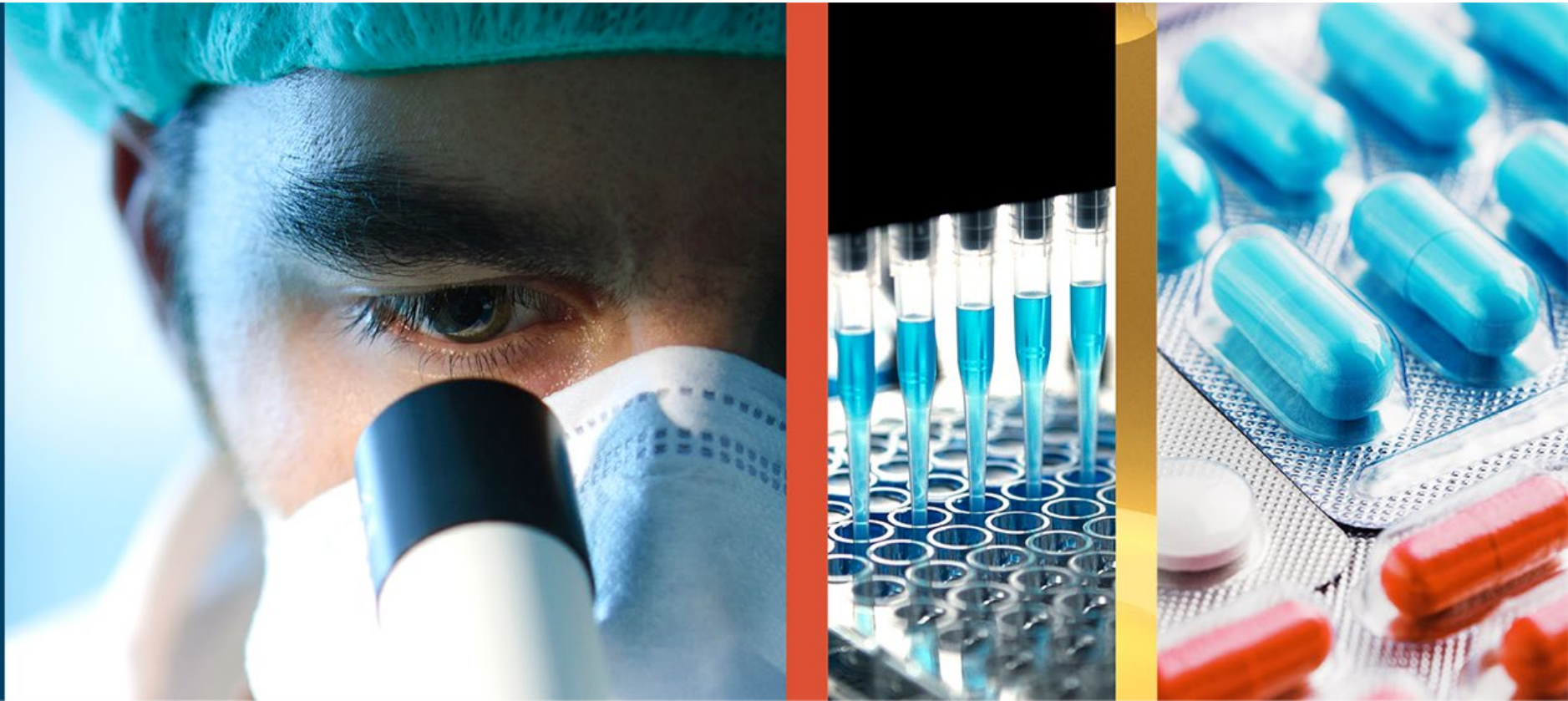


COVID-19's Impact on Opportunities in the China Health Sector

March 2020



COVID-19 and China Healthcare – an overview

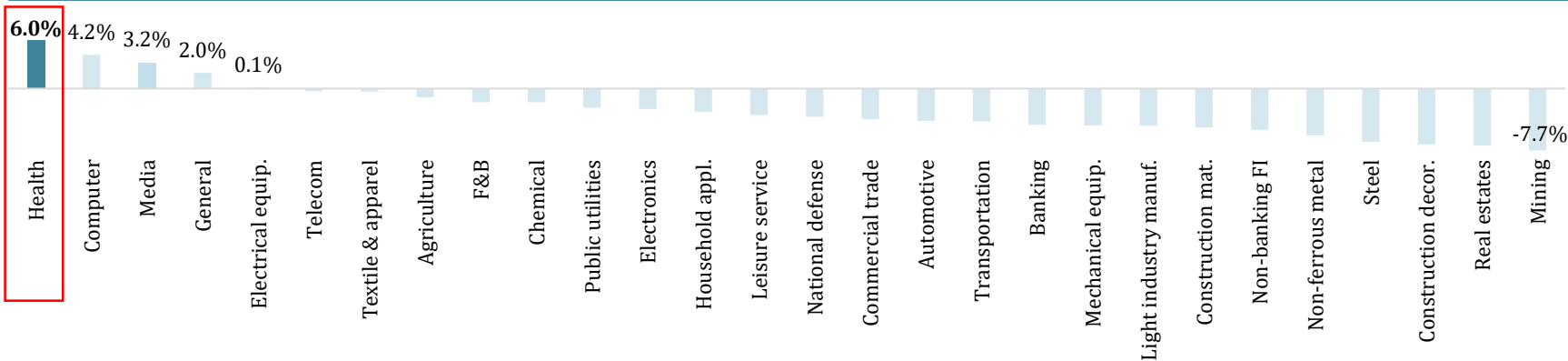
- 1 **COVID-19's impact on the global economy is far beyond SARS**, with almost 12x confirmed cases globally to date and stricter quarantine measures. While the epidemic in China shows signs of improvement, the outbreak has spread to other parts of the world. **We expect the economy in China to rebound strongly in the second half of this year**, but the extent of the recovery will depend on the impact of the outbreak on the global economy
- 2 We expect the outbreak to have a **positive effect on the healthcare sector development in China**. While SARS' impact on the sector was moderate, we believe COVID-19 will have a longer-term impact, with **certain sub-sectors benefiting from favorable government policies and increased private and public health investments**
- 3 The preventative, diagnostic and therapeutic solutions for COVID-19 generate explosive short-term demand for related medical products. While the demand spike is temporary, we expect **some medical products to experience a transformation to long-term increased demand**
- 4 COVID-19 has drastically raised people's health awareness. It will raise both public and private health spending, and we expect the following subsectors to benefit, **generating fundraising and buyout opportunities**:
 - **Vaccines, medical robots, IVD, ICU equipment & devices, online medical consultation, home-based medical devices and OTC medicine**
- 5 Healthcare has been a **hot spot for PE investments** in recent years. We expect industry consolidation to accelerate, creating **ample opportunities for both industry players and PE investors alike**
- 6 We believe that COVID-19 does not change the "principles" of cross-border M&A in China:
 - Outbound deals focus on the **acquisition of international brands, products and technology**
 - Inbound deals focus on **entering and capturing markets with strong demand and growth potential**

Overall, COVID-19 outbreak is an **opportunity rather than a crisis for capable private equity health investors**, especially in certain sub-sectors

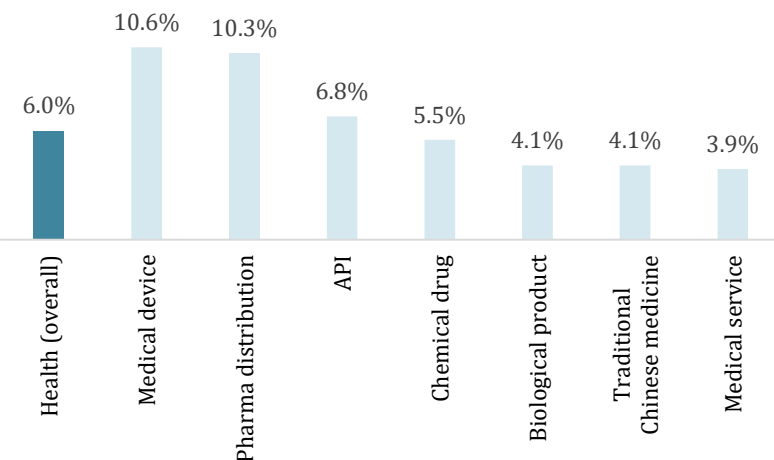
COVID-19 – China's Health Sector Performance

China's health sector has displayed outstanding defensive characteristics due to the catalytic effects of COVID-19, ranking first place among 28 key industries in the capital market with 6.0% price increase

Stock performance by key industry sectors¹



Stock performance by health subsectors



Top 10 gainers in health sector

Rank	Company Name	Price Change	Products Used for COVID-19
1	Lianhuan Pharma	61.2% ↑	Glucocorticoids
2	Improve Medical	61.1% ↑	Masks and PCR Test Kit
3	Porton Pharma	61.1% ↑	Remdesivir CDMO
4	Nanfang Medical	61.1% ↑	Protective consumables
5	Zhende Medical	61.0% ↑	Protective consumables
6	Glory Medical	60.9% ↑	Protective consumables
7	Chase Sun Pharma	54.7% ↑	Oximeters, heparin
8	Harbin Pharma	49.6% ↑	TCM (Shuang Huan Lian)
9	Neptunus	48.8% ↑	Potential vaccine and test kit in development
10	Taloph Pharma	43.7% ↑	TCM (Shuang Huan Lian)

Note: (1) China A-share companies for the week of February 3rd, 2020 to February 7th, 2020
Source: Capital IQ, BDA research and analysis

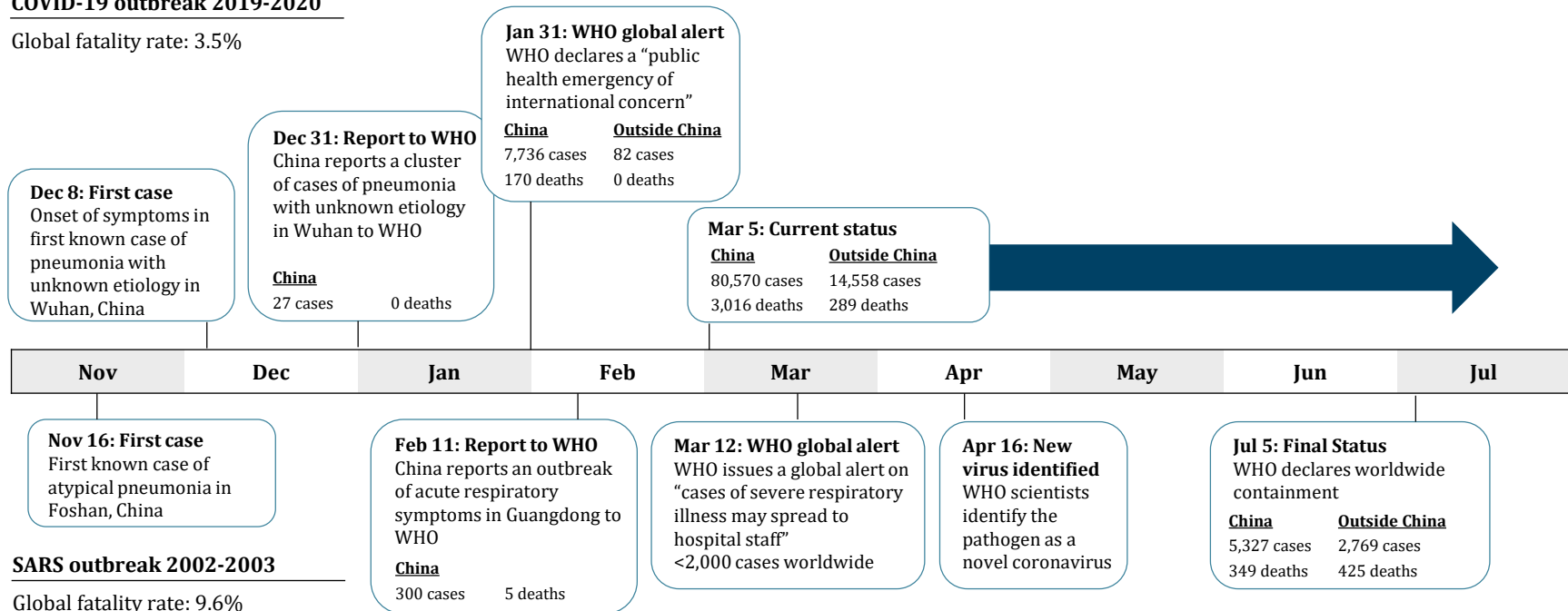
1 COVID-19's Impact on Economy is Far beyond SARS, with 12x Confirmed Cases and Stricter Quarantine Measures

Based on SARS experience, the recovery is expected to come in Q3 2020

Comparison between SARS and COVID-19

COVID-19 outbreak 2019-2020

Global fatality rate: 3.5%

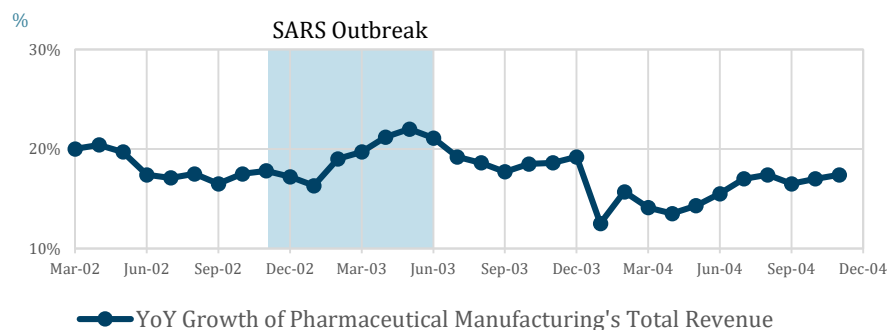


- COVID-19 is less fatal but more infectious: The global fatality rate of COVID-19 is one third of SARS, but confirmed cases are almost 12x SARS's final numbers
- With no effective drug for COVID-19, affected areas have to rely on traditional measures of infectious disease control, including quarantines, increased social distance and community lockdowns, which have led to a wider and deeper impact on the economy, particularly considering that the world is much more globalized now compared to 2003
- Expectations that the impact of the COVID-19 on Chinese economy will last until Q2 2020 and the economy will recover from Q3 2020. However, the extent of the recovery will depend on the effects of the outbreak in other parts of the world on the global economy

2 Impact on Health Sector: SARS vs COVID-19

SARS led to only short-term growth in China's health sector whereas COVID-19 will trigger long-term growth of some subsectors in a more modern healthcare environment

SARS impact on pharmaceutical sector in China



- During SARS from Nov 2002 to July 2003, China's pharmaceutical manufacturing revenue experienced significant growth peaking at 22.0% in May 2003
 - Revenue growth was mainly driven by increased drug sales volume in the pharmacy sales channel, shifting away from hospitals drug sales due to quarantine measures and lower patient volume during the outbreak period
 - Profitability increases resulted from economies of scale of larger volume manufacturing and lower channel fees
- Soon after the SARS containment, pharmaceuticals sector growth decelerated and normalized to the level before the SARS outbreak




































Health sector evolved rapidly over the past two decades and will react to COVID-19 differently in the long-term

	2003	2020
# of listed health companies	100	320
Total market cap of health companies	US\$29b	US\$684b
Share of TCM in health sector's market cap	27%	16%
#1 health company (market cap)	Harbin Pharm (US\$2b)	Hengrui Medicine (US\$56b)

- In 2003, health companies in China were mostly focused on antibiotics and TCM. Recently we have seen tremendous investments in innovative drugs and significant growth in non-pharmaceutical subsectors
- Like SARS, as a public health emergency, COVID-19 generates explosive short-term demand for related medical products
- For the long-term impact, with a more modernized health sector, COVID-19 will act as a trigger to the growth of several subsectors:
 - Vaccines, medical robots, innovative drugs, IVD, ICU equipment & devices, online medical consultation, home-based medical devices and OTC medicine

3 Like SARS, COVID-19 Outbreak Generates Explosive Demand for Related Medical Products





While much of the demand spike is temporary, we expect certain medical products to experience long-term demand growth

Stage	Resolution Measures	Related Products	Technical Complexity	Length of Impact
Prevention 	<ul style="list-style-type: none"> Personal hygiene protection through washing hands frequently and using prevention products to minimize the chance of infection Avoidance of public areas that are more compact and with high human traffic 	Vaccines		
		Vitamin C		
		Masks		
		Gloves		
		Medical disinfectant		
Diagnosis 	<ul style="list-style-type: none"> Early symptoms diagnosed include fever, fatigue, cough Clinical diagnosis and lab tests such as nucleic acid detection, urine sampling, X-ray, CT to confirm results 	X-ray machine, CT		
		IVD products		
		Nucleic acid detection		
		Thermometer		
Treatment 	Determine appropriate treatment plan according to severity <ul style="list-style-type: none"> General treatment: testing and monitoring (vital signs, blood and urine testing, CRP, oxygen therapy, medication treatment) Severe and critical case treatment: additional specialized treatment such as respiratory support and the use of innovative medicine 	Innovative medicine		
		ICU devices		
		Patient monitor		
		α interferon		
		Glucocorticoid		
		Antibiotics		
		Injection infusion		

Low     High





4 Spreading of COVID-19 Drastically Raises People's Health Awareness (1/2)

It will raise both public and private health spending, and we expect the following subsectors to benefit

Subsectors	Comments	M&A implications
Vaccine 	<ul style="list-style-type: none"> Constant media coverage of COVID-19 popularizes knowledge about infectious disease and raises awareness of proactive prevention in future - vaccination Ample growth potential: vaccination rate in US is ~59% vs ~2% in China 	<ul style="list-style-type: none"> Still very few sizable domestic vaccine players Significant potential benefits will attract more new entrants and capital
Medical Robots 	<ul style="list-style-type: none"> Medical robots are adopted in drug distribution, diagnosis and disinfection to reduce the cross-infection risk – e.g. the diagnosis of the first confirmed patient in US Expect an increase in acceptability, and scale-up 	<ul style="list-style-type: none"> Relatively new technology and business model Requires private sector funding for market expansion and continuous product development Players / investors may team up with tech giants to share technological resources
Innovative Drug 	<ul style="list-style-type: none"> Fast track approval for COVID-19 related clinical trials Expands research interests from individual diseases such as cancer and diabetes to infectious diseases like COVID-19 	<ul style="list-style-type: none"> Given the high uncertainty of pharmaceutical clinical trials, investors prefer to participate via cap raise rather than buyouts at pre-commercial phase Overseas innovative pharmaceutical companies at advanced clinical stage will generate interests from a first-mover angle "Best-in-Class" and "First-in-Class" are always the stars
IVD 	<ul style="list-style-type: none"> Advanced diagnostics is always needed, being more cost-effective, rapid, convenient and most importantly more accurate More IVD instruments will be installed and generate high reagents and consumables demand 3rd-party labs will take more responsibilities in public health 	<ul style="list-style-type: none"> Likely to drive outbound M&A deals for IVD devices, particularly wide-spectrum IVD platform 3rd-party labs can choose to expand through M&A rather than to grow organically

4 Spreading of COVID-19 Drastically Raises People's Health Awareness (2/2)

It will raise both public and private health spending, and we expect the following subsectors to benefit

Subsectors	Comments	M&A implications
ICU Equipment & Devices (e.g. ECMO) 	<ul style="list-style-type: none"> • Insufficient ICU equipment directly linked to the high mortality rate in Wuhan area • Expanding and upgrading ICU equipment after the incident is expected 	<ul style="list-style-type: none"> • Increased outbound M&A demand for advanced and durable ICU equipment & devices • Geographic, channel, or product offering expansion can drive bolt-on acquisitions
Online Medical Consulting 	<ul style="list-style-type: none"> • Constrained medical resources and cross-infection risks at hospitals force patients with mild symptoms to resort to online medical consulting • Expect to play a part in primary medical care to support tiered medical services 	<ul style="list-style-type: none"> • Highly attractive as M&A targets because online medical consulting brings in high-quality health-oriented traffic • Still at low penetration rate with high growth potential and will continue to attract venture capital
Home-based Medical Devices 	<ul style="list-style-type: none"> • Extended capacity and capability to ease the burden for hospitals • Covers diagnostics, monitors and consumables • Not limited by payments from public health insurance 	<ul style="list-style-type: none"> • Long-term homecare for chronic disease will require regular purchases with convenient channels and wide product offerings • Expect to see the rise of homecare distributors and service providers backed by venture capital funding
OTC Medicine 	<ul style="list-style-type: none"> • Medical version of the "Consumption Upgrade" trend • Health supplements, ordinary treatment and first-aid • Not limited by payments from public health insurance 	<ul style="list-style-type: none"> • OTC Products with strong branding or channels are sought-after in the M&A market • Digital marketing becomes more influential in the decision-making for OTC medicine

5 We Believe COVID-19 does not Change the “Principles” of Cross-border M&A in China

Outbound deals focus on the acquisition of international brands, products and technology, while inbound health deals focus on entering and capturing markets with strong demand and growth potential

China outbound deals – case study

Parties	Investment detail
Buyer   SEHK:853	<ul style="list-style-type: none"> Time of investment: March 2018 Deal detail: Microport Scientific Corp., manufacturer and distributor of medical devices, acquired LivaNova PLC's cardiac rhythm management (CRM) business, for US\$190m Buyer rationale: to acquire CRM technology and expand its global presence
Seller   NSDQ:LIVN	
Buyer   SHSE:600664	<ul style="list-style-type: none"> Time of investment: February 2018 Deal detail: Harbin Pharmaceutical acquired ~40% stake in U.S. nutritional supplements retailer GNC Holdings, for US\$300m Buyer rationale: to obtain exclusive rights to use GNC's trademarks and introduce its products in mainland China
Seller   NYSE:GNC	
Buyer   SEHK:1066	<ul style="list-style-type: none"> Time of investment: September 2017 Deal detail: Weigao Medical acquired US-based Argon Medical, a manufacturer of single-use vascular interventional devices, for US\$850m Buyer rationale: to expand overseas and bolster product portfolio
Seller  	

China inbound deals – case study

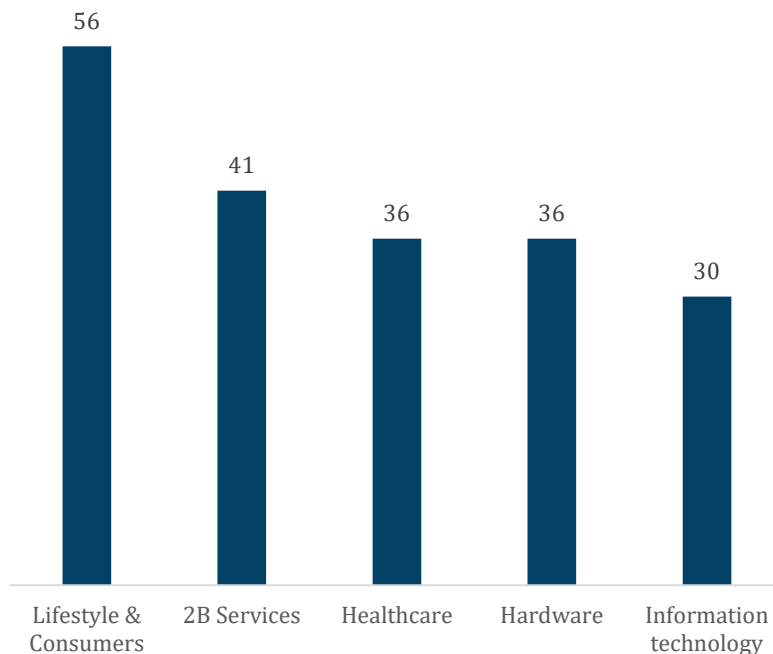
Parties	Investment detail
Buyer   NasdaqGS:AMGN	<ul style="list-style-type: none"> Time of investment: October 2019 Deal detail: Amgen acquired 20.5% of BeiGene, developer of immune oncology drugs for the treatment of cancer, for US\$2.7b Buyer rationale: to accelerate its plan to expand oncology business in China
Seller   NasdaqGS:BGNE	
Buyer   TSE:4543	<ul style="list-style-type: none"> Time of investment: July 2018 Deal detail: Terumo acquired Essen Technology, a specialized enterprise of drug-eluting stents (DES), for US\$175m Buyer rationale: to enter the DES market in China, which is expected to become the biggest market in a few years
Seller  	
Buyer   NasdaqGS:WBA	<ul style="list-style-type: none"> Time of investment: July 2018 Deal detail: Walgreens Boots Alliance acquired 40% of GuoDa Drugstores, leading retail pharmacy chain in China, for US\$418m Buyer rationale: to invest in a global pharmacy-led health and beauty enterprise and capture the fast-growing Chinese retail pharmacy market
Seller  	

6 COVID-19's Impact on PE Investments

An opportunity for capable PE investors, especially in certain sub-sectors, not just a crisis

Top 5 hot spots for PE investments after outbreak

Number of PE deals announced in Feb 2020



Impact for PE investors

- COVID-19 has significantly disrupted manufacturing and logistics across all sectors. This brings a huge challenge to the supply chain and cash flow management. The focus of PE investors in Q1 **shifts from deploying capital to active portfolio management**
- Companies with constrained cash flow may struggle to survive in the next three to six months, which will expedite the sector consolidation. For PE investors, **excellent timing to identify “temporarily distressed” companies with reasonable valuation**
- These opportunities are likely to happen in the following areas:
 - **Less rigid demand and more consumer characteristics:** health screening, ophthalmology, dental, medical aesthetics
 - Innovative drugs and medical devices which are **significantly delayed in clinical trials or regulatory approval**
 - Companies **serving hospitals with long credit terms** and elevated working capital pressure due to potential payment delays
- Execution-wise, the one-time off impact from COVID-19 **adds difficulty to due diligence and valuation** and will become a key negotiation point
- Overall, COVID-19's outbreak is an **opportunity rather than a crisis for capable PE investors**

Global Healthcare M&A Practice with a Long-Established Asian Presence

Global coverage and eight offices spread across Asia: BDA has unparalleled access in the region and globally

Global coverage⁽¹⁾



400+ M&A professionals globally

~70 M&A professionals in Asia

22+ years of relationship-building

19 cities in 13 countries

80+ assets sold to Asian buyers

10,000+ calls made to Asian buyers

500+ transactions with Asian participation

Focus sectors



Extensive healthcare M&A experience

 Has been acquired by Hillhouse Capital 2019	 Has been acquired by THE LONGREACH GROUP 2019	 Divested plant health business in Japan to Nisso 2018	 Has been acquired by AGC Humanwell 2017	 Has been acquired by evotec 2017
 Recapitalisation by GALEN PARTNERS 2017	 Has been acquired by AGC AGC Asahi Glass 2016	 Acquired by Graphic Controls 2016	 Has been acquired by 康龙化成 PHARMARON 2016	 Has been acquired by ICG 2016

(1) Joint coverage with William Blair, BDA shareholder and strategic partner

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