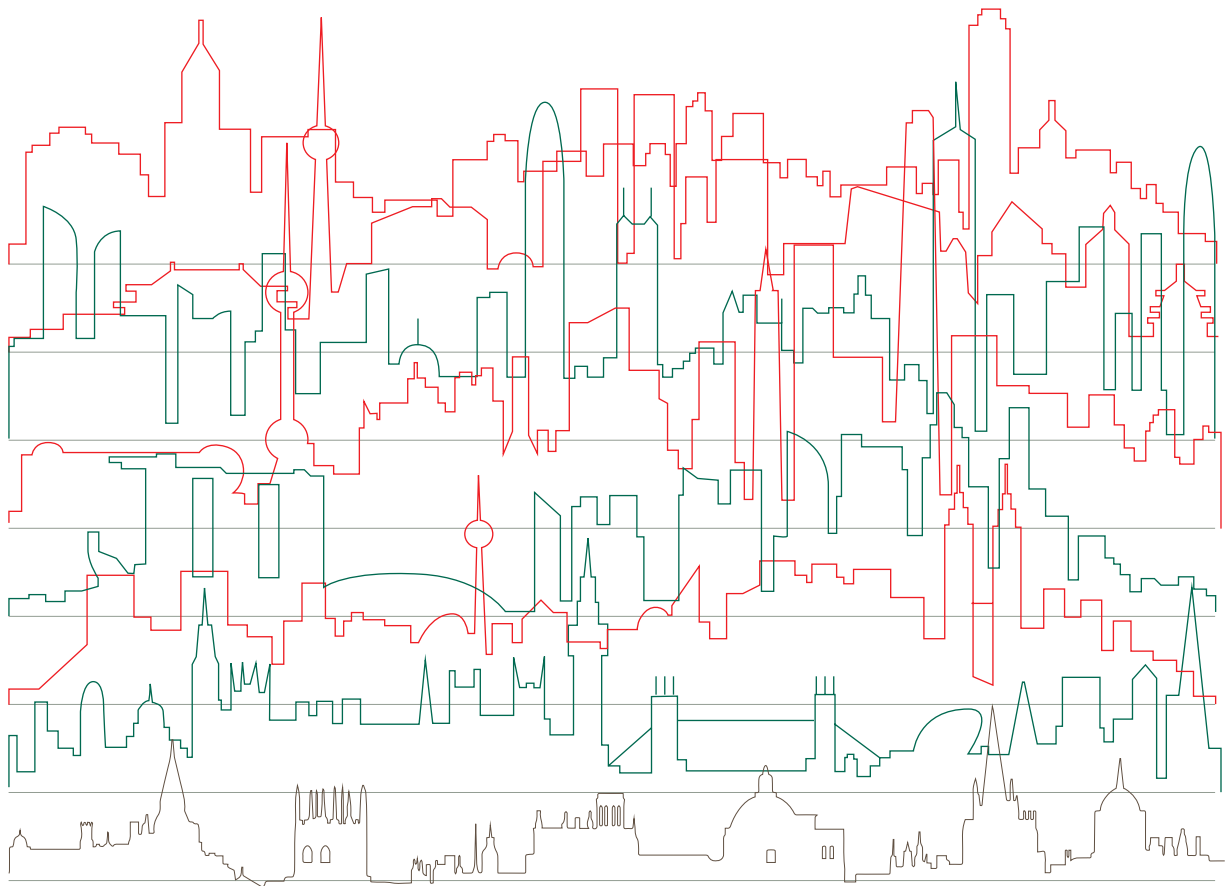


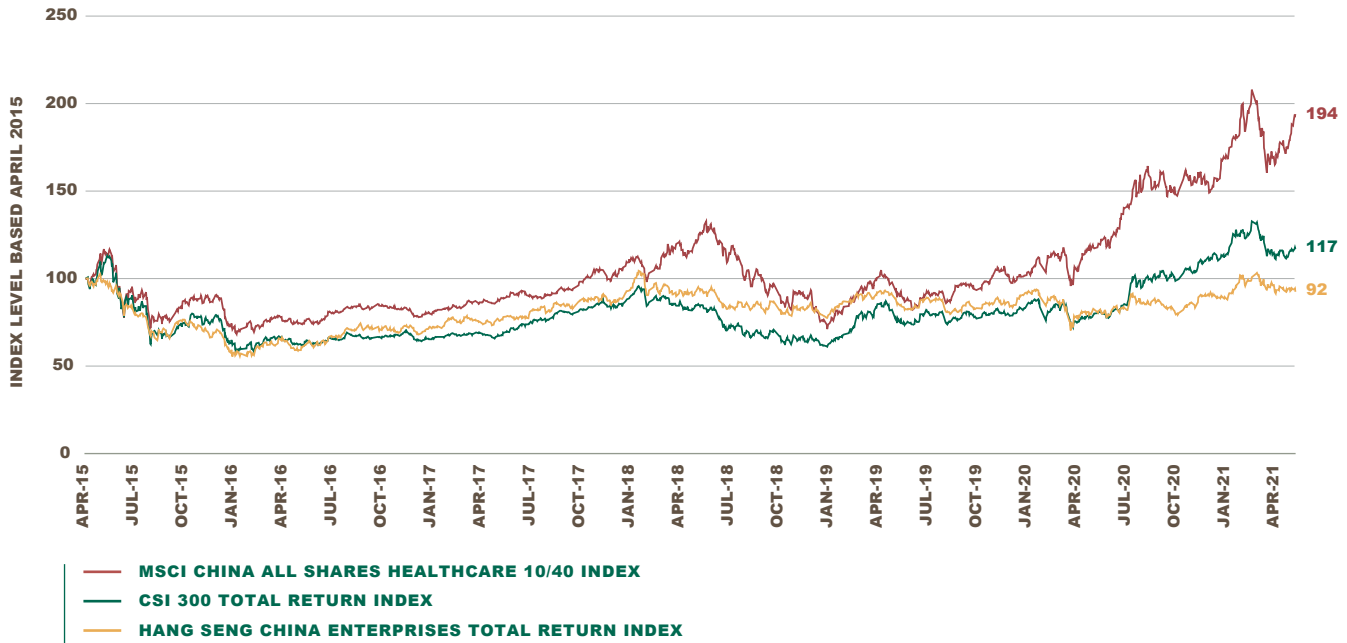
CHINA HEALTHCARE INNOVATION THE KEY TO VALUE



CHINA HEALTHCARE: A BRIGHT FUTURE

Against a backdrop of industry reform - and despite the current global pandemic - the Chinese healthcare sector prospered in 2021, recording stellar performance in the year to date. Right across its many subsectors (see Market Statistics on P.7) a bright future is unfolding for China’s pharmaceutical companies, taking into account the impetus provided by its ageing population and its burgeoning healthcare spending. Given their strong innovative capabilities, a ‘goldilocks’ prospect is in view for investment in Chinese pharmaceutical companies, as indicated by the MSCI China All Shares Healthcare 10/40 Index’s recent performance:

FIGURE 1: China healthcare performance



CHINA’S GREY BOMB CRIES OUT FOR INNOVATION

China’s over-65 population is projected to reach 366 million by 2050 and account for 26% of the population (Figure 2&3). By then, China’s enormous elderly population is estimated to exceed those of the U.S., Japan and Europe combined. This rapid growth will in turn demand reform in China’s healthcare system and improved access to affordable quality drugs, particularly those able to combat the chronic diseases associated with ageing. Unfortunately China’s spending on healthcare is low compared to other developed countries, making up only 6.6% of total GDP compared to 17% in the U.S., around 11% in Japan, Germany and France (Figure 4).

FIGURE 2: China 65 years & older

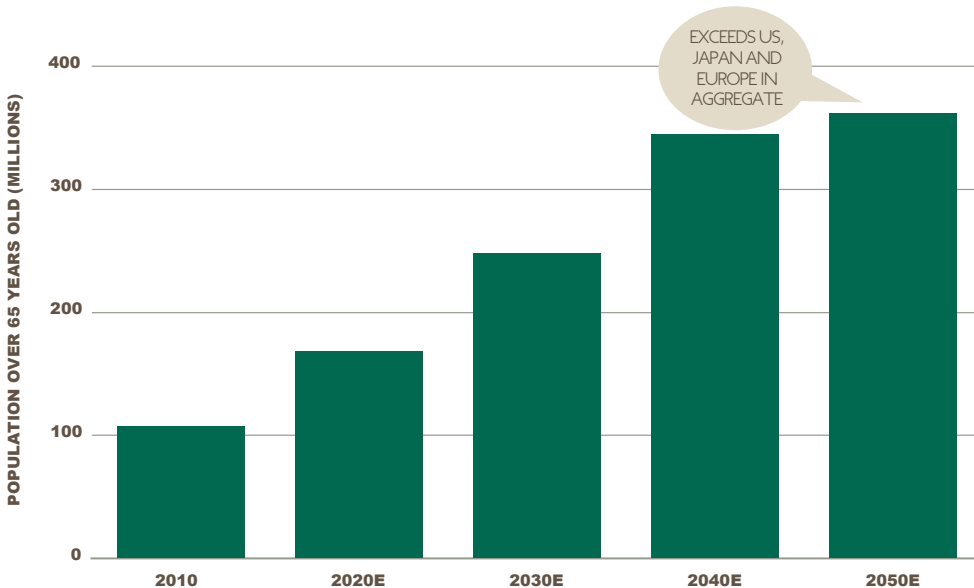


FIGURE 3: Comparative ageing rates

To close the gap, the Chinese government needs both to ramp up investment in healthcare and to allocate its spending with maximum strategic effectiveness.

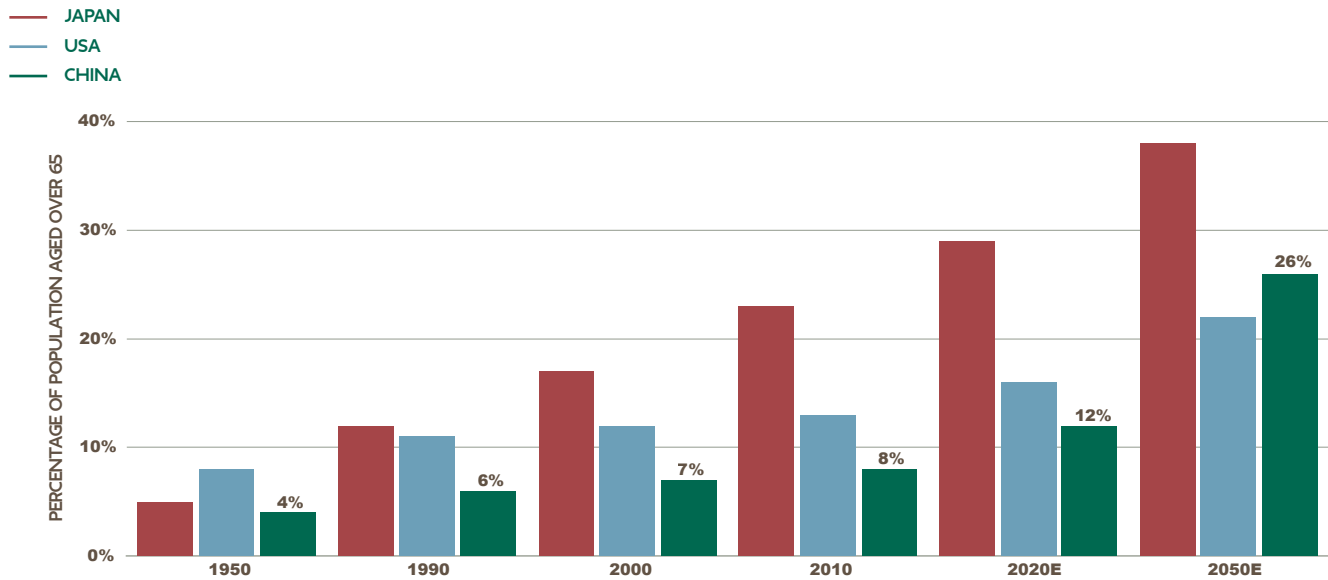
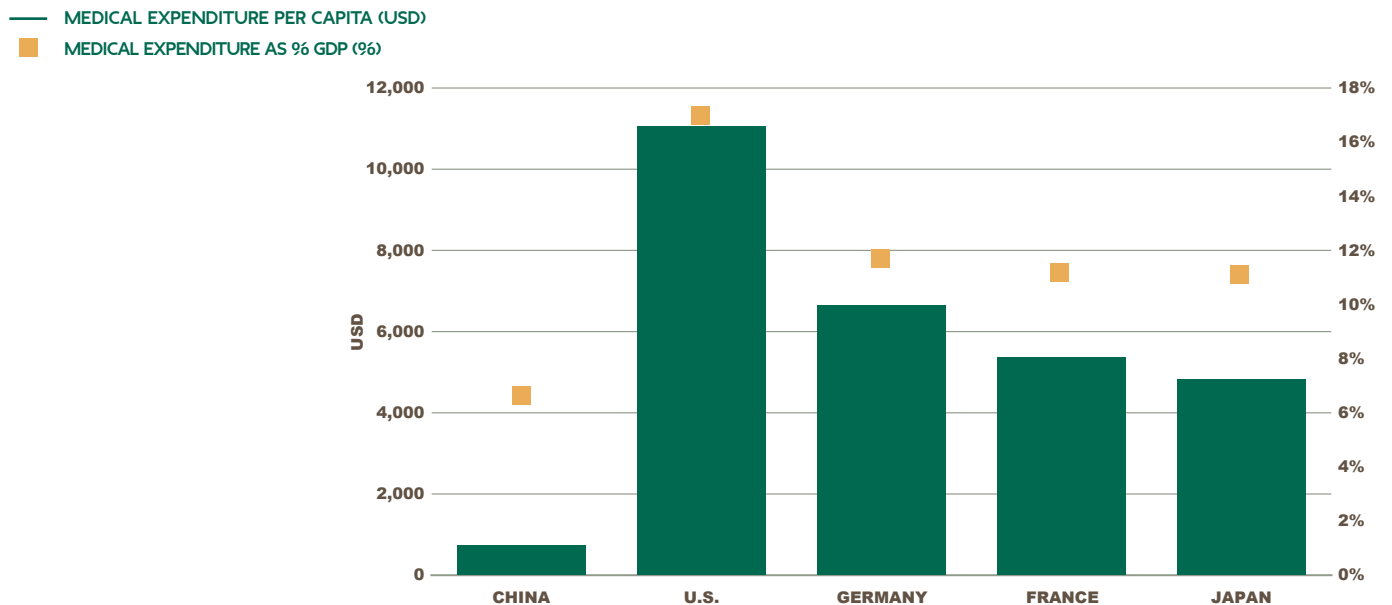


FIGURE 4: Comparative health expenditure



REGULATORY REFORM PROVIDES THE LAUNCH PAD

A milestone was passed in May 2018 with the establishment of China’s National Healthcare Security Administration (NHSA), which took over previously fragmented responsibilities in healthcare and social security from other government institutions. Focusing on the most effective allocation of resources, the NHSA launched a centralised bulk procurement programme, also known as the Group Purchasing Organization (GPO), in order to consolidate bargaining power, obtain the best prices for selected generic drugs and to eliminate poor quality drug makers. A summary of the GPO’s record to date is shown in Table 1.

The initiative was proven effective in lowering down prices. When the GPO programme first launched in late-2018, involving 25 generic drugs in 11 cities, it resulted in an average price cut of 52%. The first round of GPO was then expanded to nationwide, and resulted in a further 25% price cut. At the time, only the lowest single bidder was chosen for each drug.

A second round was launched in 2020 nationwide involving 23 provinces, which allowed up to three winning bidders for each drug, while a third was rolled out during the same year, this time allowing eight winners. In the fourth round, up to ten winners were allowed.

| TABLE 1: Timeline of GPO achievements

GPO	ANNOUNCEMENT	IMPLEMENTATION	DRUG CATEGORY	PRICE CUT MAGNITUDE
Round 1	Late 2018	End 2019	25 generics	Avg. -64%
Round 2	Jan-20	Apr-20	33 generics	Avg. -53%
Round 3	Jul-20	Oct-20	56 generics	Avg. -73%
Round 4	Dec-20	May-21	45 generics	Avg. -52%
Round 5	Apr-21	N/A	60 generics	N/A

Although the pressure of exclusive supply was becoming less tight as the number of winning bidders increased for each round, profit margins of lower value-added generic drugs continued to squeeze, resulting to share price corrections among mass generic makers. We expect this trend to continue, given the willingness of Chinese authorities to push the programme forward. A fourth round of the GPO will be implemented in May-21, while a fifth one was just announced in April.

While the policy has driven volatility in the sector given the continued price cuts, the reform should pave the long-term development of China's healthcare sector, consolidating the industry to a fewer number of companies that are more competitive and have strong innovation capability. We see opportunities in leading pharmaceutical companies, which will be able to get more market share. It is expected that the collective market share of the top four generic drug makers to jump from single-digit percentage to 30% by 2025 (Figure 5).

TWO KEY MESSAGES FOR INVESTORS

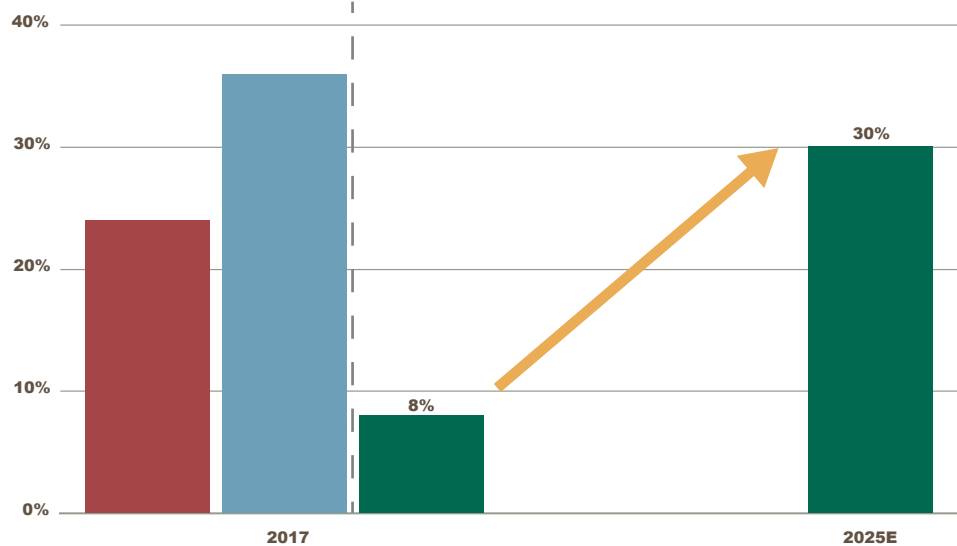
Firstly, GPO activities have triggered sector consolidation as high quality domestic players have continued to gain market share as a result of winning GPO bids. The increase in their market share has further accelerated as multinational corporations have become less active in the market (only three of them won bids in the latest GPO round). This heralds a far wider role for domestic drugs and their producers in future. It confirms our long-term view that GPO activities will particularly benefit sector leaders as the industry consolidates and domestic players become increasingly dominant. It is anticipated that the market share of the top four generic drug makers will jump from single figure percentages to 30% by 2025 (Figure 5).

Secondly, although the volume increase enjoyed by successful bidders have gone some way to offset the price cuts in generic drugs, companies will need to be able to draw on a pipeline of high quality innovation in future. Such innovation demands major investment, and only the biggest producers will be in a position to fund the necessary R&D. As well as capital to pursue fundamental research companies will also need the resources to undertake widespread clinical trials and other pre-clinical studies. Extensive sales networks and comprehensive intellectual property protections will also be indispensable for any pharmaceutical company aiming to survive and win in this environment.

The push for innovation can also be expected to further fuel consolidation in the industry, in part because small niche drug manufacturers' profitability is under increasing pressure but also because market entry barriers have risen. The converse is that innovative drugs will offer opportunities for much higher growth, especially as regulators seem prepared to streamline approval processes in order to ensure adequate amounts of domestic drugs come on stream to combat the chronic diseases associated with an ageing population.

FIGURE 5: Market share of top 4 generic drug makers

- US
- CHINA
- JAPAN



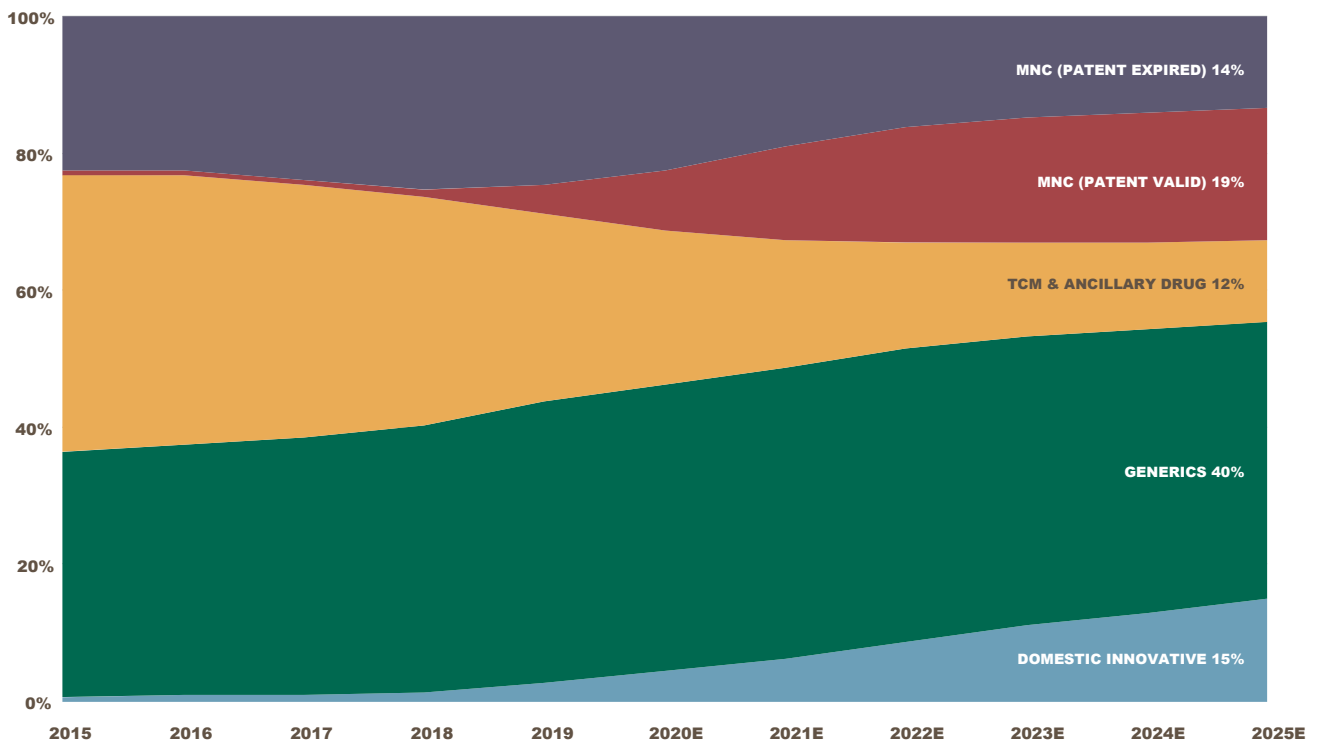
CHINA'S HEALTHY ENVIRONMENT FOR DRUG INNOVATION

To improve quality and promote innovation, China's National Medical Products Administration (NMPA) has rolled out a string of measures to facilitate approvals for drug registration. These include shorter timeframes for approval, acceptance of overseas clinical trial data and a fast-track approval process for novel high quality drugs that promise clear clinical benefits. Innovative drugs can now enjoy faster inclusion in China's National Reimbursement Drug List (NRDL). From a sales point of view, this is crucial. In China, around 70% of drug sales derive from hospitals, which for the most part only dispense NRDL-listed drugs. Historically, the majority of the drugs in the NRDL have been generic drugs but increasing numbers of innovative drugs are now also being included. In addition, since 2017 China has been updating its registration list annually instead of every five years, thus fostering much faster adoption of innovative products.

FIGURE 6: China projected drug sales market distribution

- MNC (PATENT EXPIRED)
- MNC (PATENT VALID)
- TCM & ANCILLARY DRUG
- GENERICS
- DOMESTIC INNOVATIVE

Overall, growth potential for the innovative drug market is huge. Domestic sales of such drugs are expected to rise significantly, as illustrated in Figure 6 below, jumping from 3% of total drug sales in 2019 to an estimated 15% by 2025.



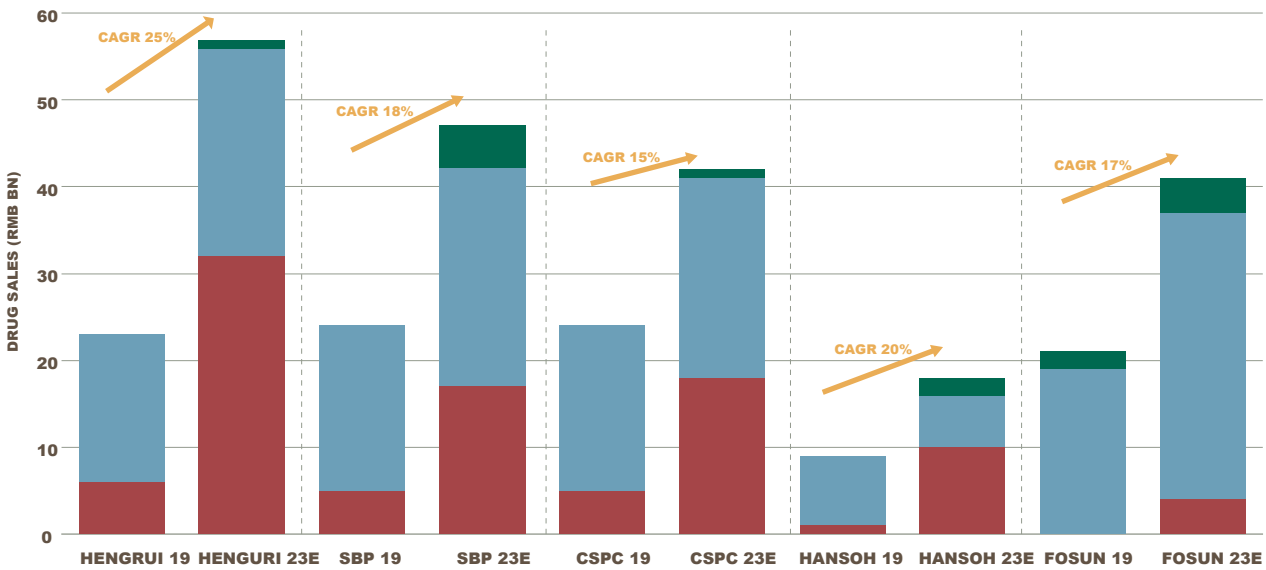
The underlying growth potential of the Chinese pharmaceutical sector is also demonstrated in Figure 7, which shows that the top five Chinese drug makers can expect to enjoy strong double digit percentage drug sales growth over the next few years - a surge in growth largely driven by the development of innovative drugs.

Taking all these factors into account, as investment prospects we therefore favor those pharmaceuticals which have strong innovation capabilities and should fare better regarding GPO and NRDL inclusion. Pharmaceuticals with diversified product pipelines and higher expenditure on R&D will outperform and better weather any future regulatory changes.

Last but not least, the door to additional finance has opened with Hong Kong Stock Exchange reforms that permit pre-revenue or pre-profit biotech listing and with the launch of Shanghai's NASDAQ-style STAR board. This influx of new capital will help drive the R&D essential to the development of groundbreaking new therapies. In turn, it will also attract more talents to the sector and play a vital part in shaping a bright future for innovation in China's pharmaceutical industry.

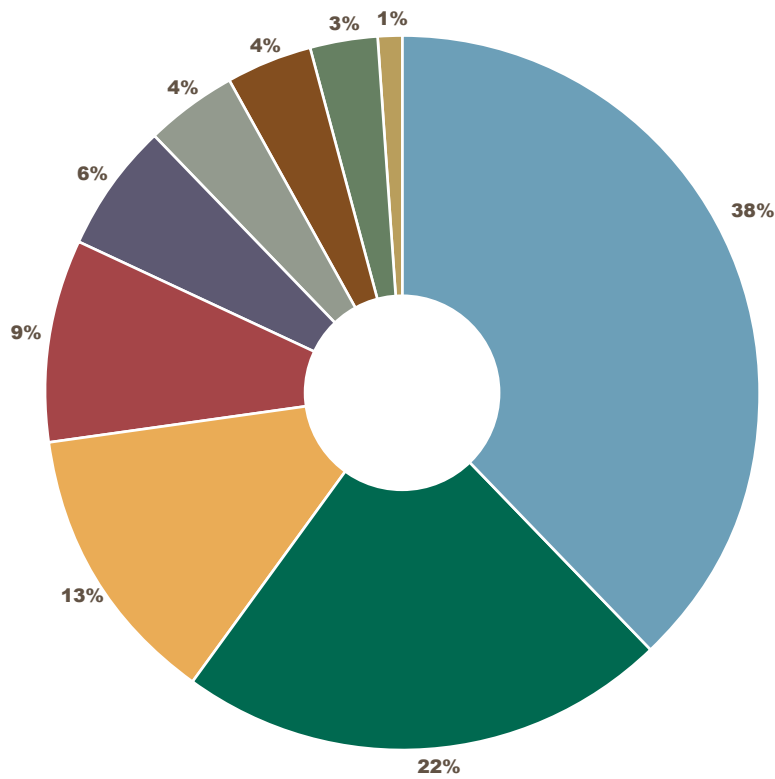
FIGURE 7: Top 5 drug makers growth

- OLD GENERICS
- NEW GENERICS
- INNOVATIVE DRUGS



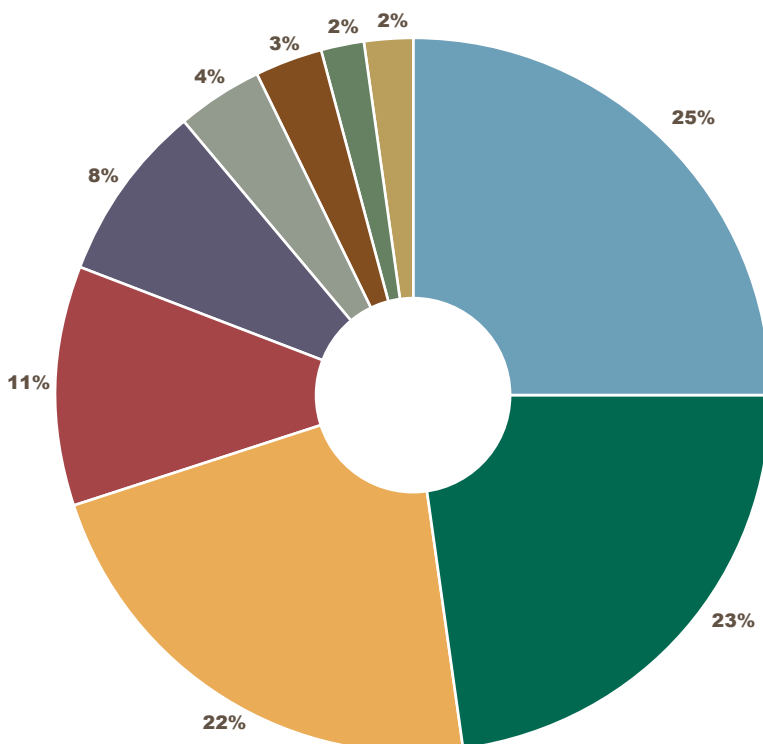
MARKET STATISTICS

ONSHORE



- PHARMACEUTICALS (38%)
- BIOTECHNOLOGY (22%)
- HEALTH CARE EQUIPMENT (13%)
- LIFE SCIENCES TOOLS & SERVICES (9%)
- HEALTH CARE SUPPLIES (6%)
- HEALTH CARE FACILITIES (4%)
- HEALTH CARE DISTRIBUTORS (4%)
- HEALTH CARE SERVICES (3%)
- HEALTH CARE TECHNOLOGY (1%)

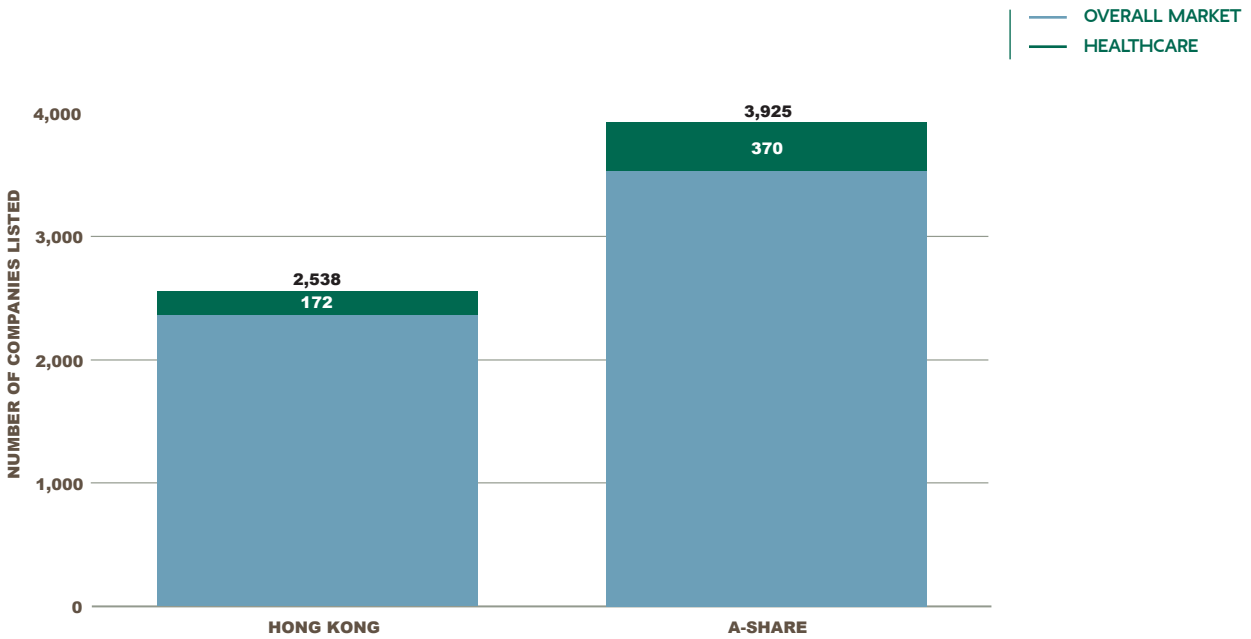
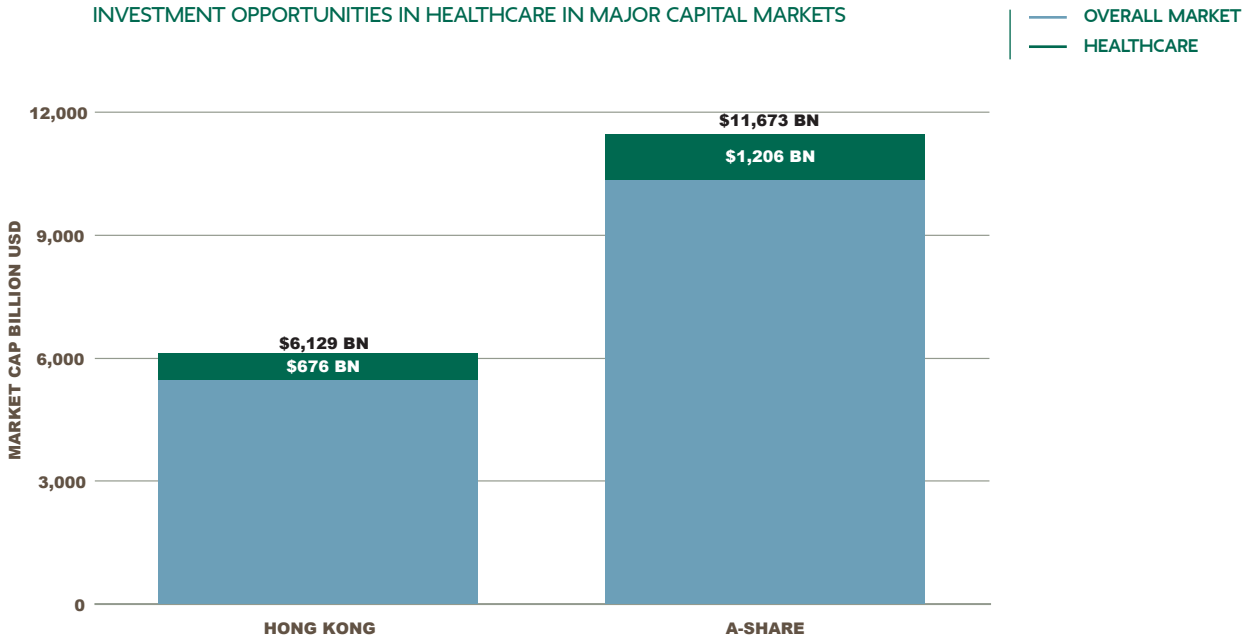
OFFSHORE



- BIOTECHNOLOGY (25%)
- LIFE SCIENCES TOOLS & SERVICES (23%)
- PHARMACEUTICALS (22%)
- HEALTH CARE FACILITIES (11%)
- HEALTH CARE TECHNOLOGY (8%)
- HEALTH CARE EQUIPMENT (4%)
- HEALTH CARE DISTRIBUTORS (3%)
- HEALTH CARE SUPPLIES (2%)
- HEALTH CARE SERVICES (2%)

MARKET STATISTICS

INVESTMENT OPPORTUNITIES IN HEALTHCARE IN MAJOR CAPITAL MARKETS



SOURCES

FIGURE 1: BLOOMBERG AS OF APRIL 2021

FIGURE 2: POPULATION PYRAMID, STATISTICS BUREAUX OF RESPECTIVE COUNTRIES AS OF 30 APRIL 2021

FIGURE 3: IBID

FIGURE 4: NATIONAL HEALTH COMMISSION, IMF, OECD & STATISTICS BUREAUX FROM RESPECTIVE COUNTRIES AT DECEMBER 2019

FIGURE 5: IQVIA, COMPANY DATA, CITI RESEARCH, 2019

FIGURE 6: IQVIA, COMPANY DATA, CITI RESEARCH, AUGUST 2020

FIGURE 7: HSBC QIANHAI SECURITIES ESTIMATES AS OF JUNE 2020

TABLE 1: GOVERNMENT WEBSITES, MORGAN STANLEY RESEARCH, APRIL 2021

MARKET STATISTICS: WIND, BLOOMBERG AS OF DECEMBER 2020

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