

Riding the storm

Market turbulence accelerates diverging fortunes



Billionaires insights 2020

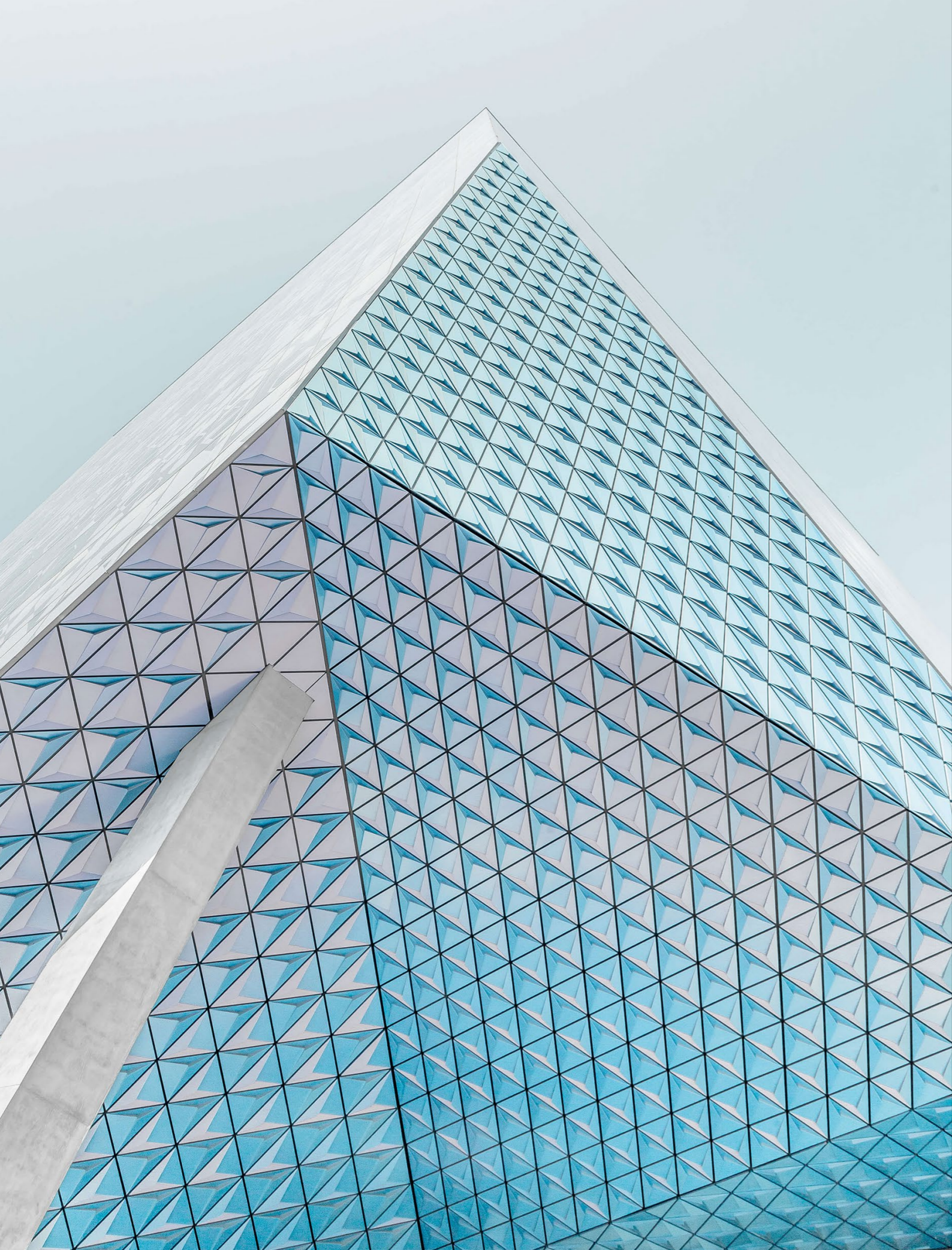
A few words about our research

This is the seventh of our reports on billionaire wealth, continuing our investigation into this historic era of wealth generation. Our research universe covers more than 2,000 billionaires from 43 markets in the Americas, EMEA and APAC, looking back over more than two decades. Our database includes the 43 largest billionaire markets, which account for around 98% of global billionaire wealth. Further, we've conducted about 60 conversations with billionaires. Our research sources include PwC billionaire data and UBS sustainability ratings. Additionally, reflecting the transformative effect of COVID-19 on billionaire wealth, where relevant we have extended this year's standard annual study period that ends on 7 April 2020 to include the five extra months to 31 July 2020. UBS and PwC advise a large number of the world's wealthy, and have unique insights into their changing fortunes and needs.

(For more information see our disclaimer on page 42.)

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Foreword

We have covered a wide range of developments since this report began in 2015, but some themes have remained prominent: the rise of China, the “Athena factor,” the growing influence of billionaires on philanthropy and the polarization of the billionaire community.

It is this last theme that we revisited in a year of dramatic and far-reaching upheaval. It has been remarked that the 2020 pandemic has created decades of change in just a few months. Billionaires have been no exception to this.

We have seen before how a cohort of billionaire innovators and disruptors, active in tech, healthcare and industry, have contributed to reshaping the economy. COVID-19 accelerated this trend dramatically: by demonstrating the value of the digital world they helped to create, they were able to decisively pull ahead of the pack as they increased their wealth while others’ fell. This is a key moment in economic history, a time of exceptional, Schumpeterian creative destruction. Scientists, computer programmers and engineers are revolutionizing industries at a pace never seen before and they are having a profound impact on the whole of the global economy.

Their influence has ranged well beyond business too. As well as being some of the most generous donors in the heat of the pandemic, they are bringing innovation to philanthropy to give it more strategic impact and raising their game on environmental and social responsibility.

But it has not all been outward-facing. According to our survey of PwC Partners who work with billionaires, like many of us they found time during lockdown to discuss family arrangements and reflect on mortality while reassessing their business and investment strategies. There has been a notable uptick in succession planning as a result.

Hinge moments like wars or pandemics tend to speed up change and leave a lasting impression in all walks of life. As with the aftermath of a storm they also call for renewal and reinvention. This billionaire community is likely to show the way in that effort too. The next generation of entrepreneurs is set to offer its unique perspective on this “new normal” and, with that, support a new era of innovation and change.

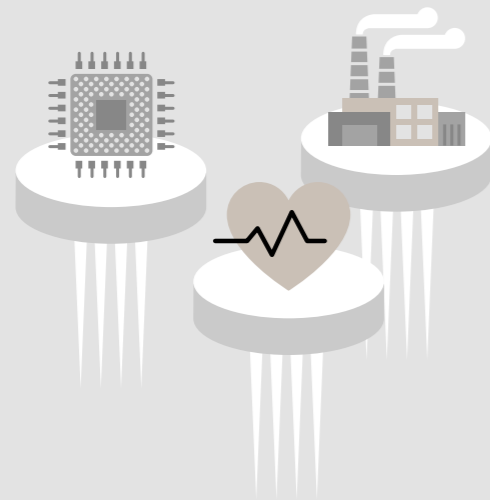
Josef Stadler
Head Global Family Office
UBS Global Wealth Management

Marcel Tschanz
Head of Banking Advisory
PwC Switzerland



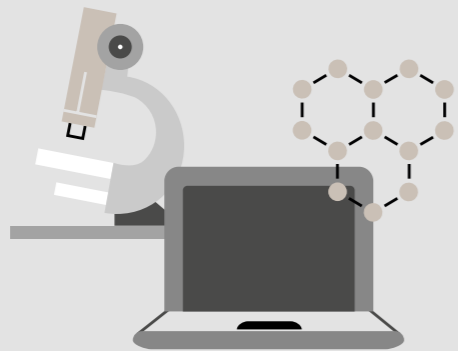
Wealth reaches new heights

Total billionaire wealth reached USD 10.2 trillion at the end of July 2020, touching a new high after the year's V-shaped rebound in asset prices. This level surpasses the previous peak of USD 8.9 trillion, reached at the end of 2017. There are now 2,189 billionaires,¹ up from 2,158 in 2017.



Polarizing fortunes

Fortunes are polarizing as business innovators and disruptors deploy technology to be among the leaders of today's economic revolution. During 2018, 2019 and the first seven months of 2020, entrepreneurs in the tech, healthcare and industrials sectors pulled ahead.² The COVID-19 storm accelerated the divergence.

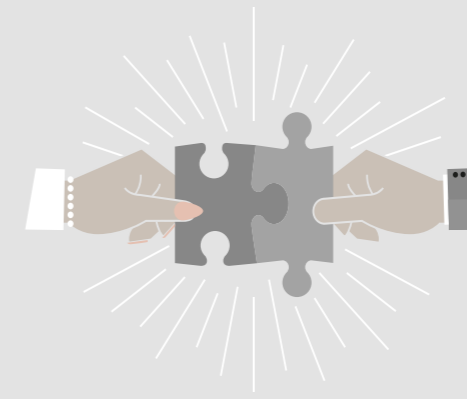


Innovators on the rise

Scientists, computer programmers and engineers are revolutionizing industries at a pace never seen before. Their sphere of activity is spreading from the tech and healthcare sectors to disrupt many parts of the economy. As they apply emerging technologies to drive change, some of them are becoming billionaires.

¹ As at 31 July 2020, the number of billionaires was 2,189. The billionaire population grew by 131 during the period when financial markets rebounded in 2020. There were 2,058 billionaires just four months earlier on 7 April 2020 which is our standard cut-off date. For this year's research we have extended it to 31 July 2020, to take into account the transformative effect of COVID-19.

² UBS and PwC extended their normal 12-month period of research to take into account the transformative impact of COVID-19.



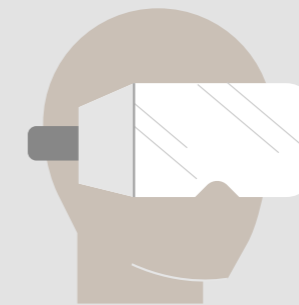
Philanthropy and sustainability pioneers

A small group of billionaires is pioneering innovation in philanthropy, while pursuing sustainability goals across their corporate and investment activities. Increasingly, they're setting a benchmark for others by bringing their originality to philanthropy and introducing new objectives to the companies they're associated with, as well as their investments.



Record-breaking donations

To tackle the pandemic, billionaires have given more than ever before in a space of a few months. Some 209 billionaires have publicly committed a total of USD 7.2 billion, whether in financial donations, manufactured goods and equipment, or other commitments.



Next generation of rebuilders

When the storm passes, a new generation of billionaire innovators looks set to play a critical role in repairing the damage. Using the growing repertoire of emerging technologies, tomorrow's innovators will digitize, refresh and revolutionize the economy. Whether intentionally or not, this has the potential to help bridge financial, social and environmental deficits.

“The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on,”

Joseph Schumpeter, the Austrian economist who introduced the concept of entrepreneurship and theory of creative destruction.



The great polarization

Today's billionaires live in turbulent but trailblazing times. While the COVID-19 crisis dominates 2020, the potential for transformative innovation has never been greater, as the pipeline of fresh technologies grows by the day. From AI to 3D printing, from nanotechnology to biotechnology, there is a wealth of emerging technologies that scientists and serial entrepreneurs are just beginning to apply, to develop radically new products and services, as well as to leapfrog incumbent businesses.

“This COVID-19 crisis could be the real border between the old and the new economy,” reflected an Italian billionaire. “This may give the opportunity to create a better economic environment focusing on sustainable growth and efficiency with less bureaucracy and procedures.”

It's a time of accelerating change, reflected in the polarizing fortunes of billionaires.

Those that are the innovators and the disruptors, the architects of creative destruction in the economy, are still increasing their wealth.³

Other billionaires, on the wrong side of economic, technological, societal and environmental trends are becoming less wealthy.

Contrast this polarization with most of the past decade, when steady growth and buoyant asset prices lifted billionaire wealth in all sectors. Most of the decade was a time of exceptional prosperity for billionaires regardless of sector, but in the last two years those using technology to change their business models, products and services have pulled ahead. The COVID-19 crisis just accentuated this divergence.

While business innovators and disruptors are deploying technology for competitive advantage across all sectors, naturally the heartland of this activity is the technology, healthcare and industrial sectors, which clearly signal the polarization taking place (see page 17, *What's a billionaire "innovator" or "disruptor"?*).

During 2018, 2019 and the first seven months of 2020,⁴ technology billionaires' total wealth rose by 42.5% to USD 1.8 trillion, supported by the surge in tech shares. Meanwhile, healthcare billionaires' total wealth increased by 50.3% to USD 658.6 billion, boosted by a new age of drug discovery and innovations in diagnostics and medical technology, as well as latterly COVID-19 treatments and equipment. (Note our standard analysis period has been extended to take into account the effects of COVID-19.)

Compare this to the smaller increase for the billionaire class as a whole. It rose by 19.1% to USD 10.2 trillion over 2018, 2019 and the first seven months of 2020.⁵

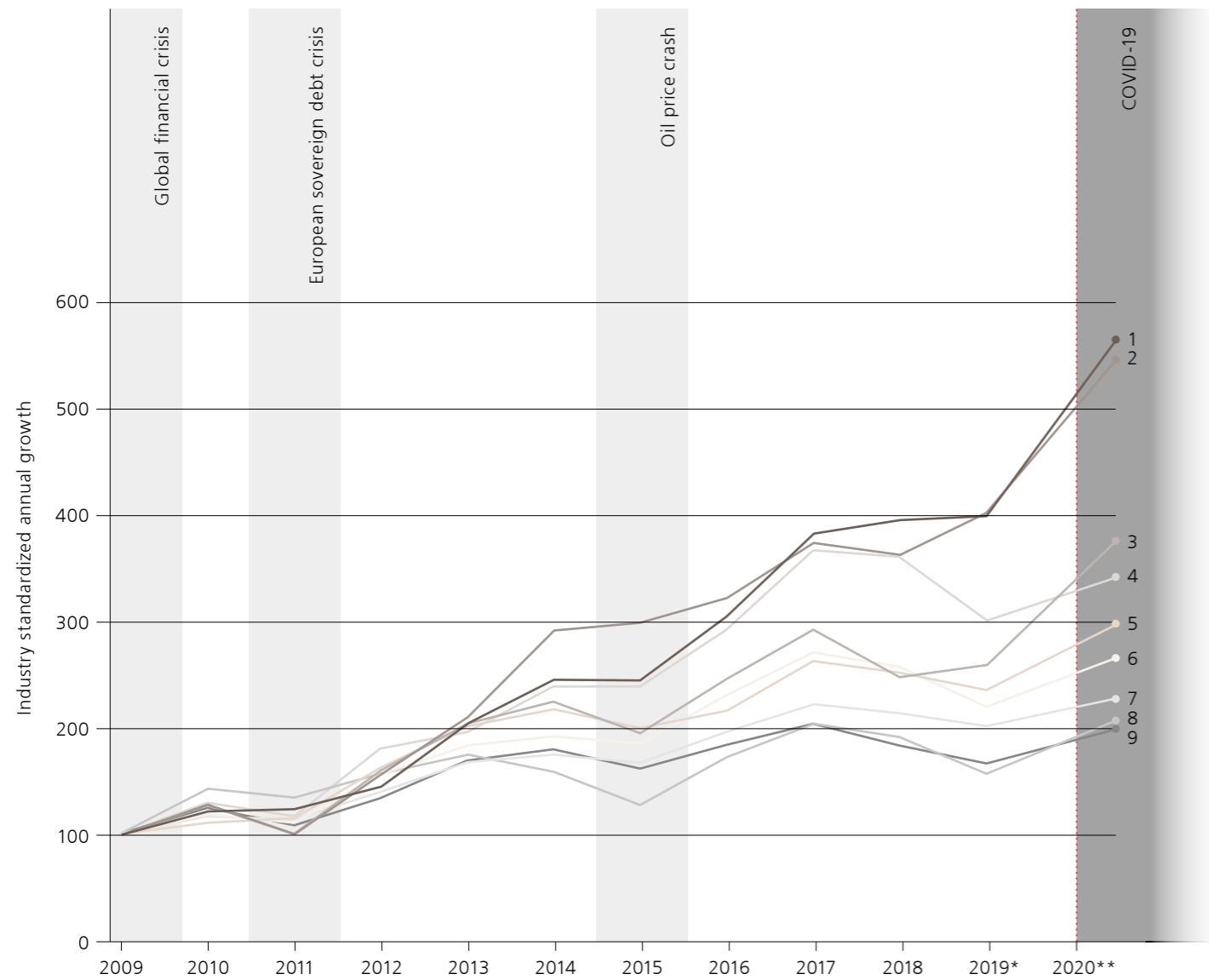
The net wealth of billionaires in entertainment, financial services, materials and real estate sectors lagged the rest of the universe, with increases of 10% or less.

³ "Profit is the payment you get when you take advantage of change," Joseph Schumpeter.
⁴ Cut-off date 31 July 2020.
⁵ Cut-off date 31 July 2020.



Diverging fortunes: tech and healthcare billionaires pull ahead

Billionaire wealth annual growth split by industry 2009–2020



1	Technology	565.7
2	Health industries	548.0
3	Industrials	376.9
4	Real estate	342.5
5	Consumer & retail	300.1
6	Other/diversified***	268.1
7	Financial services	229.1
8	Materials	206.1
9	Entertainment & media	204.1

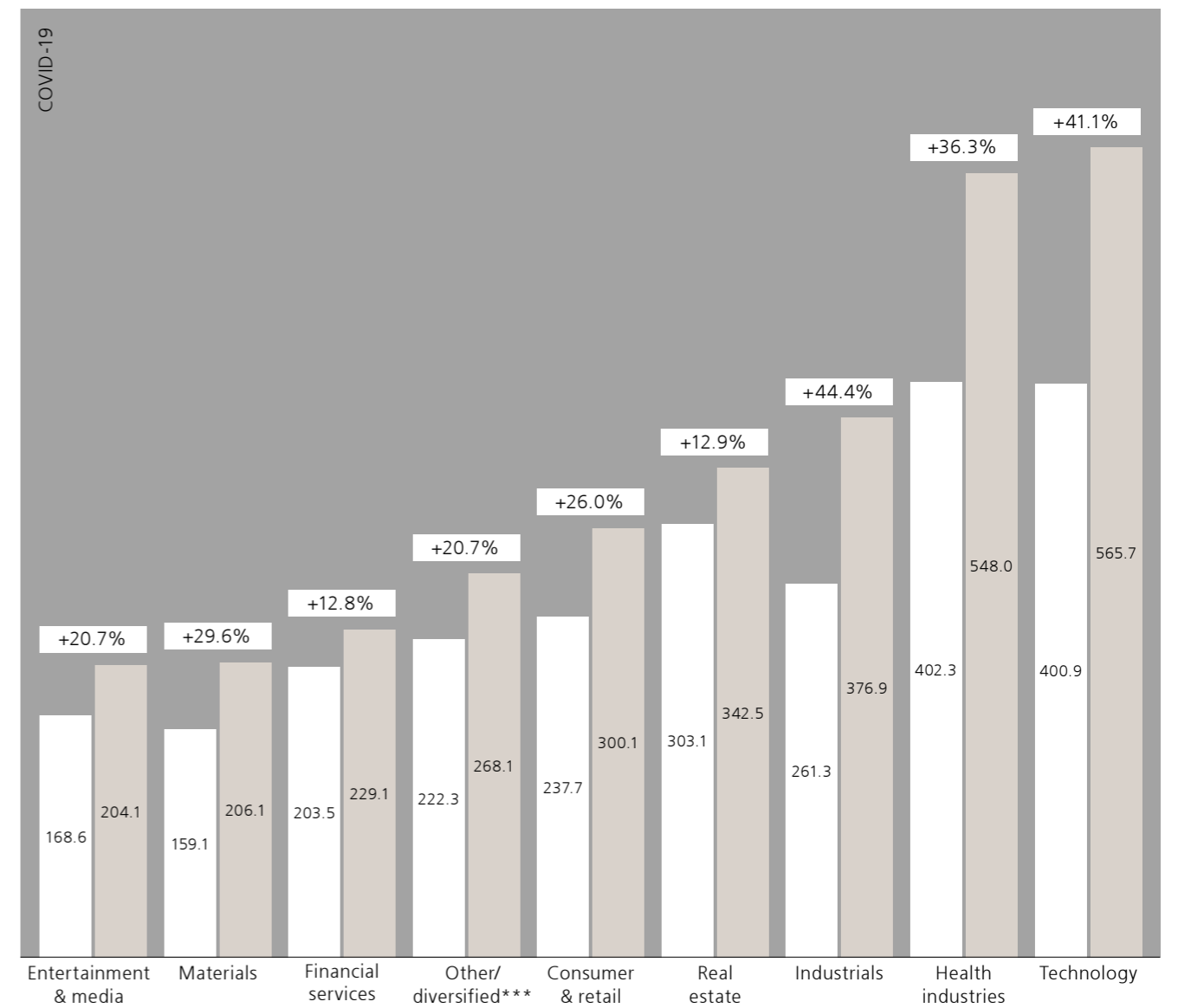
* Cut-off date 7 April 2020.

** Our standard cut-off date for this year's research is 7 April 2020. However, we have extended it to 31 July 2020, to take into account the transformative effect of COVID-19.

*** Other contains conglomerates and non-attributable categories.

The great polarization: tech, healthcare and industrials billionaires pull ahead

Focus on billionaire wealth development split by industry April–July 2020



□ April 2020 (cut-off date 7 April 2020)

■ July 2020 (cut-off date 31 July 2020)

*** Other contains conglomerates and non-attributable categories.



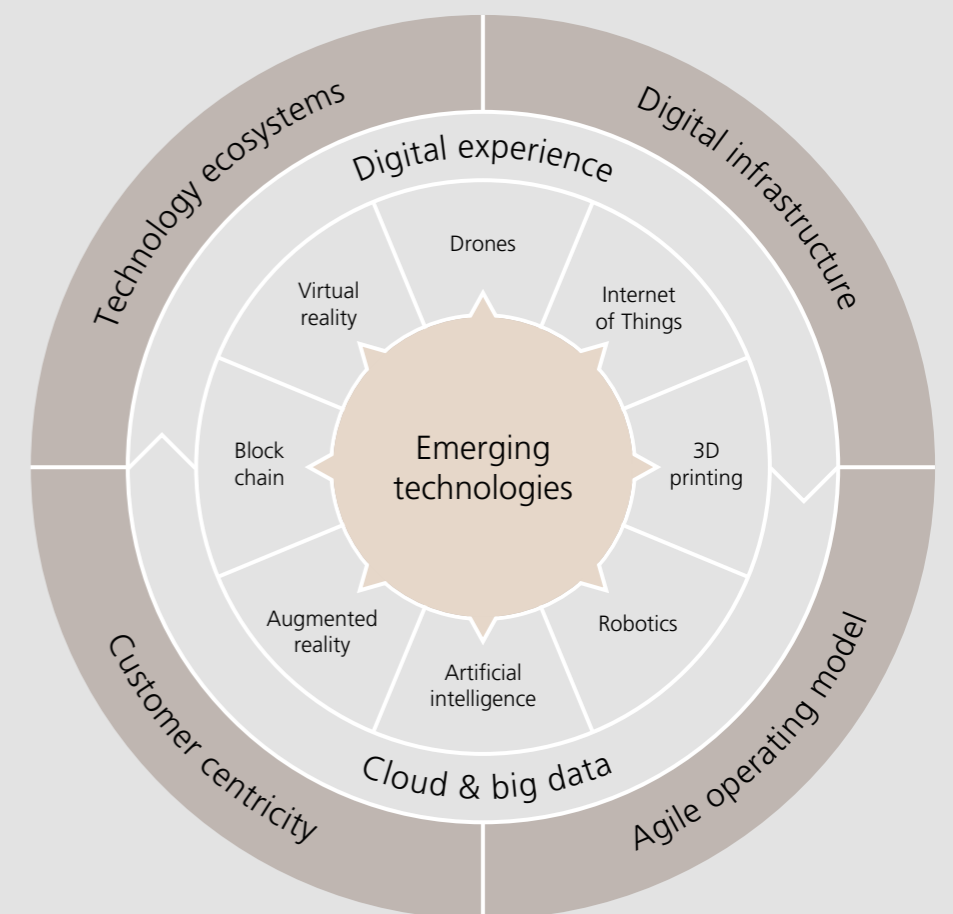
What's a billionaire "innovator" or "disruptor"?

Increasingly, business innovators are taking advantage of new technologies to gain a competitive edge and create new business models. Think of technologies like the Internet of Things, 3D printing, drones and artificial intelligence that are already being applied in businesses. Further into the future, imagine how quantum computing, neural interfaces, solid-state batteries and fuel cells might transform the global economy.

Many of the innovators applying technology at scale in this way are already billionaires, while others are becoming wealthier as they drive change. Naturally, billionaire innovators are most common in sectors such as technology, healthcare and even industrials/manufacturing – where technology has powerful applications such as introducing robots to assembly lines – but it's increasingly being applied in other sectors to varying degrees.

A small number of these innovators are "disruptors". Think of the people pioneering the production of electric cars for the mass market, or extending online retailing into new areas such as groceries.

We have taken a multilayered approach to identifying "innovator and disruptor" billionaire-controlled companies that can be applied from the outside in or vice versa. Judged as the factors having the biggest impact on business disruption and innovation, the components we have analyzed are: disruptive business models, essential technologies and proven emerging technologies (see *methodology page 41*).



Scientists, computer programmers and engineers revolutionize industries

Scientists, computer programmers and software engineers are becoming serial entrepreneurs, as they exploit novel technologies to develop new products, services and business models. They're the innovators using a growing warehouse of new technologies for a business revolution that's beginning to ripple out across sectors, creating new businesses and new wealth, with benefits for themselves and broader society.

These individuals continued to progress across 2018, 2019 and the turbulent year of 2020. Over this time, the billionaires falling within our definition of innovators and disruptors grew their wealth by 17% to USD 5.3 trillion, while traditional billionaires' wealth increased by a smaller 6% to USD 3.7 trillion.⁶ (This analysis only takes into account the people who were billionaires at the beginning of 2018.)

Looking at this from a sector perspective, naturally most of the tech (94%) and healthcare (71%) sector billionaires are among these innovators and disruptors, according to our analysis. Even long-established billionaire-controlled tech companies are revolutionizing their sectors from within, changing rapidly. For instance, software giants such as Microsoft and Oracle – both effectively “billionaire factories,” having hatched several billionaires – are quickly moving into areas such as AI, cloud computing and software as a service.

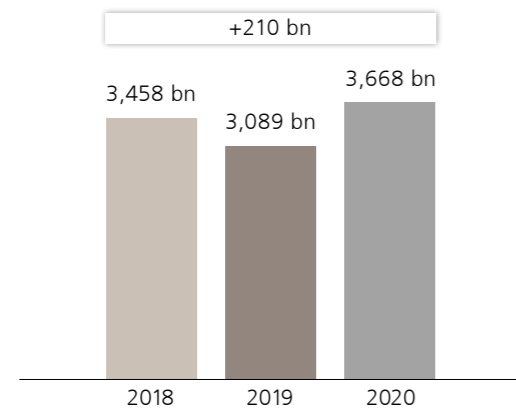
Healthcare billionaires are some of the past two years' biggest gainers, especially Mainland China's health industry leaders, who have ridden a surge in the country's drug and medical devices industries.

Notably, Hansoh Pharmaceutical listed on the Hong Kong Stock Exchange in 2019, propelling its founder and CEO, Zhong Huijhan, a former chemistry teacher, to the position of the world's most wealthy healthcare billionaire. Toward the end of the period, the pandemic boosted the wealth of healthcare executives holding shares in drug and medical device companies developing coronavirus vaccines and therapeutic drugs, as well as medical devices such as ventilators.

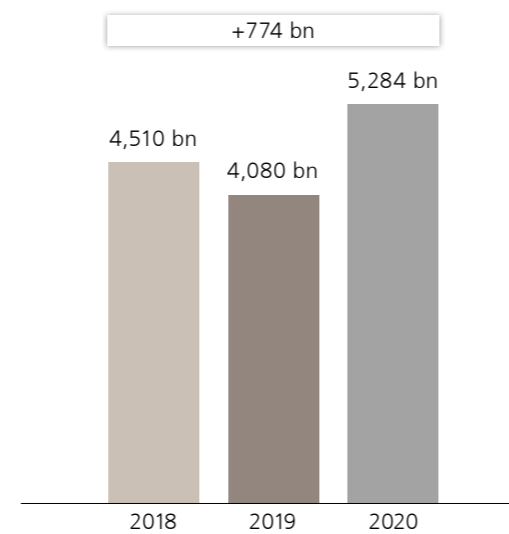
Innovators and disruptors outperform

Analysis only takes into account the people who were billionaires at the beginning of 2018 and still are as of 2020
Cut-off date 31 July 2020

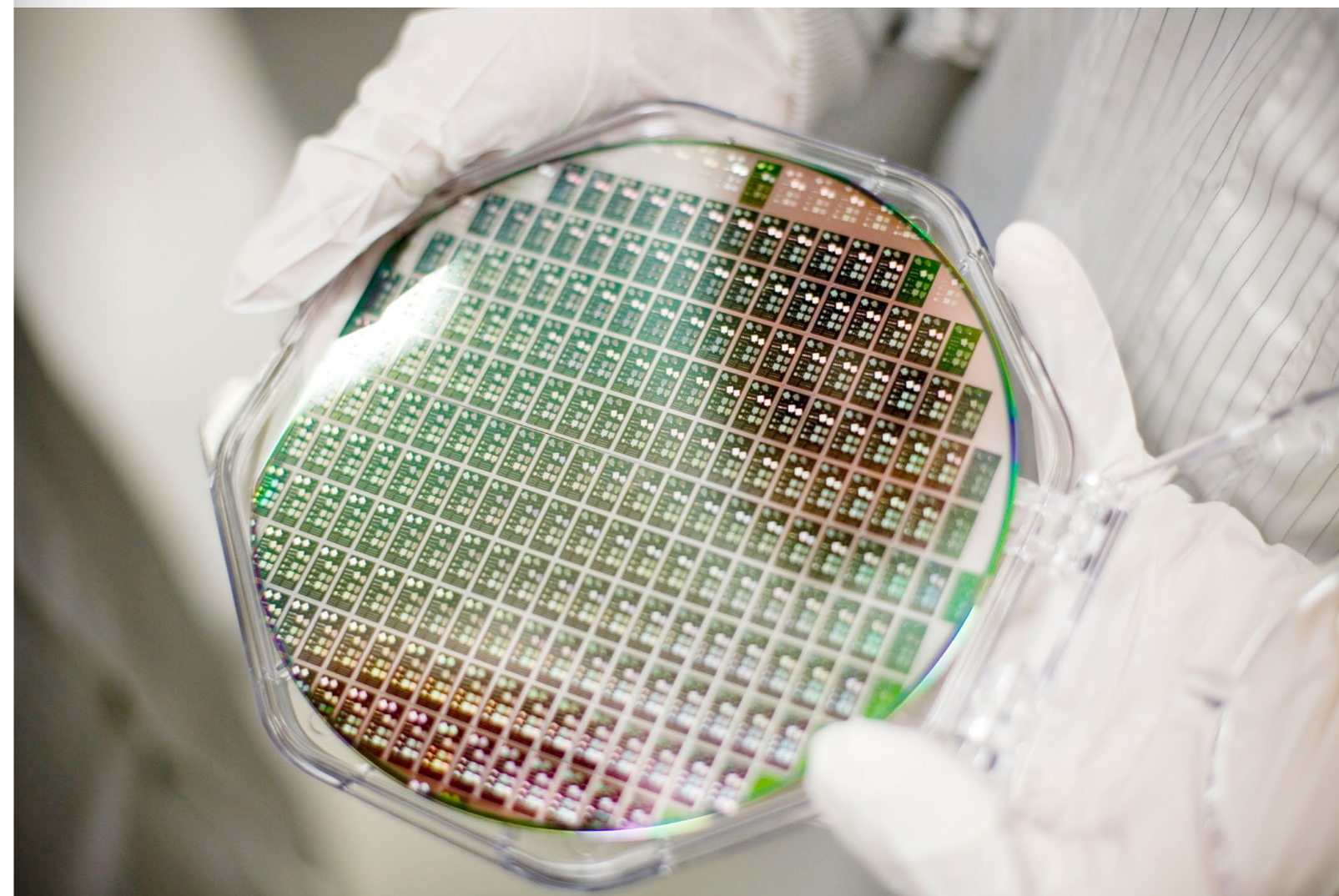
Traditional billionaires



Innovators & disruptors



⁶ This analysis extends to the 31 July 2020 cut-off date. It goes beyond our standard 12-month series analysis period in order to include the exceptional events following the outbreak of the COVID-19 pandemic. See page 41 for a description of PwC's methodology for defining innovators and disruptors.



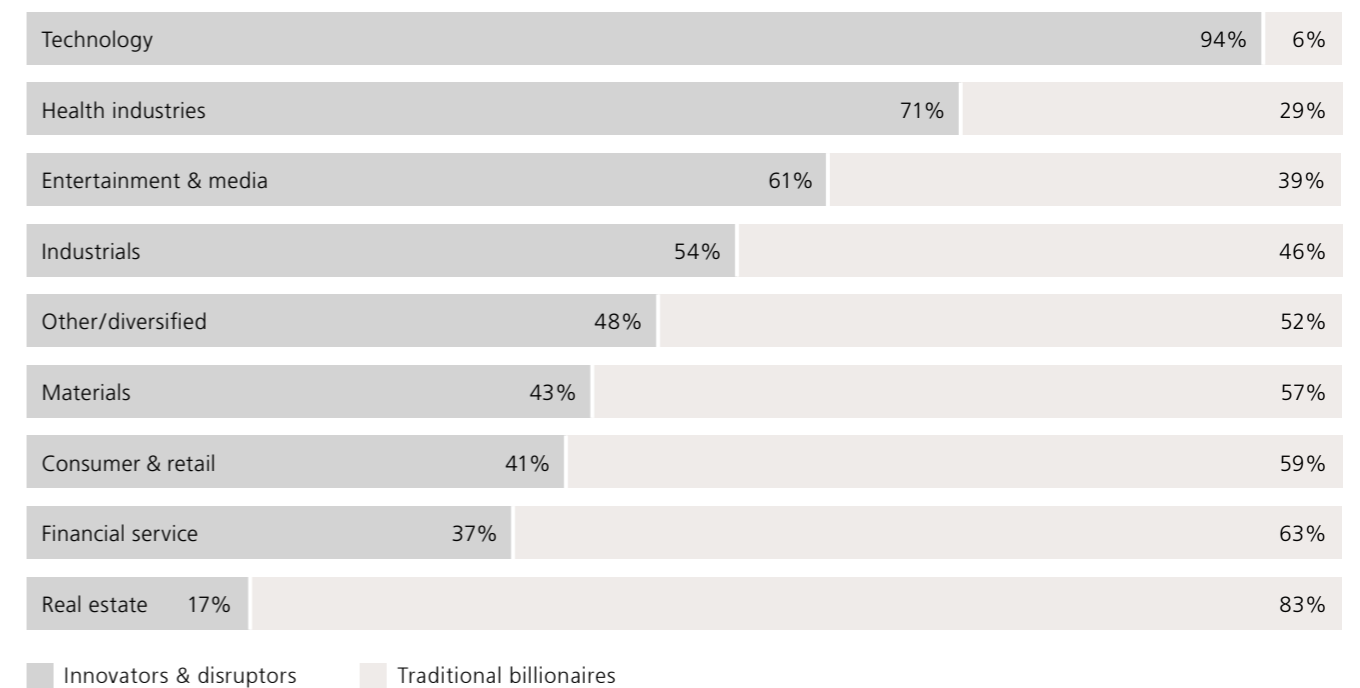


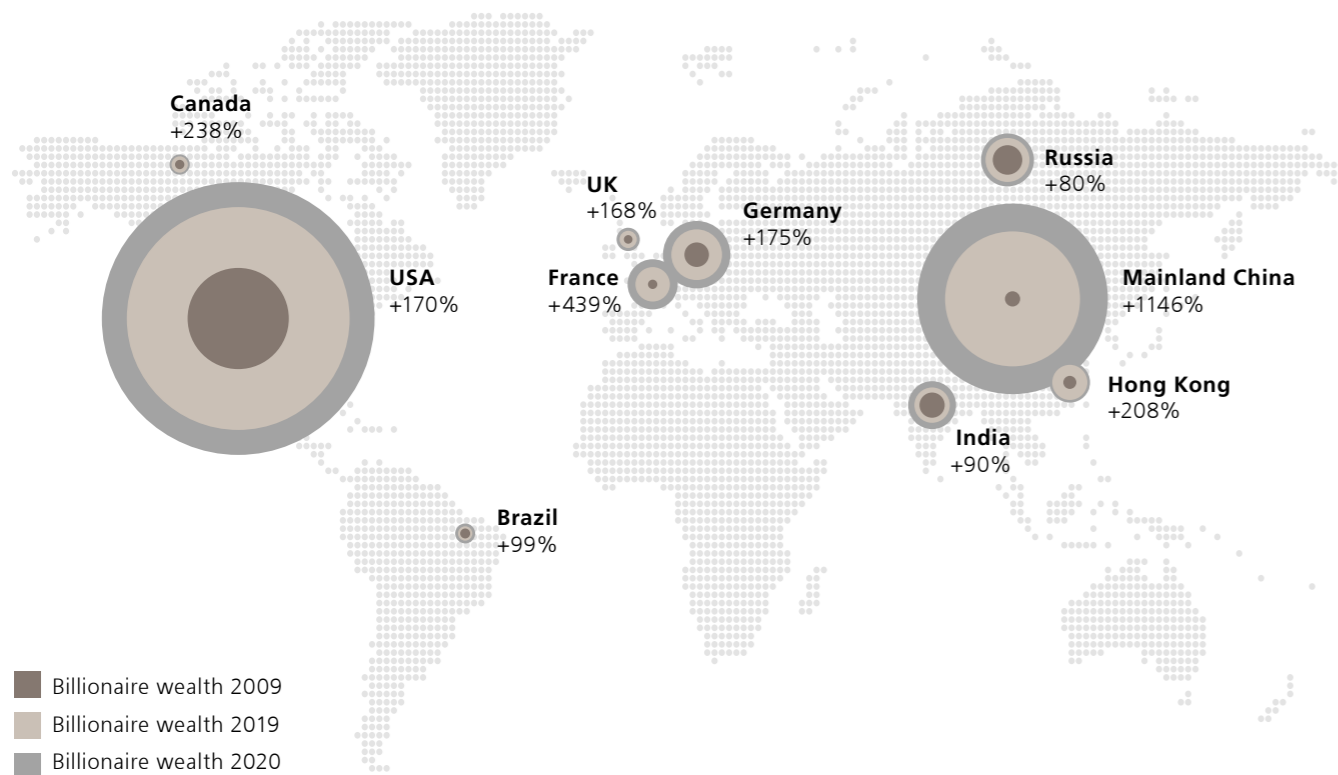
Some of the people who have prospered most in the last few years include well-known innovators and disruptors from across the economy. They include Elon Musk, the economist and physicist behind Tesla and SpaceX. Officially defined as an industrial sector billionaire, Musk's companies are respectively pioneering the mass-market electric car and private space travel. In Mainland China, Frank Wang, an engineer, is the world's first drone billionaire, as founder and CEO of tech company DJI, the world's largest manufacturer of commercial drones. Finally, one of Europe's leading young innovators is Patrick Collison, an Irish computer programmer who cofounded the Stripe software platform for internet businesses with his brother in 2010.

Yet this wave of innovation has still to reach some. Within real estate, for instance, we have identified just 17% of billionaires as innovators and disruptors, as the sector has been especially slow to embrace technology to boost efficiency. Financial services has the next lowest share of innovators and disruptors, at 37%.

Innovators: common in tech, rare in real estate

Share of innovators and disruptors/traditional billionaires per industry
Cut-off date 31 July 2020





Market	Wealth 2009 USD bn	Wealth 2019* USD bn	Wealth 2020** USD bn	Relative change 2009–2020**
United States	1,338.7	2,958.2	3,608.6	170%
Mainland China	134.9	1,190.1	1,680.9	1146%
Germany	216.1	447.0	594.9	175%
Russia	260.2	388.9	467.6	80%
France	82.2	304.3	442.9	439%
India	222.1	312.6	422.9	90%
Hong Kong	115.6	311.5	356.1	208%
United Kingdom	76.7	159.8	205.9	168%
Canada	52.8	144.1	178.5	238%
Brazil	88.6	127.1	176.1	99%

* 7 April 2020
** 31 July 2020

Mainland China and tech drive decade when wealth tripled

This polarization between innovator billionaires and the rest comes at the end of a historic decade, when billionaires doubled in number and total wealth almost tripled. By early April 2020, there were 2,058 billionaires, up from 969 at the end of 2009. Billionaires' wealth almost tripled, from USD 2.8 trillion to USD 8.0 trillion.

Geographically, Mainland China benefited most, as billionaire wealth grew fastest of all in Asia. By early April 2020, there were 389 Chinese billionaires, worth a total of USD 1.2 trillion. Their wealth had grown by almost nine times, compared with twice in the US.

Tech billionaires prospered most in the decade – pulling ahead in the polarization of the final two years. The number of tech billionaires grew from 68 in 2009 to 234 in 2020, while the number of healthcare billionaires grew from 48 to 167. Tech and healthcare billionaires' total wealth both multiplied by four times – from USD 321.3 billion to USD 1.3 trillion for tech and from USD 120.8 billion to USD 482.9 billion for healthcare.

The proliferation of different types of tech businesses shows how business innovators are using technology as a tool to disrupt other sectors, including retail, the media, finance and even education.

For instance, the number of billionaires in e-commerce, social media and FinTech is increasing, while the first billionaires are now appearing in EdTech and drones.

More dropouts over the past two years

But the end of the decade saw billionaire wealth becoming less stable. Looking at billionaires who had been worth at least USD 2 billion in 2009 – and therefore did not dip in and out of billionaire classification with small fluctuations in asset prices – 153 were no longer billionaires by the end of the decade.⁷ Almost half of them, 70, dropped out of this elite wealth bracket in the decade's last two years. EMEA suffered the greatest wealth erosion, followed by APAC and then the Americas.

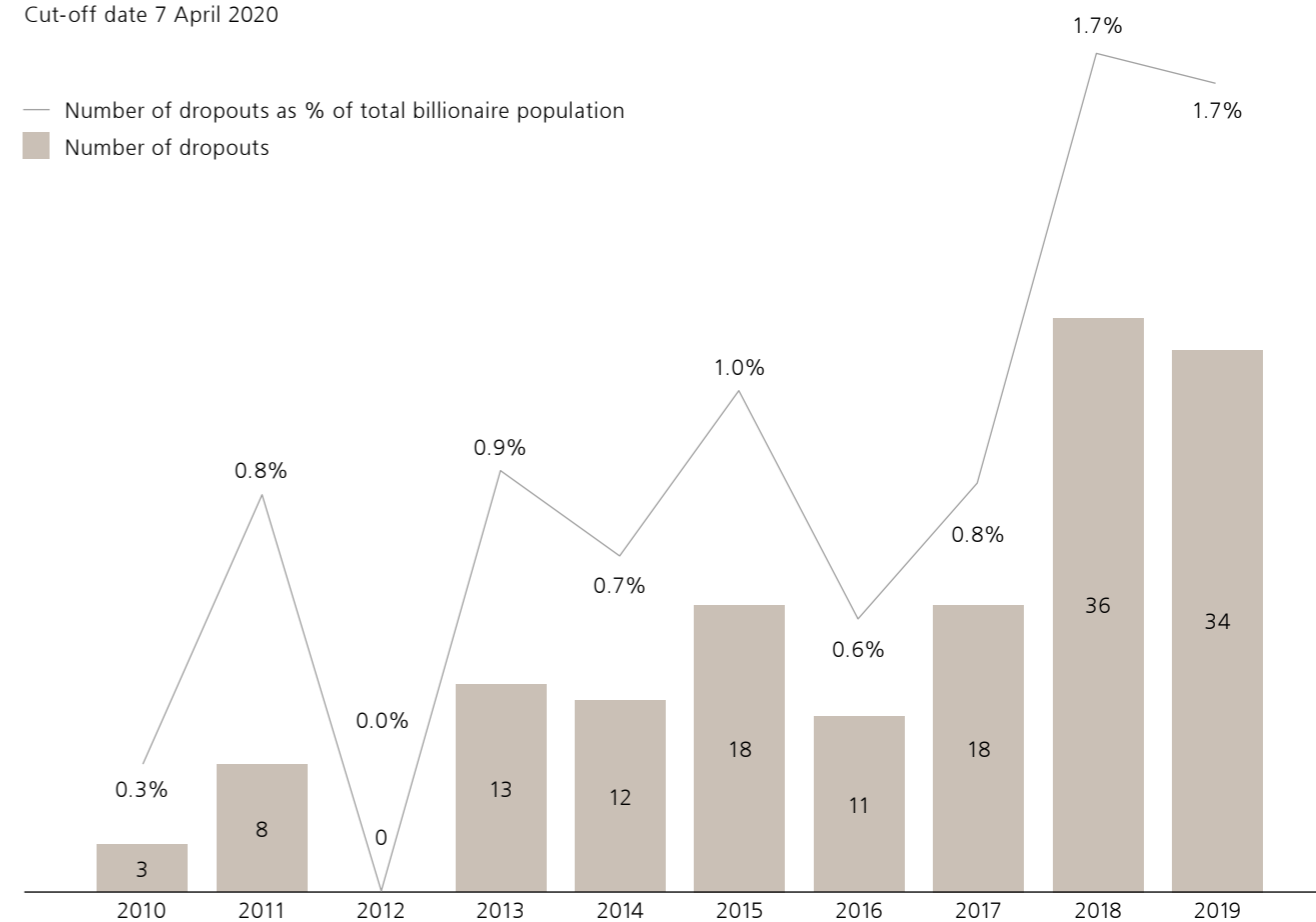
Our analysis shows that diversification across a number of businesses and assets is the key to wealth preservation.

Even billionaire innovators must keep on reinventing their businesses, reinvesting their gains into new ventures.

⁷ This analysis excludes billionaires who died during the period.

Number of billionaire dropouts 2010–2019

Cut-off date 7 April 2020



Real estate plays a fundamental role

The billionaire class has a love affair with real estate as a store of value and an asset that can be transferred to successors. Our 2020 PwC Partner Survey (see page 37) suggests that approximately half of all billionaires – regardless of the business sector they originate from – have 21–40% of their net wealth invested in real estate.

Real estate was a profitable place to be over the last decade, as falling interest rates and buoyant demand for physical space supported asset prices generally until the onset of the COVID-19 crunch.

The 64 individuals who were real estate billionaires in 2009 – having real estate businesses or a major part of their assets in the sector – went on to double their wealth over the decade. Their total wealth doubled from USD 150.4 billion to USD 303.0 billion.

APAC’s real estate tycoons led the way, masterminding the decade’s huge urban development and riding the region’s asset price rises. Their average individual wealth more than tripled, while that of their US peers more than doubled, as did that in EMEA although from a lower base.

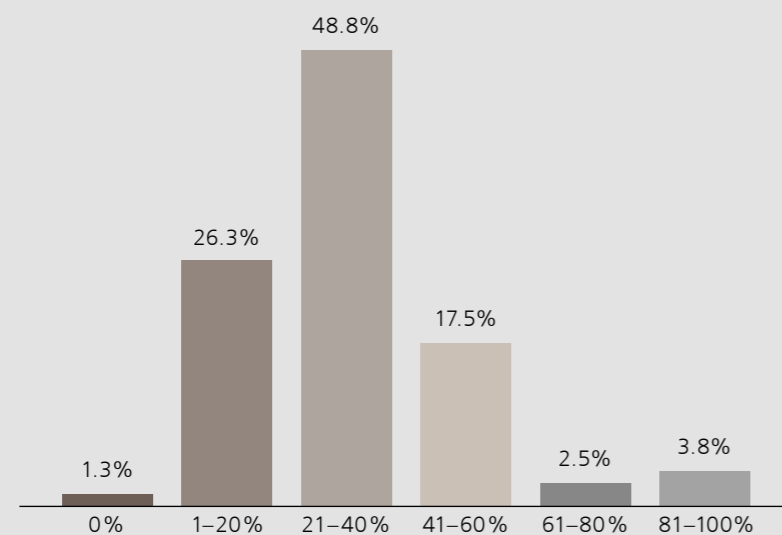
Within real estate’s subsectors, developers increased their wealth by more than 156% in the decade. They were closely followed by builders of capital projects, who almost doubled their wealth.

But by the end of the decade, challenges were mounting as the global pandemic undermined demand for commercial real estate, and an increasingly digital economy undermined demand for physical space.

Real estate billionaires expressed diverging views. “If the real estate situation looks bad from the outside in, it’s actually worse from the inside,” said a Thai billionaire.

However, a German billionaire was more sanguine. “Real estate got sucker punched but you have to stay on your feet and swiftly identify coming opportunities,” he contended. “The future of work will look different, and offices are still a major opportunity for investors.”

Share of billionaire wealth invested in real estate
Analysis period March to June 2020 (number of observations = 84)





Bringing innovation to philanthropy and sustainability

Billionaires are becoming more active across philanthropy, corporate sustainability and sustainable investing. They are even introducing innovation. Up until fairly recently, individual billionaires tended to focus on philanthropy alone.



Market	Number of billionaire donors	Donations in USD m
United States	98	4,578.6
Mainland China	12	678.8
India	9	541.0
Australia	2	324.0
United Kingdom	9	297.5

Our research shows that billionaires are giving more than at any time in history. The upsurge is reminiscent of the first few decades of the 20th century, at the time of the Second Industrial Revolution⁸, when the relationship between American capitalism and philanthropy flourished, and fortunes were invested in supporting opportunity creation through schools, universities, libraries and research centers.

It's early days, but billionaires may well be at a turning point, putting renewed energy and wealth into tackling the environmental and social problems that the pandemic and recent natural disasters have highlighted. Several signs suggest this. Entrepreneurs are turning into philanthropists earlier in their careers than previously.

Some billionaires are seeking to make a positive impact across all activities – philanthropy, corporate and investment – as opposed to focusing solely on a charitable foundation.

And there's a trend for billionaires to be strategic about their philanthropy, seeking to improve the outcome, such as the falling incidence of a disease, rather than merely concentrating on the input in terms of money donated.

COVID-19 financial donors, makers and impact entrepreneurs

Many billionaires have acted to respond to the pandemic. They have reacted quickly, in a way that's akin to disaster relief, providing unrestricted grants to allow grantees to decide how best to use funds. Our research has identified 209 billionaires who have publicly committed a total equivalent to USD 7.2 billion from March to June 2020. While this appears a small number compared with the billionaire class's total net worth, the public announcements understate the true amount donated, given a tendency toward discretion. Furthermore, some of these commitments have come in the form of gifts of PPE, or even commitments to COVID-19 treatments, rather than financial donations.

To add, a lot of the billionaire donations and commitments to causes such as increasing broadband access and providing technology to underserved communities may not get "credit" for being a COVID-19 response since they are not focused on frontline health. However, with schools and universities transitioning their curriculum to be online as we await a vaccine, this work is very much COVID-19 related.

While historical data is hard to find, our research suggests this is the greatest amount billionaires have given in a short space of time ever, even after allowing for inflation. Note that the nature of the COVID-19 emergency means that most of the donations aren't strategic – even so, the longer-term trend toward strategic philanthropy still stands.

With a deep culture of philanthropy in the United States, the country's billionaires gave far more than others during 2020's upsurge in giving, almost USD 4.6 billion. Philanthropy is part of the US entrepreneurial fabric, and giving is more public than in Europe or Asia. Chinese billionaires gave the second most,

at USD 678.8 million. However, these figures may overstate the disparity, due to the culture of publicizing philanthropy in the US.

Our analysis shows the philanthropists split into three camps:

1. Financial donors

This was by far the biggest category. One hundred and seventy-five billionaires gave USD 5.5 billion to support foundations/NGOs, hospitals and even hotels for emergency workers. They gave money to buy face masks and ventilators, fund hospitals as well as putting up healthcare staff in hotels close to hospitals. For the most part, they gave within their local communities.

2. Makers

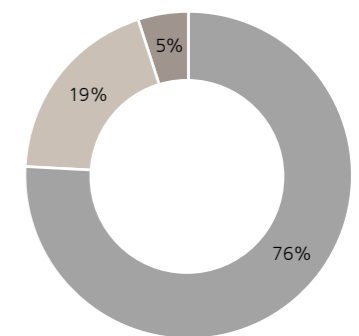
Twenty-four billionaires converted manufacturing production to make personal protective equipment and devices such as ventilators. We have estimated a total value of USD 1.4 billion. Perfume and chemical factories switched to making hand sanitizers for instance, while car factories made ventilators.

3. Impact entrepreneurs

Ten billionaires are targeting specific impacts, such as building production facilities for vaccines, that offer the best prospect of controlling the pandemic in the medium term. We estimate this amounts to USD 336.6 million.

Financial donors, makers and impact entrepreneurs

209 billionaires, USD 7.2 bn
Analysis period March to June 2020



- **Financial donors**
175 billionaires, USD 5.5 bn
- **Makers**
24 billionaires, USD 1.4 bn
- **Impact entrepreneurs**
10 billionaires, USD 0.3 bn

⁸ From 1850–1940.



A new cadre optimizes impact across all activities

Just as billionaires are among the innovators disrupting traditional business models, so too a small number appear to be philanthropy leaders – often through strategically prioritizing outputs over inputs – and at the forefront of balancing corporate, environmental and social values with corporate profitability.

A small group of them stand out as maximizing their net impact across all activities – philanthropy, their business interests and even their investments. The top ten billionaire-controlled⁹ companies ranked by sustainability performance¹⁰ are almost all associated with billionaires who are also COVID-19 donors and venture capital investors in clean tech businesses. Nine of the 10 are COVID-19 donors and seven also invest in clean tech.

Take Azim Premji, Chairman of Wipro, for instance. Known as the leading figure in India’s IT industry, he’s behind the Azim Premji Foundation, dedicated to education in India. Turning to the Americas, David Duffield is a well-known software entrepreneur, and the person behind a foundation dedicated to animal welfare. And, in EMEA, Anne Beaufour is the granddaughter of the founder of Ipsen, one of France’s largest pharmaceutical companies, as well as a COVID-19 donor. Two of the three invest in clean tech.

They remain exceptions, however, as not all billionaire-controlled companies fare well when measured on environmental, social and governance (ESG) factors. Almost 500 (494) billionaire-controlled publicly listed

companies received a sustainability score from UBS. Their average score is 3.1 (out of 10) compared with an average of 5.2 for the MSCI AC World Index stocks.

When it comes to investment, our analysis focuses on clean tech because the transparency around clean tech investing allows us to identify the billionaire investors. Billionaires are also involved in other areas of impact investing.

“This crisis has reiterated the importance of using our “purpose” and “values” as our guiding principles,”

asserted a US billionaire. “It isn’t about what we could do, but what we should do to assist those around us. It also has provided a prime example to our next generation about how to use these principles for the betterment of society.”

This may be the beginning of a new dawn. What are its defining characteristics? A rise in the amount of philanthropy. More strategic philanthropy. A drive to do better across all activities – philanthropy, the business and investments. And greater use of technology, notably through clean tech investing.

⁹ For the sake of our analysis, we have assumed holding 30% of the voting rights and 20% of the shares of a company gives an individual control.

¹⁰ Using UBS CIO research methodology, see page 41.

From corporate ESG, to COVID-19, to clean tech

Billionaire name	Company name	Area	Sustainability Headline Score (ESG)	Donations to COVID-19	Investing in clean tech
Azim Premji	Wipro	APAC	7.78	Yes	Yes
Antti Herlin & Ilkka Herlin	Kone Corporation	EMEA	7.38	Yes	Yes
Ludwig Merckle	Merckle Group	EMEA	7.33	No	No
Anne Beaufour	Ipsen	EMEA	7.32	Yes	Yes
David Duffield	Workday	Americas	7.26	Yes	No
Frits Goldschmeding	Randstad Holding	EMEA	7.06	Yes	Yes
Stefan Quandt	BMW	EMEA	6.94	Yes	Yes
Peter Woo & family	Wheelock and Company Limited*	APAC	6.93	Yes	Yes
Bernard Arnault & family	LVMH	EMEA	6.91	Yes	Yes
Joe Mansueto	Morningstar Inc.	Americas	6.88	Yes	No

Note: the ESG scores refer to companies controlled by billionaires

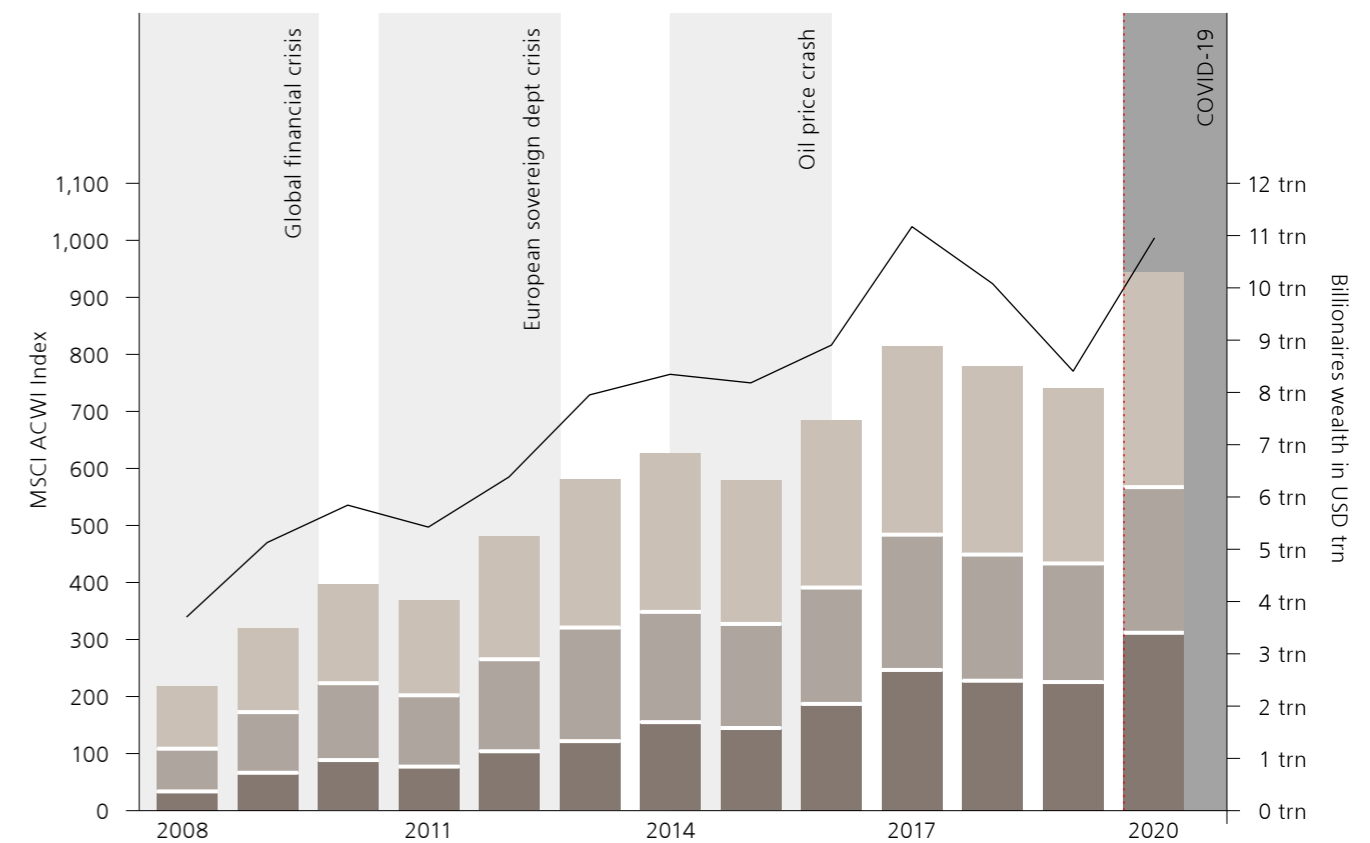
* Although Wheelock and Company Limited was publicly listed during the time of analysis, the company’s shareholders have recently agreed to its privatization.

Turbulence in an uncertain and fast-changing world

As the pandemic proliferated in the first few months of 2020, it virtually shut down parts of the global economy, sparking a storm in equity markets. Just a few extraordinary weeks in February and March 2020 caused billionaire wealth to fall 6.6% over 2019 and early 2020, by USD 564.0 billion, to USD 8.0 trillion.¹¹ The number of individual billionaires fell by 43 to 2,058.

¹¹ Cut-off date 7 April 2020.





Americas
 EMEA
 APAC
 MSCI ACWI*

* MSCI ACWI (gross) captures large- and mid-cap representation across 23 Developed Markets (DM) and 24 Emerging Markets (EM)

Billionaire wealth is loosely correlated with equity markets, due to holdings in listed companies, and a few weeks makes a big difference. From the end of March, governments' huge fiscal and quantitative easing packages drove a recovery in financial markets. By the end of July 2020, billionaire wealth was back above its 2019 level (see page 36).

APAC billionaires prove more resilient in the storm

Looking back to the period from 2019 to early April 2020, APAC saw its wealth fall just 2.1% to USD 2.4 trillion over 2019 and early 2020, with the number of billionaires even growing by 12 to 766 billionaires on a net basis. But this number masks a big turnover as 124 people dropped out of the billionaire list and 136 joined. Mainland China's billionaires bucked the trend: their wealth rose by a fifth, as the local coronavirus infections receded in March, causing equity markets to rally.

EMEA was hardest hit. Its billionaires lost 10.1% of their wealth, declining to USD 2.2 trillion over the same period, with their number falling by 36, to 562 billionaires, on a net basis. Meanwhile, the Americas lost 7.4% to USD 3.4 trillion and the number

of billionaires fell by 19, to 730. In EMEA and the Americas, infections were rising in early April, our cut-off point for this analysis, and their equity markets were close to lows.

Digital entrepreneurs excel

Social distancing accelerated the ascendance of digital businesses, compressing several years' evolution into a few months. At the same time, huge resources devoted to COVID-19-related healthcare put drug makers and medical devices companies in the spotlight. Consequently, the wealth of tech billionaires rose slightly in 2019 and early 2020, by 0.8%, to USD 1.3 billion, while that of health industry billionaires climbed 10.2% to USD 482.9 billion.

Industrials billionaires also saw their wealth rise, by 4.8% to USD 638.0 billion. The value of innovative companies such as Dyson and Tesla, applying new technologies to revolutionize their sectors, rose significantly and boosted the wealth of their owners.

By contrast, materials and real estate billionaires experienced the biggest losses, reflecting a fall in commodity prices and the value of real estate businesses. Their total wealth fell respectively by 17.8% to USD 873.7 billion and 16.6% to USD 665.8 billion.

V-shaped market bounce lifts billionaire wealth to USD 10.2 trillion

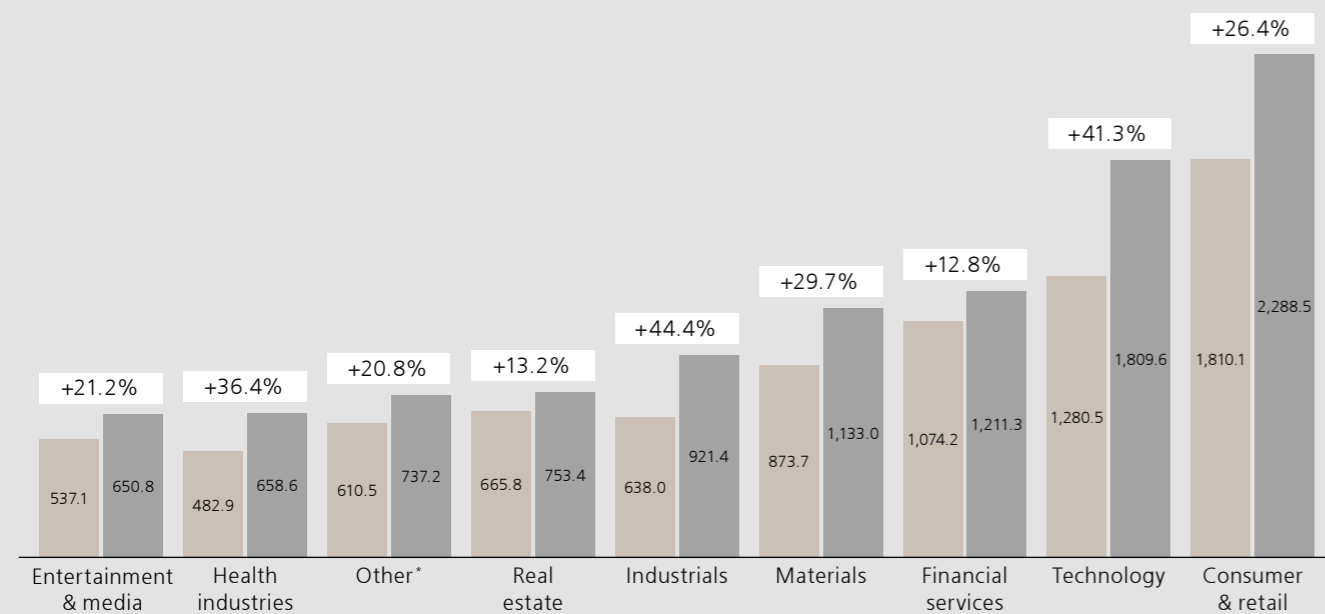
The V-shaped equity market recovery from April to July 2020 propelled billionaire wealth to a new high.¹²

Total billionaire wealth globally climbed by a quarter (27.5%), reaching USD 10.2 trillion, up from USD 8.0 trillion at the beginning of April. This is a new high, surpassing the previous peak of USD 8.9 trillion reached at the end of 2017. The number of billionaires reached 2,189, up from 2,158 in 2017.

Industrial and tech billionaires surpassed other sectors, with their wealth increasing by 44.4% and 41.3% respectively, reflecting equity market movements. Industrials benefited disproportionately as markets priced in a significant economic recovery, while tech companies performed well both due to the corona-induced demand for their goods and services, and markets discounting the value of their future cash flows in a low interest rate environment. By contrast, real estate lagged with a 13.2% rebound as equity markets doubted the strength of future demand for office and retail property.

¹² 31 July 2020 cut-off date.

Fortunes fluctuate on the rebound
Billionaires wealth split by industry USD bn



■ Wealth in April 2020 (cut-off date 7 April 2020)
■ Wealth in July 2020 (cut-off date 31 July 2020)

* Other contains conglomerates and non-attributable categories

Taking stock: PwC Partners Survey

Just like people everywhere, billionaires took stock during the lockdowns around the world, finding time to discuss family arrangements and reflect on mortality while reassessing their business and investment strategies, according to a survey of 84 PwC partners who work with billionaire clients.

There has been a notable uptick in succession planning. Many billionaire families didn't have a formal process, but the partners surveyed ranked succession planning as the most likely priority for these clients in the next 12 months. "The crisis has reminded us how unexpected the world and life can be," noted a Singaporean billionaire when discussing succession. "Neither life nor success can be taken for granted."

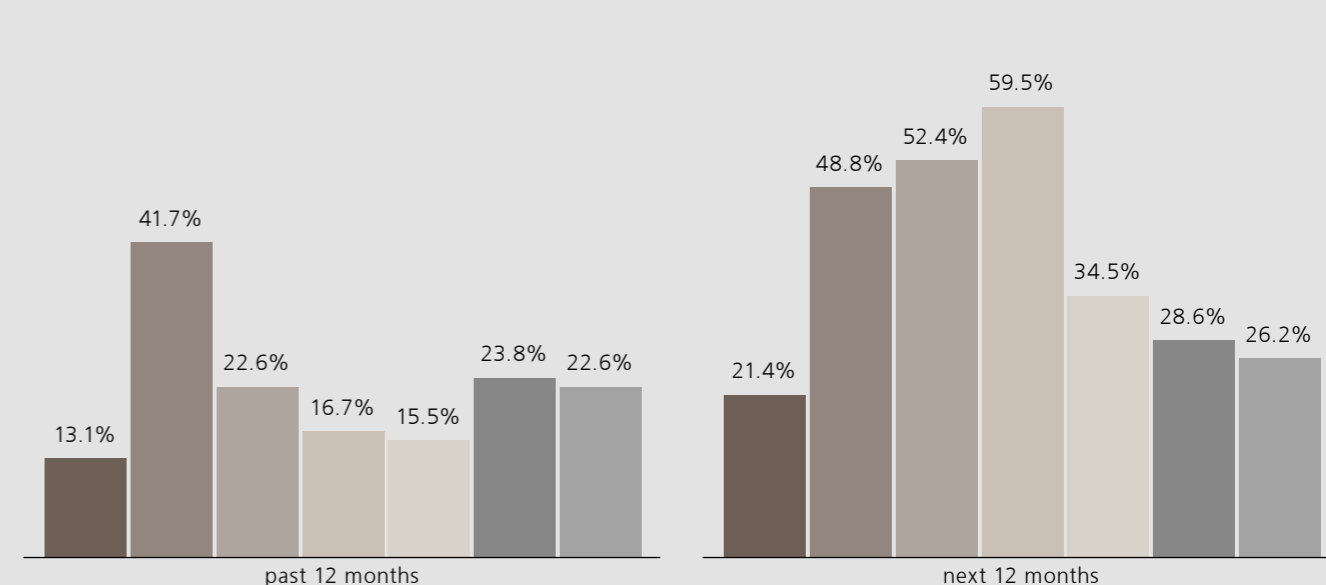
Billionaires are reviewing their business strategy, especially as the pandemic seems likely to last longer than initially expected. Do we need more capital? More liquidity? Do we have the right skill sets? Partners ranked reviewing business strategy as the second highest priority over 12 months.

In light of the extraordinary market volatility, partners also expect billionaire clients to review their long-term investment strategy and the structure of their family offices.

Turning to taxation, the partners say that their billionaire clients are expecting their taxes to increase, as they see the magnitude of government support packages and realize that the money to pay for this will have to be raised from somewhere. More than half think there will be new wealth taxes and increases in direct taxation.

On the topic of the economy, two thirds (66%) of the partners interviewed in April and May said their clients foresaw a U-shaped recovery.

Billionaires' recent and planned actions
Actions taken or to be taken by billionaires



■ Relocate to another country
■ Changes to their investment strategy
■ Changes to their business strategy
■ Accelerate succession planning
■ Change the structure of their family office
■ Change their approach to their tax affairs
■ Give more to philanthropic causes



Looking forward: emerging from the storm

“The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process,” Joseph Schumpeter

For billionaires and the world economy as a whole, 2020 will go down as a pivotal year, a hinge point in history, when the COVID-19 storm turbocharged the economy's transition to digital, while becoming less global and more indebted. In the next 10 years, society's business innovators have a vital role to play in applying the world's growing inventory of emerging technologies to boost productivity. They must also bridge the increasingly evident environmental and social deficits.

Innovators and disruptors will expand their businesses exponentially, using emerging technologies as raw materials, eventually transporting disruption to all sectors. Taking data as a proxy for the magnitude of the digital revolution, the World Economic Forum forecasts that by 2025 an estimated 463 exabytes of data will be created every day – as recently as 2012, the entire digital universe contained 2,700 exabytes. But as with any industrial revolution, there will be billionaire businesses trapped in struggling sectors. There will be winners and losers – new billionaires and more dropouts.

A less global world will stir headwinds for some, but it may create opportunities for others. While global businesses will still sell their products globally, they are already localizing production.

Another possible headwind is higher taxes. Will governments levy the superwealthy to balance budgets? While governments everywhere may be considering wealth taxes, they are often unpopular with the electorate and don't raise significant amounts, as many politicians understand. Stealth taxes such as financial repression – keeping interest rates on savings below inflation – seem more effective, steadily repairing government finances. Further, it's more politically expedient to raise existing taxes such as income and capital gains tax than to invent a new tax.

More than ever before, society's business innovators will be needed to balance society's books in the 2020s. Higher productivity is needed to address the huge public financial deficits, while taking care to reduce social inequality and to tackle the environmental resource scarcity by doing more with less. Increasingly billionaires will seek to do this not just indirectly through their businesses' economic contributions, but directly through strategic philanthropy, good corporate citizenship and impact investing. The pandemic has opened their eyes.

As the storm passes, a new generation of entrepreneurs looks likely to digitize, refresh and revolutionize the economy.

Expect continued acceleration.

In the words of a Chinese billionaire: "Continue innovation; always pursue improvement."

Methodologies

UBS/PwC "innovators and disruptors" framework

The UBS/PwC analysis framework takes a multi-layered approach to identifying "innovator and disruptor" billionaire-controlled companies that can be applied from the outside in or vice versa. Judged as the factors having the biggest impact on business disruption and innovation, these components are: disruptive business models, essential technologies and proven emerging technologies.

1. Disruptive business models

Our research has analyzed companies' business models across four dimensions: customer centricity, agile operating models, technology ecosystems and digital infrastructure.

2. The "Essential Eight" technologies

PwC's technology team has identified what it calls the "Essential Eight" technologies that matter most for business over the next three to five years. These are: (1) artificial intelligence; (2) augmented reality; (3) blockchain; (4) virtual reality; (5) drones; (6) Internet of Things; (7) 3D printing; (8) robotics. The disruptive potential of these technologies is maximized when there's a convergence between digital experience, the cloud and big data.

3. "Emerging" technologies

We have additionally selected a further 40 proven "emerging" technologies that companies are applying to achieve business innovation.

To be included in the innovator or disruptor universe, a company should have both a disruptive business model and apply at least one of the technologies that we focus on. We have analyzed this from financial statements as well as publicly available information about research and development. From this analysis we judge that these factors either have or will have a "material" effect on a company.

UBS sustainability scores

UBS has developed an in-house proprietary methodology to generate sustainability scores. The process relies on data sourced from multiple best-in-class ESG data providers, chosen according to their area of expertise, covering nearly 11,000 equity and bond issuers and 170 markets. The methodology is in line with the Sustainability Accounting Standards Board Materiality Map, which identifies the sustainability issues that impact value creation and financial performance. UBS has identified six key sustainability topics that encompass the major sustainable development challenges faced by, and impacted by, both corporations and governments. These topics have been defined following a review of current frameworks and practices in the sustainable investing industry, the availability of reliable corporate data on these topics, and feedback received from investors.

**For further information
please contact**

Oliver Gadney
Media Relations, UBS, +44 20 756 89982,
oliver.gadney@ubs.com

Stéphanie Tobler Mucznik
Manager Integrated Communications,
PwC Switzerland, +41 58 792 18 16,
stephanie.tobler.mucznik@ch.pwc.com

Research and project team

UBS

Oliver Gadney
Aline Haerri
Annegret Meier
Romina Peyer
Anthi Spiliakopoulou
Michael Viana

PwC Switzerland

Andrea Colosio
Luzius Etter
Marcel Tschanz

Editor

Rupert Bruce, Clerkenwell Consultancy

Design

Bureau Collective

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