLDING	CN 1833 ●	HYUNDAI MOBIS	KO 390 ▲	INDUSTRIAL ALLIANCE INSURANCE	CA 1191 ▼	INTUITIVE SURGICAL	US 1013 ▲	KINGBOARD HOLDINGS	HK 1704 ▲
HAINAN AIRLINES	CN 1393 ▼	HYUNDAI MOTOR	KO 225 ▼	INDUSTRIAL BANK	CN 55 ▲	INVENTEC	TA 1773 ▲	KINGFISHER	UK 1504 ▼
HAITONG SECURITIES	CN 692 ▲	HYUNDAI STEEL	KO 1188 ▼	INDUSTRIAL BANK OF KOREA	KO 616 ▼	INVESCO	US 1087 ▼	KINTETSU	JA 1399 ▲
HAKUHODO DY HOLDINGS	JA 1717 ▲	IAC/INTERACTIVECORP	US 1402 ●	INDUSTRIES QATAR	QA 1136 ▲	INVESTEC	UK 1067 ▲	KION GROUP	GE 1341 ▼
HAL TRUST	MC 1215 ▼	IBERDROLA	SP 145 ▲	INDUSTRIVARDEN	SW 1684 ▼	INVESTOR AB	SW 1036 ▼	KIRIN HOLDINGS	JA 576 ▼
HALKBANK	TU 896 ▼					INVITATION HOMES	US 1665 ▼	KIYO BANK	JA 1849 ▼
HALLIBURTON	US 442 ▲					IPSEN	FR 1897 ●	KLA-TENCOR	US 1129 ▲
HALYK BANK	KZ 1522 ▲					IQIYI	CN 1938 ●	KLEPIERRE	FR 1091 ▼
HANA FINANCIAL GROUP	KO 478 ▼					IQVIA HOLDINGS	US 961 ▼	KNORR-BREMSE	GE 1113 ●
HANESBRANDS	US 1793 ●					ISBANK	TU 663 ▲	KOBE STEEL	JA 1161 ▼
HANG LUNG GROUP	HK 1516 ▼					ISETAN MITSUKOSHI HOLDINGS	JA 1931 ▼	KOÇ HOLDING	TU 744 ▼
HANKYU HANSHIN HOLDINGS	JA 1139 ▼					ISRAEL DISCOUNT BANK	IS 1508 ▲	KOHL'S	US 885 ▲
HANWA	JA 1729 ▼					ISS	DE 1973 ▼	KOITO MANUFACTURING	JA 1300 ▼
HANWHA	KO 792 ▲					ISUZU MOTORS	JA 747 ▲	KOMATSU	JA 394 ▼
HARBIN BANK	CN 1117 ▲					ITAÚ UNIBANCO HOLDING	BR 58 ▼	KONE	FI 840 ▼
HARRIS	US 1093 ▲					ITAÚSA	BR 859 ▼	KONICA MINOLTA BUSINESS SOLUTIONS	JA 1856 ●
HARTFORD FINANCIAL SERVICES	US 408 ▲					ITC	IN 806 ▼	KOREA ELECTRIC POWER	KO 588 ▼
HASEKO	JA 1538 ▲					ITOCHU	JA 182 ▲	KOREA GAS	KO 984 ▲
HCA HEALTHCARE	US 247 ▲					IYO BANK	JA 1674 ▼	KOREA INVESTMENT HOLDINGS	KO 1441 ▲
HCL TECHNOLOGIES	IN 879 ▲					J SAINSBURY	UK 1044 ▼	KOREA ZINC	KO 1989 ▼
HCP	US 1230 ▲					J.B. HUNT TRANSPORT SERVICES	US 1378 ▼	KOREAN AIR	KO 1446 ▼
HDFC	IN 332 ▼					JABIL CIRCUIT	US 1541 ▲	KOTAK MAHINDRA BANK	IN 611 ▲
HDFC BANK	IN 209 ▼					JACCS	JA 1842 ▲	KPN	NE 1521 ▼
HEIDELBERGCEMENT	GE 482 ▲					JACOBS ENGINEERING	US 1297 ▲	KRAFT HEINZ COMPANY	US 548 ▼
HEINEKEN	NE 368 ▲					JAPAN AIRLINES	JA 776 ▲	KROGER	US 296 ▲
HELLA	GE 1536 ▲					JAPAN EXCHANGE GROUP	JA 1064 ▼	KRUNG THAI BANK	TH 972 ▲
HELVETIA HOLDING	SZ 1115 ▼					JAPAN POST HOLDINGS	JA 66 ▲	KT CORP	KO 940 ▲
HENDERSON LAND	HK 593 ▲					JAPAN SECURITIES	JA 1823 ▼	KT&G	KO 1493 ▼
HENGAN INT'L. GROUP	CN 1722 ▲					JAPAN TOBACCO	JA 286 ▼	KUBOTA	JA 564 ▼
HENGLI PETROCHEMICAL	CN 1028 ▲					JARDINE MATHESON	HK 303 ▼	KUEHNE & NAGEL INT'L.	SZ 838 ▲
HENGYI PETROCHEMICAL	CN 1840 ●					JB FINANCIAL GROUP	KO 1850 ▼	KUWAIT FINANCE HOUSE	KU 874 ▲
HENKEL	GE 322 ▼					JBS	BR 825 ▲	KUWAIT PROJECTS	KU 1949 ▼
HENRY SCHEIN	US 1248 ▲					JC PENNEY	US 1999 ▼	KWEICHOW MOUTAI	CN 419 ▲
HERMÈS INTERNATIONAL	FR 788 ▲					JD.COM	CN 613 ▲	KWG GROUP HOLDINGS	HK 1547 ▼
HERO MOTOCORP	IN 1942 ▼					JEFFERIES FINANCIAL	US 1531 ▼	KYOCERA	JA 655 ▼
HERSHEY	US 921 ▲					JERONIMO MARTINS	PO 1167 ▼	KYUSHU ELECTRIC POWER	JA 1096 ▼
HERTZ GLOBAL HOLDINGS	US 1584 ▼					JFE HOLDINGS	JA 531 ▼	KYUSHU FINANCIAL GROUP	JA 1590 ▼
HESS	US 1214 ▲					JG SUMMIT HOLDINGS	PH 1720 ▼	L BRANDS	US 1311 ▼
HESTEEL	CN 1060 ▲					JIANGSU HENGRUI MEDICINE	CN 1213 ▲	L3 TECHNOLOGIES	US 907 ▲
HEWLETT PACKARD ENT.	US 482 ▼					JIANGSU YANGHE BREWERY	CN 1090 ●	LABCORP	US 833 ▼
HEXAGON	SW 1250 ▲					JIANGSU ZHONGNAN CONSTRN. GROUP	CN 1690 ▲	LAFARGEHOLCIM	SZ 321 ▲
HIKVISION	CN 800 ▲					JIANGXI BANK	CN 1525 ●	LAM RESEARCH	US 704 ▼
HILTON	US 857 ▼					JIANGXI COPPER	CN 1227 ▲	LAND SECURITIES GROUP	UK 1949 ▼
HINDALCO INDUSTRIES	IN 875 ▲					JINKE PROPERTY GROUP	CN 1308 ▲	LANXESS	GE 1982 ▼
HIROSHIMA BANK	JA 1620 ▼					JM SMUCKER	US 1025 ▼	LARGAN PRECISION	TA 1287 ●
HITACHI	JA 230 ▼					JOHNSON & JOHNSON	US 37 ▲	LARSEN & TOUBRO	IN 438 ▲
HNA TECHNOLOGY	CN 1259 ▼					JOHNSON CONTROLS INT'L.	IR 299 ▼	LAS VEGAS SANDS	US 491 ▼
HOKKOKU BANK	JA 1830 ▼					JOHNSON MATTHEY	UK 1266 ▼	LATAM AIRLINES	CA 1622 ▼
HOKUHOKU FINANCIAL GROUP	JA 1552 ▼					JOINT STOCK COMMERCIAL BANK FOR FOREIGN TRADE OF VIETNAM	VE 1096 ▲	LAURENTIAN BANK	CA 1940 ▼
HOLLYFRONTIER	US 1011 ▼					JOINTOWN PHARMACEUTICAL GROUP	CN 1948 ▲	LEAR	US 884 ▼
HOME DEPOT	US 126 ▼					JONES LANG LASALLE	US 1376 ▲	LEG IMMOBILIEN	GE 1571 ▲
HON HAI PRECISION	TA 123 ▼					JPMORGAN CHASE	US 2 ▲	LEGAL & GENERAL GROUP	UK 271 ▼
HONDA MOTOR	JA 76 ▼					JSW STEEL	IN 863 ▲	LEGEND HOLDING	CN 677 ▲
HONEYWELL INT'L.	US 153 ▲					JTEKT	JA 1820 ▼	LEGRAND	FR 1014 ▲
HONG KONG EXCHANGES	HK 734 ▲					JULIUS BAER GROUP	SZ 928 ▼	LEIDOS	US 1304 ▲
HONG LEONG FINANCIAL	MA 1438 ▲					JUNIPER NETWORKS	US 1804 ●	LENDLEASE GROUP	AU 1871 ▼
HOPSON DEVELOPMENT HOLDINGS	HK 1572 ▲					JUROKU BANK	JA 1710 ▼	LENNAR	US 496 ▲
HORMEL FOODS	US 918 ▲					JXTG HOLDINGS	JA 257 ▼	LENOVO GROUP	HK 699 ▲
						JYSKE BANK	DE 1520 ▼	LEONARDO	IT 980 ▲
						KAISA GROUP HOLDINGS	CN 1524 ▼	LG CHEM	KO 468 ▲
								LG CORP	KO 763 ▼
								LG DISPLAY	KO 1116 ▼
								LG ELECTRONICS	KO 502 ▼



**Japan Tobacco 286**

The world's No. 4 cigarette maker by sales aims to become No. 1 with high-tech nicotine fixes and overseas expansion. Known for its Mevius (formerly Mild Seven) brand, Japan Tobacco already owns U.S. brand Natural American Spirit and the rights to Winston and Camel outside the U.S. Sales outside Japan in 2018 rose 7% to 1.4 trillion yen (\$12.4 billion) and overseas sales now account for 63% of overall revenue, up from just 52% a decade ago. This year, it launched vaping products in Belgium, Canada, France, Ireland, Italy, Romania, Russia and the U.K. Japan still accounts for 37% of sales, however, and demand there is dwindling amid rising health awareness, an aging population and tougher regulations. E-cigarettes are banned, so the government-controlled company (Japan's Ministry of Finance owns 37%) is promoting heat-not-burn tobacco products that use an electric-heating element to produce nicotine aerosols. Overall, Japan Tobacco reported a 2% decline in 2018 net profit to 386 billion yen despite a 4% rise in total sales to 2.2 trillion yen. Its share price fell 11% in the past year, helping send its Global 2000 ranking to No. 286 from No. 257. —*Jake Adelstein*

▲ UP ▼ DOWN ● UNCHANGED ● NEW ASIA PACIFIC COMPANIES ARE IN RED TYPE

LG HOUSEHOLD & HEALTH CARE	KO 1215 ▲
LG UPLUS	KO 1639 ▼
LI & FUNG	HK 1947 ▼
LIBERBANK	SP 1812 ▼
LIBERTY BROADBAND	US 1796 ▼
LIBERTY EXPEDIA HOLDINGS	US 1335 ▼
LIBERTY GLOBAL	UK 764 ▼
LINCOLN NATIONAL	US 386 ▼
LINDE	UK 219 ▲
LINDT & SPRUNGLI	SZ 1529 ▲
LINK REIT	HK 698 ▲
LIUZHOU IRON & STEEL	CN 1693 ▲
LIVE NATION ENTERTAINMENT	US 1409 ▲
LIVERAMP HOLDINGS	US 1890 ●
LIXIL GROUP	JA 1411 ▼
LKQ	US 1286 ▲
LLOYDS BANKING GROUP	UK 90 ▲
LOCKHEED MARTIN	US 181 ▲
LOEWS	US 595 ▼
LOGAN PROPERTY HOLDINGS	CN 957 ▲
LONDON STOCK EXCHANGE	UK 729 ▲
LONGFOR GROUP HOLDINGS	CN 345 ▲
LONGI GREEN ENERGY TECHNOLOGY	CN 1794 ▼
LONZA GROUP	SZ 1137 ▼
L'ORÉAL	FR 201 ▲
LOTTE	KO 1860 ●
LOTTE CHEMICAL	KO 799 ▼
LOTTE SHOPPING	KO 1326 ▼
LOWE'S	US 234 ▼
LUKOIL	RU 97 ▲
LULULEMON ATHLETICA	CA 1480 ●
LUNDBERGS	SW 1967 ▼
LUXSHARE PRECISION INDUSTRY	CN 1614 ●
LUZERNER KANTONALBANK	SZ 1877 ▼
LUZHOU LAO JIAO	CN 1602 ▲
LYFT	US 1949 ●
LYONDELLBASELL INDUSTRIES	UK 309 ▼
M&T BANK	US 514 ▲
MAANSHAN IRON & STEEL	CN 1296 ▲
MACQUARIE GROUP	AU 348 ▲
MACY'S	US 786 ▼
MAGNA INTERNATIONAL	CA 427 ▼
MAGNIT	RU 1370 ▼
MAGNITOGORSK IRON & STEEL	RU 1237 ▼
MAHINDRA & MAHINDRA	IN 973 ▼
MAKITA	JA 1892 ▼
MANPOWER	US 1330 ▼
MANULIFE	CA 166 ▲
MAPFRE	SP 646 ▼
MARATHON OIL	US 914 ▲
MARATHON PETROLEUM	US 171 ▲
MARKEL	US 1098 ▲
MARKS & SPENCER	UK 1879 ▼
MAROC TELECOM	MO 1508 ▲
MARRIOTT INTERNATIONAL	US 411 ▲
MARSH & MCLENNAN	US 488 ▲
MARTIN MARIETTA MATERIALS	US 1735 ▼
MARUBENI	JA 350 ▼
MARVELL TECHNOLOGY GROUP	BU 1965 ●
MASCO	US 1196 ▲
MASHREQ BANK	AE 1468 ▼
MASRAF AL RAYAN	QA 1420 ▲
MASTERCARD	US 334 ▲
MATCH GROUP	US 1602 ▲
MATERIALS INDUSTRY ZHONGDA GROUP	CN 1392 ▼
MAXIM INTEGRATED PRODUCTS	US 1386 ▲
MAYBANK	MA 378 ▲
MAZDA MOTOR	JA 850 ▼
MCCORMICK	US 1257 ▲
MCDONALD'S	US 255 ▼
MCKESSON	US 580 ▼
MEBUKI FINANCIAL GROUP	JA 1446 ▼
MEDIATEK	TA 1054 ▼
MEDICAL PROPERTIES TRUST	US 1846 ●
MEDIOBANCA	IT 912 ▲
MEDIPAL HOLDINGS	JA 1378 ▲
MEDTRONIC	IR 150 ▲
MEGA FINANCIAL HOLDING	TA 824 ▲
MEIJI HOLDINGS	JA 1126 ▲
MEITUAN DIANPING	CN 989 ●
MELROSE INDUSTRIES	UK 1070 ●
MERCADOLIBRE	AR 1791 ●
MERCK	GE 566 ▼
MERCK & CO.	US 119 ▲
MERCURIES & ASSOCIATES	TA 1690 ▼
MERITZ FINANCIAL GROUP	KO 1386 ▲

## Wilmar International 425

Walk down the aisles of any supermarket in China, and the cooking oil, rice or noodles you'll likely see are Singapore-listed Wilmar's products. Wilmar's Arawana consumer line has become a dominant brand in the world's second-largest economy. China accounted for 56% of Wilmar's \$45 billion in 2018 revenues, which rose 2% from 2017. Wilmar's shares have climbed 15% in the past year and its Global 2000 ranking rose to 425 from 456. Established in 1991 by Singapore billionaire Kuok Khoon Hong, now 69, Wilmar operates palm plantations in Malaysia and sugar mills in Australia, India, Morocco and Myanmar. Kuok still owns about 13%, but Wilmar's biggest shareholders are American commodities trader Archer Daniels Midland with 25% and Kuok Brothers (a holding company controlled by Kuok's uncle and Malaysia's richest man Robert Kuok) with 19%. Analysts say Wilmar could raise as much as \$13 billion from a reported plan to list its China business in Shanghai. "The company has a better chance of higher valuations for its business as investors there would better understand the size and scale of its brand," says Ivy Ng, head of Malaysia research at CIMB Investment Bank. The company declined to comment on the listing plans. —Jessica Tan



MERITZ SECURITIES	KO 1915 ●	MR. COOPER GROUP	US 1656 ●	NIDEC	JA 581 ▲	OLAM INTERNATIONAL	SI 1373 ▼
MERLIN PROPERTIES	SP 1647 ▼	MS&D INSURANCE	JA 263 ▲	NIelsen	US 1695 ▼	OLD DOMINION FREIGHT LINE	US 1576 ▲
METALLURGICAL CORP OF CHINA	CN 509 ▲	MSCI	US 1511 ▲	NIKE	US 280 ▲	OLD MUTUAL	SA 782 ▼
METALURGICA GERDAU	BR 1736 ▼	MTN GROUP	SA 936 ▲	NINE DRAGONS PAPER HLDG.	HK 1397 ▼	OLD REPUBLIC INT'L.	US 1834 ▼
METLIFE	US 84 ▼	MTR	HK 551 ▼	NINTENDO	JA 619 ▲	OLYMPUS	JA 1597 ▼
METRO	CA 1317 ▼	MTU AERO ENGINES	GE 1569 ▲	NIPPON EXPRESS	JA 1506 ▼	OMNICOM GROUP	US 582 ▲
METRO GROUP	GE 1252 ▼	MUNICH RE	GE 147 ▲	NIPPON PAINT	JA 1928 ▼	OMRON	JA 1412 ▼
METROPOLITAN BANK & TRUST	PH 1639 ▲	MURATA MANUFACTURING	JA 541 ▲	NIPPON PAPER INDUSTRIES	JA 1982 ▼	OMV GROUP	AS 405 ▲
METTLER-TOLEDO INT'L.	US 1512 ▲	MURPHY USA	US 1871 ▲	NIPPON STEEL CORP	JA 308 ▼	ON SEMICONDUCTOR	US 1539 ▼
MGM RESORTS	US 842 ▼	MUSASHINO BANK	JA 1860 ▼	NIPPON STEEL TRADING	JA 1675 ▲	ONEOK	US 630 ▲
MICHELIN GROUP	FR 382 ▲	MUYUAN FOODSTUFF	CN 1816 ●	NIPPON TELEGRAPH & TEL	JA 51 ▼	ONEX	CA 1056 ▼
MICRO FOCUS INT'L.	UK 1496 ●	MYLAN	UK 969 ▼	NIPPON YUSEN	JA 1398 ▼	OOREDOO	QA 1451 ▼
MICROCHIP TECHNOLOGY	US 1360 ▲	NAB - NTL. AUSTRALIA BANK	AU 138 ▼	NISHI-NIPPON FINANCIAL HLDG.	JA 1589 ▼	ORACLE	US 92 ▲
MICRON TECHNOLOGY	US 206 ▲	NAN YA PLASTICS	TA 649 ▼	NISOURCE	US 1570 ▲	ORANGE	FR 186 ▲
MICROSOFT	US 16 ▲	NANJING IRON & STEEL	CN 1894 ▲	NISSAN MOTOR	JA 132 ▼	O'REILLY AUTOMOTIVE	US 805 ▲
MIDEA GROUP	CN 253 ▼	NANTO BANK	JA 1753 ▼	NITORI HOLDINGS	JA 1417 ▼	ORIENT	JA 1773 ▼
MIGDAL INSURANCE	IS 1863 ▼	NANYA TECHNOLOGY	TA 1847 ▼	NITTO DENKO	JA 1481 ▼	ORIENT SECURITIES	CN 1442 ▼
MINEBEA	JA 1615 ▼	NARI TECHNOLOGY DEVEL.	CN 1348 ▲	NN GROUP	NE 370 ▼	ORIENTAL BANK OF COMMERCE	IN 1919 ▼
MIRAE ASSET DAEWOO	KO 1427 ▼	NASDAQ	US 1423 ▼	NOBLE ENERGY	US 1541 ▼	ORIENTAL LAND	JA 1174 ▲
MIRVAC GROUP	AU 1755 ●	NASPERS	SA 418 ▲	NOKIA	FI 642 ▼	ORIGIN ENERGY	AU 943 ▲
MITSUBISHI	JA 108 ▲	NATIONAL BANK OF CANADA	CA 501 ▲	NOMURA	JA 714 ▼	ORIX	JA 315 ▼
MITSUBISHI CHEMICAL	JA 475 ▼	NATIONAL BANK OF GREECE	GR 1646 ▼	NOMURA RESEARCH INSTITUTE	JA 1926 ▼	ORSTED	DE 486 ▲
MITSUBISHI ELECTRIC	JA 325 ▼	NATIONAL BANK OF KUWAIT	KU 711 ▲	NORDEA BANK	SW 231 ▼	OSAKA GAS	JA 1371 ▼
MITSUBISHI ESTATE	JA 508 ▲	NATIONAL COMMERCIAL BANK	SU 420 ▲	NORDSTROM	US 1345 ▲	OSHKOSH	US 1834 ●
MITSUBISHI GAS CHEMICAL COMPANY	JA 1986 ●	NATIONAL GRID	UK 241 ▲	NORFOLK SOUTHERN	US 380 ▼	OTP BANK	HU 868 ▲
MITSUBISHI HEAVY INDUSTRIES	JA 534 ▲	NATIONAL OILWELL VARCO	US 1323 ▼	NORILSK NICKEL	RU 574 ▲	OTSUKA HOLDING	JA 735 ▼
MITSUBISHI MATERIALS	JA 1457 ▼	NATIXIS	FR 324 ▲	NORSK HYDRO	NO 932 ▼	OVERSEA-CHINESE BANKING	SI 286 ▼
MITSUBISHI MOTORS	JA 830 ▼	NATURGY ENERGY GROUP	SP 651 ▼	NORTH PACIFIC BANK	JA 1607 ▼	OWENS CORNING	US 1889 ●
MITSUBISHI UFJ FINANCIAL	JA 43 ▼	NAVER	KO 1442 ▼	NORTHERN TRUST	US 542 ▲	PACCAR	US 435 ▲
MITSUBISHI UFJ LEASE	JA 1059 ▲	NAVIENT	US 1330 ▲	NORTHROP GRUMMAN	US 277 ▲	PACKAGING CORP OF AMERICA	US 1390 ▼
MITSUMI	JA 196 ▼	NAVISTAR INTERNATIONAL	US 1809 ●	NORWEGIAN CRUISE LINE HLDG.	US 1075 ▲	PACWEST BANCORP	US 1783 ▲
MITSUMI CHEMICALS	JA 1295 ▲	NEC	JA 1023 ▼	NOVARTIS	SZ 60 ▲	PALO ALTO NETWORKS	US 1784 ▲
MITSUMI FUDOSAN	JA 375 ▲	NEDBANK	SA 755 ●	NOVATEK	RU 500 ▲	PAN PACIFIC INT'L. HOLDINGS	JA 1592 ▲
MITSUMI OSK LINES	JA 1496 ▼	NESTE	FI 753 ▲	NOVO NORDISK	DE 376 ▲	PANASONIC	JA 298 ▼
MIZRAHI TEFAHOT BANK	IS 1669 ▼	NESTLE	SZ 42 ▲	NOVOLIPETSK STEEL	RU 791 ▲	PARKER-HANNIFIN	US 640 ▲
MIZUHO FINANCIAL	JA 125 ▼	NETAPP	US 1068 ▲	NOVOZYMES	DE 1668 ▼	PARTNERS GROUP HOLDING	SZ 1298 ▲
MOHAWK INDUSTRIES	US 1064 ▼	NETEASE	CN 787 ▲	NRG ENERGY	US 1207 ▼	PAYCHEX	US 1122 ▲
MOL HUNGARIAN OIL	HU 886 ▲	NETFLIX	US 431 ▲	NSK	JA 1594 ▼	PAYPAL	US 318 ▲
MOLINA HEALTHCARE	US 1147 ▲	NEW CHINA LIFE INSURANCE	CN 336 ▲	NTPC	IN 492 ▲	PBF ENERGY	US 1613 ▼
MØLLER-MAERSK	DE 262 ▲	NEW HOPE LIUHE	CN 1681 ●	NUCOR	US 537 ▲	PEARSON	JA 1549 ▲
MOLSON COORS BREWING	US 691 ▼	NEW RESIDENTIAL INVESTMENT	US 1244 ▲	NUERNBERGER BETEILIGUNGS	GE 1812 ▼	PEGATRON	TA 1200 ▼
MONDELZ INTERNATIONAL	US 228 ▼	NEW WORLD DEVELOPMENT	HK 457 ▲	NUTRIEN	CA 678 ▲	PEMBINA PIPELINE	CA 897 ▲
MONDI	UK 1105 ▲	NEW YORK COMMUNITY BANCORP	US 193 ▼	NVIDIA	US 529 ▲	PENSKE AUTOMOTIVE	US 1404 ▼
MONSTER BEVERAGE	US 1131 ▲	NEXON	US 1565 ▼	NVR	US 1263 ▲	PEOPLE'S INSURANCE	CN 155 ▲
MOODY'S	US 1039 ▲	NEWELL BRANDS	US 1641 ▼	NXP SEMICONDUCTORS	NE 577 ▲	PEOPLE'S UNITED FINANCIAL	US 1430 ▲
MORGAN STANLEY	US 48 ▲	NEWMONT MINING	US 1195 ▼	OBAYASHI	JA 916 ▼	PEPSICO	US 86 ▲
MOSAIC	US 1088 ▲	NEWS CORP	US 1559 ▲	OCCIDENTAL PETROLEUM	US 292 ▲	PERFORMANCE FOOD GROUP	US 1739 ▼
MOSCOW EXCHANGE	RU 1704 ▼	NEXTERA ENERGY	US 193 ▼	OGAKI KYORITSU BANK	JA 1747 ▼	PERNOD RICARD	FR 455 ▲
MOTOROLA SOLUTIONS	US 986 ▲	NH INVESTMENT & SECURITIES	KO 1785 ▲	OI	BR 1089 ▲	PERSIMMON	UK 1407 ▲
MOWI	NO 1568 ▲			OIL & NATURAL GAS	IN 220 ▲	PETROBRAS	SU 1643 ▼
				OJI HOLDINGS	JA 1368 ▲		BR 50 ▲

▲ UP ▼ DOWN  
● UNCHANGED ● NEW  
ASIA PACIFIC COMPANIES ARE IN RED TYPE



**SM Investments** 1092

With interests in property, retail and banking, this conglomerate is the second-largest of six Philippine companies that made the list. Its 72 shopping malls in the Philippines' serve the country's fast-growing urban population. The late Henry Sy Sr. started what was first known as Shoe Mart after World War II and built it into what it is today, in the process turning himself into the wealthiest person in the Philippines for 11 consecutive years until his death in January. Now led by Sy's children and a team of professional managers, SM has proved resilient in the face of the country's slowing growth. Group revenues and profits last year climbed 13% to 450 billion pesos (\$8.7 billion) and 37.1 billion pesos, respectively. In keeping with the times, the group is embracing e-commerce. "It requires the coordination and integration of nearly all aspects of the supply chain," says Chairman Jose T. Sio. "We are building solutions in many of these."  
—Roel Lindingin

SALESFORCE.COM	US 446 ▲	SHIN-ETSU CHEMICAL	JA 406 ▲
SAMBA FINANCIAL GROUP	SU 712 ▲	SHINHAN FINANCIAL GROUP	KO 281 ▼
SAMPO	FI 465 ▼	SHINSEI BANK	JA 1325 ▲
SAMSUNG C&T	KO 440 ▲	SHIONOGI	JA 1233 ▲
SAMSUNG ELECTRO-MECHANICS	KO 1557 ●	SHISEIDO	JA 997 ▲
SAMSUNG ELECTRONICS	KO 13 ▲	SHIZUOKA BANK	JA 1406 ▼
SAMSUNG FIRE & MARINE	KO 546 ▲	SHOPIFY	CA 1738 ●
SAMSUNG LIFE INSURANCE	KO 353 ▼	SHOPRITE HOLDINGS	SA 1881 ▼
SAMSUNG SDI	KO 1000 ▲	SHOWA DENKO	JA 1404 ●
SAMSUNG SDS	KO 1146 ▲	SIAM CEMENT	TH 648 ▲
SAMSUNG SECURITIES	KO 1942 ▼	SIAM COMMERCIAL BANK	TH 632 ▼
SAN JU SAN FINANCIAL GROUP	JA 1907 ●	SICHUAN CHANGHONG ELECTRIC	CN 1955 ▼
SANDVIK	SW 725 ▲	SIEMENS	GE 64 ▼
SAN-IN GODO BANK	JA 1751 ▲	SIGNATURE BANK	US 1277 ▲
SANLAM	SA 818 ▼	SIKA	SZ 1076 ▲
SANOFI	FR 114 ▲	SIMON PROPERTY GROUP	US 590 ▲
SANSTEEL MINGUANG	CN 1762 ●	SINGAPORE AIRLINES	SI 1078 ▲
SANTANDER	SP 30 ▲	SINGTEL	SI 409 ▼
SANTOS	AU 1348 ●	SINO BIOPHARMACEUTICAL	HK 1307 ▲
SANY HEAVY INDUSTRY	CN 1017 ▲	SINO LAND	HK 1925 ▼
SAP	GE 176 ▲	SINO-OCEAN GROUP HOLDING	CN 1276 ▼
SAPUTO	CA 1158 ▼	SINOPAC FINANCIAL	TA 1749 ▼
SARAS	IT 1985 ●	SINOPEC	CN 35 ▼
SASOL	SA 530 ▼	SINOPHARM GROUP	CN 572 ▲
SAUDI ARABIAN FERTILIZERS	SU 1869 ●	SINOTRANS	CN 1800 ▲
SAUDI ARABIAN MINING	SU 1147 ▲	SINOTRUK HONG KONG	CN 1490 ▲
SAUDI BASIC INDUSTRIES	SU 122 ▼	SISTEMA	RU 1467 ▲
SAUDI BRITISH BANK	SU 804 ▲	SK HOLDINGS	KO 313 ▼
SAUDI ELECTRICITY	SU 578 ▼	SK HYNIX	KO 179 ▲
SAUDI TELECOM	SU 364 ▲	SK INNOVATION	KO 454 ▼
SBA COMMUNICATIONS	US 1785 ▲	SK NETWORKS	KO 1942 ▼
SBERBANK	RU 47 ●	SK TELECOM	KO 471 ▲
SBI HOLDINGS	JA 1561 ▲	SKANSKA	SW 1150 ▲
SCENTRE GROUP	AU 866 ▼	SKF GROUP	SW 1224 ▲
SCHAEFFLER	GE 1026 ▼	SKYWORKS SOLUTIONS	US 1263 ▲
SCHINDLER HOLDING	SZ 864 ▲	SLM	US 1645 ●
SCHLUMBERGER	US 217 ▲	SM INVESTMENTS	PH 1092 ▼
SCHNEIDER ELECTRIC	FR 252 ▲	SMC	JA 986 ●
SCHRODERS	US 1176 ▼	SMITH & NEPHEW	UK 1377 ▼
SCOR	FR 942 ▲	SMURFIT KAPPA GROUP	IR 1852 ▼
SDIC CAPITAL	CN 1776 ▼	SNAM	IT 931 ▲
SDIC POWER HOLDINGS	CN 1080 ▲	SNAP	US 1990 ●
SEAGATE TECHNOLOGY	IR 867 ▲	SNAP-ON	US 1690 ▲
SEARS HOLDINGS	US 1913 ▼	SOCIÉTÉ GÉNÉRALE	FR 157 ▲
SEB	SW 416 ▲	SODEXO	FR 662 ▲
SEB	FR 1517 ▲	SOFINA	BE 1812 ●
SECOM	JA 855 ▲	SOFTBANK	JA 36 ▲
SECURITAS	SW 1978 ▲	S-OIL	KO 1204 ▼
SEGRO	UK 1371 ▲	SOJITZ	JA 1066 ▲
SEIKO EPSON	JA 1726 ▲	SOLVAY	BE 708 ●
SEKISUI CHEMICAL	JA 1440 ▼	SOMPO	JA 403 ▼
SEKISUI HOUSE	JA 687 ▼	SONOVA HOLDING	SZ 1858 ●
SEMBCORP INDUSTRIES	SI 1781 ▲	SONY	JA 73 ▲
SEMPRA ENERGY	US 459 ▲	SOUTH32	AU 910 ▲
SENSATA TECHNOLOGIES HLDG.	UK 1909 ●	SOUTHERN COMPANY	US 215 ▲
SENSHU IKEDA HOLDINGS	JA 1771 ▲	SOUTHWEST AIRLINES	US 398 ▼
SERVICENOW	US 1573 ▲	SPIRIT AEROSYSTEMS	US 1450 ▲
SEVEN & I HOLDINGS	JA 278 ▼	SPLUNK	US 1869 ▲
SEVERSTAL	RU 925 ▲	SPOTIFY TECHNOLOGY	LU 1494 ▲
SG HOLDINGS	JA 1555 ●	SQUARE	US 1673 ▲
SGS	SZ 1151 ▲	SS&C TECHNOLOGIES	US 1602 ●
SHAANXI COAL INDUSTRY	CN 802 ▲	SSE	UK 797 ▼
SHANGHAI COMMERCIAL & SAVINGS BANK	TA 1424 ▲	ST. GALLER KANTONALBANK	SZ 1965 ▼
SHANGHAI CONSTRUCTION	CN 1031 ▲	ST. JAMES'S PLACE	UK 1383 ▼
SHANGHAI ELECTRIC GROUP	CN 802 ▲	STANDARD BANK GROUP	SA 415 ▼
SHANGHAI GANGLIAN E-COMMERCE HLDG.	CN 1865 ▲	STANDARD CHARTERED	UK 357 ▼
SHANGHAI INT'L. AIRPORT	CN 1391 ▲	STANLEY BLACK & DECKER	US 736 ▼
SHANGHAI INT'L. PORT	CN 753 ▲	STARBUCKS	US 351 ▲
SHANGHAI PHARMACEUTICALS	CN 941 ▼	STARWOOD PROPERTY TRUST	US 1550 ▼
SHANGHAI PUDONG DEVELOPMENT	CN 65 ▲	STATE BANK OF INDIA	IN 460 ▲
SHANXI TAIGANG STAINLESS	CN 1324 ▲	STATE STREET	US 314 ▼
SHARP	JA 977 ▼	STEEL AUTHORITY OF INDIA	IN 1687 ▼
SHENGJING BANK	CN 943 ▼	STEEL DYNAMICS	US 1105 ▼
SHENWAN HONGYUAN GROUP	CN 901 ▼	STEINHOFF INTERNATIONAL	NE 891 ▼
SHENZHEN MINDRAY BIO-MEDICAL ELECTRONICS	CN 1655 ●	STERLING BANCORP	US 1698 ●
SHENZHEN OVERSEAS	CN 808 ▲	STMICROELECTRONICS	SZ 906 ▲
SHENZHOU INTERNATIONAL GROUP HLDG.	HK 1335 ▲	STORA ENSO	FI 881 ▼
SHERWIN-WILLIAMS	US 538 ▼	STOREBRAND	NO 1258 ▲
SHIGA BANK	JA 1727 ●	STRABAG	AS 1362 ▲
SHIMANO	JA 1631 ●	STRYKER	US 366 ▲
SHIMAO PROPERTY HOLDINGS	HK 607 ▲	SUBARU	JA 466 ▼
SHIMIZU	JA 1085 ▼	SUMEC CORPORATION	CN 1967 ▲
SHIN KONG FINANCIAL	TA 1053 ▼	SUMITOMO	JA 291 ▼
		SUMITOMO CHEMICAL	JA 719 ▼
		SUMITOMO ELECTRIC	JA 608 ▼
		SUMITOMO METAL MINING	JA 1060 ▼
		SUMITOMO MITSUI FINANCIAL	JA 67 ▼
		SUMITOMO MITSUI TRUST	JA 432 ▲

PETROCHINA	CN 22 ▲	PRYSMIAN	IT 1904 ●
PETRONAS CHEMICALS	MA 1193 ▲	PTT GLOBAL CHEMICAL	TH 834 ▼
PEUGEOT	FR 218 ▲	PTT PCL	TH 165 ▼
PFIZER	US 54 ▼	PUBLIC BANK	MA 644 ▲
PG&E	US 814 ▼	PUBLIC SERVICE ENTERPRISE GROUP	US 504 ▼
PGE POLSKA GRUPA ENERGETYCZNA	PL 1619 ▼	PUBLIC STORAGE	US 993 ▲
PGNIG GROUP	PL 1009 ▲	PUBLICIS GROUPE	FR 666 ▲
PHILIP MORRIS INT'L.	US 212 ▼	PULTEGROUP	US 1169 ▲
PHILIPS	NE 432 ▼	PUNJAB NATIONAL BANK	IN 1199 ▼
PHILLIPS 66	US 169 ▼	PVH	US 1156 ▲
PHOENIX GROUP HOLDINGS	UK 1218 ▲	QANTAS AIRWAYS	AU 1282 ▼
PINDUODUO	CN 1699 ●	QATAR ISLAMIC BANK	QA 1032 ▲
PING AN INSURANCE GROUP	CN 7 ▲	QATAR NATIONAL BANK	QA 207 ▲
PINNACLE WEST	US 1469 ▲	QBE INSURANCE GROUP	AU 800 ▲
PIONEER NATURAL RESOURCES	US 705 ▲	QINGDAO HAIER	CN 549 ▲
PIRAEUS BANK	GR 1657 ▼	QINGDAO RURAL COMMERCIAL BANK	CN 1561 ●
PIRAMAL ENTERPRISES	IN 1854 ●	QUALCOMM	US 310 ▲
PIRELLI	IT 1609 ●	QUANTA COMPUTER	TA 939 ▲
PKN ORLEN	PL 650 ▲	QUEST DIAGNOSTICS	US 1235 ▼
PKO BANK POLSKI	PL 812 ▲	QUILTER	UK 1626 ●
PNC FINANCIAL SERVICES	US 146 ▼	QUINENCO	CH 1302 ▲
POLY DEVELOPMENTS & HOLDINGS GROUP	CN 245 ▲	QURATE RETAIL GROUP	US 971 ▼
POPULAR	US 1355 ▲	RAIFFEISEN BANK INT'L.	AS 636 ▼
PORSCHE AUTOMOBIL HLDG.	GE 667 ▲	RAJESH EXPORTS	IN 1615 ▼
POSCO	KO 323 ▼	RAKUTEN	JA 565 ▲
POSTAL SAVINGS BANK OF CHINA (PSBC)	CN 60 ▼	RALPH LAUREN	US 1676 ●
POSTE ITALIANE	IT 331 ▲	RAMSAY HEALTH CARE	AU 1940 ▼
POWER ASSETS HOLDINGS	HK 1281 ▼	RANDSTAD HOLDING	NE 909 ▼
POWER CONSTRUCTION CORP. OF CHINA	CN 381 ●	RAYMOND JAMES FINANCIAL	US 764 ▲
POWER CORP OF CANADA	CA 397 ●	RAYTHEON	US 304 ▲
POWER FINANCE	IN 1247 ▲	RBC	CA 41 ▲
POWER GRID OF INDIA	IN 865 ▲	REALTY INCOME	US 1486 ▲
PPG	US 606 ▼	RECKITT BENCKISER GROUP	UK 293 ▼
PPL	US 568 ▲	RECRUIT HOLDINGS	JA 527 ▲
PRESIDENT CHAIN STORE	TA 1803 ▼	RED ELÉCTRICA	SP 1388 ▲
PRINCIPAL FINANCIAL GROUP	US 404 ▼	RED HAT	US 1464 ▲
PROCTER & GAMBLE	US 53 ▲	RED STAR MACALLINE GROUP	CN 1766 ▼
PROGRESSIVE	US 242 ▲	REGENERON PHARMACEUTICALS	US 790 ▲
PROLOGIS	US 660 ▲	REGIONS FINANCIAL	US 589 ▼
PROXIMUS	BE 1465 ▼	REINSURANCE GROUP OF AMERICA	US 715 ▼
PRUDENTIAL	UK 112 ▼	RELIANCE INDUSTRIES	IN 71 ▲
PRUDENTIAL FINANCIAL	US 98 ▼	RELIANCE STEEL	US 1472 ▼
		RELX	UK 584 ▲
		RENAULT	FR 204 ▼
		RENASAS ELECTRONICS	JA 1600 ▼
		REPSOL	SP 236 ▼
		REPUBLIC SERVICES	US 665 ▲
		RESMED	US 1722 ●
		RESONA HOLDINGS	JA 634 ▼
		RESTAURANT BRANDS INT'L.	CA 1072 ▼
		REXEL	FR 1719 ▼
		RHB BANK	MA 1344 ▲
		RICHEMONT	SZ 360 ▲
		RICOH	JA 1196 ▲
		RIO TINTO	UK 111 ●
		RISESUN REAL ESTATE DEVELOPMENT	CN 916 ▲
		RITE AID	US 1683 ▼
		RIYAD BANK	SU 728 ▲
		RMB HOLDINGS	SA 1764 ▲
		ROCHE HOLDING	SZ 88 ▲
		ROCKWELL AUTOMATION	US 1038 ▲
		ROGERS COMMUNICATIONS	CA 566 ▲
		ROLLS-ROYCE HOLDINGS	UK 733 ▼
		RONGSHENG PETROCHEMICAL	CN 1124 ▲
		RONSHINE CHINA HOLDINGS	CN 1902 ●
		ROPER TECHNOLOGIES	US 928 ▲
		ROSNEFT	RU 52 ▲
		ROSS STORES	US 671 ▲
		ROSSETI	RU 767 ▼
		ROYAL AHOLD DELHAIZE	NE 302 ▼
		ROYAL BANK OF SCOTLAND	UK 185 ▼
		ROYAL CARIBBEAN CRUISES	US 573 ▲
		ROYAL DUTCH SHELL	NE 9 ▲
		ROYAL MAIL	UK 1890 ▼
		RSA INSURANCE GROUP	UK 1262 ▼
		RTL GROUP	LU 1329 ▼
		RUSHYDRO	RU 1957 ▼
		RWE GROUP	GE 626 ▼
		RYANAIR HOLDINGS	IR 841 ▼
		S&P GLOBAL	US 820 ▲
		S.F. HOLDING	CN 888 ▼
		SABANCI HOLDING	TU 849 ▼
		SABESP	BR 1865 ▲
		SAFARICOM	KE 1680 ▲
		SAFRAN	FR 311 ▼
		SAIC MOTOR	CN 100 ▼
		SAINT-GOBAIN	FR 523 ▼
		SAIPEM	IT 1875 ▼

▲ UP ▼ DOWN  
● UNCHANGED ● NEW  
ASIA PACIFIC COMPANIES ARE IN RED TYPE

SUMITOMO REALTY	JA 635 ▼	SWISS RE	SZ 474 ▲	TAPESTRY	US 1462 ▲	TURKISH AIRLINES	TU 1034 ▲	WEICHAI POWER	CN 535 ▲
SUN ART RETAIL GROUP	HK 1415 ▼	SWISSCOM	SZ 579 ▼	TARGA RESOURCES	US 1352 ▲	TWITTER	US 1100 ▲	WELLFARGO HEALTH PLANS	US 1058 ▲
SUN HUNG KAI PROPERTIES	HK 328 ▼	SYDNEY AIRPORT	AU 1848 ▼	TARGET	US 233 ▲	TYSON FOODS	US 354 ▲	WELLS FARGO	US 10 ▼
SUN LIFE FINANCIAL	CA 273 ▼	SYMANTEC	US 1587 ▼	TATA CONSULTANCY SERVICES	IN 374 ▲	UBI BANCA	IT 1181 ▼	WELLTOWER	US 1099 ▲
SUN PHARMA INDUSTRIES	IN 1606 ▲	SYNCHRONY FINANCIAL	US 191 ▲	TATA MOTORS	IN 769 ▼	UBS	SZ 95 ▲	WENDEL	FR 1724 ▼
SUNAC CHINA HOLDINGS	CN 305 ▲	SYNDICATE BANK	IN 1772 ▲	TATA STEEL	IN 552 ▲	UCB	BE 1182 ▲	WENS FOODSTUFF GROUP	CN 1006 ▼
SUNCOR ENERGY	CA 229 ▼	SYNNEX	US 1648 ▲	TATNEFT	RU 524 ▲	UGI	US 1567 ▼	WESFARMERS	AU 517 ▼
SUNCORP GROUP	AU 701 ▼	SYNNEX TECHNOLOGY INTL	TA 1946 ▼	TAYLOR WIMPEY	UK 1552 ▲	ULTA BEAUTY	US 1144 ▲	WEST JAPAN RAILWAY	JA 676 ▲
SUNING.COM	CN 423 ▲	SYNOPSIS	US 1455 ●	TCL CORP	CN 937 ▲	ULTRAPAR PARTICIPACOES	BR 1637 ▼	WESTERN ALLIANCE BANCORP.	US 1914 ●
SUNNY OPTICAL TECHNOLOGY GROUP	CN 1953 ▼	SYNOVUS FINANCIAL	US 1711 ▲	TD AMERITRADE HOLDING	US 631 ▲	UMICORE	BE 1274 ▲	WESTERN DIGITAL	US 1515 ▲
SUNTORY BEVERAGE & FOOD	JA 933 ▲	SYSCO	US 437 ▲	TD BANK GROUP	CA 46 ▲	UNIBAIL-RODAMCO	NE 638 ▲	WESTERN UNION	US 615 ●
SUNTRUST BANKS	US 338 ▼	T ROWE PRICE	US 990 ▲	TDK	JA 899 ▲	UNICAJA BANCO	SP 1681 ▼	WESTLAKE CHEMICAL	US 1128 ▼
SURGUTNEFTGAS	RU 330 ▲	T&D HOLDINGS	JA 703 ▼	TE CONNECTIVITY	SZ 507 ▲	UNICHARM	JA 1268 ▲	WESTPAC BANKING GROUP	AU 101 ▼
SUZANO PAPEL E CELULOSE	BR 1799 ▼	TAHOE GROUP	CN 1559 ▲	TECH DATA	US 1435 ▲	UNICREDIT	IT 156 ▼	WESTROCK	US 738 ▼
SUZUKEN	JA 1693 ▼	TAISEI	JA 899 ▼	TECH MAHINDRA	IN 1543 ▲	UNILEVER	NE 106 ▼	WEYERHAEUSER	US 901 ▼
SUZUKI MOTOR	JA 394 ▼	TAISHIN FINANCIAL HOLDINGS	TA 1513 ▼	TECHNIPFMC	UK 1079 ▼	UNION BANK OF INDIA	IN 1445 ●	WH GROUP	HK 690 ▲
SVB FINANCIAL GROUP	US 871 ▲	TAIWAN BUSINESS BANK	TA 1741 ▼	TECHTRONIC INDUSTRIES	HK 1320 ▲	UNION PACIFIC	US 188 ▼	WHEELOCK	HK 614 ▼
SVENSKA HANDELSBANKEN	SW 450 ▲	TAIWAN CEMENT	TA 1990 ●	TECK RESOURCES	CA 623 ▼	UNIPER	GE 710 ▲	WHIRLPOOL	US 1159 ▼
SWATCH GROUP	SZ 930 ▼	TAIWAN COOPERATIVE FINANCIAL	TA 1135 ▲	TELECOM ITALIA	IT 759 ▼	UNIPOL GRUPPO	IT 750 ▲	WHITBREAD	UK 1663 ▲
SWEDBANK	SW 497 ▼	TAIWAN SEMICONDUCTOR	TA 126 ▼	TELEFÓNICA	SP 141 ▼	UNI-PRESIDENT	TA 983 ▼	WILLIAMS	US 819 ▼
SWIRE PACIFIC	HK 450 ▲	TAKEDA PHARMACEUTICAL	JA 377 ▲	TELENOR	NO 555 ▼	UNIQA	AS 1607 ▲	WILLIS TOWERS WATSON	UK 722 ▲
SWISS LIFE HOLDING	SZ 392 ▲	TALANX	GE 484 ▲	TELIA	SW 656 ▲	UNISPLENDOR	CN 1882 ▼	WILMAR INTERNATIONAL	SI 425 ▲



**Bank Central Asia 553**

After rallying 22% in the past year, the Indonesian bank's shares are trading near an all-time high on hopes for continued earnings growth. That has boosted its Global 2000 ranking to 553 from 574 last year. "BCA has the competitive advantage of an industry-leading deposit franchise in a large domestic market—Indonesia is the world's fourth most populous country, with a population of 263 million," says Alan Richardson, regional fund manager at Samsung Asset Management in Hong Kong. BCA's net profit climbed 11% in 2018 to 25.9 trillion rupiah (\$1.8 billion), bolstered by increased lending and fee income. After growing its loan book last year by 15% to 538 trillion rupiah, BCA predicts loan growth will slow to 9% in 2019, below the government's industry forecast of 13% growth. The bank's long-standing philosophy is to be "very, very conservative," says BCA President Director Jahja Setiaatmadja, 63. "If all goes well in the first six months of the year—including the political situation—we can reach higher growth." BCA is now approaching a regional milestone: its market cap of \$49.4 billion is second only to DBS Bank's market cap of \$51.7 billion, the largest in Southeast Asia. BCA's success has also helped its two largest shareholders, brothers Robert Budi and Michael Bambang Hartono, become Indonesia's two richest citizens, with a combined personal net worth of \$37 billion.

—Joe Cochrane

TENAGA NASIONAL	MA 612 ▼	UNITED AIRCRAFT	US 747 ▼	UNISPLENDOR	RU 1895 ▼	UNION PACIFIC	US 188 ▼	WHEELOCK	HK 614 ▼
TENARIS	LU 955 ▲	UNITED CONTINENTAL HLDG.	AU 398 ▼	UNITED OVERSEAS BANK	SI 307 ▲	UNIPER	GE 710 ▲	WHIRLPOOL	US 1159 ▼
TENENT HOLDINGS	CN 74 ▲	UNITED NATURAL FOODS	US 1876 ●	UNITED PARCEL SERVICE	US 159 ▼	UNIPOL GRUPPO	IT 750 ▲	WHITBREAD	UK 1663 ▲
TENET HEALTHCARE	US 1316 ▼	UNITED OVERSEAS BANK	SI 307 ▲	UNITED RENTALS	US 911 ▲	UNI-PRESIDENT	TA 983 ▼	WILLIAMS	US 819 ▼
TENNECO	US 1787 ●	UNITED PARCEL SERVICE	US 159 ▼	UNITED TECHNOLOGIES	US 78 ▲	UNIQA	AS 1607 ▲	WILLIS TOWERS WATSON	UK 722 ▲
TERNA	IT 1167 ▲	UNITED RENTALS	US 911 ▲	UNITED UTILITIES	UK 1819 ▼	UNISPLENDOR	CN 1882 ▼	WILMAR INTERNATIONAL	SI 425 ▲
TERNIUM	LU 1140 ▲	UNITED TECHNOLOGIES	US 78 ▲	UNITEDHEALTH GROUP	US 32 ▼	UNITED AIRCRAFT	RU 1895 ▼	WINTRUST FINANCIAL	US 1955 ●
TERUMO	JA 1193 ▼	UNIVERSAL ENTERTAINMENT	JA 1754 ●	UNIVERSAL HEALTH	US 1071 ▲	UNITED CONTINENTAL HLDG.	US 306 ▲	WIPRO	IN 857 ▲
TESCO	UK 243 ▲	UNIVERSAL HEALTH	US 1071 ▲	UNUM	US 872 ▼	UNITED NATURAL FOODS	US 1876 ●	WIRECARD	GE 1751 ▲
TESLA	US 694 ▲	UNUM	US 872 ▼	UPM-KYMMENE	FI 709 ▲	UNITED OVERSEAS BANK	SI 307 ▲	WISTRON	TA 1579 ▼
TEVA PHARMACEUTICAL	IS 751 ▼	UPM-KYMMENE	FI 709 ▲	US BANCORP	US 103 ▲	UNITED PARCEL SERVICE	US 159 ▼	WM MORRISON SUPERMARKETS	UK 1435 ▼
TEXAS INSTRUMENTS	US 402 ▲	US BANCORP	US 103 ▲	US FOODS	US 1337 ▼	UNITED RENTALS	US 911 ▲	WOLTERS KLUWER	NE 1272 ▲
TEXTRON	US 795 ▲	US FOODS	US 1337 ▼	US STEEL	US 1209 ▲	UNITED TECHNOLOGIES	US 78 ▲	WOODSIDE PETROLEUM	AU 772 ▲
THAI BEVERAGE	TH 1044 ▲	US STEEL	US 1209 ▲	VAKIFBANK	TU 908 ▲	UNITED UTILITIES	UK 1819 ▼	WOOLWORTHS	AU 499 ▼
THAI OIL	TH 1996 ▼	VAKIFBANK	TU 908 ▲	VALE	BR 139 ▼	UNIVERSAL ENTERTAINMENT	JA 1754 ●	WOORI FINANCIAL GROUP	KO 575 ▼
THALES	FR 503 ▲	VALE	BR 139 ▼	VALEANT PHARMACEUTICALS	CA 1292 ▲	UNIVERSAL HEALTH	US 1071 ▲	WORKDAY	US 1575 ▲
THANACHART CAPITAL	TH 1988 ▼	VALEANT PHARMACEUTICALS	CA 1292 ▲	VALEO	FR 853 ▼	UNIVERSAL HEALTH	US 1071 ▲	WORLD FUEL SERVICES	US 1543 ▲
THE ESTÉE LAUDER COMPANIES	US 591 ▲	VALEO	FR 853 ▼	VALERO ENERGY	US 211 ▼	UNUM	US 872 ▼	WORLDPAY	US 1220 ●
THERMO FISHER SCIENTIFIC	US 222 ▲	VALERO ENERGY	US 211 ▼	VEEVA SYSTEMS	US 1882 ●	UPM-KYMMENE	FI 709 ▲	WPG HOLDINGS	TA 1741 ▼
THOMAS COOK GROUP	UK 1928 ▲	VEEVA SYSTEMS	US 1882 ●	VENTAS	US 1314 ▼	US BANCORP	US 103 ▲	WPP	UK 487 ▼
THOMSON REUTERS	CA 1035 ▼	VENTAS	US 1314 ▼	VEOLIA ENVIRONNEMENT	FR 696 ▲	US FOODS	US 1337 ▼	WR BERKLEY	US 998 ▲
THYSSENKRUPP GROUP	GE 847 ▼	VEOLIA ENVIRONNEMENT	FR 696 ▲	VEON	NE 1904 ▼	US STEEL	US 1209 ▲	WUESTENROT & WUERTEMBERGISCHE	GE 1312 ▼
TIFFANY & CO.	US 1580 ●	VEON	NE 1904 ▼	VERBUND	AS 1399 ●	VAKIFBANK	TU 908 ▲	WULIANGYE YIBIN	CN 831 ▲
TIMES PROPERTY HOLDINGS	CN 1588 ●	VERBUND	AS 1399 ●	VERISIGN	US 1382 ▲	VALEANT PHARMACEUTICALS	CA 1292 ▲	WW GRAINGER	US 979 ▲
TINGYI HOLDING	CN 1643 ▼	VERISIGN	US 1382 ▲	VERISK ANALYTICS	US 1365 ▲	VALEO	FR 853 ▼	WYNN RESORTS	US 1177 ▲
TJX COS	US 394 ▲	VERISK ANALYTICS	US 1365 ▲	VERIZON COMMUNICATIONS	US 20 ▼	VALERO ENERGY	US 211 ▼	X5 RETAIL GROUP	NE 1288 ▼
TOHO BANK	JA 1740 ▼	VERIZON COMMUNICATIONS	US 20 ▼	VERTEX PHARMACEUTICALS	US 962 ▲	VALERO ENERGY	US 211 ▼	XCEL ENERGY	US 490 ▲
TOHOKU ELECTRIC POWER	JA 1141 ▼	VERTEX PHARMACEUTICALS	US 962 ▲	VESTAS WIND SYSTEMS	DE 847 ▲	VEEVA SYSTEMS	US 1882 ●	XEROX	US 1513 ▲
TOKIO MARINE HOLDINGS	JA 163 ▲	VESTAS WIND SYSTEMS	DE 847 ▲	VF	US 707 ▲	VENTAS	US 1314 ▼	XIAMEN C&D	CN 886 ▲
TOKYO CENTURY	JA 1154 ▼	VF	US 707 ▲	VIACOM	US 685 ▼	VEOLIA ENVIRONNEMENT	FR 696 ▲	XIAMEN INTERNATIONAL TRADE GROUP	CN 1471 ▼
TOKYO ELECTRIC POWER	JA 414 ●	VIACOM	US 685 ▼	VICI PROPERTIES	US 1916 ●	VEON	NE 1904 ▼	XIAMEN XIANGYU	CN 1565 ▼
TOKYO ELECTRON	JA 721 ▲	VICI PROPERTIES	US 1916 ●	VIENNA INSURANCE GROUP	AS 1192 ▼	VERBUND	AS 1399 ●	XIAOMI	CN 426 ●
TOKYO GAS	JA 844 ▼	VIENNA INSURANCE GROUP	AS 1192 ▼	VINETIN BANK	VE 1769 ▼	VERISIGN	US 1382 ▲	XILINX	US 1174 ▲
TOKYO KIRABOSHI FINANCIAL GROUP	JA 1778 ▼	VINETIN BANK	VE 1769 ▼	VINCI	FR 159 ▼	VERISK ANALYTICS	US 1365 ▲	XINHU ZHONGBAO	CN 1840 ▼
TOKYU	JA 1057 ▼	VINCI	FR 159 ▼	VINGROUP	VE 1747 ▲	VERIZON COMMUNICATIONS	US 20 ▼	XINYU IRON & STEEL	CN 1489 ▲
TOKYU FUDOSAN	JA 1744 ▼	VINGROUP	VE 1747 ▲	VIPSHOP HOLDINGS	CN 1934 ▼	VERTEX PHARMACEUTICALS	US 962 ▲	XPO LOGISTICS	US 1410 ▼
TOLL BROTHERS	US 1651 ▲	VIPSHOP HOLDINGS	CN 1934 ▼	VISA	US 162 ▲	VESTAS WIND SYSTEMS	DE 847 ▲	XYLEM	US 1459 ▲
TOMONY HOLDINGS	JA 1928 ▲	VISA	US 162 ▲	VISTRA ENERGY	US 1086 ▲	VF	US 707 ▲	YAGEO CORPORATION	TA 1873 ●
TONGLING NONFERROUS METALS	CN 1938 ▼	VISTRA ENERGY	US 1086 ▲	VIVA ENERGY GROUP	AU 1703 ●	VIACOM	US 685 ▼	YAMADA DENKI	JA 1837 ▼
TOPPAN PRINTING	JA 1476 ▼	VIVA ENERGY GROUP	AU 1703 ●	VIVENDI	FR 705 ▼	VICI PROPERTIES	US 1916 ●	YAMAGUCHI FINANCIAL	JA 1593 ▼
TORAY INDUSTRIES	JA 680 ▼	VIVENDI	FR 705 ▼	VMWARE	US 598 ▲	VIENNA INSURANCE GROUP	AS 1192 ▼	YAMAHA MOTOR	JA 1044 ▼
TORCHMARK	US 1253 ▼	VMWARE	US 598 ▲	VODAFONE	UK 464 ▼	VINETIN BANK	VE 1769 ▼	YAMATO HOLDINGS	JA 1346 ▲
TOSHIBA	JA 329 ▲	VODAFONE	UK 464 ▼	VODAFONE IDEA	IN 1790 ●	VINGROUP	VE 1747 ▲	YANDEX NV	NE 1495 ●
TOSOH	JA 1637 ▼	VODAFONE IDEA	IN 1790 ●	VOESTALPINE	AS 1162 ▼	VIPSHOP HOLDINGS	CN 1934 ▼	YANGO GROUP	CN 1271 ▲
TOTAL	FR 25 ▲	VOESTALPINE	AS 1162 ▼	VOLKSWAGEN GROUP	GE 18 ▼	VISA	US 162 ▲	YANZHOU COAL MINING	CN 784 ▼
TOTAL SYSTEM SERVICES	US 1460 ▼	VOLKSWAGEN GROUP	GE 18 ▼	VOLVO GROUP	SW 246 ▼	VISTRA ENERGY	US 1086 ▲	YARA INTERNATIONAL	NO 1184 ▼
TOWNGAS	HK 873 ▲	VOLVO GROUP	SW 246 ▼	VONOVIA	GE 621 ▲	VIVA ENERGY GROUP	AU 1703 ●	YES BANK	IN 1812 ▼
TOYOTA BOSHOKU	JA 1932 ▼	VONOVIA	GE 621 ▲	VORNADO REALTY	US 1470 ▲	VIVENDI	FR 705 ▼	YONGHUI SUPERSTORES	CN 1452 ▼
TOYOTA INDUSTRIES	JA 463 ▼	VORNADO REALTY	US 1470 ▲	VOYA FINANCIAL	US 1002 ▼	VMWARE	US 598 ▲	YPF	AR 845 ▼
TOYOTA MOTOR	JA 15 ▼	VOYA FINANCIAL	US 1002 ▼	VTB BANK	RU 471 ▼	VODAFONE	UK 464 ▼	YUANTA FINANCIAL HOLDING	TA 1222 ●
TOYOTA TSUSHO	JA 495 ▼	VTB BANK	RU 471 ▼	VULCAN MATERIALS	US 1556 ▼	VODAFONE IDEA	IN 1790 ●	YUEXIU PROPERTY CO.	HK 1942 ●
TP ICAP	UK 1990 ▼	VULCAN MATERIALS	US 1556 ▼	W.P. CAREY	US 1686 ●	VOESTALPINE	AS 1162 ▼	YUM CHINA HOLDINGS	CN 1069 ▲
TRACTOR SUPPLY	US 1321 ▲	W.P. CAREY	US 1686 ●	WALGREENS BOOTS ALLIANCE	US 136 ▼	VOLKSWAGEN GROUP	GE 18 ▼	YUM! BRANDS	US 949 ▲
TRANSCANADA	CA 346 ▲	WALGREENS BOOTS ALLIANCE	US 136 ▼	WALMART	US 29 ▼	VOLVO GROUP	SW 246 ▼	YUNNAN BAIYAO GROUP	CN 1659 ▼
TRANSNIGM GROUP	US 1160 ▲	WALMART	US 29 ▼	WALT DISNEY	US 70 ▲	VONOVIA	GE 621 ▲	ZAIN	KU 1760 ●
TRANSNEFT	RU 386 ▲	WALT DISNEY	US 70 ▲	WANHUA CHEMICAL GROUP	CN 820 ▲	VORNADO REALTY	US 1470 ▲	ZALANDO	GE 1842 ▲
TRANSURBAN GROUP	AU 1294 ▲	WANHUA CHEMICAL GROUP	CN 820 ▲	WANT WANT CHINA	CN 1932 ▼	VOYA FINANCIAL	US 1002 ▼	ZEBRA TECHNOLOGIES	US 1897 ●
TRAVELERS	US 226 ▲	WANT WANT CHINA	CN 1932 ▼	WÄRTSILÄ	FI 1670 ▼	VTB BANK	RU 471 ▼	ZENITH BANK	NI 1961 ▲
TUI	GE 992 ▼	WÄRTSILÄ	FI 1670 ▼	WASTE CONNECTIONS	CA 1275 ▼	VULCAN MATERIALS	US 1556 ▼	ZHEJIANG CHINT ELECTRICS	CN 1907 ●
		WASTE CONNECTIONS	CA 1275 ▼	WASTE MANAGEMENT	US 458 ▲	WALGREENS BOOTS ALLIANCE	US 136 ▼	ZHEJIANG LONGSHENG GROUP	CN 1620 ●
		WASTE MANAGEMENT	US 458 ▲	WATERS	US 1465 ●	WALMART	US 29 ▼	ZHEJIANG ZHENENG ELECTRIC POWER	CN 1076 ▼
		WATERS	US 1465 ●	WAYFAIR	US 1689 ●	WALT DISNEY	US 70 ▲	ZHONGSHENG GROUP HLDG.	CN 1357 ▲
		WAYFAIR	US 1689 ●	WEC ENERGY GROUP	US 653 ▲	WANT WANT CHINA	CN 1932 ▼	ZHONGYUAN BANK	CN 1526 ▼
		WEC ENERGY GROUP	US 653 ▲			WÄRTSILÄ	FI 1670 ▼	ZIJIU MINING GROUP	CN 889 ▲

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# WHOPPER OF A TURNAROUND

To fix Burger King, Daniel Schwartz turned to 3G Capital's standard recipe: cut costs, incentivize management—and stay hungry for acquisitions. It worked.

BY CHLOE SORVINO

**C**hallenge: Make a 60-year-old hamburger chain into something cool. Daniel Schwartz accepted that assignment six years ago after 3G Capital took over Burger King and named Schwartz chief executive. He was 32. Burger King was a tired outfit, with a confusing menu and sales going sideways. Its restaurants averaged half the revenue of McDonald's. But where there is underperformance, there is opportunity. Schwartz slashed overhead at the Miami headquarters. He streamlined food preparation. He dished out stock to middle managers. He shrank the payroll and the capital budget by selling company-owned stores to franchisees.

In the years since, Burger King has become Restaurant Brands International (following some more classic 3G dealmaking). Restaurant Brands is now a growth stock. Burger King opened up 1,000 restaurants around the globe last year, compared to 600 for McDonald's. McDonald's stores still have a bigger average volume, but Burger King's are gaining on them; in the U.S., BK boosted its average volume per outlet by 30%, to \$1.4 million, while McDonald's had a gain of only 20%. All of Burger King's success is, of course, in stark contrast to what's going on at Kraft Heinz, another 3G turnaround that went the other way. In February, Kraft Heinz said it was taking a \$15.4 billion writedown, a signal that its classic food brands were losing value.

The situation is different at Burger King. At the parent company level, where revenue consists mostly of franchise fees, Restaurant Brands took in \$5.4 billion last year, up 17% from 2017. McDonald's revenue was off 8%. "How many companies that have been around since the 1950s grow the top line at 10%?" says Schwartz, 38.

For a fast-food conglomerate that oversees 26,000 locations with combined sales of \$32 billion, Restaurant Brands is quite agile. Last December, the company introduced the Whopper Detour promotion, in which Burger King offered its signature item for one cent if the customer or-



Daniel Schwartz (left) and Jose Cil dine on Burger King Whoppers, Tim Hortons donuts and Popeyes fried chicken.



dered food on the BK phone app within roughly 200 meters of a McDonald's location. In February came the 45-second Super Bowl ad featuring historic footage of Andy Warhol slowly unwrapping and methodically eating a Whopper. The BK app topped the charts in Apple's App Store during the campaign; throughout the Super Bowl, "Andy Warhol" was the most searched term on Google.

Maybe Schwartz can even make his hamburger chain cool enough for New Age customers. Burger King just introduced a plant-protein patty from Impossible Foods, the start-

up backed by investors like Bill Gates and the venture capital arm of Alphabet. As of April 1, 59 Burger Kings in and around St. Louis will be offering its iconic Whopper with Impossible patties as a test market.

The past decade has been a whirlwind for Schwartz, who combined a certain amount of luck—in the right place at the right time—with a large amount of energy. A lanky guy who has a big smile and a tendency to speak with his hands, Schwartz left Cornell in 2001 with a degree in applied economics. Four years later, he landed a job at 3G Capital, the





## The King's New Reign

MCDONALD'S HAS RULED AS AMERICA'S TOP BURGER FOR DECADES, BUT BURGER KING IS MAKING GAINS.

	McDonald's	Burger King
Total restaurants globally	<b>37,855</b>	<b>17,796</b>
Percent of locations franchised globally	<b>93%</b>	<b>99%</b>
Systemwide sales for franchisees	<b>\$86 billion</b>	<b>\$21.6 billion</b>
Revenue from franchise locations	<b>\$11 billion</b>	<b>\$1.6 billion</b>
Annual revenue change from franchise locations	<b>9%</b>	<b>35%</b>
Earnings from franchise location revenue	<b>\$9 billion</b>	<b>\$928 million</b>
EBIT of parent company	<b>\$8.8 billion</b>	<b>\$1.9 billion</b>
Enterprise value of parent company	<b>\$173 billion</b>	<b>\$40 billion</b>

private equity firm that became famous for engineering the Anheuser-Busch InBev merger (and later infamous for the sickly Kraft Heinz merger).

Schwartz became a 3G partner at 27. "The group believes in investing in young people and giving them opportunities," he says. "I worked hard and proved that I really cared. More so than anything else, I put the business and the firm ahead of myself." His wife tolerated the long hours, perhaps because, as a physician in residency, she worked late too.

Schwartz went hunting for deals. Burger King looked intriguing. "I'd ask my wife or my mom, 'If McDonald's is worth \$70 billion, what do you think Burger King is worth?' They'd say, '\$30 billion?'" Schwartz recalls. Paying a 46% premium for the publicly traded shares, 3G acquired the chain for \$4 billion, including debt. Schwartz then raised his hand to help run it. "I wanted to be part of this. And I didn't want to just sit in an office and get monthly reports."

At 29, Schwartz became BK's chief financial officer. He sold the corporate jet. He told employees to use Skype to make free international calls. And to get a feel for the whole business, he worked shifts off and on at Miami Burger Kings, cleaning toilets, cooking burgers and manning the drive-thru.

In 2012, 3G took Burger King public again, and Schwartz got the chief executive slot in June 2013. In the next 18 months, Burger King stock doubled, while McDonald's lost

8%. Focused as he was on selling hamburgers, he hadn't left behind his dealmaking instincts. Rechristened Restaurant Brands, his company acquired Canadian coffee chain Tim Hortons in 2014. In 2017 it spent \$1.8 billion in cash to get the Popeyes chicken chain.

Warren Buffett is a fan, having put up \$3 billion in equity to help finance the Hortons deal. So is Bill Ackman, whose Pershing Square hedge fund owns 5% of the stock; 3G owns 41%. The second-largest shareholder: the employees, with more than 5% of stock. Thanks to a match for those who invest their bonuses in RBI shares, nearly all 300 middle managers (average age: 37) own shares; at least 100 have become millionaires. Schwartz is sitting on about \$100 million in stock and options.

"I'm comforted as an owner when all of the key employees own a lot of stock," Ackman says. "It makes them much less focused on short-term things. They're much more focused on 'Will this make the business more

valuable in five years, ten years?'" Recently, Schwartz was moved up to executive chairman, and longtime Burger King executive Jose Cil, 49, became CEO. "We take bets on people," Cil says. "When they are ambitious and willing to work harder than anybody because they're driven by something beyond a paycheck, they want to do something big."

Schwartz lives in Florida with his wife and three kids. He has been working out of RBI offices in Miami and Toronto, but now he's going to be spending more time at the 3G office in New York, with assignments that range beyond the restaurant chains. "I'm not gonna be CEO at another company," he says. "But we aspire to do more, and over time we can buy another business down the road."

Or perhaps repair some of the businesses that 3G already owns. Could someone who has engineered a turnaround at Burger King work some magic on old ketchup and cheese brands? His diplomatic answer: "Maybe you could ask me that question in six months, when I hopefully get a little bit closer to the business of Kraft Heinz."

3G's business is as much about building as buying and selling. Schwartz says: "Most traditional investment firms, if they were in our shoes, probably would have sold [RBI] many years ago. Not only did we not sell, we bought more brands along the way. We are building this into a big company with a long-term mindset." **F**

# STANDING TALL IN ASIA'S REAL ESTATE MARKET

There are still plenty of opportunities for investors looking to buffer their property portfolio against regional headwinds.



The Asia-Pacific real estate market has ridden a wave of expansion over the past decade, powered by robust economic growth and strong capital inflows into the region. However, recent headwinds have emerged to threaten the continued growth of the sector. These challenges—ranging from the continued trade spat between the U.S. and China to rising borrowing costs—have persisted into 2019, resulting in heightened uncertainty.

Amid the volatility, however, lies unique developments and concepts that have risen above the competition to grab the attention of investors and buyers. One luxury residential project that has literally taken Singapore's real estate market to new heights is the Wallich Residence—a one-of-a-kind development that offers an ultra-exclusive, urban-living experience in the heart of the city's business district.

Developed by GuocoLand, Wallich Residence is perched atop Singapore's tallest building—the 290-meter Guoco Tower—which has helped elevate the profile of downtown Tanjong Pagar district, one of Singapore's most sought-after neighborhoods.

Also injecting a dose of vibrancy into the premium end of Singapore's residential

market is the luxurious Marina One Residences, which launched unit sales at its second tower this year. This groundbreaking project is the result of a historic collaboration between Malaysia's and Singapore's state-owned investment funds.

More exciting launches are in the pipeline. For instance, developer Aurum Land is introducing a new living concept that combines nature and art in a prime lifestyle district. The Hyde condominium will offer an oasis of tranquility in bustling Singapore, with the lush foliage of Goodwill Hill providing the residence with an air of exclusivity, while high-end boutiques and Michelin-starred restaurants lie minutes away on Orchard Road.

Projects such as these helped boost prime residential prices in Singapore by 9.1% in 2018 to S\$3,480 (US\$2,565) per square foot as buyers returned to the market in force, according to property consultancy Knight Frank. While the growth trend stalled when the government introduced new cooling measures in July, analysts say a severe price correction in 2019 is unlikely given the city's stable economic fundamentals.

In Hong Kong, the city's prime housing prices rose 3.9% in 2018 to HK\$33,956

(US\$4,328) per square foot, decelerating from a 7.3% increase a year earlier, data from Knight Frank showed. But like Singapore, differentiated offerings are expected to continue to do well over the long term.

One such development is Discovery Bay on Hong Kong's Lantau Island. Located between the waters of the South China Sea and tree-lined hills, this once-barren land was transformed in the 1980s by developer HKR International Limited into a 650-hectare, world-class, resort-style residential development. As Hong Kong's largest, low-density, premium integrated development, Discovery Bay is highly sought after by families seeking a vibrant child- and pet-friendly community within the territory.

Over on Hong Kong island, meanwhile, Sun Hung Kai Properties Limited iconic Victoria Harbour residential project is making waves in the market, with the development's luxury apartments in high demand and registering record prices.

Against a backdrop of uncertainty, investors should take the opportunity to refine their real estate strategies and identify developers and projects that can help build resilience against market volatility into their portfolios.

# WALLICH RESIDENCE:

## TAKING LUXURY URBAN LIVING TO NEW HEIGHTS

The city's tallest residential address has it all, including a prime location, unparalleled views and the buzz of living in one of Singapore's most vibrant neighborhoods.

Perched atop Singapore's tallest building, the ultra-luxury Wallich Residence is a truly one-of-a-kind development, offering an exclusive living experience in the heart of Singapore's business district. Developed by GuocoLand, the 99-year leasehold residential development is the crowning glory of the majestic Guoco Tower—which soars a staggering 290 meters into the sky—and takes up the 39th to 64th floors of the integrated tower.

Guoco Tower has helped transform the entire Tanjong Pagar district in Singapore's downtown, elevating it to a level that is on par with its prestigious neighbors, Raffles Place and Marina Bay. Yet, with its many heritage shophouses and its proximity to Chinatown, Tanjong Pagar also boasts a more colorful character than its relatively straight-laced peers. With so many unique qualities, it's no surprise that Wallich Residence has set new benchmarks for home prices in the area, and is helping to spark Tanjong Pagar's transformation into one of Singapore's newest and most exciting prime neighborhoods.

Wallich Residence is also poised to ride the development of the Greater Southern Waterfront, which will be created following the relocation of Tanjong Pagar's container terminals to Tuas in western Singapore. A total area of 1,000 hectares, the equivalent of three times the size of Marina Bay, will



Singapore's loftiest address, Wallich Residence.

eventually be freed up for development when the port's lease runs out in 2027. This will open up a vibrant waterfront lifestyle district in central Singapore. Development of the Greater Southern Waterfront will begin within the next five to 10 years, the government announced earlier this year.

### An Integrated Development

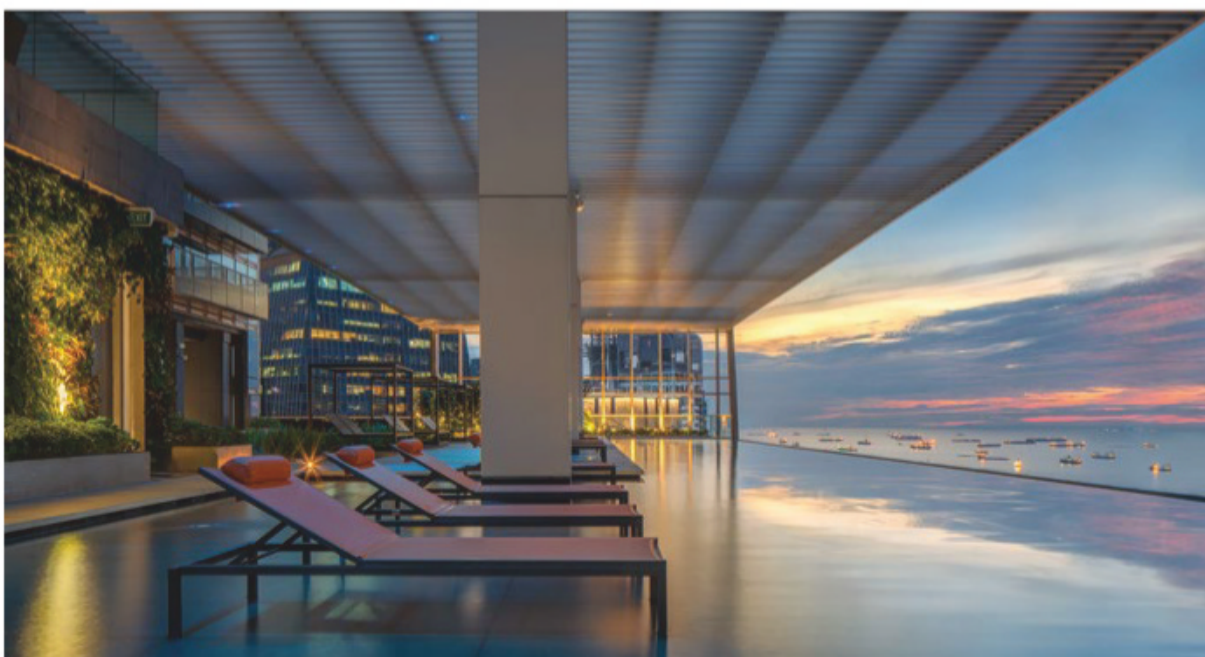
Being part of Guoco Tower means that residents of Wallich Residence can take advantage of the other aspects of this unique 5-in-1 integrated development.

Guoco Tower also houses the luxury Sofitel Singapore City Centre hotel, 890,000 square feet of premium Grade A offices, 100,000 square feet of retail and a 150,000-square-foot urban park that offers a swathe of lush greenery. The mixed-use project was designed by the renowned architectural firm Skidmore, Owings and Merrill, which is behind some of the most famous skyscrapers across the globe including the Burj Khalifa in Dubai—the world's tallest building—and Trump International Hotel and Tower Chicago.

With a myriad of food and beverage outlets across 100,000 square feet of retail space, there is no shortage of dining choices at Guoco Tower. These include East Japan Railway Company's first overseas Japan Rail Cafe, Blue Lotus Chinese Grill House by acclaimed restaurateur and chef Ricky Ng, and Michelin-starred restaurant Imperial Treasure Fine Teochew Cuisine.

### New Standard in Luxury Living

As Singapore's loftiest address, each of Wallich Residence's 181 units offers an unparalleled view of the city and beyond. Yet, the development is also rooted to the buzz of its surrounding neighborhood. Residents can take a high-speed lift from their homes



Infinity pool



Function Room

directly to Tanjong Pagar MRT station, whose entrance is a mere 50 meters away from the lift lobby. Those working in the central business district can potentially go from home to office in a matter of minutes.

The development is comprised of one-to four-bedroom units, four penthouses and one ultra-luxurious super penthouse. Each home is designed with the highest quality fixtures and fittings, and offers stunning unblocked views.

With four levels of amenities, residents do not have to leave Wallich Residence to get their dose of relaxation, wellness and entertainment. On offer is a hotel-style concierge service that begins on the ground floor at a dedicated car drop-off and entrance for residents. Once inside the lobby, they will find the concierge in an expansive space designed to welcome them home or to receive their guests.

On the 39th floor, stunning views serve as a backdrop to an infinity pool, landscaped gardens and an al fresco dining space. A jacuzzi, entertainment rooms and a fully equipped gym round off the offerings on this level. Further up on the 52nd floor, lush sky gardens and a theatre are ideal for hosting your guests at social events. There is also a networking

suite that can also be used as a corporate boardroom. To entertain friends or business partners, The Wallich Room on this level comes with a fully equipped kitchen. Meanwhile, the panoramic views are nothing short of spectacular on the 62nd story, Singapore's highest observation deck in a residential development.

Getting around Singapore from Wallich Residence is a breeze given its central and connected location. It seamlessly

connects to key arterial roads such as the Marina Coastal Expressway and Ayer Rajah Expressway. Residents will be able to reach Changi International Airport by car in as few as 16 minutes, the premium shopping belt of Orchard Road in eight minutes, and the lifestyle and entertainment hub Marina Bay in just four.

With its ultra-luxurious trappings, central location and status as one of Singapore's most iconic residential addresses, Wallich Residence at Guoco Tower is elevating urban living to new heights in Singapore.

**WALLICH**  
RESIDENCE

[www.wallichresidence.com.sg](http://www.wallichresidence.com.sg)

 **GuocoLand**

[www.guocoland.com.sg](http://www.guocoland.com.sg)

### WALLICH RESIDENCE HIGHLIGHTS

- The development is located at the heart of Tanjong Pagar in the CBD and is close to the future Greater Southern Waterfront
- It is minutes away from prominent cultural and lifestyle areas such as Chinatown and Marina Bay and the premium shopping belt of Orchard Road
- It sits at the top of Singapore's tallest building Guoco Tower, which was designed by the world-renowned architectural firm Skidmore, Owings and Merrill
- It is Singapore's tallest residential address, located from the 39th to 64th stories of Guoco Tower
- The development is comprised of 181 exclusive residences, consisting of one-to four- bedroom units, four penthouses and one super penthouse
- There are four levels of recreational facilities, including an infinity pool on level 39 and a glass observation AirDeck at Apex on level 62
- The Signature Wallich Concierge Service caters exclusively to residents' needs
- Residents can also enjoy a 150,000-square-foot Urban Park and a 32,000-square-foot City Room for events and activities

### GUOCOLAND'S PORTFOLIO

GuocoLand Limited is a premier regional property company with operations in Singapore, China, Malaysia and Vietnam. In 2017, GuocoLand expanded beyond Asia as it ventured into the United Kingdom and Australia through a strategic partnership with Eco World Development Group Berhad in Eco World International Berhad.

The group's portfolio comprises residential, hospitality, commercial, retail and integrated developments. At the end of June last year, the company's total assets stood at S\$10.5 billion (US\$7.2 billion). In Singapore, GuocoLand has successfully developed 35 residential projects, yielding around 10,000 apartments and homes, including its flagship integrated mixed-use development Guoco Tower.



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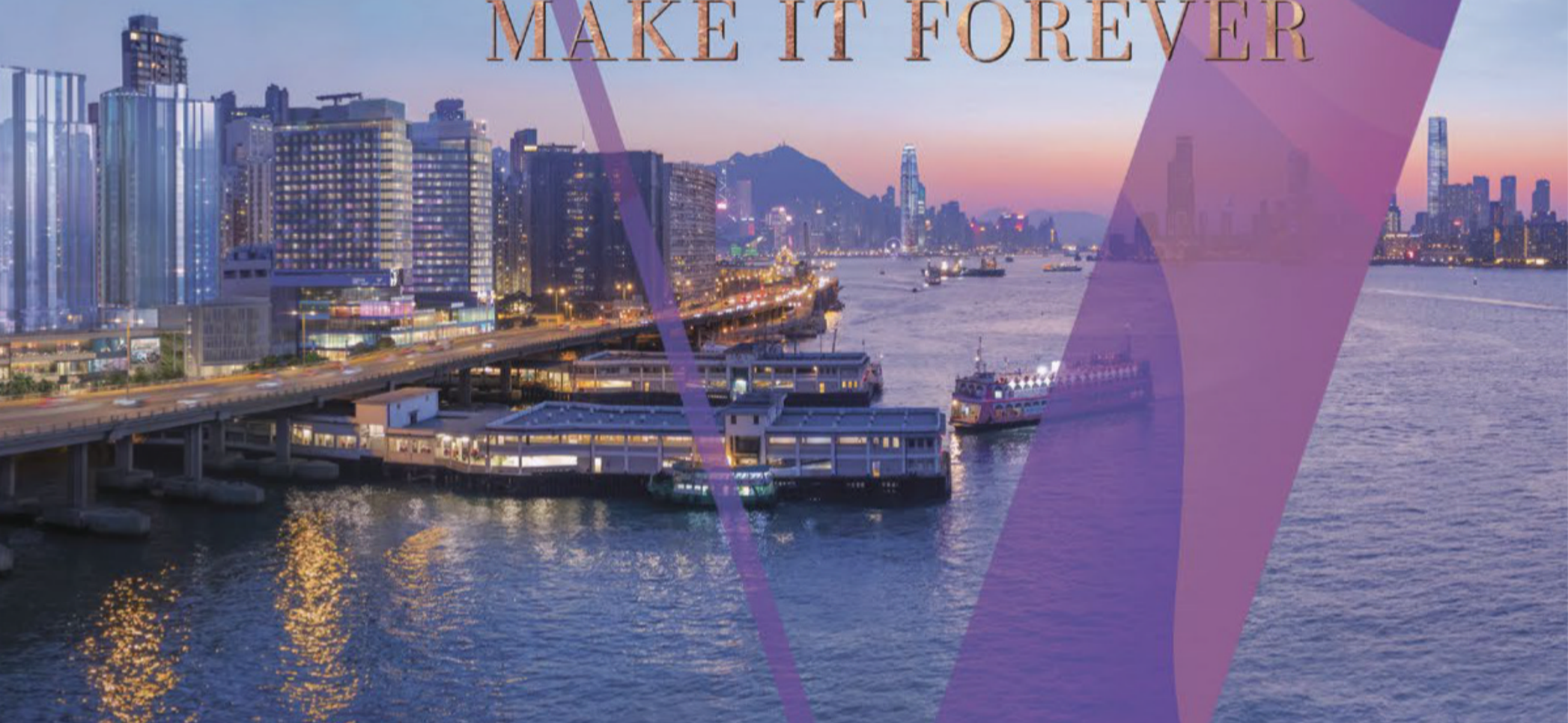
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# AURUM LAND:

## BREAKING NEW GROUND

The Singapore group's visionary approach to building communities has given rise to a growing portfolio of innovative living and working spaces.

Leading luxury real estate group Aurum is renowned for creating innovative spaces that redefine the living and working experience for businesses, individuals and families in Singapore and beyond. From luxury condominiums to high-end coworking spaces, the group's business units—Aurum Land, Found8, Core Collective and Aurum Investments—are blazing new trails with each new project it undertakes.

The group's award-winning property arm, Aurum Land, has championed the seamless fusion of function and form in its developments for more than 35 years. The result of these efforts are a growing portfolio of living spaces that have made an indelible mark on the city. Guided by a culture of innovation coupled with deep market insight, Aurum Land is managed by a team of passionate industry professionals who bring with them extensive development expertise, design excellence and technical skills.

The boutique developer adopts an experiential, human-centric approach to building spaces and communities. The end goal is to inject life into its developments, while breaking down the walls that limit the possibilities of connectivity. Among its award-winning projects is The Asana, a luxurious urban sanctuary featuring 48 exclusive apartments, which is located in one of Singapore's most distinguished districts. Another of its recent offerings is NYON, an exceptional freehold residence that seeks to capture the best of living on Singapore's



An oasis of tranquility fronting Goodwood Hill (Artist's Impression)

vibrant East Coast through the harmonious union of heritage and modernity.

### The Hyde: An Urban Oasis

Aurum Land's latest project is The Hyde, which seeks to transform the notion of living in an urban setting through a vibrant blend of nature, art and luxury. Located at 11 Balmoral Road in central Singapore, the luxury freehold residence is inspired by the avant-garde Serpentine Galleries in London's Hyde Park—an iconic space that has championed the possibilities of contemporary artistic endeavor for almost 50 years.

In the heart of bustling Singapore, The Hyde is an oasis of tranquility. The lush greenery of Goodwill Hill provides the residence with an elegant air of exclusivity that separates it from the high-end boutiques and the Michelin-starred restaurants of Orchard Road, which is just a stroll away. One can also find within the vicinity distinguished members-only clubs boasting exclusive facilities for social and recreational pursuits. With this broad spectrum of lifestyle offerings, The Hyde's neighborhood is a charming kaleidoscope of life's pleasures.

For residents with children, some of the city's best educational institutions catering to students of all ages are located nearby: the Anglo-Chinese School and Singapore Chinese Girls' School are within one kilometer of The Hyde, while St Joseph's Institution, the Chinese International School and Raffles House Pre-school are also in close proximity.

The Hyde is inextricably linked to the rest of Singapore. The central business district and iconic lifestyle hub Marina Bay are several minutes' drive away, while a pair of adjacent train stops—Newton and Stevens MRT stations—provide a convenient gateway to the rest of the island.



3 Bedroom Living Room (Artist's Impression)

### Luxury Living Exemplified

At The Hyde, art and nature combine easily to offer a truly refined living experience in one of the world's most cosmopolitan cities. Each of the 117 apartments sits high off the ground to offer commanding views of the luxuriant expanse of Goodwill Hill.

Residents can indulge in the surrounding greenery with leisurely evening walks or weekend picnics for the whole family. Those seeking healthier pursuits can jog or participate in group fitness activities in peaceful environs, away from the stress of the concrete jungle. Those seeking an even larger expanse of nature can head to the Singapore Botanic Gardens—the country's first UNESCO World Heritage Site—which is located within walking distance of The Hyde.

Ranging in size from 495-square-foot apartments to the exclusive 1,798 square-foot penthouse, The Hyde caters to a range of residents, from working professionals to families with children. Each unit comes with roomy layouts, floor-to-ceiling glazed facades and sashless windows—a first for a residential building in Singapore—that allow for completely unblocked views.

The theme of nature is repeated in each apartment with granite and marble bathrooms that feature state-of-the-art fixtures by European brands Gessi and Laufen; cutting-edge, smart-home devices further heighten the living experience.

Residents will also be able to enjoy world-class facilities that sit among sculpted landscapes, with a signature Olympic-sized constellation pool as its centerpiece. A jacuzzi, gymnasium, playground for kids and a garden club house for entertaining guests also offer respite from the city. Meanwhile, a cantilevered sky club features an unblocked panoramic view of picturesque Goodwood Hill during the day, and the city's glittering skyline at night.

The Hyde's enviable location, aura of exclusivity and odes to art and nature come together alluringly to offer an



Penthouse - Living Room (Artist's Impression)

unparalleled urban living experience in the heart of the city.

### More Than Meets the Eye

In a time when customer experience is the gold standard, Aurum is not only a leader in luxury real estate, it is a lifestyle platform that provides access to a diverse network of innovators and business leaders, fitness and wellness professionals and investment opportunities.

Aurum's latest business Core Collective is a one-of-a-kind concept designed for fitness and wellness professionals. Its state-of-the-art facilities swap conference rooms and cubicles for yoga studios, treatment rooms and a fully equipped gym. Aurum Land buyers will enjoy complimentary monthly fitness services including personal training and group exercise classes such as yoga, pilates and boxing. They will also enjoy complimentary monthly wellness services such as physiotherapy, acupuncture, sports massage and life coaching.

For business leaders and entrepreneurs looking to grow their business across the Asia-Pacific, Aurum's innovation ecosystem Found8 provides instant

access to a curated network of peers, mentors and experts. Aurum Land buyers will enjoy complimentary membership to Found8's coworking spaces in Singapore and Kuala Lumpur, as well as hotdesking access to affiliate coworking spaces across 30 cities globally. Found8 hosts inspiring events that feature key opinion leaders from the tech industry, among them Bradley Horowitz, Google's Vice President of Product Management. Found8 members also enjoy 40% off HubSpot—the leading marketing and customer relationship management platform—and S\$20,000 (US\$14,700) in google credits as part of its partnership with Google for Startups.

### THE HYDE

- Minutes away from the premium lifestyle belt of Orchard Road
- A range of units from one- to four-bedrooms, catering to singles, couples and families
- Surrounding greenery with unblocked views of Goodwood Hill offers exclusivity
- Close to some of Singapore's elite educational institutions
- Two adjacent MRT stations provide convenient connectivity to the rest of the island



Sky Club (Artist's Impression)

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REDEFINING OPPORTUNITY

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For enquiries, please call +65 6462 8887



# DISCOVERY BAY:

## HONG KONG'S FANTASY LAND

New residential projects, increasingly convenient transportation links and a world-class ice rink are set to further enhance one of the city's most unique communities.



Panorama of Discovery Bay

Sitting on a magnificent seafront stretch of Lantau Island in Hong Kong, Discovery Bay is an exclusive residential community that nestles between the calm waters of the South China Sea and verdant tree-lined hills. In 1977, the area was a barren piece of land, but has since been transformed by leading developer HKR International Limited (HKRI) into a 650-hectare, world-class, resort-style

development that began in the 1980s and to date, a total gross floor area of more than 1 million square meters has been developed or is under development.

As Hong Kong's largest, low-density, premium integrated development, Discovery Bay is highly sought after by families seeking a vibrant child- and pet-friendly community within the territory. Residents can choose from a range of living options, including spacious standalone garden homes as well as low-, mid- and high-rise residential apartments. Buildings are modern and high quality, making it difficult to tell whether they were built several years ago or decades earlier. The self-contained community offers a carefree, seaside lifestyle experience for residents, enhanced by a tantalizing range of leisure amenities for those seeking an active and healthy lifestyle. As part of a program to continuously enhance the development's facilities, a world-class ice rink is expected to open in 2020 and further upgrades to commercial services will benefit residents and visitors alike.

and green zones. These include a park, a natural mangrove, several hiking trails and a waterfront promenade. With such a high-quality standard of living on offer, Discovery Bay has attracted residents from around the globe. More than 50% of its residents are non-Chinese, forming the core of a multicultural community.

"Surrounded by mountains and sea, with facilities and amenities that have been thoughtfully expanded, and additional residential complexes that have been progressively and sensitively developed in harmony with the landscape, Discovery Bay has a high level of liveability and strong sense of community life that is unique in the Hong Kong market," says Elke Chu, Head of Sales and Marketing and Portfolio Development, HKRI.

While the development enjoys a high degree of privacy, it is also conveniently connected to the rest of Hong Kong. The area is serviced by ferry services to the central business district, and there are shuttle bus services to designated MTR stations and to Hong Kong International Airport (HKIA). Taxi services are available at the Auberge Discovery Bay hotel at DB North, offering convenient access to and from downtown areas. There is even a privately built tunnel fully financed by the developer, which further improves connectivity for residents.



Elke Chu, Head of Sales and Marketing and Portfolio Development of HKR International Limited

### Escape From the Bustle

Discovery Bay is also one of the few eco-friendly residential communities in Hong Kong, with two-thirds of the development being used as landscaped spaces

Discovery Bay further benefits from the role of Lantau Island as the “Double Gateway.” It is located only 15 minutes to HKIA, and with the opening of the Hong Kong-Zhuhai-Macao Bridge, residents can also conveniently cross over to Macao and Zhuhai. The infrastructure of Lantau Island will be further enhanced with HKIA’s third runway project and land-reclamation development Lantau Tomorrow Vision in the pipeline.

### A Slice of Italy

The 16 phases of Discovery Bay’s build-out are known as villages by its residents. As a reflection of the hilly landscapes and magnificent sea vistas that the villages enjoy, these phases are named after towns in some of Italy’s most scenic regions. Earlier phases include villages respectively named after the town of Siena—a UNESCO World Heritage Site and one of Italy’s most visited tourist attractions—and Amalfi, a stunning stretch of coastline in the south famed for its sheer cliffs and rugged shoreline dotted with beaches and fishing villages.

Similarly, the latest residential project in Discovery Bay, Poggibonsi, is named after a small town in Tuscany that is surrounded by mountains, vineyards and wineries. Some units in this newest village offer its residents full views of the stunning scenery as well as Hong Kong’s iconic cityscape.



DB North

Having forged a unique reputation as a residential enclave offering a world-class, urban living experience, Discovery Bay is not done with its journey as it continues to be enhanced to meet the changing needs of its community. Says Chu: “HKRI will continue to develop and grow Discovery Bay to provide the best homes, ancillary facilities and living environment for its residents and visitors.”

### KEY FACTS ABOUT DISCOVERY BAY

**Overall area:** about 650 hectares

**Commercial spaces:** two shopping malls, alfresco dining hub D’Deck, resort-style hotel Auberge Discovery Bay Hong Kong

**Population:** approximately 20,000 residents, representing more than 50 nationalities

**Recreational facilities:** a 27-hole golf course with a clubhouse, a world-class marina (under renovation), two premium recreation clubs

**Education:** four kindergartens, five primary schools and two secondary schools (most are international schools)

**Access:** ferry service connecting Central; bus services connecting Hong Kong International Airport, Tung Chung and Sunny Bay MTR stations; and Urban and Lantau taxis to and from DB North



Discovery Bay Easter Egg Hunt on the Beach.

**HKRI**  
HKR International

[www.hkri.com](http://www.hkri.com)

# MARINA ONE RESIDENCES:

## THE DEFINITIVE LUXURY RESIDENTIAL ADDRESS

Design meets sustainability at one of Singapore's most prestigious locations with premium retail and lifestyle offerings on tap.



A panoramic view of Marina Bay Sands and Gardens by the Bay.

Located in the heart of Singapore's vibrant downtown, the second tower of the luxurious Marina One Residences has been launched for sale. The award-winning development consists of two 34-story towers, each housing 521 units, and is part of Marina One—a sustainable mixed-use project that includes Grade A offices and premium lifestyle offerings.

Marina One Residences central location, stunning architecture and premium amenities make it an attractive proposition for both investors and potential home

owners. Buyers can choose from one-, two-, three- and four-bedroom units as well as penthouses.

The story of Marina One's genesis is as inspiring as its iconic design. The project is part of a historic collaboration between the Malaysian and Singapore governments. The project's developer, M+S Pte Ltd, is owned jointly by the two sovereign wealth funds, Malaysia's Khazanah Nasional Berhad (60%) and Singapore's Temasek (40%).

M+S was set up in June 2011 specifically to develop four land parcels in Marina

South and two land parcels in Ophir-Rochor as the integrated developments of Marina One and DUO, respectively.

### Green Living in the City

Sustainability is a key theme in the design of Marina One, which has been brought to life by Christoph Ingenhoven, founder of Ingenhoven architects and a recognized leader in green architecture.

One key design element of the development is the structure's curved levels, which have been compared with rice terraces that can be seen in some parts of Asia. Beyond aesthetics, the louvres on the inner edges of the terraces also serve to protect those on the inside from the sun's heat.

Another striking feature of the Marina One is the Green Heart, a 65,000-square-foot garden in the center of the integrated development that has been crafted to resemble a rainforest valley. Designed by Gustafson Porter + Bowman, the landscape architects behind Bay East at Singapore's Gardens by the Bay, the Green Heart boasts 386 species of plants and is the largest biodiverse garden in the central business district.

Set amid the lush greenery and spectacular waterfall features are integrated private and public spaces. Residents can



Fifty-meter lap pool

focus on their wellness at the 50-meter lap pool or the fully equipped 200-square-meter gym. To unwind after work or on weekends, they can entertain their guests at the private dining rooms and Teppanyaki terraces.

From the Green Heart, Marina One residents can directly access the great variety of lifestyle and retail options in Marina One, such as The Macallan Boutique bar, Virgin Active Fitness Club, Cold Storage supermarket and the two renowned signature eateries, Majestic Restaurant and Wakanui Grill Dining. Open sky terraces and transport facilities are also right at their doorstep.

Once inside, each home at Marina One Residences has been thoughtfully designed to offer a premium living experience. Every unit is equipped with Villeroy & Boch bathware, high-end appliances from Miele and signature Poggenpohl kitchen designs. The meticulously crafted interiors seamlessly blend into the development's overall design, with a customized signature weave adorning the balcony facade.



Green Heart

international events such as the Formula One Grand Prix and performances by international stars.

As the centerpiece of Singapore's urban transformation, Marina Bay will continue to evolve as a vibrant downtown hub. This puts Marina One Residences right at the heart of this dynamic evolution, ensuring it is well positioned to reap the tremendous benefits that are expected from the area's growth.

### All Roads Lead to Marina One

Marina One residents will be spoiled for choice when it comes to transport and connectivity options. The development is served by a comprehensive transport network, including underground MRT stations and major expressways that conveniently connect residents to the rest of the island. The development is also close to Marina South Pier, a terminal for ferries traveling to the Southern Islands, and to Marina Bay Cruise Centre, Singapore's state-of-the-art cruise terminal.

With so much to offer, Marina One Residences is destined to become one of Singapore's most sought-after residential addresses.



Spacious layout



[www.marinaone.com.sg](http://www.marinaone.com.sg)

### Location, Location, Location

Marina One sits in the heart of one of Singapore's most vibrant and prestigious residential and business addresses: Marina Bay. The district is a buzzing hive of round-the-clock activity for people to live, work and play. Some of the world's top multinationals sit comfortably alongside Michelin-starred restaurants and world-leading entertainment outlets.

Marina One is a stone's throw away from some of Singapore's most recognized attractions, including Marina Bay Sands, Gardens by the Bay, Esplanade - Theatres on the Bay and the ArtScience Museum. The area is also home to high-profile

### KEY FEATURES OF MARINA ONE RESIDENCES

- A 3.67 million-square-foot integrated development with luxurious residences, unique retail offerings and prime Grade A offices
- Two towers of luxurious residences, each with 521 units, offering one-, two-, three-, and four-bedroom apartments and penthouses
- 65,000 square feet of lush greenery in the Green Heart garden
- A wide choice of recreational facilities including a 50-meter lap pool, a 200-square-meter gymnasium, private dining rooms and Teppanyaki terraces
- Connected to key MRT lines (North South, Circle, Downtown and upcoming Thomson-East Coast lines)
- Panoramic views of the city skyline, sea and Gardens by the Bay
- A seven-minute walk to Marina Bay Sands and world-class lifestyle offerings

# E N E R G



# I Z E D



**PETCH OSATHANUGRAH**  
IS AMPING UP HIS FAMILY'S 128-YEAR-OLD  
ENERGY DRINKS COMPANY OSOTSPA.

**BY RON GLUCKMAN**

PHOTOGRAPHS BY BRENT LEWIN FOR FORBES ASIA



**P**etch Osathanugrah is a walking, talking advertisement for M-150, the energy drink his family's company Osotspa sells and that is No. 1 in Thailand by sales. At 64, there seems little Petch hasn't already done: A once chart-topping rocker, occasional film actor and advertising executive, Petch remains a fixture in Bangkok's live-music scene, a university president and—if that wasn't enough—a major arts patron, with a collection so vast he claims to have lost count, but that includes works by Picasso and Damien Hirst. Oh, he's building a museum, too.

As Osotspa's dynamo CEO, however, Petch is tackling a different challenge: that few outside Thailand have ever heard of, much less tried, M-150 or Osotspa's other products. Petch aims to change that by ramping up Osotspa's footprint abroad, starting in neighboring markets such as Cambodia, Laos and Myanmar. In the process, he's transforming one of Thailand's oldest companies from a family-run pharmaceutical firm into a modern consumer-products multinational. "This is my vision," says Petch, "to go from one of the oldest companies in Thailand and transform it into one of the most modern."

Last October, Petch led 128-year-old Osotspa in the country's biggest IPO of the year, raising a \$464 million war

chest for expansion by selling a roughly 20% stake that valued the company at \$2.3 billion. Osotspa's stock has since gained a quarter in value, boosting the Osathanugrah family's 64% holding to roughly \$1.9 billion, pushing its overall net worth up by 30% from the year before and vaulting it up four places to eighth on our annual list of Thailand's richest.

The path to market was anything but easy. After taking the reins of Osotspa in 2015, Petch led a sweeping reorganization that trimmed Osotspa's exceedingly diverse line of health items and pharmaceuticals, refocusing on energy drinks such as M-150. He also laid off a quarter of Osotspa's employees and recruited experienced professional managers from international firms such as Unilever. "I didn't want the company to be a family business," Petch says during an interview in his high-rise office at Osotspa's sprawling headquarters. Since the family bought the site in 1995 on what was then the city's outskirts, bustling Bangkok has engulfed it. "I wanted it to be more professional, more organized."

Petch's great-grandparents started what would become Osotspa in 1891. Chinese immigrants, they opened the Teck Heng Yoo pharmacy in Bangkok's Chinatown selling traditional herbal remedies. After one of their elixirs helped end an outbreak of dysentery among his army, Thailand's King Vajiravudh bestowed a new name on the family: Osathanugrah, or "provider of medicine" in Thai. Teck Heng Yoo was renamed Osotspa, or "medicine organization," after World War II.

# Thailand's 50 Richest

Osotspa expanded into an increasingly long list of health-care and personal products. Today, Osotspa's personal-care division, with baby-care and women's beauty-care products, is a market leader, with 35% of the market for liquid baby soap and 24% of the market for infant talcum powder.

Energy drinks, though, became Osotspa's mainstay. In 1965, Petch's father Surat licensed an energy tonic, Lipovitan-D, from Japan's Taisho Pharmaceutical and in 1985 launched his own version, M-150—the "M" for magnum revolver cartridges and the 150 for its 150ml bottle—labelled with a sheriff's badge and chocked full of herbs, vitamins, sugar and caffeine.

While Red Bull (known in Thailand as *Krating Daeng*) was launched nine years before and has since become recognizable worldwide, M-150 dominates the Thai market with what Osotspa claims is a 39% share. M-150 is most popular among male blue-collar workers 30 and above. For younger men, Osotspa offers M-Storm, an energy drink enhanced with D-ribose, a sugar normally produced in the body and also used to enhance performance. Shark Bite is targeted at white-collar workers. Combined with its other brands of energy drinks—Chalarm, Lipovitan-D (Taisho's original) and Som in Sum—Osotspa controls a roughly 54% share (by sales) of a \$720 million market, according to research firm Frost & Sullivan. The average Thai drinks at least 11 liters of energy drinks a year, U.K. market research firm Zenith International estimates, four times the average per-capita consumption in North America.

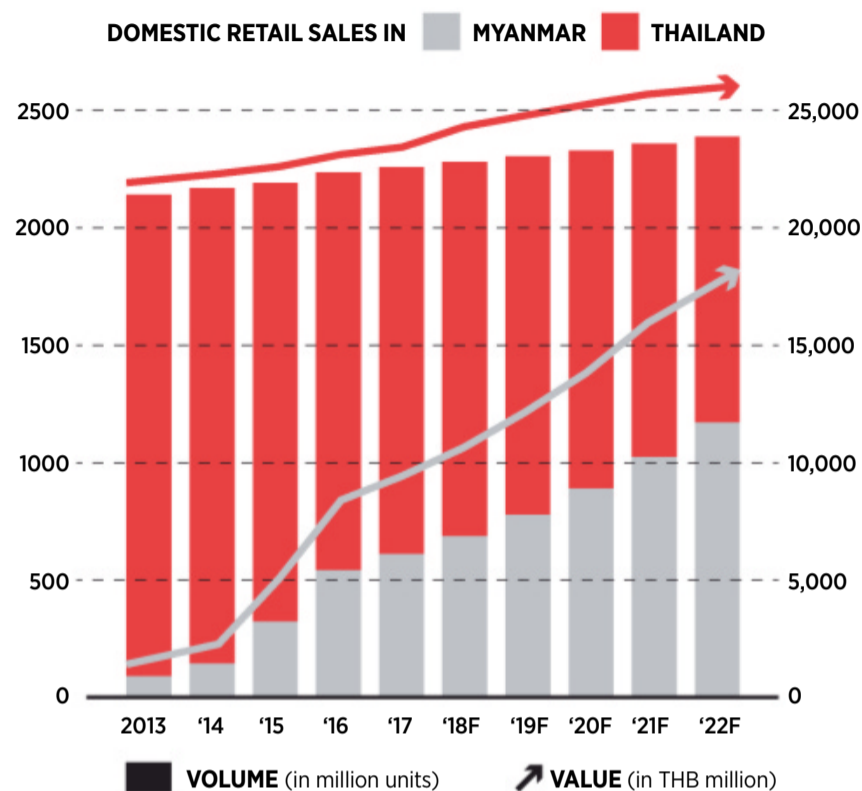
Energy drinks account for 74% of Osotspa's overall revenues, and while Thailand's robust economic growth augurs well for energy-drink demand, Frost & Sullivan estimates the market is growing at only about 2% a year. So while Osotspa's domestic sales are rising, growing competition from the likes of TC Pharma's Red Bull and Carabao Tawandang has whittled its share of the overall market to roughly 55% in 2017 from 60% in 2013.

The real growth opportunity in energy drinks is outside Thailand, where the craze for tiny bottles of liquid energy has created what California-based Grand View Research estimates is a \$50 billion global market that will grow to \$84 billion by 2025. Asia-Pacific's \$12 billion energy drink market is growing 7.5% a year. Overseas sales still account for only a fifth of Osotspa's total beverage sales. But Osotspa "also has a good strategy for growth outside Thailand," says Theethanat Jindarat, an analyst at Yuanta Securities in Bangkok.

**PETCH, WHO TOOK OVER IN 2015 AS CEO** from younger brother Ratch, may seem an unlikely candidate to lead a corporate overhaul. Though he has been involved in the company most of his life, his first calling was the arts. He started playing the guitar at 12; piano at 14. He released his

## WHERE THE GROWTH IS

Myanmar's thirst for energy drinks is still growing fast, while Thailand's may be largely quenched.



Source: Frost & Sullivan

**“I DIDN'T WANT THE COMPANY TO BE A FAMILY BUSINESS. I WANTED IT TO BE MORE PROFESSIONAL, MORE ORGANIZED.”**

first album, *Tammada Mun Pen Raung Tammada* (It's Ordinary), in 1987. His song "I'm Not a Magical Guy" has been called one of the most romantic in the Thai language. "I'm a creative person, not a businessman," Petch concedes.

He reluctantly returned to the family business at his mother's insistence, putting his degree in marketing from Southern Illinois University to use as head of the family's SPA Advertising. But his roots as a rocker run deep: in 2007, he released a second album, *Let's Talk About Love*, which rose to No. 1 on the Thai pop charts. His success translated into a brief turn in film: in 2008, Petch starred alongside French actress Emmanuelle Béart in the thriller *Vinyan*.

Petch still sits in occasionally with local bands, as when in 2017 he joined a house band led by New Zealand's celebrity chef Bobby Chinn during the closing party for Bangkok's World Gourmet Summit to perform a rendition of "I Can't Get No Satisfaction." In April, he took time off from running Osotspa to perform with the Bangkok Beatlenuts, a local Beatles cover band.

His career as a rock star may be behind him, but his iconoclastic fashion sense endures. Petch's style is more Bowie

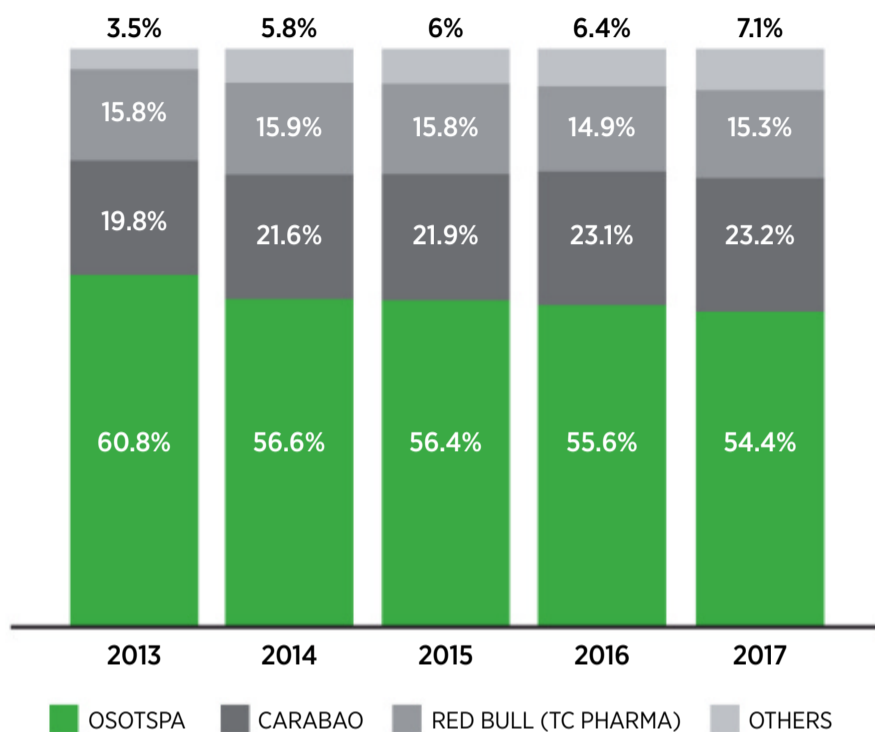


# Thailand's 50 Richest

## COMING DOWN

Competition is slowly eroding Osotspa's dominance of Thailand's energy drink market.

MARKET SHARE OF ENERGY DRINK MAKERS IN THAILAND



Source: Frost & Sullivan

than boardroom, and he's created what he calls a collaborative, open-plan workspace that looks more like an art gallery than an office. His own desk sits enclosed in floor-to-ceiling windows and a large, colorful mural by UK-born painter and filmmaker Sarah Morris. "This is a company from 120 years ago," he says. "Now, it looks young, like me. I dress young, I feel young."

Petch also divides his time between Osotspa and Bangkok University, which the Osathanugrah family founded in the 1960s and, with 26,000 students, is Thailand's largest private university. Petch is president, a job that keeps him there two days a week handling the administration.

Some in Bangkok's business community say Petch's stardom and unconventional style overshadow his leadership abilities. But Vararatana Jutimitta, managing director of Bualuang Securities, which helped underwrite Osotspa's IPO, warns not to be fooled by Petch's style. "He's a smart guy, and has adapted to his role pretty well," says Vararatana. "He's been transforming the company. The key thing: He knows how to use personnel. He puts the right people in the right place."

When Petch started running Osotspa, he supplemented a boardroom heavy on relatives (uncle Surin is chairman, brother Ratch is vice-chairman, cousin Tasharin sits on the executive committee with two other cousins, as does cousin Niti, who also heads the remuneration and corporate governance committees) by enlisting industry veterans such as former Siam Commercial Bank president Kannikar Chalitaporn. In 2017, Osotspa recruited as its president Wannipa Bhakdibutr,

## AN EYE FOR ART

Leading arts magazine *ARTnews*' list of the world's 200 top art collectors last year included its first Thai, Petch Osathanugrah. How many pieces does Petch have? "Over 500, 600. I've lost count," says Petch, estimating his collection to be worth as much as \$80 million. Petch is planning to use roughly \$70 million of his growing fortune to build a contemporary art museum housing his collection and exhibitions from abroad. He plans to buy land to build the museum, which he will call DIB ("raw" in Thai) Bangkok, near the Chao Phraya River that snakes through the Thai capital. He says construction will begin next year, and that DIB Bangkok will likely open in 2022.

Artists and art lovers have been buzzing about Petch's museum plans for years. "Petch is a modern renaissance man," says Whitney Ferrare, senior director at Pace Gallery in Hong Kong, where Petch is a regular at the city's Art Basel every March. "He's really involved. He visits the studios and talks to the artists. He's an artist himself and genuinely admires art."

Petch credits his father for helping to inspire his own passion for art. After attending Babson College in Massachusetts, Surat Osathanugrah returned home to run Osotspa but remained a lifelong photographer and art collector, focused on ceramics. He was renowned in his later years for both passions, exhibiting his street scenes and publishing several books. His ceramics make up the core of 15,000 pieces housed in the Southeast Asian Ceramics Museum, which opened in 2005 at the university the family founded, Bangkok University.

Petch wouldn't be the first Thai business leader to build a contemporary art museum. Boonchai Bencharongkul, chairman of Thai telco DTAC, in 2012 built Bangkok's Museum of Contemporary Art, while Eric Booth, assistant managing director at Jim Thompson, in 2016 opened the MAIAM Contemporary Art Museum in Chiang Mai with his stepfather, Jean Michel Beurdeley.



Both those museums, however, feature only Thai art. But world capitals, says Petch, are distinguished by their museums, and while Bangkok's art scene has grown tremendously in recent years—the first Bangkok Art Biennale was held from October last year through February—it has no international museum of modern art. “You cannot be world class if you collect only Thai art,” he says. “Contemporary art is global.”

Not that he plans to neglect Thai art. “Petch is a great patron of art,” says Udomsak Krisanamis, one of Thailand's best-known artists. “He is a free spirit. He collects whatever he likes.” Booth is more effusive. “We are all impatient and excited about his museum,” he says. “Students of the arts would benefit so much to have his collection available for viewing to the public. And it will be so important for Thailand and Thai contemporary art.”

a 30-year veteran of consumer-products goliath Unilever. She was followed by fellow Unilever alums Suthipa Panyamahasup as chief marketing officer, Sarayut Jitcharungporn in sales, and Apiwan Chatrapongporn in charge of trade marketing.

Petch sees his role as CEO largely as a strategist. “My staff is great. They know much more than me about the business,” he says. “So we talk to each other. I consult with them and listen to them a lot. I'm good at strategy.” With his new team in place, Petch began talking to bankers about taking his family firm public. “We were preparing for the listing for a long time,” says Petch. “It takes time. There was a lot to do, in transforming this old family company to become a modern, public one. We were doing a lot of restructuring, which is still going on.”

## “THIS IS A COMPANY FROM 120 YEARS AGO. NOW, IT LOOKS YOUNG, LIKE ME.”

Petch launched an overhaul plan dubbed “Fitness First:” Osotspa dropped more than 1,000 products, including more than four-fifths of its personal care line, and laid off 1,000 employees, a quarter of its workforce. Slimming down has been costly: revenues tumbled by nearly a quarter in 2017 and another 1.5% last year. But Osotspa also slashed expenses by more than a quarter in those two years, which helped boost net profit margins to 12% from 8.5%. “We expect profit margins to expand much more than last year,” said Theethanat at Yuanta. “I expect strong growth this year.”

Investors appear to agree. Osotspa's new shares ended up pricing at the top of their offer range and surged 20% on their first day of trading in Bangkok. Since the listing, they have climbed 25%. Petch plans to use the money raised to fund further expansion, especially in neighboring countries such as Cambodia, Laos and Myanmar, where many of its energy drinks and health products are already market leaders. Osotspa exports its products to these and nine other countries from 10 plants in Thailand. It's also exploring expansion into China and Vietnam.

About 20% of the IPO funds are earmarked to build its first overseas factory, in Yangon, which is scheduled to start producing M-150 and other Osotspa drinks for Myanmar's market by the end of the year. Osotspa's Shark energy drink already dominates that market, with a 38% share. But, notes Petch, “we have plenty of room to grow there. It's like the size of Thailand and experiencing great growth.” Myanmar's population of 53 million is roughly three-quarters the size of Thailand's, but incomes are still where Thailand's were in the late-1980s and growing fast as the nation opens. The energy drinks market there is growing 60% a year, according to Frost & Sullivan.

As for his music career, Petch says no more records are likely. Instead, he plans to release a collection of short stories this year, he says, “stuff I've written for a while, some quite erotic.” **F**

# Thailand's 50 Richest

BY NAAZNEEN KARMALI

## Speed Bump

Political uncertainty and a slow economy translated into lower fortunes for half of the nation's wealthiest.

**A**fter enjoying a surge in their wealth a year ago, Thailand's richest hit a speed bump in 2019. Uncertainty ahead of the country's March elections and a slow economy dampened sentiment, sapped the Thai baht and sent the country's benchmark stock index down roughly 7% since we last measured fortunes. The combined net worth of the listees was slightly lower at \$160.5 billion from last year's total of \$162.5 billion.

Half of the nation's richest saw their fortunes decline, including each of the top four. The **Chearavanont brothers** of the Charoen Pokphand group retained the No.1 spot with a net worth of \$29.5 billion. Dhanin Chearavanont, the group's senior chairman, stepped down in April as chairman of flagship Charoen Pokphand Foods after 25 years in that position. (He remains chairman of CP All, the listed operator of 7-Eleven stores.)

But a fortunate third of the list members ended up better off than a year ago. The biggest gainer was energy tycoon **Sarath Ratanavadi**, whose fortune surged by \$1.8 billion, earning him a spot in the top five for the first time. Shares of his Gulf Energy Development soared 57% in the past 12 months as new power projects came online and the company's 2018 revenue more than doubled, to \$628 million.

Another gainer was the **Osathanugrah family**, which got a boost from the October 2018 listing of Osotspa, their 128-year-old energy drink maker. Run by the colorful Petch Osathanugrah, an art collector and former pop singer, Osotspa was founded by his great-grandparents as a small pharmacy selling herbal medicines.

There are four new faces on this year's list, including **Chaivat Taepaisitphongse**, chairman of Betagro Group, an agrifoods outfit. **Aiyawatt Srivaddhanaprabha**, 33, the youngest on the list, debuts with a \$4.7 billion fortune shared with his family, after his father, the late duty-free tycoon Vichai Srivaddhanaprabha, died in a helicopter crash in October 2018. Banker **Chartsiri Sophonpanich**, 59, president of Bangkok Bank, appears for the first time, replacing his late father Chatri, who died last June.

Notable among the four returnees to the ranks is **Prachai Leophairatana**, who makes a comeback after a five-year



Sarath Ratanavadi

hiatus. His cement and concrete maker TPI Polene returned to the black in 2018 with a \$45 million profit, helping send its stock up 14% since the last time we tallied our list. Five from last year didn't make the cut, however, including Sarawut Pornpatanaruk, founder of Do Day Dream, maker of Snail-White skin-whitening products, due to a fall in exports to China, its biggest overseas market.

*Additional reporting by Megha Bahree, Sean Kilachand, Suzanne Nam, Phisanu Phromchanya, Anuradha Raghunathan and Sheela Sarvananda.*

### METHODOLOGY

This list was compiled using shareholding and financial information obtained from the families and individuals, stock exchanges and analysts, the Stock Exchange of Thailand and regulatory agencies. Unlike our billionaire rankings, this list encompasses family fortunes, including those shared among extended families of multiple generations. Public fortunes were calculated based on stock prices and exchange rates as of April 26. Private companies were valued based on comparisons with similar companies that are publicly traded.



## WILLIAM HEINECKE: MINOR TO MAJOR

Even measured against its steady expansion in recent years, **Minor International's** purchase last year of 94% of Spain's NH Hotel Group for roughly \$2.7 billion marked a giant leap for founder and CEO William Heinecke (No. 22), morphing the Bangkok-based hotelier into a global player. "We went from about 150 hotels to 550 hotels, making us one of the largest hotel groups in the world," says Heinecke, 70. Buying NH also took Minor from 22,209 rooms in 2017 to 75,241 rooms at the end of 2018.

U.S.-born Heinecke started Minor in 1967 as an office cleaning and advertising company while still a teen studying at Bangkok's International School. His father—a former U.S. military officer who worked for the foreign service—moved the family around Southeast Asia before settling in Thailand in 1963. Apart from its core hotel business, Minor also operates about 2,200 restaurants and shops in Thailand and in over 60 countries around the world. "We probably have 150 hotels in the pipeline. It took us 40 years to get to 100-150 hotels," says Heinecke, who became a Thai citizen in 1992. "It's mind-boggling."

Minor continues to expand, and plans new properties for its Anantara line of hotels in Africa, Brazil, Indonesia and Malaysia. The company's revenue climbed 35% to 79.3 billion baht (\$2.5 billion) in 2018 from a year earlier, with hotels contributing about 65%, and food and retail the rest. Net profits were flat at 5.4 billion baht, as increased competition in food and retail crimped margins. Heinecke is optimistic, though, that consumer confidence and domestic consumption will improve following Thailand's long-delayed elections in March. —*Ron Gluckman*

## AIYAWATT SRIVADDHANAPRABHA: NEW CHALLENGES

The newest and youngest member of the Thai rich list is Aiyawatt Srivaddhanaprabha, 33, who last year took over from his late father, Vichai Srivaddhanaprabha, as CEO of duty-free giant **King Power**. He shares his fortune with his mother and three siblings.

Vichai founded King Power with his wife, Aimon, more than three decades ago and grew it from a small luxury goods importer into a retail powerhouse, with \$3.2 billion in sales in 2017—up from \$2.4 billion the previous year. Vichai was already grooming Aiyawatt, the youngest of two sons, to take over when Vichai was killed last October in a helicopter crash after watching his Leicester City football team play at the club's King Power stadium in the U.K. The family bought the then-middling team in 2010. Six years later, Leicester City won the U.K.'s Premier League title. Aiyawatt has been the club's vice chairman for the past nine years.

Aiyawatt will face new challenges. Thailand's airport operator granted King Power the country's sole airport retail concession in 2006, when Bangkok's new international airport was just opening. But that concession is due to expire next year, meaning King Power may have to contend with new competitors or lose the concession. South Korea's Lotte, as well as local retailers Central Pattana (owned by the Chirathivat family, No. 2) and Minor International (owned by William Heinecke, No. 22), have indicated interest in jumping into the business. —*Suzy Nam*



## THE LIST

1.  
**CHEARAVANONT BROTHERS**  
**\$29.5 BILLION** ▼  
CHAROEN POKPHAND GROUP
2.  
**CHIRATHIVAT FAMILY**  
**\$21 BILLION** ▼  
CENTRAL GROUP
3.  
**CHALERM YOOVIDHYA**  
**\$19.9 BILLION** ▼  
RED BULL AGE: 68
4.  
**CHAROEN SIRIVADHANABHAKDI**  
**\$16.2 BILLION** ▼  
THAI BEVERAGE  
AGE: 75
5.  
**SARATH RATANAVADI**  
**\$5.2 BILLION** ▲  
GULF ENERGY DEVELOPMENT  
AGE: 53
6.  
**AIYAWATT SRIVADDHANAPRABHA**  
**\$4.7 BILLION** ★  
KING POWER  
AGE: 33
7.  
**PRASERT PRASARTTONG-OSOTH**  
**\$3.4 BILLION** ▲  
BANGKOK DUSIT MEDICAL SERVICES  
AGE: 86
8.  
**OSATHANUGRAH FAMILY**  
**\$3 BILLION** ▲  
OSOTSPA

▲ UP ▼ DOWN ◀ FLAT  
★ NEW TO LIST ◀ RETURNEE

# Thailand's 50 Richest

## THE LIST

9.  
**VANICH CHAIYAWAN**  
**\$2.85 BILLION** ▼  
THAI LIFE  
AGE: 87

10.  
**SOMPHOTE AHUNAI**  
**\$2.83 BILLION** ▲  
ENERGY ABSOLUTE  
AGE: 51

11.  
**KRIT RATANARAK**  
**\$2.8 BILLION** ▼  
BANGKOK BROADCASTING  
& TV AGE: 73

12.  
**ALOKE LOHIA**  
**\$2.52 BILLION** ▼  
INDORAMA VENTURES  
AGE: 60

13.  
**CHUCHAT & DAONAPA  
PETAUMPAI**  
**\$2.5 BILLION** ▲  
MUANGTHAI CAPITAL  
AGES: 65, 65

14.  
**SANTI BHIROMBHAUDI**  
**\$2.25 BILLION** ▼  
BOON RAWD BREWERY  
AGE: 72

15.  
**SUPALUCK UMPUJH**  
**\$2.1 BILLION** ▲  
THE MALL GROUP  
AGE: 64

16.  
**KEEREE KANJANAPAS**  
**\$2.07 BILLION** ▲  
BTS GROUP HOLDINGS  
AGE: 68

17.  
**HARALD LINK**  
**\$2.05 BILLION** ▲  
B. GRIMM GROUP  
AGE: 64



**THIRAPHONG CHANSIRI**

## Can-Do Attitude

**AFTER OVERCOMING TWO CRISES** in recent years, Thai Union Group CEO Thiraphong Chansiri now faces what may be his biggest obstacle yet—declining demand for the tuna that is his company's biggest product. U.S. consumption of canned tuna has declined about 40% in the past three decades, according to the U.S. Department of Agriculture, amid environmental and, more recently, health concerns. Thai Union is the world's largest maker of canned tuna; crack open any can of the stuff and there's a 20%

chance it's from one of Thai Union's many brands—John West, King Oscar and Petit Navire, just to name a few. Tuna and other seafood such as sardines, salmon, mackerel and shrimp account for 46% of Thai Union's overall revenues.

Thiraphong is undaunted. He's set a sales growth target this year of at least 5% from the previous year by continuing to diversify into new markets and new businesses. That strategy has already helped the company weather falling demand in recent years for canned

tuna, selling higher value tuna products, salmon and shrimp to keeping revenues afloat even as Ebitda has sunk by a third since 2015, to 7.4 billion baht (\$229 million). The company's share price has climbed roughly 5% in the past year, raising Thiraphong's father Kraisor and his family's wealth by 3% and lifting their rank to No. 41 from No. 42.

The family owns about 20% of Thai Union, which Kraisor and his brother Cheng Nirrutinanon founded in 1977 in Thailand's coastal Samut Sakhon province. Thiraphong, now 53, took the helm at Thai Union from his father in 1995. The company was then canning tuna for other companies' brands. As it grew in size, Thai Union bought them: in 2014, it paid \$866 million for France's MW Brands, in doing so gaining popular European brands John West, Petit Navire, Parmentier and Mareblu. The same year, it bought Norway's King Oscar. U.S. regulators scotched its bid in 2015 to buy Bumble Bee. In the decade since 2008, Thai Union has almost doubled revenues, while net profit climbed 28%.

It hasn't all been smooth sailing, however. Concerns since the 1980s that driftnets used to catch tuna were devastating other species such as dolphins led to widespread boycotts. Health warnings about poisonous mercury in some tuna species have placed a further drag on demand.

Thai Union worked with Greenpeace to develop its policies on sourcing tuna and other seafood in a sustainable manner. In its latest annual report, the company says it's moving towards ensuring that all of its tuna is certified by the Marine Stewardship Council as having been fished sustainably. Its efforts seem to be paying off. The company has been listed on the Dow Jones Sustainability Index since 2013. It was also nominated for the Thomson Reuters Foundation's Stop Slavery Award in 2016 and 2018.

Thiraphong sees the decline in demand for tuna as inevitable. "It's not surprising that canned tuna has fallen out of favor," he says. "It's been presented to consumers in the same format for years." Whatever the reasons for declining consumption, Thai Union "can't rely on the canned tuna business any longer for growth," says Charti

Phrawphraikul, a research analyst at Phatra Securities in Bangkok.

The company is responding by expanding into new markets and products. It's been pushing into China and introducing new flavors, including sun-dried tomato tuna in the U.S., rosemary and sea salt tuna in the U.K. and green curry tuna in Thailand. It's also been expanding sales of shrimp and pet food. And it's diversifying into dietary supplements: in October, Thai Union opened a \$24 million refinery in Germany to turn tuna heads into heart-healthy omega-3 and DHA oils.

Acquisitions also continue to provide Thai Union with entrée into new markets. Last year, Thai Union bought a 45% stake in

## THAI UNION WORKED WITH GREENPEACE TO DEVELOP ITS POLICIES ON SOURCING TUNA AND OTHER SEAFOOD IN A SUSTAINABLE MANNER.

Russia's top tuna producer, DPR Group, for \$16 million. While DPR's \$50 million in annual revenue is small, the acquisition could enable Thai Union to penetrate markets in Eastern Europe.

Thai Union also ventured downstream in 2016, buying a 25% stake in Florida-based Red Lobster, the world's largest seafood restaurant chain, with 700 outlets in the U.S., Canada, Ecuador, Japan, Mexico, Malaysia, Qatar and Saudi Arabia. Thai Union's \$575 million investment included preferred shares that it can convert into an additional 24% stake. Thiraphong says a well-known brand like Red Lobster could not only get Thai Union into a new and potentially profitable business, but also help Thai Union sell seafood products at a premium.

Analysts aren't ready to swallow that; Red Lobster has been spilling red ink for the past three years. "With new consumer products acceptance takes a while, it may be 2 to 3 years before they stick," says Sirima Dissara, an analyst at SCB Securities in Bangkok. That's okay with Thiraphong. "We aren't expecting any home runs. We need lots of good ideas." —*Suzy Nam*

18.  
**RIT THIRAKOMEN**  
**\$2 BILLION** ▼  
MK RESTAURANT GROUP  
AGE: 67

19.  
**THAKSIN SHINAWATRA**  
**\$1.9 BILLION** ◀▶  
SC ASSET AGE: 69

20.  
**WICHAI THONGTANG**  
**\$1.84 BILLION** ▼  
BANGKOK DUSIT  
MEDICAL SERVICES  
AGE: 72

21.  
**PRAYUDH MAHAGITSIRI**  
**\$1.83 BILLION** ▲  
QUALITY COFFEE PRODUCTS  
AGE: 73

22.  
**WILLIAM HEINECKE**  
**\$1.81 BILLION** ▼  
MINOR INTERNATIONAL  
AGE: 70

23.  
**CHAIVAT  
TAEPAISITPHONGSE**  
**\$1.8 BILLION** ★  
BETAGRO GROUP

24.  
**PRACHAK  
TANGKARAVAKOON**  
**\$1.7 BILLION** ▼  
TOA PAINT (THAILAND)  
AGE: 75

25.  
**ISARA VONGKUSOLKIT**  
**\$1.6 BILLION** ▲  
MITR PHOL SUGAR  
AGE: 70

26.  
**ANANT ASAVABHOKHIN**  
**\$1.5 BILLION** ▲  
LAND & HOUSES  
AGE: 68

▲ UP ▼ DOWN ◀▶ FLAT  
★ NEW TO LIST ⌚ RETURNEE

# Thailand's 50 Richest

## THE LIST

27.  
**THONGMA VIJITPONGPUN**  
**\$1.4 BILLION** ▼  
PRUKSA REAL ESTATE  
AGE: 60

28.  
**BANTHOON LAMSAM**  
**\$1.11 BILLION** ▼  
KASIKORN BANK  
AGE: 66

29.  
**CHARTSIRI SOPHONPANICH**  
**\$1.1 BILLION** ★  
BANGKOK BANK  
AGE: 59

30.  
**SOMPORN JUANG-ROONGRUANGKIT**  
**\$1.07 BILLION** ▼  
THAI SUMMIT AGE:68

31.  
**WITON SURIYAWANAKUL**  
**\$1.05 BILLION** ▲  
SIAM GLOBAL HOUSE  
AGE: 61

32.  
**CHATCHAI KAEWBOOTTA**  
**\$1 BILLION** ▼  
SRISAWAD  
AGE: 67

33.  
**PHORNTHAP PHORNPRAPHA**  
**\$960 MILLION** ▼  
SIAM MOTORS AGE: 70

34.  
**NISHITA SHAH**  
**\$900 MILLION** ▼  
GP GROUP  
AGE: 38

▲UP ▼DOWN ◀FLAT  
★NEW TO LIST ◀RETURNEE

## WEALTH CREATION

# Window of Opportunity

Thailand must upgrade its industrial capabilities as growth slows.

BY YUWA HEDRICK-WONG

THAILAND IN LATE MARCH held its first elections since 2014. Whatever its shortcomings, the vote ensured that elected representatives in parliament have some measure of accountability and provided a legitimate outlet for dissent. However you look at it, it will be an improvement over the past few years.

Thailand now has to focus on improving its economy. Despite its incredibly successful and resilient tourism sector, Thailand's economy has been underperforming, with annual GDP growth between 2015 and 2018 averaging 3.6%, according to the IMF, well below the 6.2% average for the members of ASEAN (minus Singapore) over the same period.

Even as global trade and developed economies slow, Asia's consumer markets are booming. China-centric manufacturing supply chains are being overhauled, and Thailand's neighbors—Vietnam in particular—are jockeying to become stronger manufacturers. China's Belt and Road Initiative (BRI), furthermore, is fostering the economic integra-

tion of the Mekong Delta region by promoting investment in the region's transportation and logistics infrastructure.

Thailand cannot afford to stand idly by. The only way for it to move forward is to climb the value-added ladder. Thailand is uniquely placed in Asia for stronger growth because it is already closely connected to Asia's two largest economies, China and Japan. Thailand can succeed if it synergizes those linkages to upgrade its manufacturing and infrastructure. If Thailand becomes more competitive globally and more productive domestically, better jobs and higher incomes at home will follow.

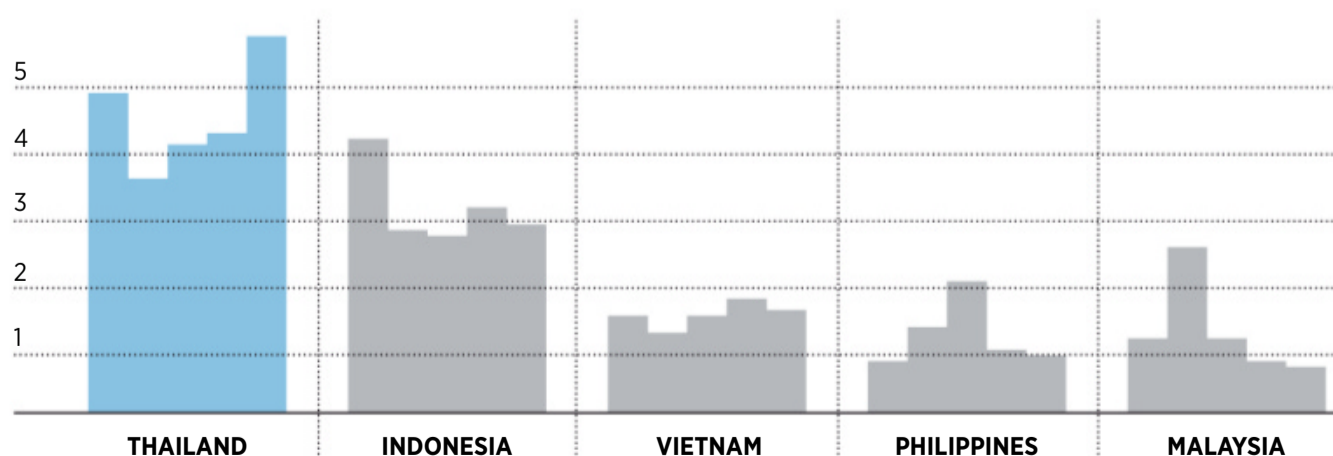
Take Thailand's auto manufacturing sector: While a successful supplier of car parts and the most powerful driver of Thai exports, Thailand's auto industry is undergoing transformation as electric vehicles gain market share, particularly in the world's largest auto market—China. Design and technology are changing fast in conventional vehicles, let alone in cutting-edge, self-driving, electric cars. Thailand cannot retain its strength in auto parts manufacturing without massive injections of new know-how and upgraded technology.

Simultaneously, global manufacturing supply chains are shifting away from China in response to both the China-U.S. trade war and Beijing's own Made in China 2025 program, which aims to make China's technology among the best in the world. Equally important, China's domestic demand is rapidly supplanting exports as a driver of growth and development. As a consequence, many global companies are relocating their more labor-intensive and export-oriented production facilities to Southeast Asia, while custom-

## JAPAN'S INVESTMENTS IN SOUTHEAST ASIA, 2014-2018

(EX-SINGAPORE)

IN BILLIONS OF U.S. DOLLARS



SOURCE: JETRO



Aerial view of the Victory Monument in Bangkok

izing products and services to target China's expanding consumer market. Accordingly, Thailand will need to reposition itself as a productive node in these reconfigured supply chains, and as a competitive supplier to growing import demand by China's consumers.

Japanese investment and technology transfer will be critical in upgrading Thailand's industries. Japanese FDI in Thailand has been rising, reaching \$6.7 billion in 2018, representing 4.2% of all Japanese fixed investment abroad, up from a 2.8% share in 2017. Within Asia, Thailand ranks third as a destination of Japanese FDI, after Singapore and China, by value. And Japanese FDI in Thailand is increasingly technology intensive, consistent with Japan's aim to support the development of the next-generation auto sector in Thailand, according to the Japan External Trade Research Organization.

Thailand is well-positioned to take advantage of these technology transfers. World Bank data show that Thailand's labor force is the most highly educated in the Mekong region, and has one of the highest female labor participation rates in ASEAN. Thailand also has more science and engineering students as a proportion of tertiary graduates than India, Indonesia, Malaysia or Vietnam.

To stay globally competitive, Thailand also needs to upgrade its infrastructure, investment in which has been hindered by weak government spending, persistent fiscal deficits and rising public debt. Unless it improves its logistic efficiency, Thailand won't be able to play a leading role in integrating the

economies of the Mekong Delta. China's BRI is channeling funding to a wide range of infrastructure projects in the region, from rails to ports to highway networks. That investment represents an opportunity for Thailand to invest in domestic infrastructure projects that not only improve domestic efficiency, but also boost connectivity with its neighbors and with southern China.

An even more powerful outcome can be achieved if Thailand is able to make its close economic relations with Japan and China mutually supportive. A case in point is the Eastern Economic Corridor (EEC) development project, a cornerstone of the Thai government's "Thailand 4.0" strategy. The EEC could attract tens of billions of dollars in investments in new industries, from smart electronics to robotics. If Thailand coordinates its EEC with China's BRI, not only would development be accelerated, but the EEC would attract more private sector investment from Thailand and abroad. With world-class logistics, the EEC would in turn become a magnet for Japanese FDI and the vital new technology that would come with it.

A rejuvenation of the Thai economy could open a new chapter of investment opportunities and wealth creation for Thai businesses and entrepreneurs. Traditional sectors like construction and properties as well as innovative tech startups all stand to benefit. Many established conglomerates could get a shot in the arm, while young and talented entrepreneurs could take off. Now is the time for Thailand to act.

35.  
**JAREEPORN  
JARUKORNSAKUL**  
\$865 MILLION ▲  
WHA AGE: 51

36.  
**SATHIEN SETTHASIT**  
\$860 MILLION ▼  
CARABAO GROUP  
AGE: 65

37.  
**BOONCHAI  
BENCHARONGKUL**  
\$820 MILLION ▲  
TOTAL ACCESS  
COMMUNICATIONS  
AGE: 65

38.  
**PONGSAK  
VIDDAYAKORN**  
\$780 MILLION ↻  
PRINCIPAL CAPITAL  
AGE: 85

39.  
**CHALERM  
HARNPHANICH**  
\$735 MILLION ▲  
BANGKOK CHAIN HOSPITAL  
AGE: 66

40.  
**PETE BODHARAMIK**  
\$730 MILLION ▼  
JASMINE INTERNATIONAL  
AGE: 46

41.  
**KRAISORN CHANSIRI**  
\$720 MILLION ▲  
THAI UNION GROUP  
AGE: 84

42.  
**VIRIYAHBHUN FAMILY**  
\$705 MILLION ▼  
VIRIYAH INSURANCE

43.  
**CHANSAMORN  
WATTANAVEKIN**  
\$670 MILLION ↻  
KIATNAKIN GROUP  
AGE: 90



# Thailand's 50 Richest

## THE LIST

44.  
**SURANG PREMPREE**  
**\$660 MILLION** ▼  
BANGKOK  
BROADCASTING & TV  
AGE: 76

45.  
**PRACHAI  
LEOPHAIRATANA**  
**\$640 MILLION** ↻  
TPI POLENE  
AGE: 75

46.  
**PARPHAN  
SIRIVIRIYAKUL**  
**\$610 MILLION** ▼  
KASET THAI  
INTERNATIONAL SUGAR  
AGE: 66

47.  
**MALEENONT FAMILY**  
**\$600 MILLION** ★  
BEC WORLD

48.  
**SIRIPONG  
RUNGROJKITIYOS**  
**\$590 MILLION** ↻  
P.C.S. MACHINE  
GROUP HOLDING  
AGE: 68

49.  
**NUTCHAMAI THANOM-  
BOONCHAROEN**  
**\$570 MILLION** ▼  
CARABAO GROUP  
AGE: 57

50.  
**WORAWIT WEERA-  
BORWORNONG**  
**\$565 MILLION** ▼  
SIAMGAS &  
PETROCHEMICALS  
AGE: 74

▲UP ▼DOWN ◀FLAT  
★NEW TO LIST ↻RETURNEE

## PRASERT PRASARTTONG-OSOTH: AIR POCKET

Former surgeon Prasert Prasarttong-Osoth, 86, saw his fortune rise 1.5% to \$3.4 billion despite being obliged by regulators to step down from the helm of the regional airline his family controls, **Bangkok Airways**.

Prasert and his family own 60% of Bangkok Airways, which Prasert established in 1968 and which today flies 40 aircraft from Bangkok to various parts of Thailand and destinations across Southeast Asia, China and India. Most of the family's fortune, however, comes from their 22% stake in Bangkok Dusit Medical Services, which Prasert founded in 1969 and is now the country's largest hospital network.

In January, Thailand's Securities and Exchange Commission fined Prasert, his daughter Poramaporn, 47, and Prasert's executive secretary, Narumon Chainaknan, \$15.7 million for allegedly manipulating Bangkok Airways' shares.

The SEC said the three executed trades between November 2015 and January 2016 that led to a 22% rise in the airline's stock even as the benchmark SET Index fell about 9%. All three have denied the charges and Prasert vowed in January to prove their innocence but eventually paid the fines. Bangkok Airways and Prasert's representatives didn't respond to requests for comment.

The SEC also barred Prasert and Narumon from holding any board or executive positions in listed companies for two years and Poramaporn for a year. Prasert stepped down last January as vice-chairman and CEO at Bangkok Airways, while Narumon resigned as executive secretary. Prasert's son Puttipong, 54, who is also the airline's president, was appointed three days later to take over his father's positions. Bangkok Airways' stock has fallen roughly 6% since the SEC announced the fines.

Prasert also resigned last January as CEO and executive chairman of Bangkok Dusit Medical. Poramaporn, a medical doctor who was Bangkok Dusit's COO, stepped down the same day. Bangkok Dusit's investors appear to be taking the changes in stride: its shares have climbed roughly 8%. —*Phisanu Phromchanya*



## SOMPNOTE AHUNAI: CHARGED UP

Former securities trader Somphote Ahunai, who made his first billion from solar and wind power, is now betting on electric vehicles and the batteries to power them. Shares in Somphote's renewable energy company, **Energy Absolute**—of which he and his family own 44%—rallied 47% in the past year, adding \$900 million to Somphote's wealth and boosting his rank to No. 10 from No. 18.

Somphote started Energy Absolute in 2006 producing palm oil and then biodiesel. In 2011, he ventured into renewable energy and then in 2016 into energy storage. The latest may prove a timely move: Thailand's government said last year it might scale back its purchase of renewable energy.

In 2018, Energy Absolute unveiled a prototype electric car, Mine, and earlier this year an electric boat to ferry passengers along Bangkok's Chao Phraya River. It plans to build 1,000 battery-charging stations in the Thai capital and elsewhere around the country.

The company is also investing \$3 billion to build a factory outside Bangkok to make lithium-ion batteries. The first phase, scheduled for completion later this year, is expected to generate 1 gigawatt per hour annually, going up to 50 gigawatts per hour when the second phase is completed by 2021.

Adisak Prombun, an analyst at Asia Wealth Securities in Bangkok, says Energy Absolute should have no problem finding customers to buy the first phase's output. "There's enough demand for these storage batteries from its own businesses," he says. Adisak is less sanguine, though, about the project's second phase given the high cost of producing lithium-ion batteries and the threat from cheaper alternatives such as sodium-ion batteries. —*Megha Bahree*

FOR MORE INFO, GO TO [FORBES.COM/THAILAND](https://www.forbes.com/thailand)

# BOOKDOC: A GROWING CIRCLE OF CONNECTIONS

New partnerships and a bigger loyalty program fuel the Malaysian medtech's next phase of expansion.



BookDoc co-founder and CEO Chevy Beh receiving an award from Perkeso CEO Dr. Mohammed Azman for promoting an active lifestyle among Malaysian workers.

Medtech start-up BookDoc is on a roll and the secret, according to Chief Executive Officer Dato' Chevy Beh, lies in forging meaningful partnerships within an ecosystem that is aimed at building long-term relationships.

"We are always on the lookout for new initiatives to add value to our healthcare ecosystem," says the 34-year-old co-founder of BookDoc. "BookDoc may have started with a simple idea of matching patients with doctors but it's now more than that; it's about growing our partner and user base."

The company began in 2015 with the aim of providing a convenient way to match patients to doctors through a mobile app, which has since evolved to connect corporate customers with insurers and syncs with wearable devices such as the Apple Watch and Fitbit.

It counts among its clients Top Glove, Petronas, Malaysia's Ministry of Health (MOH), KPJ Healthcare and Ramsay Sime Darby Health Care. Regionally, its services are used by PT Siloam International Hospitals in Indonesia and Bumrungrad International Hospital in Thailand.

It's just the beginning for Beh. In the past nine months alone, Beh has added a string of Malaysian government ministries to its list of

partners. These include the Ministry of Education (MOE), the Ministry of Human Resources (MOHR) and the Ministry of Defence.

"The idea is to get large government agencies and its employees onto our BookDoc platform so that we can expand our healthcare benefits as widely as possible," he explains. "For example, BookDoc, the MOH and MOE are together promoting healthier lifestyles among Malaysian students in schools by getting them to sign up for the app. Our tie-up with MOHR is to promote a healthy workplace environment at offices."

Beh believes BookDoc can be the catalyst to promote healthier lifestyles. Behind this effort is the company's loyalty platform dubbed Activ, which aims to reward people for setting fitness goals and exercising.

He says Activ is designed to create a "wow" factor to motivate people to take care of their health and be recognized for their efforts.

"We've partnered with hundreds of retailers, and BookDoc users who meet their exercise targets can, for example, redeem their rewards at over 1,600 offline locations as well as with online partners in 12 countries."

Beh says the Activ loyalty program is constantly evolving based on what its users are doing with the BookDoc app.

"We collect a lot of data, such as the frequency of visits, the different health screening packages and exercise data from smartwatches connected to BookDoc. "Our app can then target specific users with different offers and rewards," Beh explains, adding that all data collected complies with guidelines in the U.S. Health Insurance Portability and Accountability Act to safeguard patient health information.

Beh says in the near future, BookDoc's ecosystem will grow exponentially. He is currently working on securing another government partnership before the end of the year that will add 1.6 million Activ users to its existing 500,000 members.

"We are continuing to grow our corporate customers and reward partners, and have plans to add features like telehealth and remote monitoring," he says.



30 • ASIA •  
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• ALUMNI • 30

# Aiming For **Zillions**

By focusing on the seller ecosystem, **Zilingo** has carved its own niche in Asia's crowded e-commerce market.

BY RANA WEHBE



Ankiti Bose

**Z**ilingo is an online marketplace for small merchants operating largely in Southeast Asia, named for the “zillions” of products and merchants that its two founders aim to serve. “We envisioned it as an aggregation of opportunities,” says Ankita Bose, 27, who is CEO and cofounder. She and her fellow Indian cofounder Dhruv Kapoor, 28, made Forbes’ 30 Under 30 Asia list in 2018 and, in February, received \$226 million in funding from investors, including Sequoia, Burda Principal and Temasek Holdings in a deal that valued Zilingo at \$970 million, according to a source familiar with the matter.

Zilingo has so far signed up 30,000 merchants and has 5 million monthly visitors to its platform, according to Bose. To handle that demand, it has quadrupled its workforce in the past year, to 420 people in offices spread across eight markets—Australia, Hong Kong, India, Indonesia, the Philippines, Singapore, Thailand and the U.S. “Our biggest challenge is figuring how we can scale the DNA of the team in so many different countries,” says Bose, who is now considering expanding to Latin America.

The company was conceived in 2015 when Bose, at the time an investment analyst at venture capital firm Sequoia Capital, and software engineer Kapoor were chatting at a party in Bangalore and discovered they both yearned to start a business. The pair decided then and there to join forces. “It’s not the usual story, where cofounders knew each other for years,” says Bose. “We connected over starting a business together.”

The early days were rough: Since many of the merchants Bose and Kapoor hoped to target were in Bangkok, Bose moved there from Bangalore and started Zilingo’s operations in a small rented apartment. To save money, she and a handful of team members at the time hand-packed products into boxes for shipping.

Having relocated from Bangkok to Singapore and now flush with cash, Zilingo’s business model has evolved. Instead of focusing solely on providing a platform for businesses to sell products to consumers, Zilingo also offers services to merchants selling on other platforms, even rival ones. Zilingo provides merchants with analytics software, management tools, automated logistics and payments systems to help them process orders locally and overseas. Zilingo also offers working capital loans to merchants that can’t get funding from banks, and helps them find manufacturers they can outsource production to in Bangladesh, Cambodia, Indonesia, Thailand or Vietnam.

Setting up an online storefront on Zilingo’s platform to display and sell products is free; Zilingo instead collects about 15% of the sales made on its platform. Merchants also pay Zilingo for any extra tools and services they subscribe to, such as photo cataloguing or trend monitoring.



Bose expects Zilingo to begin turning a profit **within 18 months.**



Merchandise at Zilingo’s HQ in Singapore

Bose expects Zilingo to begin turning a profit within 18 months. However, in 2017, Zilingo posted \$6.3 million in losses on \$1.3 million in revenue, according to the company’s latest filing with Singapore’s Accounting and Corporate Regulatory Authority. Its 2018 filing isn’t yet available, but the company says revenue grew twelvefold in the year ended March 2018 and quadrupled between April 2018 and January 2019, led by its supply-chain business.

Zilingo’s investors say they remain confident. “I liked the focus on the seller ecosystem, which most other marketplaces consider a low priority,” says Peter Kennedy, a senior adviser at Singapore-based Burda Principal Investments, which since 2016 has invested \$60 million in Zilingo, according to the company. Zilingo’s biggest opportunity, he says, is in continuing to build out the ecosystem from “the factory to the ultimate consumer.”

Bose is unfazed by competition from the likes of Alibaba, Amazon and Lazada. “We encourage our merchants to sell on all platforms,” she says. The few competing services that offer such back-end services do so largely for platforms in China, such as Alibaba, giving Zilingo its own niche connecting merchants and manufacturers in Southeast Asia. “There isn’t anything competing directly with us in Southeast Asia,” says Bose. “Merchants where we operate, like Indonesia, Bangladesh and Sri Lanka, don’t have access to the same tech, financial services and channels the Chinese have.”

The key to expanding into new countries and signing up more merchants, Bose says, has been localization. Zilingo tries to make setting up an online business as convenient as possible by providing tools and data on its platform in local languages and training and development programs by its local staff.

Bose credits her experience at Sequoia, where she was able to meet lots of startups, for preparing her for her own entrepreneurial journey. “Starting a company can be isolating and lonely,” she says. “People don’t see the failures; they see only the fundraise announcements and the expansion announcements. It helped to have a network of founders to tell us sometimes that ‘It’s okay.’” **F**

PROMOTION

# CHINA CONSTRUCTION BANK:

## PROSPERING WITH THE NATION

Recent initiatives have strengthened the group's position in the banking sector and helped it support the country's real economy.



CCB's head office in Beijing

China Construction Bank (CCB), one of the world's largest banks by market capitalization, made further headway in 2018 in its mission to support the development of the Chinese economy amid an uncertain and volatile environment. By leveraging the capabilities of its workforce and new technologies, CCB continued to focus on serving the needs of the real economy.

The Beijing-headquartered group successfully implemented major strategies last year that involved growing its housing rental operations, expanding its inclusive finance strategy and financial technology (fintech) platforms, supporting supply-side structural reforms, strengthening internal control risk-management measures, and promoting high-quality growth of the bank's businesses to generate positive economic and social benefits.

### Real Estate Solutions

To build up its real estate rental business, CCB set up a housing-service company,

Jianxin Housing Services Co. Ltd., and a housing-rental-service platform, which today has more than 10 million online listings and registered users. It continued to develop a rental community called Jian Rong Jia Yuan to explore a new model for the inventory housing business. These initiatives have contributed to the bank establishing a nationwide rental service network that will benefit the bank and its customers over the long term.

### Inclusive Finance

The previous year also saw CCB rolling out its inclusive finance strategy that features "mass customer acquisition, accurate profiling, automated approval, intelligent risk control and integrated services." These efforts helped propel the bank to lead the industry in terms of outstanding loan and incremental loan growth.

Through this strategy, the bank successfully promoted new online financing models, such as an online supply chain,

increased its access to small and midsize enterprise (SME) clients through its large corporate clients and introduced 26 targeted measures to support the private economy as well as SMEs. CCB made more than RMB710 billion (US\$105.7 billion) in loans that benefited 550,000 small and micro enterprises. It has also explored new ways to expand rural finance by introducing new forms of banking support, such as the "agricultural quick loan."

The bank has worked to alleviate poverty through a new platform known as Min Gong Hui, which offers services for migrant workers. To further broaden the reach and impact of its inclusive finance initiative, it established a one-stop service platform called Hui Dong Ni. These efforts are paying off for CCB. At the end of 2018, the bank's balance of inclusive finance loans stood at RMB631.02 billion (US\$93.95 billion), up 50.78%, from the previous year. This puts CCB as the industry leader in terms of balance loans and new inclusive finance loans.

## PROMOTION



CCB executives announce the bank's 2018 annual results.

### Adopting Fintech

CCB continued its adoption of fintech solutions in 2018. It has built 17 platforms, including public cloud services and smart government administration, to provide customized technical support services for customers, financial institutions and government departments. To deepen its technology capabilities, the bank also set up CCB Fintech Corporation, a wholly owned unit that employs big data analytics, blockchain and artificial intelligence to fuel product innovation and improve customer service and risk management across the group's various businesses and subsidiaries in China and overseas.

### Serving the Real Economy

CCB is committed to serving the real economy and is doing so by proactively supporting major national strategic programs, including the Belt and Road Initiative, the Beijing-Tianjin-Hebei Collaboration, the Yangtze River Economic Belt and the Guangdong-Hong Kong-Macau Greater Bay Area, among others.

CCB provided the first commercial bank loan for the Xiongan New Area construction project, and also launched the Shan Xing Chen Jian financial brand to support the construction of urban infrastructure for smart city solutions. At the end of 2018, the bank's loan balance for the infrastructure industry sector stood at RMB3.46 trillion (US\$515.15 billion), a year-on-year increase of 3.04%.

CCB is also playing its part in the transformation of China's economy. For instance, it has supported eco-friendly construction, with its green credit balance reaching RMB1.04 trillion (US\$154.84 billion) last year. The bank successfully completed the first green and sustainable development bond issuance. Together with the National Development and Reform Commission, CCB actively supports emerging businesses, industries and technologies through a range of investment and financing vehicles, such as bonds, funds, mergers and acquisitions, and asset securitization.

On the retail-banking front, CCB constantly adapts its service offerings to

meet the changing needs of consumers. In response to customer demand, it expanded its suite of easy-to-use financial products such as "quick loans," and launched the personal wealth management and service platform "Long Wealth." Such innovations continue to drive CCB's retail business, as it leads the industry in terms of total customer volume, loan balance and asset quality.

### Giving Back to Society

CCB ramped up its corporate social responsibility activities in 2018. To date, it has a total of 14,300 "caring stations" at its branches to provide useful services for industry groups such as delivery drivers, sanitation workers and taxi drivers. About 30 million people have benefited from this initiative so far.

In the area of manpower development, the bank set up CCB University to integrate the bank's training resources and collaborate with other universities at home and abroad. It also launched the "Industry and Education Integration Alliance for New Financial Talents," an open platform for education and training.

Fulfilling its responsibility as a large, state-owned bank, CCB donated a total of RMB89.41 million (US\$13.31 million) toward public welfare in 2018, and rolled out several long-term public welfare projects. In 2019, which marks the 70th anniversary of the founding of the People's Republic of China, CCB will continue to move forward to realize its mission of "serving the public to live and work in peace and build a modern and beautiful life."



[www.ccb.com](http://www.ccb.com)

## FINANCIAL PERFORMANCE HIGHLIGHTS

In March 2019, China Construction Bank announced its 2018 annual operating results. Here are some of the highlights:

- Total assets stood at RMB23.22 trillion (US\$3.46 trillion), up 4.96% from 2017.
- Net profit rose 4.93% to RMB255.63 billion (US\$38.06 billion), while net profit attributable to equity shareholders improved by 5.11% year-on-year to RMB254.66 billion (US\$37.91 billion). Net interest income rose 7.48% to RMB486.28 billion (US\$72.39 billion). Net interest margin reached 2.31%, an increase of 10 basis points.
- Return on average assets and return on average equity were 1.13% and 14.04%, respectively.
- The capital adequacy ratio was 17.19%, the nonperforming loan ratio was 1.46% and the provision coverage ratio was 208.37%.
- Based on the group's strong business performance, the board of directors recommended a final cash dividend of RMB0.306 (US\$0.05) per share (tax included).

# BLOWING UP THE VENTURE CAPITAL MODEL (AGAIN)

**In just a decade, Andreessen Horowitz has backed a bevy of startup blockbusters—Facebook, Instagram, Twitter, Airbnb, Lyft, Skype, Slack—and made just as many Silicon Valley enemies. To stay ahead, it took the unusual step of renouncing its venture capital status—and making even bigger, riskier bets.**

BY ALEX KONRAD

Marc Andreessen

**E**merging from the financial crisis in 2009, Marc Andreessen and Ben Horowitz laid out their campaign to take on Silicon Valley. The pitch deck for their first venture-capital fund that year promised to find a new generation of “megalomaniacal” founders—ambitious, assertive, singularly focused—who would, in the mold of Steve Jobs, use technology to “put a dent in the universe.” In getting behind the likes of Facebook and Twitter, with a war chest that swelled into the billions, they proceeded to do exactly that.

Andreessen, whose Netscape browser and his company’s IPO were touchstone moments of the early digital age, understands that the choice of words back then doesn’t land so well in 2019. His new take: “The 21st century is the century of disagreeableness,” he says, sitting down with *Forbes* at Andreessen Horowitz’s headquarters in Menlo Park, California. In an era of hyper-connectivity, social media and information overload, he says, those “disagreeables” will challenge the status quo and create billion-dollar companies.

If that’s an equally unpleasant prospect, consider Andreessen, who’s 47, the perfect messenger. From showy check-writing to weaponizing his popular blog and Twitter account to hiring an army of operational experts in a field built on low-key partnerships, he’s one of Silicon Valley’s poster boys for upending the rules. And it’s worked: In one decade, Andreessen Horowitz joined the elite VC gatekeepers of Silicon Valley while generating \$10 billion-plus in profits, at least on paper, for its investors. Four of its unicorns—Lyft, PagerDuty, Pinterest and most recently Uber—went public in the last few months. Over the next year or so, expect several more, headlined by Airbnb and Slack, to follow.

“What’s the No. 1 form of differentiation in any industry? Being No. 1,” lectures Andreessen, who—at 196cm with a shaved dome that his wife, philanthropist Laura Arrillaga-Andreessen, has been known to lovingly call “my egg”—carries himself with a brio to match his words.

**STAYING NO. 1, HOWEVER, IS HARDER** than getting there. Optimism that technology will transform the world for the better has soured with each successive Facebook data scandal (Andreessen still sits on Facebook’s board). Every revelation of social media’s tendency to foster society’s worst forces poses a challenge to his and his firm’s trademark techno-evangelism. And in the conference rooms of Silicon Valley’s Sand Hill Road, stakes in the next Instagram, Twitter or Skype—three of its best-known early deals—are no longer there for the taking. Today there are a record number of rival billion-dollar funds and a newer kid on the block in SoftBank, which, armed with a \$100 billion megafund, makes them all look quaint. And one thing about saying you’re going to fix a broken industry—you create plenty of competitors who won’t hesitate to capitalize on even a whiff of doubt that you can back up the hype with results.

And so Andreessen and Horowitz, 52, intend to be disagreeable themselves. They just finished raising a soon-to-be announced \$2 billion fund (bringing total assets under management to nearly \$10 billion) to write even bigger checks

for portfolio companies and for unicorns the firm missed the first time. More aggressively, they are registering their entire firm—a costly move requiring reviews of 150 people—as a financial advisor, renouncing Andreessen Horowitz’s status as a venture-capital firm.

Why? Well, venture capitalists have long avoided Wall Street-style oversight on the promise that they’ll invest mainly in new shares of private companies. It was a trade-off the firms gladly made until the age of crypto, and investing in crypto means accepting more government oversight. So be it, says Andreessen Horowitz. By renouncing its venture-capital status, it’ll be able to go deeper on riskier bets: If the firm wants to put \$1 billion into cryptocurrency, or buy unlimited shares in public companies, it can. And in doing so, the thinking goes, it’ll again make other firms feel like they have one hand tied behind their back. “What else are feathers for? They just like to get ruffled,” Andreessen says with a smirk.

**FROM THE BEGINNING**, Andreessen Horowitz had a simple credo: “We wanted to build the venture-capital firm that we always wanted to take money from,” says Horowitz. Andreessen, whose Netscape breakthrough landed him on the cover of *Time* magazine by age 24, didn’t need the fame. And neither needed the money. They were colleagues at Netscape and then cofounded a company that eventually became Opsware, run by Horowitz, who sold it to HP in 2007 for \$1.7 billion.

Before founding their venture firm two years later, the pair dabbled in angel investing, where they gained a rebellious reputation, at least by the khakis-and-button-down standards of Sand Hill Road. Andreessen helped popularize startup advice through his “pmarca” blog, the spiritual predecessor of his Twitter stream, which became known for its surprise 140-character micro-essays on subjects from economic theory to net neutrality. (He’s widely credited with popularizing the term “Tweetstorm.”) Horowitz, meanwhile, had a reputation for his ability to cite rap lyrics and his fandom for the rough-and-tumble Oakland Raiders football team.

To build their firm, Andreessen and Horowitz modeled their brand strategy not on the industry’s elite but on Larry Ellison’s Oracle and its aggressive marketing during the enterprise-software wars. They embraced the media, hosted star-studded events and badmouthed traditional venture capital to anyone who would listen. They fashioned their firm more on a Hollywood talent agency than on the usual VC. And while they started with small seed checks to companies such as software firm Okta (now valued at \$9 billion) and Slack (\$7 billion), they ignored conventional wisdom and gobbled up shares of Twitter and other companies when they were already valued in the billions. For one investor in their funds, Princeton University’s chief investment officer Andrew Golden, it became a running joke how long it would take for other firms to complain about Andreessen Horowitz. “In the early days, it was within two minutes,” he says.

Buoyed by exits and some scrimping, Andreessen and Horowitz reinvested their money in the business. Neither drew



a salary for years, and new general partners took lower salaries than is typical. Instead, much of its fee income, the standard 2% of funds managed that covers a firm's expenses, went into a fast-growing services team, including experts in marketing, business development, finance and recruiting. Need to raise another funding round? Andreessen Horowitz specialists would give a startup "superpowers," helping write your presentation, then coaching you through dozens of dry runs before scheduling the meets. Need a vice president of engineering? The firm's talent team would identify and tap the best search

unicorn Instacart (a 2014 investment that now has a \$7.9 billion valuation) scored partnerships with national retailers and food brands. In March a dozen startups filed through to meet with the Defense Innovation Unit, the branch of the U.S. Department of Defense that helps America's military find and pay for new technologies. The day before, it was New York-based Hachette Book Group. "We've had companies where it's 40% to 60% of their pipeline, and I'm like, whoa, wait, we are not your sales force," says Martin Casado, an enterprise-focused general partner at the firm who sold his Andreessen

### The Founders



MARC ANDREESSEN



BEN HOROWITZ

When Marc Andreessen and Ben Horowitz founded their eponymous firm in 2009, they gave up any salary to help afford a growing team.

### The Old Guard

Scott Kupor and Jeff Jordan, two of the firm's longest-running general partners along with Peter Levine, are in charge of fundraising and coaching new GPs. Alex Rampell and Martin Casado joined in 2015 and 2016.



ALEX RAMPPELL



PETER LEVINE



MARTIN CASADO



SCOTT KUPOR

### The New Guard

Andreessen Horowitz has a new look today with Connie Chan, Andrew Chen, Angela Strange, David Ulevitch and David George all named general partners since 2018. Chan and Strange were the first internal GP promotions in firm history.



CONNIE CHAN



DAVID GEORGE



ANGELA STRANGE



ANDREW CHEN

firm, monitor its effectiveness and help choose the best candidate for the job. Human resources problem? Accounting crisis? "If something is going off the rails, you have the 'Batphone,'" says Lea Endres, the chief executive of NationBuilder, which makes software for nonprofits and political campaigns.

And at the firm's executive briefings at headquarters and its New York office, Andreessen Horowitz staff played matchmaker, enticing big corporations and government agencies with the prospect of seeing cutting-edge technology, then lining up startups to present to the visitors. GitHub, the open-source-code repository that the firm backed in 2012 before it was acquired by Microsoft for \$7.5 billion, found the briefings so lucrative—good for \$20 million in new recurring revenue in 2015 and 2016—that it posted a junior staffer to hang around the Andreessen Horowitz office full-time, its sales chief says. Consumer startups such as the grocery-delivery

Horowitz-backed startup, Nicira, for \$1.3 billion.

The formula worked. The firm's first and third flagship funds, \$300 million and \$900 million, respectively, are expected to return five times their money to investors. Its \$650 million second fund and \$1.7 billion fourth fund are expected to return three times their investment. A \$1.6 billion fifth fund, from 2016, is too young for estimated returns.

While they may be unwilling to credit Andreessen Horowitz publicly, other firms have followed suit. From bloggers and podcast experts to finance officers and security experts, the number of non-investor professionals in the venture industry has swelled in recent years. "The idea of providing services, that feels like a table-stakes item now," says Semil Shah, general partner at venture firm Haystack. "A lot of firms copied that." At Okta, cofounder Frederic Kerrest says he's routinely approached by other firms curious

about building their own briefing centers to compete.

**ALL THIS CROWING AND NOSE-THUMBING** has made enemies. Other investors never forgot how Andreessen Horowitz claimed the business was broken and it alone had the recipe to fix it. Almost from the beginning, gossip about the firm overpaying for deals was rampant, enough so that when Andreessen and Horowitz set out to raise their third main fund in 2012, the partners had to run every position past their portfolio companies so they could disprove that notion with their investors.

Horowitz lead. The firm, Andreessen in particular, was just as hungry to make it happen. By early October, Kalanick was calling other firms to tell them he had a handshake in place with Andreessen and another partner that valued Uber at around \$300 million. But at the 11th hour the firm blinked. It would still invest, but with a structure that valued Uber at significantly less—\$220 million, according to an email from Kalanick obtained by Forbes. “They tried to surprise us,” Kalanick wrote his investors. “So here we are. The next phase of Uber begins.” Kalanick instead turned to Menlo Ventures—which until then

was being used as a stalking horse for leverage—and accepted its \$290 million valuation.

While Andreessen Horowitz backed Uber rival Lyft in 2013 and has already cashed out some of those shares at a profit, the firm wasn’t done with Uber. It participated in merger discussions between the two ride-hailing companies in 2014 and again in 2016, according to people involved in the talks. If the deal had gone through, it would have given the firm a backdoor route to a piece of Uber. The ride-hailing company is now aiming for a valuation of up to \$100 billion when it goes public, perhaps as soon as this month. That’s four times larger than Lyft’s. Andreessen Horowitz declined to comment on Uber.

Both Andreessen and Horowitz have quieted down their bluster in recent years. Andreessen admits that, contrary to what they maintained when they were Young Turks, “venture capital wasn’t an industry in crisis.” Horowitz goes further: “I kind of regret it because I feel like I hurt people’s feelings who were [running] perfectly good businesses. I went too far.”

Andreessen has even stopped tweeting after a couple of incidents in 2016. In one he seemed to joke, after India refused a new Facebook service, that the country might

have fared better under colonial rule—earning a rare scolding from CEO Mark Zuckerberg. In response, Andreessen became a digital recluse, deleting most of his past tweets. Andreessen says the purge wasn’t due to the backlash against his comment, though “that didn’t help”; rather, he blames “the general climate,” in politics and culture. He may come back, he says, when things “go back to normal.”

**EARLIER THIS YEAR** a small group of Andreessen Horowitz executives gathered in a bright conference room at its headquarters for a pitch meeting with a pair of founders from a low-profile but in-demand biotech company. The twist: The VCs are pitching the entrepreneurs, with operating-team leaders advertising their own services to the startup, a health-diagnostics company still in stealth mode. The entrepreneurs appear skeptical. When they met with Andreessen Horowitz two years ago, after

### Crypto Specialists



KATIE HAUN



CHRIS DIXON

Originally focused on consumer investments, Chris Dixon shifted to the world of crypto in 2018. Former federal prosecutor Katie Haun came on to co-lead the firm’s first crypto fund the same year.

### Biotech Specialists



JORGE CONDE



VIJAY PANDE

Andreessen Horowitz launched its first industry-specific fund in biology in 2015 under Vijay Pande. It doubled down with a larger, second fund in 2017, adding Jorge Conde.

Meanwhile, their failed investments—and there have been high-profile ones, including Clinkle, Jawbone and Fab—and big missteps such as Zenefits get magnified. Andreessen Horowitz’s well-publicized view, one it still holds, was that what matters is not how many companies you back that fail but how many become massive, outlier successes. Andreessen argues that only 15 deals a year generate all the returns, and he’s intent on seeing all the hot ones first.

Swinging for home runs magnifies whiffs, and Andreessen Horowitz blew one of the most-highly valued unicorns of recent years, Uber. The firm doesn’t admit it now, but the firm was very close to getting a big stake before letting it slip through its grasp. The until-now mostly untold story, according to several people with knowledge of the fundraising: In the fall of 2011, Uber cofounder Travis Kalanick was raising a red-hot Series B funding round and was keen to have Andreessen

it wrote a small check in their seed round, the firm didn't have much to offer bio startups. So for the next hour they're treated to example after example of how Andreessen Horowitz has added dedicated experts and connections to companies such as UnitedHealth Group and Kaiser Permanente over the previous 18 months. "We've found that a biotech company in Silicon Valley is really different from building just a tech company," says Shannon Schiltz, the firm's technical talent chief.

Besides turning the typical venture-capital process on its head, the firm is investing in biotech, which it once said it would never touch. But the need to grow and to pursue more challengers to the status quo means pushing into new areas, and the firm has raised \$650 million in two funds for the sector. "The brand doesn't carry the weight in bio that it does in the tech community yet," says Jorge Conde, a general partner. "But we've made a concerted effort and planted the flag." The 10 partners meet in committees by topic three times a week to evaluate deals, then convene as one firm on Mondays and Fridays to review likely investments.

Which brings us to crypto. Last year the firm raised a \$350 million fund in the up-and-down area. But until recently partners Chris Dixon and Katie Haun would meet in private with Horowitz, their fund a separate legal entity from the rest of the firm. That meant they had different email addresses and their own website to avoid the legal constraints on traditional VC funds. While Andreessen Horowitz was an early investor in San Francisco-based crypto marketplace Coinbase and was one of many firms to catch cryptocurrency fever in 2017, it's one of the few that doubled down even after prices sank. U.S. government regulations consider such investments high risk and limit these stakes, as well as investments in tokens, to no more than 20% of a standard VC fund.

So Andreessen Horowitz spent the early part of this year embarking on one of its more disagreeable moves so far: It renounced its VC exemptions and registered as a financial advisor. It's a costly, painful move that requires hiring compliance officers, conducting audits for each employee and banning its investors from talking up the portfolio or fund performance in public. The benefit: The firm's partners can work together on more deals, with a real-estate expert tag-teaming a deal with a crypto expert on, say, a blockchain startup for home-buying, says Haun.

And it'll come in handy since the firm announced a new growth fund earlier in May that added a fresh \$2 billion for its newest general partner, David George, to invest in the firm's current portfolio companies and in other, larger, high-growth companies. Under the new rules, that fund will be able to buy shares from founders and early investors—or trade public stocks. The new fund will give Andreessen Horowitz four specialized funds, and more may follow.

That's how the firm plans to keep up in a crowded VC landscape that is bifurcating between specialist seed funds and a handful of giant, all-purpose firms. Established firms face more pressure than ever from the top and bottom of the

funnel because of more sophisticated angel investor groups and non-VC giants such as SoftBank's Vision Fund, says Ilya Strebulaev, a Stanford University professor who studies the industry. "Venture capital is in flux," he says. "We should expect a lot of fundamental changes."

Some are inevitable, like the industry's wising up to the Andreessen Horowitz playbook of using services as a deal sweetener. Or the inherent limits to the Andreessen Horowitz model, which will always require large and growing funds to cover expenses. Others are fixable, like mixed report cards from former operating employees. High pay isn't enough for ambitious, younger staff to stick around when there's little chance of upward mobility, they say. And with veterans of Andreessen's and Horowitz's old company, Opsware, still spread throughout the firm, the sense that some employees get special treatment—and are immune to sanction—can sap morale.

### **By renouncing venture capital status, Andreessen Horowitz says it'll go deeper on riskier bets: If the firm wants to put \$1 billion into cryptocurrency or buy unlimited amounts of shares in public companies or from other investors, it can.**

Meanwhile, the firm's insistence on calling everyone a partner, even its most junior talent or accounting managers, might seem harmless, or an annoyance for others in the industry at worst. But if those titles are limiting the prospects of promotion and career growth, as one former partner notes, they may need to be retired.

Most risky: Being the best-known VC on the block, or the one competitors mock until they copy, won't matter if sweeping changes come for the entire industry. The world is becoming increasingly concerned over the power and influence that big tech companies such as Facebook and Google wield over society and to the likelihood that they haven't fully owned up to their responsibilities. Against such changing tides, the historical VC narrative of hypergrowth and Zuckerberg-like ambitions may fall flat.

In a choice that could be equal parts intransigence or naiveté, Andreessen invokes Facebook's CEO as precisely the kind of disagreeable founder who has the resolve to take the necessary, wrenching steps to make things right. "He just put out this memo talking about basically reinventing Facebook around privacy and messaging," Andreessen says of Zuckerberg's March blog post pledging to refocus Facebook toward private conversations instead of public broadcasting. "Just close your eyes and imagine a classic guy in a suit doing that."

And though Andreessen says he's too busy running the firm to have any hobbies—he's reminded he has a young son now, too—he gives his own, grander twist to a quote from one of his favorite new TV shows, HBO's *Succession*, to describe the mindset necessary to pull off a reinvention: "If you can't ride two elephants at the same time, what are you doing at the circus?"

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# An Apple (Watch) a Day



**A**pple has a tendency to pitch its products and services as either industry-changing or even life-changing. That may well be true given how the iPhone helped revolutionize the way we use the internet. While Apple has had misses—such as the recently scrapped charging mat AirPower—it has no shortage of triumphs.

The Apple Watch falls squarely into that category. The U.S. tech giant has been promoting Apple Watch as a health-monitoring wearable for the past couple of years, and the Watch's ability to detect irregular heart rates has made it a potentially lifesaving device.

Hong Kong resident Gaston D'Aquino, 77, can attest to that. About a year ago, D'Aquino was at church when his Watch buzzed, alerting him to an unusually high heartbeat. Though he felt fine, he went to the hospital anyway, where doctors immediately hooked him up to an electrocardiogram, or ECG, which confirmed the irregularity. Further tests revealed that D'Aquino's coronary arteries were more than 90% blocked. He underwent an angioplasty and has since fully recovered.

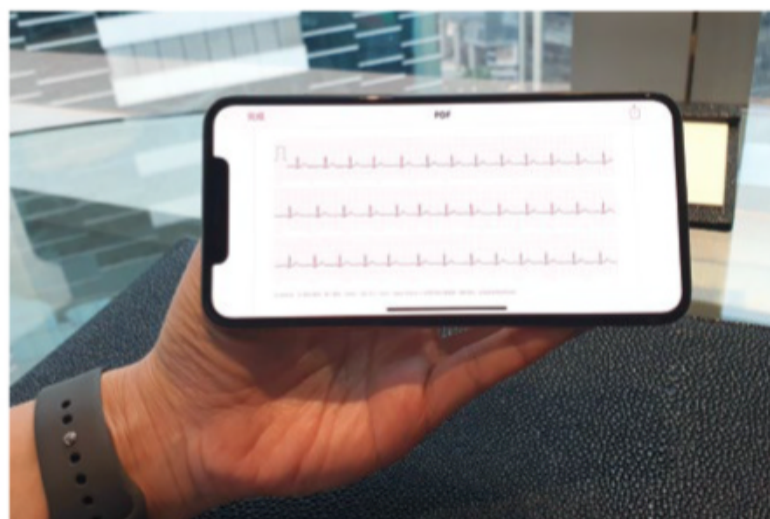
According to Apple representatives, stories like D'Aquino's inspired the company to further refine the Watch's heart-tracking capabilities. Last month, Hong Kong became the first city in Asia to get the Watch equipped with a new ECG app that captures the heart's rhythm. The ECG results can then be exported as PDF files and shared by email or messaging apps to the user's physician.

The ECG sensor works by monitoring the heart's electrical activity. A 30-second scan can detect signs of atrial fibrillation, an abnormal heart rhythm that's associated with higher risk of heart failure and stroke. Clinical tests conducted by Apple and Stanford's School of Medicine with 600 volunteers, half of whom suffered from atrial fibrillation, successfully identified 236 of 240 affected by the condition (the other 60 either withdrew from the study or failed to conduct scans regularly).

Fitness trackers that can detect heartbeats aren't new and there are already portable ECG devices by other brands on the market. But the Apple Watch is the first to win medical validation. In addition to the seal of approval from Stanford's medical school, the U.S. Food & Drug Administration and Europe's Conformité Européenne have both certified the ECG watch as meeting safety requirements.

While Hong Kong has no similar regulatory body, cardiologist Jeffrey W. H. Fung of Hong Kong's Adventist Hospital says he sees benefits to such a device. "Symptoms for those who suffer from irregular arrhythmia (irregular heart rhythm) often come and go suddenly," says Dr. Fung. "I think the watch being always with them helps them keep track of it and provide more data. More data is always good." **F**

**The Apple Watch Series 4 is equipped with an ECG app that captures the heart's rhythm. A detailed electrocardiograph will show up on the user's iPhone (bottom). Gaston D'Aquino (right).**



Ben Sin is a Hong Kong-based contributor for *Forbes Asia* who writes about consumer tech.

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WHILE BITCOIN AND OTHER CRYPTOCURRENCIES SEEM FROZEN IN A BEAR MARKET, CORPORATIONS WORLDWIDE ARE QUIETLY CO-OPTING THE UNDERLYING TECHNOLOGY.

# BLOCKCHAIN GOES TO WORK

BY MICHAEL DEL CASTILLO



On the New Jersey side of the Hudson River just across from Manhattan's Financial District, there is a glass-and-steel office tower designed in a severe International Style aesthetic. "DTCC" is emblazoned across the top, but few outside Wall Street realize that in this building, occupied by the Depository Trust & Clearing Corp., are records for most of the world's securities, representing some \$48 trillion in assets—from stocks and bonds to mutual funds and derivatives. In the 1970s, Wall Street created a DTCC predecessor to replace a system that had been powered by young men running around the cavernous alleys of lower Manhattan delivering stock certificates from brokerage house to brokerage house.

DTCC still has paper certificates in its vaults, but records related to the 90 million daily transactions it handles are kept electronically on its servers and backed up in various locations. Thousands of financial institutions and exchanges in 130 countries rely on DTCC for custody, clearing, settlement and other clerical services.

In a few months DTCC will begin the largest live implementation of blockchain, the distributed database technology made popular by the bitcoin cryptocurrency. Records for about 50,000 accounts in DTCC's Trade Information Warehouse, where information on \$10 trillion worth of credit derivatives is stored, will move to a customized digital ledger called AxCore.

According to Rob Palatnick, DTCC's chief technology architect, the warehouse already keeps an electronic "golden record" of events such as maturity dates, payment calculations and

other activities needed to clear and settle these securities daily. But each participant in a complicated credit derivatives transaction also keeps its own records, which must in turn be reconciled multiple times before the investment matures. By moving those records to the blockchain, visible to all participants in real time, most of those redundancies won't be necessary.

"We're not talking about eliminating humans and firms," Palatnick says. "We're talking about getting rid of layers of databases and translations between those databases."

On the other side of the world in Taipei, Foxconn, the electronics giant best known as a manufacturer of iPhones, launched a Shanghai startup called Chained Finance with a Chinese peer-to-peer lender. Chained will soon connect Foxconn and its many small suppliers (and their suppliers' suppliers) on an Ethereum-based blockchain that will use its own token and smart contracts (read: automatically executed) to make payments and provide financing in near real time, eliminating a daisy chain of paperwork. "We view blockchain as the skeleton of our work," says Jack Lee, the founder of Foxconn's venture capital arm, which has invested \$40 million in six blockchain startups. "Smart contracts that automatically execute transactions are the muscles, and tokens are the blood."

Welcome to the brave new world of enterprise blockchain, where corporations are embracing the technology underlying cryptocurrencies like bitcoin and using it to speed up business processes, increase transparency and potentially save billions of dollars. At its core, blockchain is simply a distributed database, with an identical copy stored on many computers. That facilitates transactions (financial or otherwise) between individuals (or companies) that don't know or trust each other. It's virtually impossible to cheat, since every transaction is record-

ed in many places and the details of those transactions are visible to everyone. Companies are already using blockchain to track fresh-caught tuna from fishing hooks in the South Pacific to grocery shelves, to speed up insurance claims and to manage medical records. Total corporate and government spending on blockchain should hit \$2.9 billion in 2019, an increase of 89% over the previous year, and reach \$12.4 billion by 2022, according to market research firm IDC. When PwC surveyed 600 “blockchain-savvy” execs last year, 84% said their companies were involved with blockchain.

To chronicle the rise of so called “enterprise” blockchain, Forbes has created its first annual Blockchain 50 list of big companies that are putting the technology to work in meaningful ways. While blockchain’s first application, cryptocurrency, is struggling to achieve mainstream adoption, these companies are committing manpower and capital to build the future on top of shared databases.

The version of a blockchain future these companies are building is, for the most part, far different from what the founders and early adopters of blockchain had envisioned. While many cryptocurrency idealists fantasize about a global, public network of individuals connected directly and democratically, without middlemen, these companies—many of which are middlemen themselves like DTCC—are building private networks they will use to profit from centralized management.

Not surprisingly, financial firms—from Allianz to Visa and JPMorgan Chase—dominate the list. But Blockchain 50 companies run the gamut of industries, including energy firm BP, retailer Walmart and media company Comcast.

Because of the lingering bad taste left by bitcoin drug bazaars like Silk Road and the 2017 digital currency bubble,

**Corporations are embracing the technology underlying cryptocurrencies like bitcoin and using it to speed up business processes, increase transparency and potentially save billions of dollars.**

most companies emphasize the distinction between crypto and blockchain, shunning the former and embracing the latter. In some ways the members of the Blockchain 50 represent a bridge between the old and new worlds. Just as internal computer networks were adopted by companies long before the internet took off, these firms are starting by adopting distributed ledger technology at a small scale. “The era of blockchain tourism has ended,” says Bridget van Kralingen, a senior vice president at IBM Global Industries. “We’ve really seen blockchain move from being overshadowed by cryptocurrency to focus on real business problems and complex processes.”

In 2009, when Satoshi Nakamoto, bitcoin’s pseudonymous creator, activated his network, its blockchain was the underlying accounting system that let anyone with bitcoin transfer money without the need of a middleman. Transactions are processed in blocks—just a fancy word for a hunk of data—about every ten minutes, each containing a compressed version of the previous block, linking them together into a chain. Instead of relying on a bank or another middleman to keep track of when a bitcoin leaves one location and arrives at another, the thousands of computers on the bitcoin network do the work and in exchange for their efforts are paid in bitcoin.

For most companies this presented a potential problem. While identities aren’t required to use the bitcoin blockchain, the transactions themselves are tied to addresses that are publicly available, meaning that with a bit of work many of these addresses can be tied to actual people or companies. Thus, enterprises like Coca-Cola and JPMorgan Chase, accustomed to maintaining competitive advantages based on proprietary processes and control, were initially skeptical of cryptocurrency.

Businesses also need some control over their data. “The entire corporate world has been fashioned around who has responsibility over a particular part of the business flow,” says David Treat, the global head of Accenture’s Financial Services Blockchain practice. “There can be no gaps, because that is unacceptable for a multibillion-dollar company. You cannot have a gap, or you are subject to huge security breaches and social contract breaches.”

Perhaps no firm has had a greater influence on the growing corporate use of blockchain technology than Digital Asset Holdings, a New York-based startup that hired the former JPMorgan Chase banker Blythe Masters as its CEO in early 2015. Under Masters, Digital Asset began making acquisitions and almost immediately purchased a small company that was in the process of building an “invitation only,” or permissioned, blockchain. Then in late 2015 Digital Asset donated the code for its “open ledger” project to the Linux Foundation, which supports commercial open-source software projects, including the Linux operating system.

The project was called Hyperledger, and thanks in part to Masters’ connections, its backers read like a who’s who of finance and technology. Thirty companies are listed as founders, including ABN AMRO, Accenture, Cisco, CME Group, IBM, Intel, JPMorgan Chase, NEC, State Street, VMware and Wells Fargo. Hyperledger immediately established itself as the gold standard for corporate blockchain projects.

What happened next might be considered the Big Bang moment of enterprise blockchain. In early 2016, IBM donated 44,000 lines of code to the project, which formed the core of a new blockchain with faster speeds and increased privacy. No



fewer than half of the members of the Forbes Blockchain 50 are now using that blockchain, known as Hyperledger Fabric. “We’ve been very focused on making sure that not only is the blockchain technology standard but that the documents and data are standard,” says Marie Wieck, IBM Blockchain’s general manager. “This standardization allows [the companies] to not spend their time comparing differences and validity in the documents.”

Shortly after the launch of Hyperledger, which is a non-profit venture, a New York-based fintech called R3 raised \$107 million from the likes of ING, Barclays and UBS to create a for-profit enterprise blockchain platform called Corda Enterprise. As the commercial potential of coopting blockchain technology became more apparent, many cryptocurrency startups began to rethink their models.

For example, San Francisco’s Ripple, originally called OpenCoin and conceived of as yet another alternative monetary system, expanded its focus in late 2015 from the cryptocurrency (called ripple and trading as XRP) to building software for large banks. A bitcoin startup called Counterparty spawned another company, Symbiont, in March 2015, which coded a proprietary blockchain that’s now being used by Vanguard for sharing stock index data. In February 2017, ConsenSys, a Brooklyn-based collection of crypto companies controlled by one of Ethereum’s founders, helped launch the Enterprise Ethereum Alliance.

**J**ust as corporate America co-opted counterculture vibes for its marketing and advertising (“Think Different,” “Don’t Be Evil”), its most forward-thinking businesses are fast incorporating a technology that was designed in large part to eliminate them.

In insurance, for example, MetLife’s mobile app Vitana bundles insurance with a test for gestational diabetes that uses a blockchain to record data and verify and pay claims. In recent testing in Singapore, where one in five expectant mothers develops gestational diabetes, a practitioner simply enters a positive test result into a patient’s electronic medical record and in a matter of seconds MetLife’s smart contract deposits an insurance payment into that patient’s bank account to cover the medical expenses associated with the condition. No paperwork or claim filing necessary.

Similarly, Germany’s Allianz, working with EY, tested moving certain captive insurance claims processes—often involving many emails, attachments and phone calls across multiple time zones—to a private blockchain. The time required to process a claim fell from weeks to hours.

BNP Paribas, which has lent money to commodities traders since the 19th century, is considering using a ledger platform called Voltron to process letters of credit for traders. Northern Trust has begun administering private equity funds using Hyperledger Fabric. Broadridge Financial has been running pilots testing multiple distributed ledgers for its dominant proxy vot-

ing and shareholder communications business. “In real time, you know who owns the stock, who’s entitled to vote and how it’s tied to the universally-agreed-upon shareholder meeting agenda,” says Michael Tae, Broadridge’s head of strategy.

In the perpetually fraught food business, which regularly endures disasters ranging from E. coli outbreaks to a worker being cooked alive, companies like Nestlé and Bumble Bee Foods are turning to blockchain to secure their supply chains and reduce paperwork.

## One group that is getting rich from the enterprise blockchain gold rush: consultants.

Golden State Foods, a big McDonald’s supplier that makes more than 400,000 hamburgers per hour, tracks the location and temperature of its patties with devices like radio frequency ID tags and Hyperledger Fabric. The system can immediately alert GSF to conditions that might lead to spoilage. At the same time, it can optimize inventory levels by tracking how much meat is in a truck or in a restaurant’s freezer, in real time.

At this year’s SXSW conference in Austin, Texas, Bumble Bee unveiled an SAP-built, supply-chain blockchain offering complete transparency to its customers. Soon you will no longer have to take Bumble Bee’s word for it when it assures you that the 340g package of yellowfin tuna you just bought was caught by individual fishermen in the South Pacific and not by a factory ship. The fishing crews, tuna processors and packers are now entering their own data in real time on Bumble Bee’s distributed ledger. By summer, Bumble Bee will be sharing that information with retailers and customers who take the time to check.

From a public relations standpoint alone, Bumble Bee’s SAP blockchain is likely to bear dividends. In 2017 Greenpeace ranked Bumble Bee 17th out of 20 tuna brands for its sustainability practices, accusing it of “greenwashing” a host of bad behaviors with environmentally friendly marketing.

“Food safety and sustainably sourced product has become an overwhelmingly important topic in our industry,” says Tony Costa, the CIO at Bumble Bee. “Leveraging the latest technology enables us to open it up to more of a public perspective, if you will. So, we get out of the business of managing data. We’re relying on a relationship.”

In the healthcare business, an estimated 20 cents of every dollar—some \$700 billion a year—is wasted because of inefficiencies. Ciox, a little known company based in Alpharetta, Georgia, that manages medical records exchanges for 60% of the hospitals in the U.S., is considering developing a private blockchain that healthcare providers could use—for a fee paid to Ciox—to exchange data. Blockchain 50 enterprises

like Ciox and the media giant Comcast, which is toying with using blockchain to micro-target television advertisements, plan to use the privacy features of blockchain to profit from their customers' data while protecting their identities.

**D**espite the surge in corporations working on blockchain projects, the technology is still new, and relatively few have generated significant revenues or savings. The one group that is getting rich from the current enterprise blockchain gold rush: consultants. Deloitte, PwC, KPMG, EY and Tata Consultancy Services are deploying small armies to preach the virtues of blockchain to the C-suite and charging huge fees to help companies implement the technology. (We excluded consultants from the Blockchain 50 because they played a key role in helping us create the list.) Deloitte, for example, has 1,400 full-time blockchain employees. India's Tata has 1,000 staffers, 600 of them full-time, in its blockchain unit. Tech firms, including Oracle, SAP and Amazon, are also staking out their turf.

Part technology firm, part consultant, IBM may be the biggest and most successful enterprise blockchain company of all. Besides creating Hyperledger Fabric, the company has 1,500 staffers—mostly engineers—devoted to the new technology and reports that its IBM Blockchain powers 500 client projects.

IBM Food Trust, for example, counts Walmart, Kroger, Nestlé and Carrefour, the French grocer, among its 50-plus members. IBM is also behind TrustChain, a consortium of companies in the supply chain for diamonds and jewelry, including Rio Tinto Diamonds, Asahi Refining and Helzberg Diamonds. Health Utility Network, another Big Blue group, counts three of the five largest U.S. health insurers—Aetna, Cigna and Anthem—as members.

“The power of any blockchain network is in its participants and its members,” says IBM's Wieck. It matters little whether those members are crypto-idealists or global corporations. **F**

# BLOCKCHAIN 50

EDITED BY MATT SCHIFRIN

REPORTED BY MICHAEL DEL CASTILLO, JEFF KAUFLIN, SARAH HANSEN, KRISTIN STOLLER, ALEX KNAPP, JONATHAN PONCIANO, AMY FELDMAN, KARSTEN STRAUSS, LAUREN DEBTER, RACHEL WOLFSON AND DARRYN POLLACK.

Cryptocurrencies may be in the depths of winter, but it's early spring for new business applications using the technology underlying bitcoin. Our new list features 50 big companies—with minimum revenues or valuations of \$1 billion and U.S. operations—that are leading the way in adapting decentralized ledgers to their operating needs. From eliminating paperwork to monitoring hamburger patties and speeding up insurance payments, the antiestablishment software is being welcomed in the executive suite.

## ALLIANZ SE

MUNICH

The insurance giant has been testing blockchain for a variety of products. For example, a joint venture that sells flight-delay insurance has used a smart contract that initiates a claim as soon as a flight is delayed by a set period of time. The customer gets a notification on his smartphone, enters his bank account details and payment is made.

**Blockchain platforms:** Hyperledger Fabric, Corda

**Key leader:** Robert Crozier, head of Allianz's Global Blockchain Centre of Competence



where consumers upload their driver's license information to a blockchain and can then buy beer at a vending machine simply by scanning their phone. In Africa, the world's fastest-growing beer market, AB InBev has a partnership with BanQu that uses blockchain to provide pricing info and payments to farmers lacking bank accounts. That could make it possible for the company to work faster, and with more farmers, to ramp up its African operations.

**Blockchain platforms:** Ethereum, Corda

**Key leader:** Tassilo Festetics, VP of global solutions

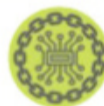
## AMAZON

SEATTLE

Amazon Web Services offers blockchain tools to help companies that want to use distributed ledger technology but don't want to develop it themselves. It's a clever way to maintain its dominance in cloud computing, Amazon's most profitable business line, with a 2018 operating profit of \$7.3 billion. Cloud clients using its tools include Change Healthcare, which helps manage payments among hospitals, insurers and patients; Guardian Life Insurance; HR software provider Workday; and securities clearinghouse DTCC.

**Blockchain platforms:** Hyperledger Fabric, Ethereum (later in 2019)

**Key leader:** Rahul Pathak, general manager of Amazon Managed Blockchain at AWS



## ANT FINANCIAL

HANGZHOU, CHINA

Fintech power Ant Financial has developed a proprietary blockchain that is used, among other things, to keep tabs on the products sold on a marketplace run by Alibaba, a part owner of Ant. For example, customers can trace a diamond's sourcing back to a trading center in Antwerp and see grading, cutting and polishing records. Separately, in June 2018, Ant's payment app, Alipay (with a billion-plus users worldwide), launched a blockchain-based service offering money transfers directly between people in Hong Kong and the Philippines that can be completed in just seconds.

**Blockchain platforms:** Ant Blockchain

**Key leader:** Geoff Jiang, VP of Ant Financial



## BBVA

BILBAO, SPAIN

Last November, Spain's second-largest bank announced its first blockchain-based syndicated loan, a \$170 million deal for Red Eléctrica Corporación,



## ANHEUSER-BUSCH INBEV

LEUVEN, BELGIUM

The brewing giant is involved in a pilot program in the San Francisco Bay Area



Spain's electrical grid operator. With nearly \$5 trillion in loans being syndicated worldwide each year, the transparency, security and efficiency of blockchain could make a big difference.

**Blockchain platforms:** Hyperledger Fabric, Corda, public Ethereum

**Key leader:** Carlos Kuchkovsky, CTO, new digital business

## BITFURY

AMSTERDAM

While \$500 million (revenues) Bitfury is still best known for selling hardware for bitcoin mining, it is now also building blockchain services for enterprise customers. In 2017, it launched the Exonum blockchain, designed specifically to make it easier for enterprises to use the bitcoin blockchain. One early customer, the Republic of Georgia, is using Exonum to record and transfer land ownership.

**Blockchain platforms:** Exonum, Bitcoin

**Key leadership:** Valery Vavilov, CEO and cofounder

## BNP PARIBAS

PARIS

When Rio Tinto sells iron ore to Cargill, the food giant doesn't pay right away; instead it presents a bank's letter of credit. BNP Paribas is trying to move letters of credit from paper to a secure distributed ledger. In November 2018 Paribas worked with HSBC Singapore to complete the first fully digitized letter-of-credit transaction. Commodities finance dates back to 4,000 B.C. Sumer, and old-line banks like France's BNP Paribas dominate. Maintaining a digital edge in this business is a matter of survival.

**Blockchain platforms:** Corda, Hyperledger Fabric, Ethereum

**Key leader:** Jacques Levet, head of transaction banking for Europe, Middle East and Africa

## BP PLC

LONDON

Like BNP Paribas, BP is investing in blockchain technology to improve the efficiency of commodities trade finance. It's a founding member of Vakt, a blockchain platform that aims to digitize parts of energy trading that remain slow, such as contracts and invoicing. So far, BP has invested more than \$20 million in blockchain projects.

**Blockchain platforms:** Ethereum, Cardano, Quorum

**Key leader:** Julian Gray, technology director, Digital Innovation Organization

## BROADRIDGE

NEW YORK CITY

This little-known ADP spinoff controls 80% of the U.S. proxy-voting

and shareholder-communications business. Broadridge has a team working to move its core proxy-voting services to a distributed ledger, allowing stockholders to cast their own votes on corporate resolutions and directors in real time—without going through the custodial banks that hold the shares. Broadridge is an investor, alongside banks such as BNP and Citi, in Digital Asset Holdings, which played a key role in the development of private blockchain ledgers.

**Blockchain platforms:** Hyperledger Fabric, DAML, Quorum

**Key leader:** Michael Tae, head of strategy

## BUMBLE BEE FOODS

SAN DIEGO

Thanks to help from developers at SAP, Bumble Bee is using a blockchain to provide complete transparency to its tuna supply chain all the way from the pole-and-line-catch fishermen sailing the South Pacific to grocery stores in the United States. Given current concerns about food safety and sustainability, instilling confidence in its albacore product is paramount. Moreover, the entire tuna industry has been targeted by environmental activists for killing dolphins. The company that can demonstrate provenance of its catch could demand a premium price.

**Blockchain platform:** Multichain

**Key leader:** Tony Costa, CIO

## CARGILL

WAYZATA, MINNESOTA

The agricultural giant that popularized high-fructose corn syrup began testing Intel's Hyperledger Sawtooth before Thanksgiving 2017 to track turkeys through its supply chain as they made their way from farm to supermarket. Cargill has committed a team of engineers to work with Intel and enterprise blockchain startup Bitwise to help build Hyperledger Grid, which will track food back to its source—a crucial step in this day of food-contamination scares. By getting in on the ground floor with this Grid, Cargill could be in a position to sell its expertise to other suppliers.

**Blockchain platforms:** Hyperledger Sawtooth, Hyperledger Grid

**Key leader:** Keith Narr, VP, Cargill Digital Labs

## CIOX HEALTH

ALPHARETTA, GA

As the biggest manager of medical records in the U.S. (its software is used to securely transfer records between healthcare providers), Ciox figures the blockchain could cut paperwork redundancies, reduce medical mistakes and provide it a new source of subscription income. It has established a team to evaluate which blockchain platform to build on.

**Blockchain platform:** Ethereum

**Key leader:** Florian Quarre, chief digital officer



*“We could do fully decentralized authentication if we wanted to. I think the real question is, do you really want that? . . . People would be able to not have an intermediary, but you'd also have more cases of abuse and the recourse would be much harder.”*

—MARK ZUCKERBERG

## CITIGROUP

NEW YORK CITY

The bank has invested in a half-dozen startups (Digital Asset Holdings, Axoni, SETL, Cobalt DL, R3 and Symbion) developing blockchains and distributed ledgers for applications such as securities settlement, credit derivative swaps and insurance payments. Last year, Citi partnered with Barclays and software infrastructure provider CLS to launch LedgerConnect, an app store where companies can shop for blockchain tools.

**Blockchain platform:** Ethereum

**Key leader:** Puneet Singhvi, managing director

## COINBASE

SAN FRANCISCO

With more than 20 million users and a valuation of \$8 billion, Coinbase is the dominant U.S. cryptocurrency



*“This isn’t just a Walmart initiative, this is other retailers. . . . This is competitors. What blockchain gives is a system of trust. . . . Because even though you’re my competitor, we can’t ask the same small farmer to use multiple systems. That’s not going to work. I can be assured that that data is not going to be changed in that what Walmart can see, Kroger doesn’t.”*

—GINNI ROMETTY

exchange. It offers custody, wallet services and both retail and institutional trading platforms. The blue chip among crypto-first financial firms is poised to become even more dominant when institutional usage of blockchain grows.

**Blockchain platforms:** Bitcoin, Ethereum, XRP, Lumen

**Key leader:** Brian Armstrong, CEO; his Coinbase holdings make him a billionaire

## COMCAST

PHILADELPHIA

Comcast owns MState, a venture capital firm that has invested in at least seven enterprise blockchain startups, including Blockdaemon, which builds software to help enterprises build applications that use Bitcoin and Ethereum and comply with



current regulations (for example, from the SEC or protecting healthcare privacy). Last December, Comcast partnered with competitors Viacom and Spectrum Reach to launch Blockgraph, which aims to allow advertisers to precisely target ads to viewers, without disclosing viewers’ personal information to those advertisers.

**Blockchain platforms:** Bitcoin, Ethereum, Hyperledger Fabric, Quorum

**Key leader:** Gil Beyda, managing director, Comcast Ventures

## CVS HEALTH

WOONSOCKET, RI

New CVS subsidiary Aetna is a member of IBM’s Health Utility Network, a group (including Cigna and Anthem) working to create a distributed ledger of information available to patients, providers and insurers. As its first project, the network plans to publish tamperproof, unforgeable medical credentials so patients can check out their doctors. Other projects being considered would combine data from different insurers to make it easier to share information between doctors and insurers and prevent prescriptions that conflict, with the aim of improving care while cutting costs.

**Blockchain platforms:** IBM Blockchain, Hyperledger Indy, Hyperledger Sawtooth

**Key leader:** Claus Torp Jensen, CTO of both CVS and Aetna



## THE DEPOSITORY TRUST & CLEARING CORPORATION

JERSEY CITY

A warehouse of sorts that provides custody, clearing and settlement for \$1.85 quadrillion in transactions per year, DTCC is planning to move its \$10 trillion-a-year credits derivatives tracking operation to a customized blockchain. If the new system, scheduled to launch by the end of the year, is successful, it could eliminate massive record redundancies and prove that centralized middlemen have a place in a decentralized ledger world.

**Blockchain platform:** Axcure

**Key leader:** Rob Palatnick, chief technology architect



## FACEBOOK

MENLO PARK, CA

In January 2018, CEO Mark Zuckerberg disclosed in his annual statement that the social media giant was studying cryptocurrency’s potential. In May of that year he moved former PayPal president and Coinbase board member David Marcus from his position as vice president of messaging to head up a secretive team exploring blockchain and its applications. This past February, Zuckerberg told Harvard law professor Jonathan Zittrain he was interested in letting users log in to websites with blockchain-based identities instead of Facebook Connect—a change that could have big implications for the way Facebook monetizes its users’ info.

**Blockchain platforms:** Unknown

**Key leaders:** David Marcus, blockchain lead



## FIDELITY

BOSTON

The 73-year-old fund giant began mining bitcoin in 2015 as a way to learn about digital assets. This year, it launched a custody service for institutional investors who want to store bitcoin securely. It’s also building a trading platform that allows a large block of crypto to be purchased by executing orders across multiple exchanges. About 100 Fidelity employees are now devoted to digital assets. Having originally missed the ETF explosion, Fidelity will be at the forefront if crypto-assets go mainstream.

**Blockchain platforms:** Bitcoin, Ethereum

**Key leader:** Tom Jessop, president, Fidelity Digital Assets



## FOXCONN

TAIPEI

The giant Chinese manufacturer has pilot projects under way that use blockchain to streamline supply chain transactions and provide working capital to suppliers. Separately, it is developing a blockchain-enabled smartphone that would make it easier for consumers to spend digital coins.

**Blockchain platform:** Ethereum

**Key leader:** Jack Lee, founding managing partner of venture arm HCM Capital



## GOLDEN STATE FOODS

IRVINE, CA

This restaurant supplier is participating in IBM’s Food Trust, a consortium of companies aiming to track food along the entire supply chain. In one early application, Golden State is giving all the companies involved in its burger business—from meat processors to shippers to restaurants—access to streaming data about the temperature at which the beef is kept. In addition to improving food safety, such projects could reduce both paperwork and food spoilage, which is estimated to cost \$7 billion annually in North America alone, before it reaches the consumer.

**Blockchain platform:** IBM Blockchain

**Key Executives:** Bob Wolpert, chief strategy and innovation officer



## GOOGLE

MOUNTAIN VIEW, CA

The search giant has made numerous investments in blockchain, including Veem, a payments startup that lets enterprises instantly send and receive payments in different currencies, using bitcoin as an intermediary holding. Meanwhile, it has created a suite of tools that make it easier to search (and analyze) cryptocurrency transactions—in other words, to Google public blockchains.

**Blockchain platforms:** Bitcoin, Ethereum, Bitcoin Cash, Ethereum Classic, Litecoin, Zcash, Dogecoin, Dash

**Key leader:** Allen Day, science advocate



**HPE**

SAN JOSE, CA

The \$31 billion (revenue) enterprise tech spin-off from Hewlett-Packard hopes to make a splash with its blockchain services. It already counts more than a dozen customers, including car-part manufacturer Continental, which will use HPE's tech to track a vehicle's location and a driver's license and insurance. That could be useful as more Americans move from owning a car to renting one by the hour or month.

**Blockchain platforms:** Corda, Ethereum, Quorum, Sia, Hyperledger Fabric

**Key leader:** Raphael Davison, worldwide director of blockchain



Hyperledger Fabric, Hyperledger Indy

**Key leader:** Mariana Gomez de la Villa, program director of distributed ledger technology

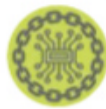
**INTEL**

SANTA CLARA, CA

Like IBM, Intel is one of the bigger corporate forces pushing blockchain into the enterprise market. Its open-source Hyperledger Sawtooth platform lets companies build their own blockchains. Users include Cargill, T-Mobile and the Tel Aviv Stock Exchange. Still, IBM is way ahead.

**Blockchain platforms:** Corda, Ethereum, Hyperledger Fabric, Hyperledger Sawtooth

**Key leader:** Michael Reed, director, blockchain program



**Blockchain platform:** Its own platform, built from scratch.

**Key leader:** Ken Moore, EVP and head of Mastercard Labs

**METLIFE**

NEW YORK CITY

Through MetLife's incubator, LumenLab, the insurer has developed a mobile app called Vitana, that is using ethereum's smart contracts to automatically pay claims in certain circumstances.

**Blockchain platform:** InsureChain built on Ethereum

**Key leader:** Zia Zaman, CIO of MetLife Asia

**HTC**

TAOYUAN, TAIWAN

The company recently released Exodus 1, a new smartphone that provides crypto-owners a safer way (built in to the phone's hardware) to store and recover lost bitcoin, litecoin and ethereum, as well as the ability to easily trade cryptocurrencies. The phone also has a special Web browser designed for sites built on the blockchain. With its dismal smartphone market share, HTC's new phone may be a Hail Mary pass.

**Blockchain platforms:** Bitcoin, Ethereum

**Key leader:** Phil Chen, decentralized chief officer

**JPMORGAN CHASE**

NEW YORK CITY

The nation's largest bank is one of the creators of Quorum, a restricted version of the Ethereum blockchain built especially for enterprises looking to move tasks performed by back-office middlemen to the distributed ledger. It recently announced JPM Coin, an early-stage project to enable real-time institution-to-institution payments.

**Blockchain platform:** Quorum

**Key leader:** Christine Moy, blockchain lead

**IBM**

ARMONK, NY

Blockchain's early advocate is working to commercialize the technology through its enterprise-grade version of Hyperledger Fabric, called IBM Blockchain. Other IBM launches include World Wire, a foreign exchange platform seeking to replace interbank messaging platform Swift, and TradeLens, a shipping supply chain service codeveloped with shipping giant Maersk. IBM has already filed for more than 100 blockchain patents. With its proprietary blockchain connecting companies in at least 85 networks, IBM is a clear enterprise winner.

**Blockchain platforms:** IBM Blockchain, Stellar, Hyperledger Burrow, Sovrin

**Key leader:** Bridget van Kralingen, SVP, global industry platforms and blockchain

**MAERSK**

COPENHAGEN

Transactions for shipping goods from one port to another still rely on reams of paperwork, as they did centuries ago. Last year, IBM and Maersk, one of the world's largest shippers, announced plans to create TradeLens, a global blockchain for shippers. So far, 100 organizations, including ports, freight forwarders, sea and land carriers, and customs agencies, have signed up to use the platform.

**Blockchain platforms:** IBM Blockchain, Corda

**Key leader:** Michael J. White, head of TradeLens

**MASTERCARD**

PURCHASE, NY

The credit card behemoth has applied for 80 blockchain-related patents. Sixteen have been granted, including one for linking cryptocurrencies to traditional bank accounts and another for increasing the privacy of blockchains. Mastercard rarely comments on its blockchain ambitions, but it recently announced it's working with Amazon and Accenture to build more transparent supply chains where, for example, someone buying a pair of jeans could see where they were made and tip the creator through Mastercard's payment rails. More significantly, if Mastercard can tie its massive, high-speed payments network to blockchain-based payments, it can open a new revenue stream and solve a problem that plagues most blockchain technology: processing times are still slow.

**MICROSOFT**

REDMOND, WA

Last year, Microsoft's cloud unit Azure launched Azure Blockchain Workbench, a tool for developing blockchain apps. Many templates are available for free, but if an organization builds or runs an app or network on Azure, Microsoft charges for the underlying cloud services. Blockchain Workbench customers include Insurwave, Webjet, Xbox, Bühler, Interswitch, 3M and Nasdaq.



*"Bitcoin is ingenious, and blockchain is important, but bitcoin has no unique value at all. It doesn't produce anything. You can stare at it all day and no little bitcoins come out or anything like that. It's a delusion, basically."* —WARREN BUFFETT

**Blockchain platforms:** Ethereum, Parity, Quorum, Corda, Hyperledger Fabric

**Key leader:** Mark Russinovich, CTO of Microsoft Azure

## NASDAQ

NEW YORK CITY

Distributed ledgers could theoretically eliminate the need for centralized exchanges, but Nasdaq has hedged its bets by immersing itself in the new industry. For example, it has sold its market-surveillance software to seven crypto exchanges and a blockchain eVoting product to the South African central securities depository. Nasdaq has also brought together eight Swedish companies to develop a blockchain to replace the current paper-driven trading process in the Swedish mutual fund market.

**Blockchain platforms:** Symbiont, Corda, Hyperledger Fabric

**Key leader:** Johan Toll, head of digital assets, market technology



*"I probably shouldn't say any more about cryptocurrency. But it's not the same as gold or fiat currencies. Those are supported by law, police, courts. They're not replicable, and there are strictures on them. Blockchain, on the other hand, is real. We're testing it and will use it for a whole lot of things."*

—JAMIE DIMON

## NESTLE

VEVEY, SWITZERLAND

Over the last two years the \$92 billion (sales) consumer goods giant has been testing blockchain technology in more than ten projects. Its most promising is with IBM Food Trust, where it is using blockchain to track the provenance of food ingredients in a handful of products, including Gerber baby food. That service is expected to be available in Europe later this year. Food-borne illnesses cost the U.S. \$55 billion a year and can cripple a brand. Blockchain food tracking could reduce that cost and be a selling point for brands that participate.

**Blockchain platform:** IBM Blockchain

**Key leader:** Benjamin Dubois, manager of digital transformation

## NORTHERN TRUST

CHICAGO

The big asset manager (\$1.1 trillion) is using Hyperledger Fabric to handle the administration of private equity fund events, including initial sales and liquidations of fund investments. Northern Trust is also helping hedge funds track their crypto investments and is working with the Australian Securities Exchange on a blockchain-based equities clearing, settlement and custody platform. Last year, it helped the World Bank execute a \$79 million bond issue via the Ethereum blockchain.

**Blockchain platforms:** Hyperledger Fabric, Ethereum

**Key leader:** Justin Chapman, head of market advocacy and research

## ORACLE

REDWOOD SHORES, CA

The database and cloud company is offering "business-ready" blockchain software in an effort to keep customers of its non-blockchain products from defecting to upstarts and rivals like Google and Microsoft. One of Oracle's customers, China Distance Education Holdings, is sharing student educational records and professional certifications across institutions to help employers and recruiters verify that credentials aren't fraudulent.

**Blockchain platform:** Oracle Blockchain Platform

**Key leader:** Frank Xiong, group vice president, Blockchain Development Platform

## OVERSTOCK

MIDVALE, UT

The online discount store became the first major retailer to accept bitcoin in 2014. Founder and CEO Patrick Byrne, a libertarian with a Ph.D. in philosophy, is so convinced that blockchain will change the world that he is trying to get out of the retail business altogether and is already remaking Overstock into something of a crypto-obsessed company. Most notably, he has used \$200 million in Overstock's cash to fund Medici Ventures, a subsidiary which has invested in 19 blockchain companies.

**Blockchain platforms:** Bitcoin, Ethereum, RVN, Florin

**Key leader:** Patrick Byrne, founder and CEO of Overstock

## PNC

PITTSBURGH

The bank is using Ripple's XRP blockchain-based software to process international payments. It is also the only bank involved with IBM's Health Utility Network, which is attempting to speed insurance company payments to health providers.

**Blockchain platforms:** Hyperledger Fabric, DAML, Corda, Ripple

**Key leader:** J. Christopher Ward, EVP and head of Treasury product management

## RIPPLE

SAN FRANCISCO

This startup aims to disrupt Swift, the messaging system the world's banks use to transfer an estimated \$6 trillion a day, with RippleNet, with aims to be cheaper, faster and more transparent. While it already has 200 customers for its service, Ripple funds operations (including 300 employees) by selling about \$100 million a quarter of its own cryptocurrency, XRP. (XRP's total market cap now stands at \$13 billion, down from its \$146.5 billion all-time high in 2018.) RippleNet customers include big names such as Santander, American Express and PNC.

**Blockchain platform:** XRP Ledger

**Key leader:** Brad Garlinghouse, CEO

## SAMSUNG

SEOUL

Samsung is using its Nexledger blockchain platform to overhaul how its battery-manufacturing subsidiary manages contracts and the execution of those contracts. For Korean consumers it has developed a smartphone app that uses the blockchain to verify the identity of the phone's owner to 15 of the nation's banks. That eliminates the inconvenience of South Korea's 20-year-old identity verification system, which can require a tedious signup process for each bank.

**Blockchain platforms:** Nexledger, Ethereum

**Key leader:** Jeanie Hong, SVP and head of Blockchain Center

## SANTANDER

MADRID

The Spanish banking giant made headlines last year when it allowed its investors to vote at its annual meeting via the blockchain. A year ago, Santander launched mobile app One Pay FX, a foreign exchange service using RippleNet, that enables individuals to transfer money to other individuals in a foreign country in less than a day.

**Blockchain platforms:** RippleNet, Hyperledger Fabric

**Key leader:** María de la Concepción de Monteverde, director of the Blockchain Center of Excellence

## SAP SE

WALLDORF, GERMANY

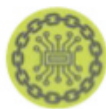
SAP has developed its own cloud-based blockchain toolkit, Leonardo, to keep clients from moving to Oracle or IBM as they transition to distributed

## BLOCKCHAIN 50

ledger technology. It's also selling project development as a service—most notably, it built Bumble Bee Foods' new blockchain, designed to trace the origin of tuna from fisherman to processor to consumer.

**Blockchain platform:** Hyperledger Fabric, MultiChain, Quorum

**Key leader:** Raimund Gross, chief innovation strategist, Blockchain



Bloomington to developing a blockchain that could speed up the now painfully slow process by which insurers pay claims to policyholders and then seek partial reimbursement from other insurers involved with the claim. State Farm is working with RiskBlock Alliance on an application that could speed up this claims dance.



**Blockchain platforms:** Hyperledger Fabric, Corda, Quorum

**Key leader:** Mike Fields, innovation executive at State Farm RED Labs



*"I stopped viewing large corporations over the last few years as kind of singular evil behemoths. . . . As far as where big companies can fit in, I do think that they have a role, and I do think the smart ones that take the first step and are willing to kind of play with the technology rather than against it can survive and even benefit from the whole process."*

—VITALIK BUTERIN

from tracking shipments to operating drones) and wants to use the blockchain to quickly pinpoint the culprit in future food-safety scares. In 2016 it partnered with Big Blue to create IBM Food Trust, now being tested by more than 50 companies. Today Walmart can track 25 products, including strawberries, yogurt and chicken, from five suppliers (and counting). In September 2018, it said it would begin requiring all of its lettuce and spinach suppliers to log their shipments on the blockchain.

**Blockchain platform:** Hyperledger Fabric

**Key leader:** Karl Bedwell, senior director, Global Business Services & Technology



## SEAGATE TECHNOLOGY

CUPERTINO, CA

Data-storage company Seagate Technology is working with IBM on a proof-of-concept blockchain aimed at tracking products through their distribution and life—in large part to ensure that fake hard drives aren't returned to Seagate's warehouses, where they could be resold by accident. Counterfeiting of electronics is a \$100 billion problem, and Seagate hard drives are a frequent target for fraud.

**Blockchain platform:** Hyperledger Fabric

**Key leader:** Manuel Offenber, managing technologist and data security research lead



## UBS

ZURICH

The Swiss bank's most ambitious project so far is Utility Settlement Coin (USC), which would allow central banks to use digital cash instead of their own currencies to move money to each other. It's a bold play—if central bankers start using crypto for big transfers with each other, it could make them more willing to move their own national currencies onto a blockchain. UBS' partners in USC include BNY Mellon, Deutsche Bank and Santander.



**Blockchain platforms:** Hyperledger Fabric, Ethereum, Quorum, Corda

**Key leader:** Sam Chadwick, head of blockchain

## SIEMENS

MUNICH

In Park Slope, Brooklyn, some residents with Siemens solar panels had more energy than they could use on sunny days. The Brooklyn Microgrid project, run off a private blockchain, allows those with excess power to sell energy to their neighbors. The German giant has a lot of skin in this game, with \$28 billion a year in revenues from things like energy turbines and applications managing smart grids. Grid technology has been decentralizing and democratizing power generation; blockchain can accelerate that process.

**Blockchain platforms:** Ethereum, Hyperledger Fabric, Corda

**Key leader:** Bernd Rosauer, head of research, Technology Field IT Platforms



## VISA

SAN FRANCISCO

The credit card network has filed for 50 blockchain patents, ranging from a real-time payments settlement system to technology related to crypto trading. This year, Visa is launching B2B Connect, which uses blockchain to help banks around the world process cross-border, business-to-business payments. With \$18 trillion in such B2B payments being made a year, gaining even a small chunk of this business would be a nice addition to Visa's consumer-payment dominance.



**Blockchain platform:** Hyperledger Fabric

**Key leader:** Kevin Phalen, global head of business solutions

## SIGNATURE BANK

NEW YORK CITY

Signature was the first FDIC-insured bank to develop a blockchain-based digital payments platform. Signet™ allows the bank's commercial clients to send free, secure payments to other commercial clients of the bank at any time of day with no transaction limits, in as little as five seconds. It uses a token, the signet, backed by U.S. dollars. American PowerNet, a Signature Bank client, recently chose Signet™ to make real-time payments to renewable energy providers.

**Blockchain platform:** A private, Ethereum-based blockchain

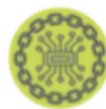
**Key leader:** Frank Santora, senior vice president and director of digital asset solutions



## VMWARE

PALO ALTO, CA

The cloud-infrastructure company will soon release a suite of blockchain software products called VMware Blockchain, developed in partnership with Deloitte and Dell. The first product will be one that allows data to be transferred securely. Next up is a service that verifies transactions on the blockchain.



**Blockchain platforms:** Project Concord, a new blockchain, which supports multiple frameworks such as Ethereum

**Key leader:** Mike DiPetrillo, senior director, Blockchain

## STATE FARM

BLOOMINGTON, IL

The insurer has devoted 11 members of its Research, Experiment & Deploy (RED) Labs in

## WALMART

BENTONVILLE, AR

The world's largest retailer (by sales) has filed for about 50 blockchain patents (for everything



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# Exhilaratingly Practical

The Urus combines the practicality of an SUV with the power and extravagance you'd expect from a Lamborghini.

BY YESSAR ROSENDAR

WITH A TOP SPEED of 305km/h and the ability to pounce from a standstill to 100km/h in just 3.6 seconds, the Lamborghini Urus has a supercar's pedigree, but is nonetheless a sports car in a family-friendly SUV package. Named after a long-extinct species of wild cattle, the Urus starts in Singapore at S\$798,000 (\$589,000) before taxes and is only the second SUV Lamborghini has made since launching its LM002 more than three decades ago.

To make the Urus perform and handle like its supercar cousins, Lamborghini poured all its high-performance technologies into offsetting the weight and height of the Urus. Lamborghini gave the Urus a turbocharged engine, making it easier to drive and giving the off-roader the torque needed to tackle difficult terrain. The car is powered by a 4,000-cc twin turbo, V8 engine that can generate 641 horsepower and a staggering 850 newton meters of torque. It uses twin-scroll turbochargers that provide wider ranging power and a central turbocharger layout close to the combustion chambers to give the Urus enhanced responsiveness.

While the exterior design is subtler than the brand's coupes, it is still one of the most extravagantly designed SUVs on the market. It combines Lambo's characteristic, stealth fighter look into a larger, higher form. The interior takes its design cues from Lamborghini's Aventador and Huracan supercars. The model provided for the test drive sported a luxurious, red-leather interior wrapping the seats, dashboard and side doors, complemented with a ceiling covered in suede-like Alcantara microfiber.

The Urus features three dashboard screens, one for the driver and two touchscreen displays in the center dash. The top center screen is the



main display; the second is largely for climate control or a keyboard for navigation. The touchscreen also vibrates slightly when touched just to reaffirm its responsiveness.

The interior includes practical features foreign to most Lambos but which you'd expect in an SUV: an abundance of cup holders, a glovebox and a sunroof. Even when travelling down Singapore streets at full speed, the Urus' cabin was surprisingly quiet, with little engine or tire noise, making it easier to enjoy the optional Bang & Olufsen Sound System, with 21 speakers can pump out 1,700 watts of 3D sound.

Naturally, the Urus departs from its sports-car siblings in spaciousness: ample legroom and a roomy back seat with a spacious rear cabin created by its 3,003mm wheelbase and a clever, cutout rear-cabin roof that provides extra headroom.

At 5.1m long and 2.1m wide, the Urus can't be described as dainty, but it somehow retains the cozy feel of a compact. Rear-wheel steering adapted from the Aventador S increases agility and re-



duces the turning radius for better maneuverability at slow speeds. It makes driving the Urus around town a breeze, even in tight turns. Driving down Orchard Road through Singapore's premier shopping district and slipping into and out of narrow parking lots was no problem—a 360-degree parking camera helps wedge the Urus into tight spaces. Making U-turns on narrow roads is also breeze and, like any SUV, the higher driving position lends the Urus superior visibility, restricted only somewhat in the Urus by a smallish rear window.

Coming from a brand best-known for providing performance at the expense of practicality, Lamborghini's Urus offers a remarkably comfortable ride. The Urus is a complete package, combining performance, practicality, comfort, and an extravagant Lamborghini design. For those who crave a family-oriented vehicle but covet that Lambo flair, the Urus may just be for you. **F**

**THE URUS CAN'T BE DESCRIBED AS DAINTY, BUT SOMEHOW RETAINS THE COZY FEEL OF A COMPACT.**

# THE NBA'S MOST VALUABLE TEAMS

Pro basketball's growth continues to outpace that of the U.S.' other major sports leagues. The average NBA team is now worth \$1.9 billion, up 13% from a year ago. NFL teams gained 2% on average over that time, while baseball (7%) and hockey (6%) also lagged. Credit the prospects for international growth and record profitability of \$61 million per team—double the figure from just two years ago.

BY KURT BADENHAUSEN, MICHAEL K. OZANIAN AND CHRISTINA SETTIMI

RANK	TEAM	OWNER(S)	CURRENT VALUE (\$MIL)	1-YEAR CHANGE %	REVENUE (\$MIL)	OPERATING INCOME (\$MIL)
1	<b>NEW YORK KNICKS</b>	MADISON SQUARE GARDEN CO.	<b>\$4,000</b>	11%	\$443	\$155
2	<b>LOS ANGELES LAKERS</b>	JERRY BUSS FAMILY TRUSTS, PHILIP ANSCHUTZ	<b>3,700</b>	12	395	147
3	<b>GOLDEN STATE WARRIORS</b>	JOE LACOB, PETER GUBER	<b>3,500</b>	13	401	103
4	<b>CHICAGO BULLS</b>	JERRY REINSDORF	<b>2,900</b>	12	287	115
5	<b>BOSTON CELTICS</b>	WYCLIFFE & IRVING GROUSBECK, ROBERT EPSTEIN, STEPHEN PAGLIUCA	<b>2,800</b>	12	287	100
6	<b>BROOKLYN NETS</b>	MIKHAIL PROKHOROV	<b>2,350</b>	2	290	53
7	<b>HOUSTON ROCKETS</b>	TILMAN FERTITTA	<b>2,300</b>	5	326	103
8	<b>DALLAS MAVERICKS</b>	MARK CUBAN	<b>2,250</b>	18	287	99
9	<b>LOS ANGELES CLIPPERS</b>	STEVE BALLMER	<b>2,200</b>	2	258	40
10	<b>MIAMI HEAT</b>	MICKY ARISON	<b>1,750</b>	3	259	41
11	<b>TORONTO RAPTORS</b>	BELL CANADA, ROGERS COMMUNICATIONS	<b>1,675</b>	20	275	76
12	<b>PHILADELPHIA 76ERS</b>	JOSHUA HARRIS, DAVID BLITZER	<b>1,650</b>	40	268	68
13	<b>SAN ANTONIO SPURS</b>	JULIANNA HAWN HOLT	<b>1,625</b>	5	262	63
14	<b>PORTLAND TRAIL BLAZERS</b>	PAUL ALLEN ESTATE	<b>1,600</b>	23	246	40
15	<b>SACRAMENTO KINGS</b>	VIVEK RANADIVE	<b>1,575</b>	15	263	72
16	<b>WASHINGTON WIZARDS</b>	TED LEONIS	<b>1,550</b>	15	255	34
17	<b>PHOENIX SUNS</b>	ROBERT SARVER	<b>1,500</b>	17	235	47
18	<b>OKLAHOMA CITY THUNDER</b>	CLAYTON BENNETT	<b>1,475</b>	18	241	10
19	<b>UTAH JAZZ</b>	MILLER FAMILY TRUST	<b>1,425</b>	19	243	59
20	<b>INDIANA PACERS</b>	HERBERT SIMON, STEPHEN SIMON	<b>1,400</b>	19	222	50
21	<b>DENVER NUGGETS</b>	KROENKE FAMILY	<b>1,375</b>	22	222	48
22	<b>MILWAUKEE BUCKS</b>	WES EDENS, MARC LASRY, JAMIE DINAN	<b>1,350</b>	26	204	25
23	<b>ORLANDO MAGIC</b>	DEVOS FAMILY	<b>1,325</b>	8	223	64
24	<b>ATLANTA HAWKS</b>	TONY RESSLER	<b>1,300</b>	13	215	42
25	<b>CLEVELAND CAVALIERS</b>	DAN GILBERT	<b>1,275</b>	-4	302	-13
26	<b>DETROIT PISTONS</b>	TOM GORES	<b>1,270</b>	15	235	52
27	<b>MINNESOTA TIMBERWOLVES</b>	GLEN TAYLOR	<b>1,260</b>	19	223	47
28	<b>CHARLOTTE HORNETS</b>	MICHAEL JORDAN	<b>1,250</b>	19	213	22
29	<b>NEW ORLEANS PELICANS</b>	GAYLE BENSON	<b>1,220</b>	22	214	29
30	<b>MEMPHIS GRIZZLIES</b>	ROBERT PERA	<b>1,200</b>	17	213	27
	<b>LEAGUE AVERAGE</b>		<b>1,868</b>	13	267	61

## HIGHEST-EARNING NBA PLAYERS

**1. LEBRON JAMES**  
LOS ANGELES LAKERS  
**Earnings: \$88.7 mil**  
Salary: \$35.7 mil  
Endorsements: \$53 mil



**2. STEPHEN CURRY**  
GOLDEN STATE WARRIORS  
**Earnings: \$79.5 mil**  
Salary: \$37.5 mil  
Endorsements: \$42 mil



**3. KEVIN DURANT**  
GOLDEN STATE WARRIORS  
**Earnings: \$65 mil**  
Salary: \$30 mil  
Endorsements: \$35 mil



**4. RUSSELL WESTBROOK**  
OKLAHOMA CITY THUNDER  
**Earnings: \$53.7 mil**  
Salary: \$35.7 mil  
Endorsements: \$18 mil



Revenue and operating income are for 2017-2018 season and are net of revenue sharing and arena debt service.

**5. JAMES HARDEN**  
HOUSTON ROCKETS  
**Earnings: \$47.4 mil**  
Salary: \$30.4 mil  
Endorsements: \$17 mil



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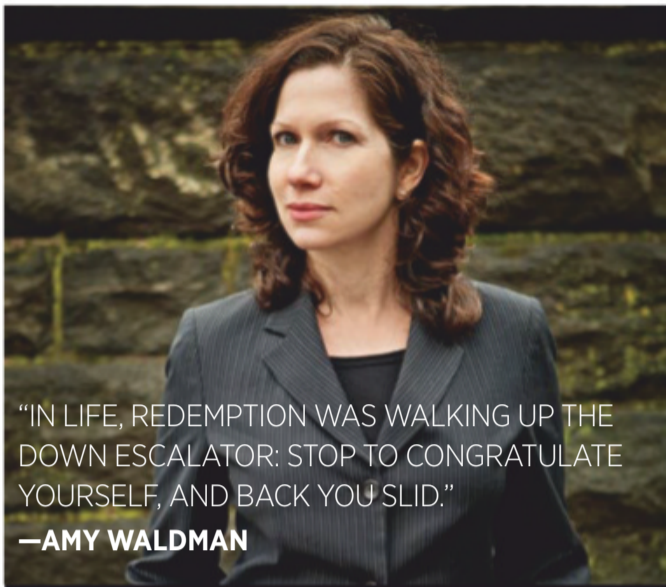
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# Redemption

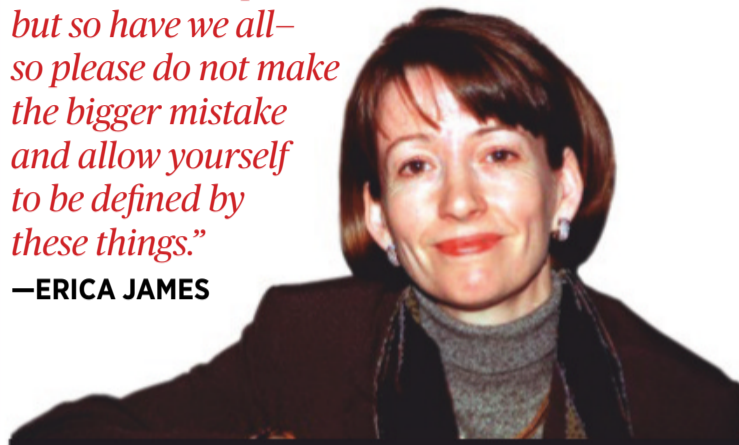


"IN LIFE, REDEMPTION WAS WALKING UP THE DOWN ESCALATOR: STOP TO CONGRATULATE YOURSELF, AND BACK YOU SLID."  
—AMY WALDMAN

"God creates out of nothing. Wonderful, you say. Yes, to be sure, but he does what is still more wonderful: He makes saints out of sinners."  
—SØREN KIERKEGAARD

*"Yes, you have made mistakes in the past, but so have we all—so please do not make the bigger mistake and allow yourself to be defined by these things."*

—ERICA JAMES



"As for redemption? It's far too neat—a moviemaker's bromide."  
—JULIAN BARNES



"The whole apparatus of absolution and forgiveness strikes me as deeply immoral."  
—CHRISTOPHER HITCHENS

"We all long for Eden, and we are constantly glimpsing it. Our whole nature at its best and least corrupted . . . is still soaked with the sense of exile."  
—J.R.R. TOLKIEN

—J.R.R. TOLKIEN



*"There is enough light for those who desire only to see, and enough darkness for those of a contrary disposition."*

—BLAISE PASCAL



—CHRISTOPHER HITCHENS

"Yes, a dark time passed over this land, but now there is something like light."  
—DAVE EGGERS

—DAVE EGGERS

**"A MAN WITHOUT REGRETS CANNOT BE CURED."**

—ARISTOTLE



"Unnecessary and unchosen suffering wounds us but need not scar us for life. It does mark us. What we allow the mark of our suffering to become is in our own hands."  
—bell hooks

—bell hooks



## FINAL THOUGHT

*"Men lacking principle can yet reform and become accepted as examples fit to be held up to the youth of the land."*  
—B.C. FORBES

—B.C. FORBES



*"Without the Fall, there would have been no human drama, and so no literature, no art, no suffering, no religion, no laughter, no joy, no sin and no redemption."*

—MALCOLM MUGGERIDGE



**"THERE IS ALWAYS A ROAD BACK, IF WE HAVE THE COURAGE TO LOOK FOR IT AND TAKE IT."**

—LOUISE PENNY

"I HAVE SWEEPED AWAY YOUR OFFENSES LIKE A CLOUD, YOUR SINS LIKE THE MORNING MIST. RETURN TO ME, FOR I HAVE REDEEMED YOU."  
—ISAIAH 44:22

—ISAIAH 44:22

SOURCES: THE JOURNALS OF KIERKEGAARD; ALL ABOUT LOVE: NEW VISIONS, BY BELL HOOKS; THE LETTERS OF J.R.R. TOLKIEN; LETTERS TO A YOUNG CONTRARIAN, BY CHRISTOPHER HITCHENS; ZEITOUN, BY DAVE EGGERS; THE SUBMISSION, BY AMY WALDMAN; PENSÉES, BY BLAISE PASCAL; SONG OF THE SKYLARK, BY ERICA JAMES; CHRONICLES OF WASTED TIME, BY MALCOLM MUGGERIDGE; THE ONLY STORY, BY JULIAN BARNES; A GREAT RECKONING, BY LOUISE PENNY; THE NICOMACHEAN ETHICS, BY ARISTOTLE.

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