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10 July 2017

Outperform
Initiation of Coverage

Market Data: July, 7

Closing Price (HK$)	6.80
Price Target (HK$)	7.90
HSCEI	10,252
HSCCI	3,954
52-week High/Low (HK$)	7.42/4.86
Market Cap (US$m)	6,453
Market Cap (HK$m)	50,400
Shares Outstanding (m)	7,412
Exchange Rate (Rmb-HK$)	1.15

Price Performance Chart:

Source: Bloomberg

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研发丰收在望

SINO BIOPHARMACEUTICAL LIMITED (1177:HK)

Financial summary and valuation

	2015	2016	2017E	2018E	2019E
Revenue (HK$ m)	14,550.23	15,825.44	17,240.38	19,016.83	20,933.81
YoY (%)	17.55	8.76	8.94	10.30	10.08
Net income (HK$ m)	1,778.69	1,913.28	2,083.64	2,331.51	2,631.68
YoY (%)	17.54	7.57	8.90	11.90	12.87
EPS (HK$)	0.24	0.26	0.28	0.31	0.36
Diluted EPS (HK$)	0.24	0.26	0.28	0.31	0.36
ROE (%)	24.76	23.00	21.44	20.30	19.54
Debt/asset (%)	36.64	41.88	36.16	31.20	26.73
Dividend Yield (%)	0.94	0.88	0.83	0.93	1.04
PE (x)	28.33	26.35	24.19	21.62	19.15
PB (x)	3.41	4.22	3.52	2.96	2.51
EV/Ebitda (x)	14.95	13.48	12.23	10.83	9.49

Note: Diluted EPS is calculated as if all outstanding convertible securities, such as convertible preferred shares, convertible debentures, stock options and warrants, were exercised.

中国生物制药是国内制药龙头企业，公司的产品覆盖多种治疗领域，包括肝病、心脑血管疾病、肿瘤、镇痛 、骨科、肠道营养、抗感染、呼吸系统、肛肠科、糖尿病等。

润众 （恩替卡韦）有望触底回升。市场担忧替诺福韦对于恩替卡韦的替代竞争。然而，我们认为替诺福韦将主要抢夺对拉米夫定、阿德福韦或替比夫定耐药的病患市场。目前拉米夫定、阿德福韦、替比夫定的合计市场份额达到 48%（按量计算），意味着替诺福韦的替代空间巨大。由于恩替卡韦能够强效抗病毒，并且对于 NAs 初治乙肝患者耐药性低，恩替卡韦未来有望维持稳定的市场份额（按量计算约为 50%的份额）。润众于 16 年 1 季度退出福建市场，16 年 4 季度退出广东市场。尽管如此，随着渗透率的提升以及对于原研药的逐步替代，润众的销量有望于 17 年继续实现 10%的同比增长，并于 18-19 年提升至约 15%。我们估计未来 2-3 年润众的均价有约 12%的下降空间。我们预计润众的销售额于 17 年同比增长 5%，并于 2018-19 年每年增长 10%。

肿瘤药有望成为新的增长点。依尼舒（达沙替尼片）、格尼可（伊马替尼胶囊）、晴唯可（地西他滨注射液）以及首辅（卡培他滨片）于 2012-2014 年上市，未来有望借助招标快速渗透市场。今年 2 月，依尼舒、格尼可、晴唯可被纳入国家医保目录，将会进一步拉动这些产品的销售增长。我们预计公司肿瘤药的整体销售额于 17-19 年实现 15%的复合增长。

埃索美拉唑有望快速放量。艾速平注射剂（埃索美拉唑）是耐信的首仿药，于 2016 年 9 月上市。与传统的质子泵抑制剂相比，埃索美拉唑有效率高，起效快并且药效持久。假设 5 年内埃索美拉唑在质子泵抑制剂注射剂的市场份额从目前的 12%提升至 30%，并且艾速平占中国埃索美拉唑注射剂 20%的市场份额，艾速平的峰值销售额有望达到 6.5 亿元。

研发管线丰收在望。由于公司对研发的持续高投入，中国生物制药储备了非常丰富的在研产品线。截止今年 3 月，公司有 441 个品种处于临床试验或申报生产阶段。我们预计安罗替尼，一种新型多靶点的酪氨酸激酶抑制剂，有望于今年年底获得 CFDA 批准用于治疗非小细胞肺癌。预计该适应症将于上市后 7 年内实现约 25 亿元的峰值销售额。此外，我们预计替诺福韦和来那度胺的仿制药或将分别于 17 年底和 18 年获得 CFDA 上市许可，峰值销售额有望分别达到 16 亿元和 5 亿元。

中国制药行业的长期领跑者。我们看好公司雄厚的研发实力，以及未来新品种获批对于公司产品线的不断丰富。此外，公司强大的销售团队是新品种成功商业化的保障。我们预计 17/18/19 年的稀释每股盈利分别为 0.28 港币，0.31 港币，0.36 港币，分别同比增长 8.9%/11.9%/12.9%。我们的目标价为 7.9 港币，首次覆盖予以增持评级。

Investment Highlights:

Sino Biopharmaceutical has a comprehensive product portfolio covering therapeutic areas such as hepatitis, cardio-cerebral vascular (CCV) diseases, oncology, analgesia, orthopedic diseases, parenteral nutrition, anti-infection, respiratory system diseases, anorectal diseases and diabetes. We forecast diluted EPS of HK$0.28 in 17E (+8.9% YoY), HK$0.31 in 18E (+11.9% YoY), and HK$0.36 in 19E (+12.9% YoY). Our target price is HK$7.90. We initiate coverage with an Outperform recommendation.

***Runzhong* to bottom out.** We see tenofovir, a potential substitute for *Runzhong* (entecavir dispersible tablet), as mainly taking market share from patients resistant to lamivudine, adefovir or telbivudine. We think entecavir will maintain a stable market share at c.50% by volume thanks to its potent antiviral efficacy and low rate of drug resistance. *Runzhong* exited Guangdong in 4Q16 and Fujian in 1Q16. Nevertheless, higher penetration and market share gained from the original drug can still drive volume growth. We see 12% downside in *Runzhong's* average selling price (ASP) within the next 2-3 years and forecast *Runzhong* sales growth of 5% YoY in 17E, accelerating to 10% YoY in 2018-19E.

Young oncology drugs to become a new growth pillar. *Yinishu* (dasatinib tablet), *Genike* (imatinib mesylate capsule), *Qingweike* (decitabine injection) and *Shoufu* (capecitabine tablet) came to market in 2012-14, and can quickly penetrate the market through tender wins. *Yinishu, Genike* and *Qingweike* were included in the new national reimbursement drug list (NRDL) released in February 2017, which will significantly stimulate sales. We forecast combined sales of oncology drugs to grow at a 15% Cagr in 2017-19E.

Esomerprazole to ramp up rapidly. *Aisuping* (esomeprazole) injection, a first-to-market generic of *Nexium* injection, was launched in September 2016. Compared with conventional proton pump inhibitor (PPI) drugs, esomeprazole has greater predictability of response, enhanced speed and duration of effect. We forecast peak sales of *Aisuping* injection to reach Rmb650m in about five years, assuming esomeprazole's market share in PPI injections will increase from the current 12% to 30% and *Aisuping* will take a 20% share of the Chinese esomeprazole injection market.

Fruitful pipelines. Thanks to consistent investment on R&D, Sino Biopharmaceutical has built very comprehensive pipelines. As of March 2017, Sino Biopharmaceutical has 441 drug applications that are under clinical trials or filed production applications. We expect anlotinib, a novel multi-target tyrosine kinase inhibitor (TKI) to receive CFDA's approval of non-small cell lung cancer (NSCLC) indication by end-17E and peak sales from the single indication may reach Rmb2.5bn within seven years of launch. We also expect Sino Biopharmaceutical to receive CFDA approvals of tenofovir generic in end-17E and lenalidomide generic in 18E. We see Rmb1.6bn peak sales for tenofovir and Rmb500m peak sales for lenalidomide.

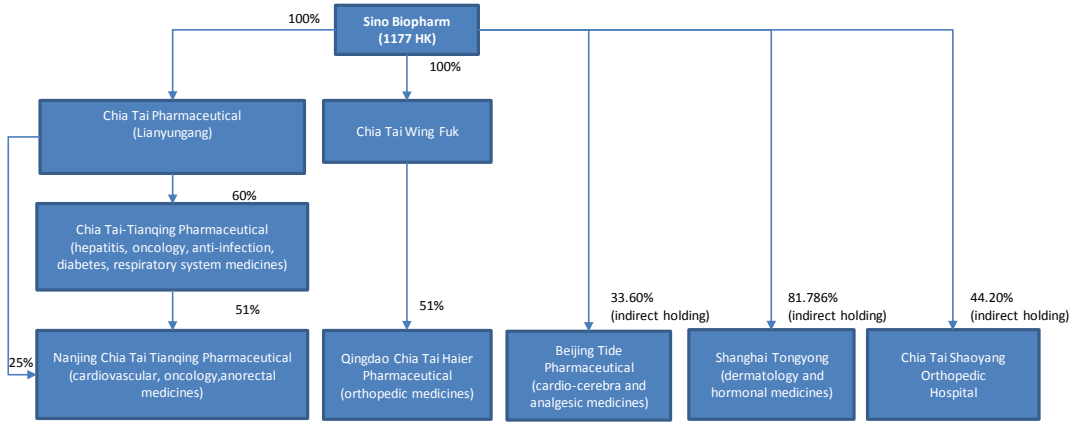
Long term winner in pharma industry. Sino Biopharmaceutical will continue to expand its product portfolio thanks to its strong R&D capability. Its sizable and capable in-house sales team will help the new drugs to ramp up fast after commercialization. We forecast diluted EPS of HK$0.28 in 17E (+8.9% YoY), HK$0.31 in 18E (+11.9% YoY), and HK$0.36 in 19E (+12.9% YoY). Our target price is HK$7.9. We initiate coverage with an Outperform recommendation.

Leading pharmaceutical manufacturer

Sino Biopharmaceutical, listed in Hong Kong in 2000, is a leading pharmaceutical manufacturer in China. It has a comprehensive product portfolio covering therapeutic areas such as hepatitis, cardio-cerebral vascular (CCV) diseases, oncology, analgesia, orthopedic diseases, parenteral nutrition, anti-infection, respiratory system diseases, anorectal diseases and diabetes.

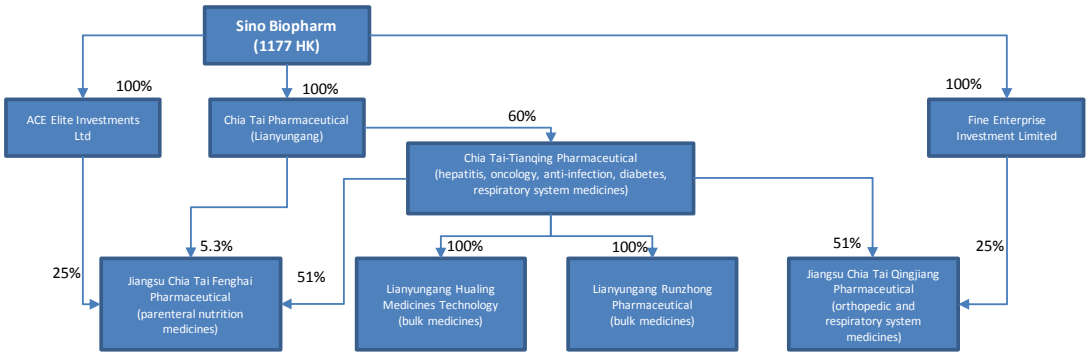
As a holding company, Sino Biopharmaceutical holds above 50% stake in its core subsidiaries, such as Chia Tai Tianqing Group (CTTQ), Nanjing Chai Tai Tianqing (NJCTT), Qingdao Haier Pharma, Jiangsu Qingjiang Pharma, Jiangsu Fenghai Pharma and Shanghai Tongyong Pharma. Sino Biopharmaceutical also holds 33.6% stake in Beijing Tide Pharma (Beijing Tide), an associate company.

Fig 1: Major subsidiaries and associates of Sino Biopharmaceutical (To be continued)



Source: Company data, SWS Research

Fig 2: Major subsidiaries and associates of Sino Biopharmaceutical (Continued)



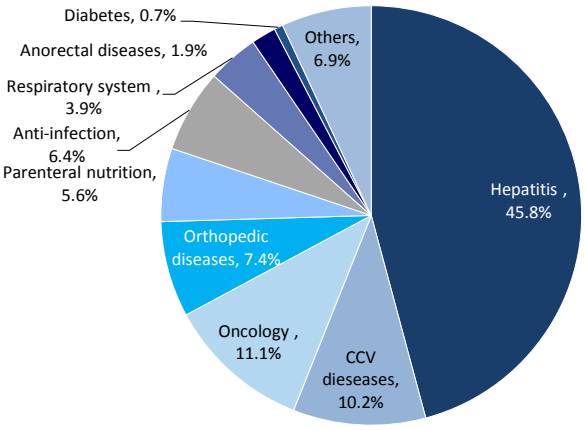
Source: Company data, SWS Research

Sino Biopharmaceutical registered total sales of HK$15.8bn in 16A. Its hepatitis drug sales reached HK$7.25bn in 16A, contributing 46% of Sino Biopharmaceutical's total sales. CCV drugs recorded HK$1.61bn sales in 16A, accounting for 10% of Sino Biopharmaceutical's total sales. Sales of oncology drugs accounted for 11% of the total sales in 16A and may expand quickly in the future.

Beijing Tide, an associate company of Sino Biopharmaceutical, mainly produces CCV drugs and analgesic drugs. We estimate the total sales of Beijing Tide's key products amounted to HK$3.51bn in 16A.

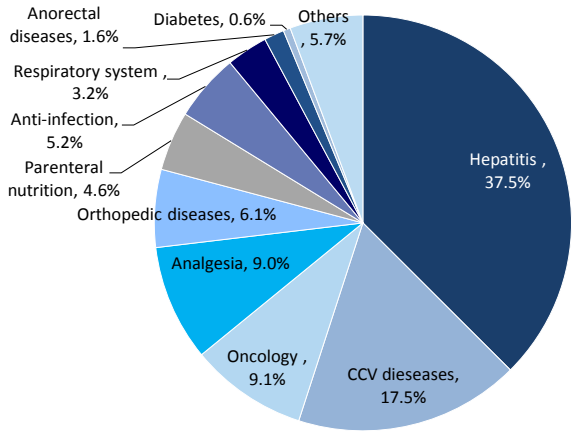
Sino Biopharmaceutical has strong sales force to support its leading market share in the key therapeutic areas. As of March 2017, Sino Biopharmaceutical has a total of 9,266 sales delegates while 4,756 people are dedicated in hepatitis drugs, 3,158 people focus on CCV drugs and the remaining 1,352 people cover other therapeutic areas. With more oncology products to come to the market, Sino Biopharmaceutical will quickly expand its oncology sales force, in our view.

Fig 3: Sales mix of Sino Biopharmaceutical (2016A, excluding drugs not being consolidated but under the management of Sino Biopharmaceutical)



Source: Company data, SWS Research

Fig 4: Sales mix of Sino Biopharmaceutical (2016A, including drugs not being consolidated but under the management of Sino Biopharmaceutical)



Source: Company data, SWS Research

We think *Runzhong* (entecavir dispersible tablet) is likely to bottom out in 17E (+5% YoY) and return to double digit growth in 18-19E. *Tianqingganmei* (magnesium isoglycyrrhizinate) sales may remain weak due to restrictions on the use of adjuvant drugs. Young oncology drugs, newly launched esomeprazole injection, and potential blockbusters under development will become key earnings driver for Sino Biopharmaceutical.

Fig 5: Sino Biopharmaceutical's key products

Brand name	Generic name	Formulation	Indication	Year of approval	Registration type	Manufacturer	Effective equity interest held by Sino Biopharmaceutical	Status	Sales (16A, HK$m)	% of total sales
Hepatitis										
Ganlixin 甘利欣	Diammonium glycyrrhizinate 甘草酸二铵	Injection and capsule	Acute and chronic viral hepatitis	1994	Type 5 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	130	0.8%
Tianqing Ganping 天晴甘平	Diammonium glycyrrhizinate 甘草酸二铵肠溶胶囊	Enteric capsule	Acute and chronic viral hepatitis	2004	Type 5 Chemical drug	Chia Tai Tianqing	60%	Exclusive formulation	483	3.1%
Tianqing Ganmei 天晴甘美	Magnesium isoglycyrrhizinate 异甘草酸镁注射液	Injection	Chronic viral hepatitis	2005	Type 1.3, 1.6 Chemical drug	Chia Tai Tianqing	60%	Exclusive drug, patent drug	2,163	13.7%
Mingzheng 名正	Adefovir dipivoxil 阿德福韦酯胶囊	Capsule	Chronic hepatitis B	2006	Type 3.1 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	510	3.2%
Runzhong 润众	Entecavir 恩替卡韦分散片	Dispersible tablet	Chronic hepatitis B	2010	Type 5 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	3,534	22.3%
Tianding 天丁	Maleicacid entecavir 马来酸恩替卡韦片	Tablet	Chronic hepatitis B	2012	Type 4 Chemical drug	Chia Tai Tianqing	60%	Generic, exclusive drug	275	1.7%
CCV										
Tianqingning 天晴宁	Hydroxyethylstarch 130 羟乙基淀粉 130/0.4 氯化钠注射液	Injection	Preventing and treating hypovolemia and acute normovolemic hemodilution (ANH)	2006	Type 6 Chemical drug	Nanjing Chia Tai Tianqing	55.60%	Generic	199	1.3%
Yilunping 依伦平	Irbesartan/Hydrochlorothiazide 厄贝沙坦氢氯噻嗪片	Tablet	Hypertension	2005	Type 6 Chemical drug	Nanjing Chia Tai Tianqing	55.60%	First-to-market generic	629	4.0%
Tuotuo 托妥	Rosuvastatin calcium tablets 瑞舒伐他汀钙片	Tablet	Hypercholesterolemia	2008	Type 3.1 Chemical drug	Nanjing Chia Tai Tianqing	55.60%	Third-to-market generic	627	4.0%
Kaishi 凯时	Alprostadil injection 前列地尔注射液	Injection	Improve cardio-cerebral micro-circulation, antithrombus	1998	Type 6 Chemical drug	Beijing Tide	33.60%	First-to-market generic	1,424	NA (product of an

Kaina 凯那	Beraprost sodium tablets 贝前列素钠片	Tablet	Chronic arterial occlusion	2008	Type 6 Chemical drug	Beijing Tide	33.60%	First-to-market generic	340	associated company) NA (product of an associated company)
Oncology										
Zhiruo 止若	Palonoside hydrochloride 盐酸帕洛诺司琼注射液	Injection	Chemotherapy induced nausea and vomiting	2008	Type 3.1 Chemical drug	Chia Tai Tianqing	60%	Generic	392	2.5%
Saiweijian 赛维健	Raltitrexed 注射用雷替曲塞	Injection	Advanced colorectal cancer	2009	Type 3.1 Chemical drug	Nanjing Chia Tai Tianqing	55.60%	First-to-market generic, exclusive drug	347	2.2%
Tianqingyitai 天晴依泰	Zoledronic acid injection 唑来膦酸注射液	Injection	Bone metastatic cancer pain	2004	Type 2, 6 Chemical drug	Chia Tai Tianqing	60%	Generic	238	1.5%
Qingweike 晴唯可	Decitabine 注射用地西他滨	Injection	Myelodysplastic syndrome (MDS)	2012	Type 3.1 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	156	1.0%
Shoufu 首辅片	Capecitabine 卡培他滨片	Tablet	1. Breast cancer 2. Colorectal cancer 3. Advanced or metastatic gastric cancer	2014	Type 6 Chemical drug	Chia Tai Tianqing	60%	Third-to-market generic	179	1.1%
Genike 格尼可	Imatinib mesylate 甲磺酸伊马替尼胶囊	Capsule	Ph+ chronic myeloid leukemia (CML)	2013	Type 6 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	155	1.0%
Yinishu 依尼舒	Dasatinib 达沙替尼片	Tablet	Imatinib resistant Ph+ chronic myeloid leukemia (CML)	2013	Type 3.1 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	87	0.5%
Renyi 仁怡	Pamidronate disodium 帕米膦酸二钠葡萄糖 注射液	Injection	Hypercalcemia caused by malignant tumor and osteodynia caused by metastatic bone cancer	2004	Type 4 Chemical drug	Nanjing Chia Tai Tianqing	55.60%	First-to-market generic, exclusive drug	NA	NA
Analgesia										
Kaifen 凯纷	Flurbiprofen axetil injection 氟比洛芬酯注射液	Injection	Analgesia for post-operation or cancer patients	2004	Type 6 Chemical drug	Beijing Tide	33.60%	First-to-market generic, exclusive drug	1,396	NA (product of an associated company)
Zepplas 泽普思	Flurbiprofen cataplasmata 氟比洛芬巴布膏	Cataplasmata	Relieving non-surgical joint soft tissue pain	2010	Type 6 Chemical drug	Beijing Tide	33.60%	First-to-market generic	318	NA (product of an associated company)
Orthopedic diseases										
New ossified triol capsule 盖三淳	Calcitriol capsule 骨化三醇胶丸	Capsule	1.Post-menopausal osteoporosis and senile osteoporosis; 2. Renal osteodystrophy	2003	Type 4 Chemical drug	Qingdao Chia Tai Haier	51.00%	First-to-market generic	846	5.3%
Jiuli 九力片	Glucosamine hydrochloride 盐酸氨基葡萄糖	Tablet	For treatment and prevention of osteoarthritis	2006	Type 3.1 Chemical drug	Jiangsu Chia Tai Qingjiang	55.60%	Second-to-market generic	210	1.3%
Parenteral nutrition										
Xinhaineng 新海能注射液	Carbohydrate and electrolyte 混合糖电解质注射液	Injection	Parenteral nutrition	2006	Type 3.2 Chemical drug	Jiangsu Chia Tai Fenghai	60.90%	First-to-market generic, exclusive drug	645	4.1%
Fenghaineng fructose injection 丰海能果糖注射液	Fructose injection 果糖注射液	Injection	Parenteral nutrition	2003	Type 6 Chemical drug	Jiangsu Chia Tai Fenghai	60.90%	First-to-market generic	239	1.5%
Anti-infection										
Tiance 天册	Biapenem injection 注射用比阿培南	Injection	Septicemia, pneumonia and lung abscess caused by sensitive bacteria	2008	Type 3.1 Chemical drug	Chia Tai Tianqing	60%	Second-to-market generic	752	4.8%
Tianjie 天解	Tigecycline injection 注射用替加环素	Injection	1. Complicated skin soft tissue infections 2. Complicated intra-abdominal infections	2013	Type 6 Chemical drug	Chia Tai Tianqing	60%	Third-to-market generic	261	1.6%
Respiratory system diseases										
Tianqingsule 天晴速乐粉雾吸入剂	Tiotropium Bromide 噻托溴铵	Inhalation powder	1. Chronic obstructive pulmonary disease (COPD) 2. Chronic bronchitis and lung abscess	2006	Type 3.1 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	370	2.3%
Chia Tai Suke 正大素克片	Cefaclor and bromhexine hydrochloride 克洛己新片	Tablet	Respiratory tract infection caused by sensitive bacteria	2005	Type 4 Chemical drug	Jiangsu Chia Tai Qingjiang	55.60%	First-to-market generic, exclusive drug	189	1.2%
Anorectal diseases										
Getai 葛泰片	Diosmin 地奥司明片	Tablet	1. Venous-lymphatic function insufficiency 2. Acute hemorrhoids	2005	Type 6 Chemical drug	Nanjing Chia Tai Tianqing	55.60%	First-to-market generic	226	1.4%
Diabetes										
Taibai 泰白缓释片	Metformin hydrochloride 盐酸二甲双胍	Sustained release tablet	Type 2 diabetes	2003	Type 5 Chemical drug	Chia Tai Tianqing	60%	Second-to-market generic	87	0.5%
Others										
Esomeprazole injection 注射用艾司奥美拉唑钠	Esomeprazole 注射用艾司奥美拉唑钠（埃索美拉唑）	Injection	1. Gastroesophageal reflux disease 2. Acute gastric mucosal hemorrhage or duodenal ulcer bleeding	2016	Type 6 Chemical drug	Chia Tai Tianqing	60%	First-to-market generic	NA	NA
Linezolid injection 利奈唑胺注射液	Linezolid 利奈唑胺	Injection	Complicated bacterial infection	2016	Type 6 Chemical drug	Chia Tai Tianqing	60%	Second-to-market generic	NA	NA

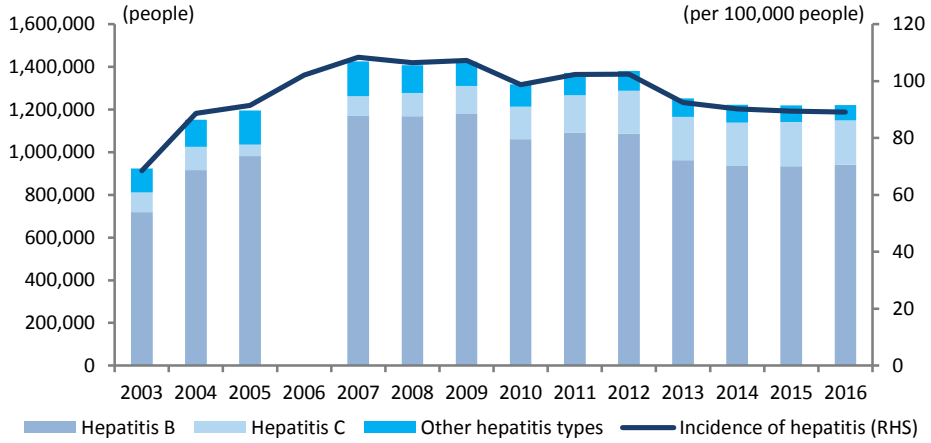
Source: CFDA, Insight, Company data, SWS Research

Huge hepatitis market can keep growing

Sino Biopharmaceutical's flagship hepatitis drugs include *Runzhong, Tianqingganmei, Tianqingganping* and *Mingzheng*. Hepatitis drug sales amounted to HK$7.25bn in 16A, accounting for 46% of the company's total sales. Sino Biopharmaceutical has an approximately 18% share in the Chinese hepatitis market in 2016.

China has a large population of viral hepatitis patients. According to data from the Chinese Center for Disease Control and Prevention (CDC), in 2016, there were 1.22m new cases of viral hepatitis, representing a high incidence rate at 89.1 per 100,000 population. Of these, 77% are infected with hepatitis B, while 17% are infected with hepatitis C.

Fig 6: New virus hepatitis infection cases (2003-2016)



Source: China's Disease Control and Prevention Center, SWS Research

According to National Health and Family Planning Commission (NHFPC), as of 2015, there are approximately 90m hepatitis B virus (HBV) carriers in China and 28m are chronic sufferers. The Chinese government started to provide free hepatitis B vaccine for all newborns since 2005. As such, the incidence rate of hepatitis B has decreased from 72.42 per 100,000 population to 68.74 in 2016. Nevertheless, the population of hepatitis B patients remains large, with an average of 0.97m new infections every year in 2012-16.

According to NHFPC, as of 2015, China had around 7.6m chronic hepatitis C patients. As the symptoms of hepatitis C are not obvious many years after infection and detection of the hepatitis C virus (HCV) is rare in physical examinations, the diagnosis rate is low.

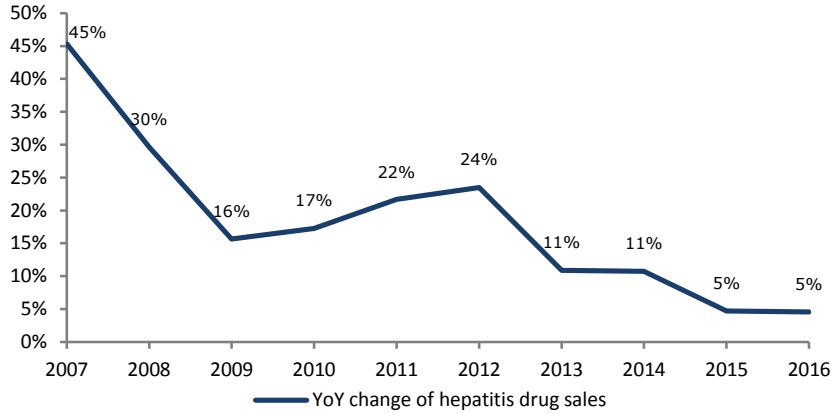
As most Chinese hepatitis patients are from rural areas, only a small proportion can afford the cost of antiviral treatments. According to CDC, as of 2015, only 10% of hepatitis B patients and 1% of hepatitis C patients received antiviral treatments.

We estimate that China's hepatitis market amounted to c.Rmb40bn in 2016. According to sales in sample hospitals, hepatitis drugs have grown steadily at a 7% Cagr in 2013-16. With rising awareness of hepatitis and expanding reimbursement coverage of antiviral drugs, the treatment rate of hepatitis will increase, in our view. Hence, we expect steady growth in hepatitis drugs in the next three years.

Hepatitis drugs include antiviral drugs, such as nucleoside analogues (NAs) and interferon alpha, and adjuvant drugs for liver protection or immunity enhancement. In terms of sample hospital sales, NAs' share of the total market for hepatitis drug market increased from 24% in 2007 to 41% in 2016. As of 2016, interferon accounted for 8% of market share while adjuvant drugs accounted for 52%.

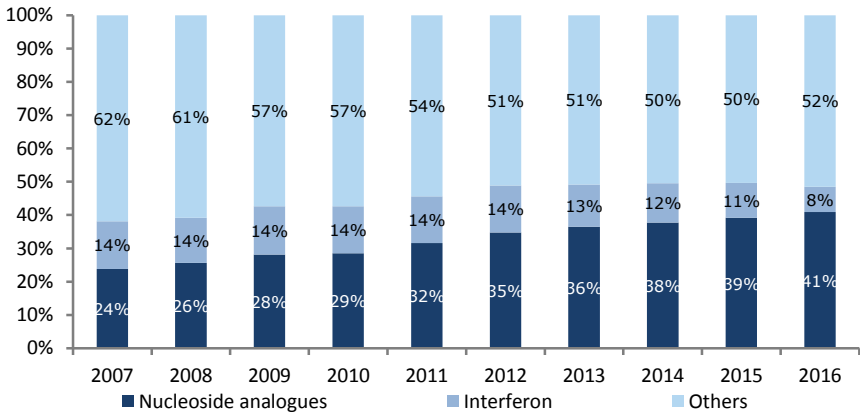
NAs usually have good tolerance, potent antiviral effects and convenient oral administration forms. Interferon alpha is also often used for antiviral treatment. However, interferon alpha has frequent side effects and requires subcutaneous injection. The main advantages of interferon alpha are the absence of resistance and higher rate of HBe seroconversion.

Fig 7: Growth in hepatitis drug sales in sample hospitals (2007-2016)



Source: Pharma Database, SWS Research

Fig 8: Market share split of hepatitis drugs in sample hospitals (2007-2016)



Source: Pharma Database, SWS Research

Runzhong to bottom out

Sino Biopharmaceutical's antiviral drugs mainly include *Runzhong* (entecavir dispersible tablet, HK$3.53bn sales in 16A), *Mingzheng* (adefovir dipivoxil capsule, HK$510m sales in 16A), *Tianding* (entecavir maleate tablet, HK$275m sales in 16A). The combined sales of antiviral drugs amounted to HK$4.3bn, or 27% of Sino Biopharmaceutical's total sales.

Runzhong (entecavir dispersible tablet) came to the market in 2010. In 2013-16, *Runzhong* sales grew at 28% Cagr thanks to wide reimbursement coverage. In 1Q17, sales of *Runzhong* increased 8.4% YoY to Rmb885m, accounting for 23% of Sino Biopharmaceutical's total sales, remaining Sino Biopharmaceutical's largest source of revenue.

Entecavir (ETV) is a type of NA drug. There are five main NA drugs in the market, including lamivudine (LAM), adefovir (ADV), entecavir (ETV), telbivudine (LdT) and tenofovir (TDF). Entecavir and tenofovir are recommended by authoritative guidelines, including American Association for the Study of Liver Diseases (AASLD), European Association for the Study of the Liver (EASL) and Asian Pacific Association for the Study of Liver (APASL), as first line monotherapies for hepatitis B because of their potent efficacy and high barriers to resistance.

Lamivudine is the first approved NA drug for hepatitis B and has been most widely used to date. Lamivudine is an inexpensive agent, but engenders very high rates of resistance with monotherapy. Adefovir is less efficacious than tenofovir, and engenders higher rates of resistance. Telbivudine is a potent inhibitor of HBV but a high incidence of resistance has been observed in patients with high baseline levels of replication and in those with detectable HBV DNA after 24 weeks of therapy.

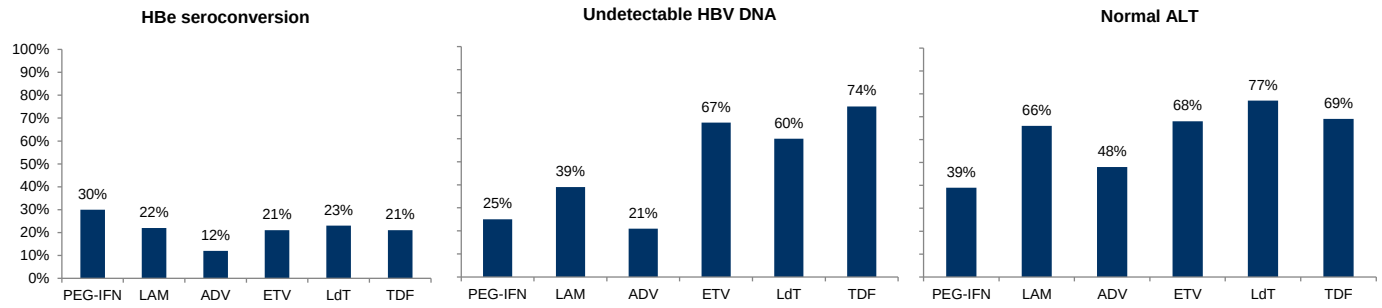
Fig 9: Key factors of NA drugs

Generic name	Original producer	Brand name	Year of US FDA approval	Year of CFDA approval	Advantages	Disadvantages
Tenofovir (TDF)	Gilead	Viread	Approved by US FDA for the treatment of HIV in 2001; Approved by US FDA for the treatment of HBV in 2008	Approved by CFDA for the treatment of HIV in 2011; Approved by CFDA for the treatment of HBV in 2013	Potent HBV inhibitors; Highest barrier to resistance; No cross resistance; Pregnancy category B drugs (Safe for pregnant women)	Expensive costs
Entecavir (ETV)	BMS	Baraclude	2005	2005	Potent HBV inhibitors; High barrier to resistance	Resistance in lamivudine-refractory hepatitis; Expensive costs
Adefovir (ADV)	GSK	Hepsera	2002	2005	Cheap costs	Less efficacious than TDF; Low barrier to resistance
Lamivudine (LAM)	GSK	Heptodin	1998	2001	Cheap costs	Lowest barrier to resistance
Telbivudine (LdT)	Novartis	Sebivo	2006	2007	Potent HBV inhibitors; Pregnancy category B drugs (Safe for pregnant women)	Low barrier to resistance; Resistance in lamivudine-refractory hepatitis

Source: European Association for the Study of the Liver, CFDA, Yaozh.com, SWS Research

Comparing the efficacy among five NA drugs, entecavir, tenofovir and telbivudine have strong efficacy while lamivudine and adefovir are less efficacious.

Fig 10: Rates of HBe seroconversion, undetectable HBV DNA and normal ALT at one year of therapy with PEG-IFN and five NAs



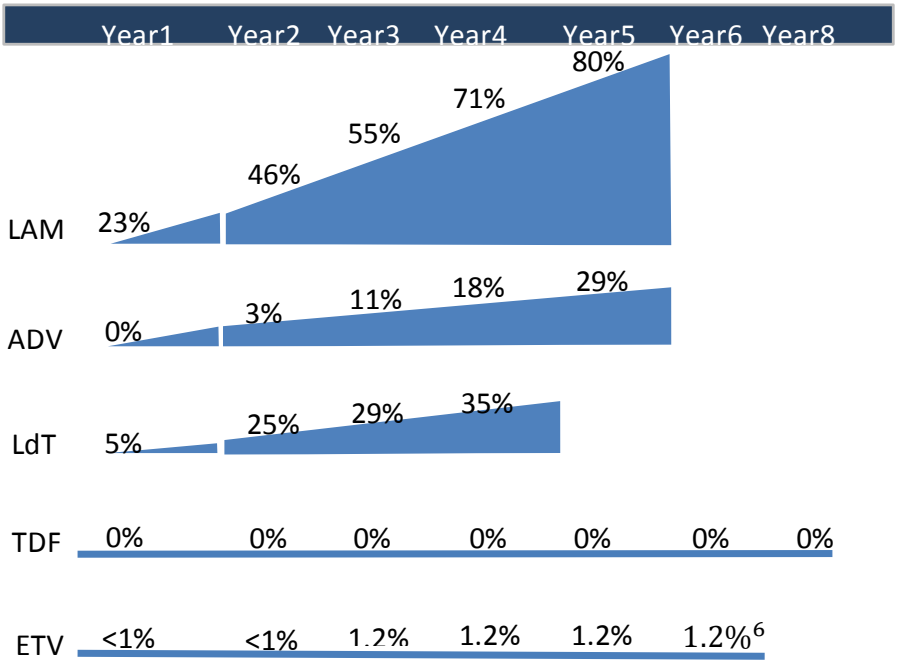
Source: European Association for the Study of the Liver, SWS Research

Drug resistance is a serious problem for NA therapies. Lamivudine has the lowest barrier to resistance. The cumulative rate of emergence of lamivudine resistance is 15–20% per year, and it plateaus at 60-80% after five years. Lamivudine is cross-resistant to telbivudine and entecavir. Patients resistant to lamivudine can switch

to tenofovir. Tenofovir has the least chance of resistance. Resistance to tenofovir has not been described so far.

Among treatment-naive patients, entecavir resistance is very rare, only 1% over five years. Nevertheless, entecavir has much higher rates of resistance in lamivudine refractory patients, around 10% per annum. Entecavir has no cross-resistance to adefovir, so entecavir monotherapy can be used to treat adefovir resistance.

Fig 11: Cumulative incidence of antiviral resistance in long-term studies of NA therapy



Source: Asian-Pacific clinical practice guidelines on the management of hepatitis B, SWS Research

Fig 12: Strategies to manage treatment failure—first and second line

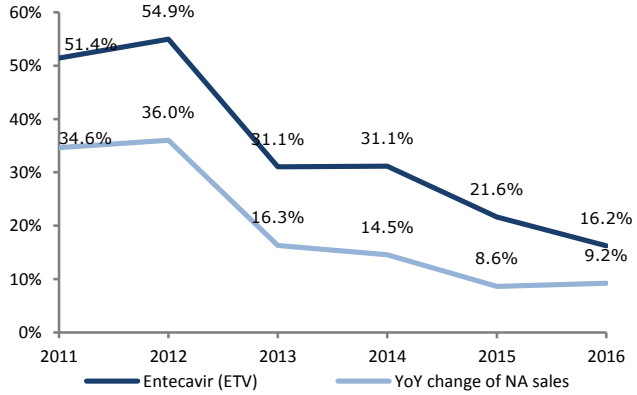
Resistance	Rescue therapies
LAM/LdT resistance	Switch to TDF Add ADV
LAM then ETV resistance	Switch to TDF Add ADV
ADV resistance (no previous LAM)	Switch to ETV Switch to TDF
ADV resistance (previous LAM/LdT)	Switch to TDF Switch to LAM/TDF
ADV resistance (no previous LAM/LdT)	Switch to TDF Add ADV
Multidrug resistance	Switch to ETV/TDF Switch to Peg-IFN

Source: Asian-Pacific clinical practice guidelines on the management of hepatitis B, SWS Research

HBV patients are sensitive to prices as NA therapies usually costs thousands of renminbi per year. For regions without extra reimbursement for HBV treatment, patients need to pay most of the costs out-of-pocket. Lamivudine and adefovir are cheaper than other NAs and have been widely used among Chinese HBV patients. However, they have caused serious drug resistance problems. Current guidelines recommend adefovir resistant patients switch to entecavir/tenofovir and lamivudine resistant patients switch to tenofovir.

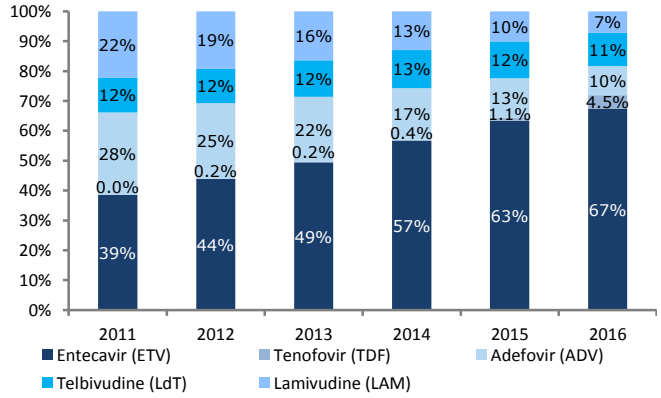
Thanks to superior efficacy and high barriers to resistance, entecavir and tenofovir have been taking market share from lamivudine, adefovir and telbivudine in recent years. In terms of sample hospital sales, entecavir has grown at a 23% Cagr in 2013-16 and its market share by revenue in China's NA market has expanded from 49% in 2013 to 67% in 2016. In addition, market share of tenofovir increased rapidly, from 0.2% in 2013 to 4.5% in 2016, due to wider reimbursement coverage.

Fig 13: Sample hospital sales of entecavir vs all NAs (2011-2016)



Source: Pharma Database, SWS Research

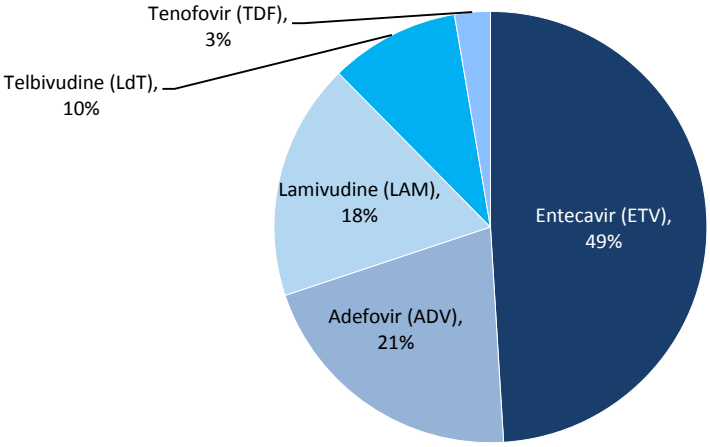
Fig 14: Market share split of NAs by revenue (2011-2016)



Source: Pharma Database, SWS Research

By volume, entecavir accounted for 49% of the market in 2016 and tenofovir for 3%. The remaining 48% market share by volume is divided between lamivudine, adefovir and telbivudine.

Fig 15: Market share split of NAs by volume (2016A)



Source: Pharma Database, SWS Research

We note market concerns that entecavir will be substituted by tenofovir because tenofovir has stronger antiviral properties, expanded reimbursement coverage and cheaper costs after price cuts. In our view, tenofovir will mainly take market share from patients resistant to lamivudine, adefovir or telbivudine. The combined market share of lamivudine, adefovir and telbivudine by volume was 48% in 2016, indicating significant room for substitution by tenofovir. Meanwhile, we think entecavir will maintain a stable market share at c.50% by volume thanks to its potent antiviral effect and low rate of drug resistance.

Viread (tenofovir) completed price negotiations with the central government in 2015 and agreed to cut the price by a significant 67%. After the price cut, the yearly treatment cost of *Viread* is c.Rmb5,962, which is 6% cheaper than *Runzhong*. Moreover, tenofovir was added into the new NRDL in February 2017. We think

most provinces may complete revising their new provincial reimbursement drug lists (PRDLs) by early 2018 and reimbursement of tenofovir will be available in most regions across China.

Fig 16: Treatment costs of NAs

Generic name	Yearly treatment cost of original drug (Rmb)	Major generic drug producer	Generic drug brand name	Yearly treatment cost of generic drug (Rmb)	Reimbursement coverage
Tenofovir (TDF)	5,962	NA	NA	NA	NRDL Type2 (limited to HIV infection, active hepatitis B or interruption of mother-to-infant transmission of hepatitis B virus) 1 PRDL (Hubei, only for second-line treatment)
Entecavir (ETV)	10,286	Chia Tai Tianqing	Runzhong	6,353	NRDL Type2 (limited to active hepatitis B) 27 PRDLs (limited to active hepatitis B), 2 PRDLs (no reimbursement restriction)
Adefovir (ADV)	5,625	TIPR Pharmaceutical	Daiding	3,154	NRDL Type2 (limited to active hepatitis B) 28 PRDLs (limited to active hepatitis B), 1 PRDL (no reimbursement restriction)
Lamivudine (LAM)	4,223	Cosunter Pharmaceutical	Heganding	2,347	NRDL Type2 (limited to active hepatitis B or interruption of mother-to-infant transmission of hepatitis B virus) 29 PRDLs (limited to active hepatitis B), 2 PRDLs (no reimbursement restriction)
Telbivudine (LdT)	6,680	NA	NA	NA	NRDL Type2 (limited to active hepatitis B or interruption of mother-to-infant transmission of hepatitis B virus) 30 PRDLs (limited to active hepatitis B), 1 PRDL (no reimbursement restriction)

Source: Yaozh.com, Pharma Database, SWS Research

In terms of global sales, *Baraclude* (entecavir) reached peak sales of US$1.53bn in 2013 and sales have since declined to US$1.19bn in 2016 while *Viread* (tenofovir)'s sales have grown to US$1.19bn in 2016. Hence, we think, in the long-term, entecavir and tenofovir will both account for half of the domestic market.

In our view, we think demand for entecavir still has room to expand because of the low treatment rate for HBV. We estimate that the market size of NAs in China is around Rmb13bn. Assuming average cost of NA therapies is c.Rmb4,000 per annum, c.3m HBV patients have received NA therapies, or c.10-15% of the total number of Chinese HBV patients.

The low penetration rate is mainly due to the high cost of treatment and limited reimbursement coverage. Entecavir was added into the NRDL as a type-2 drug in 2009 but reimbursement is limited to active hepatitis B. Due to the high relapse rate after NA treatment discontinuation, HBeAg-positive patients who develop HBe seroconversion with NAs require long follow-up treatment. China's guidelines for HBV treatment recommend patients receive NA therapy for at least four years, and NA therapy should be continued for another three years after HBe seroconversion with alanine aminotransferase (ALT) normalisation and no detectable traces of HBV DNA. However, reimbursement for entecavir treatments is available only to patients with active hepatitis (ie patients with detectable levels of HBV DNA). Hence, many patients cannot afford the out-of-pocket payment for years of NA therapy.

The yearly cost of *Runzhong* is around Rmb6,353. If patients also take liver protective drugs, yearly spending can easily top Rmb10,000. For outpatients, personal medical insurance accounts usually have a c.Rmb3,300 income for the year, insufficient to cover the expense. Some regions provide extra reimbursement for chronic HBV outpatients but this is not the case in all regions across China. Media reports show that for urban workers, 78% of cities provide additional chronic HBV reimbursement while for non-employed urban residents, merely 57% of cities offer additional reimbursement for chronic HBV outpatients.

Our calculation shows that chronic HBV outpatients need to pay Rmb4,710-6,710 out-of-pocket costs every year.

Fig 17: Reimbursement of entecavir for outpatients

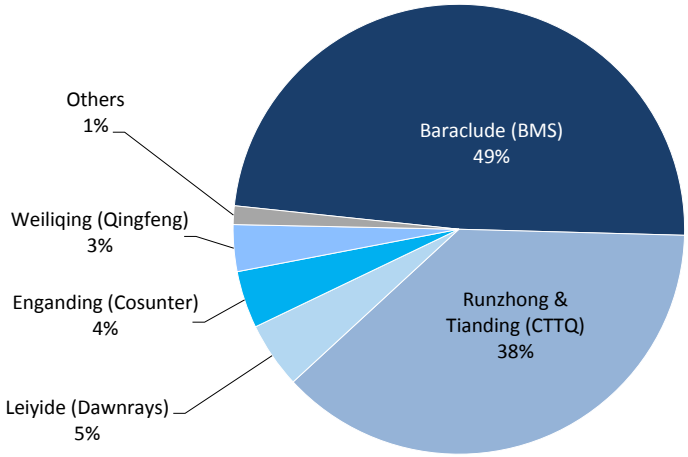
Treatment spending for urban employees (Rmb)	With extra reimbursement for chronic HBV	Without extra reimbursement for chronic HBV
Yearly treatment cost for HBV	**10,000**	**10,000**
- 20% out-of-pocket payment	*823*	*823*
- 80% can be reimbursed by current year's individual medical insurance account balance (Calculated based on average salary in Nanjing in 2016)	*3,290*	*3,290*
- Deductible Rmb1,200 out-of-pocket payment	*378*	
- 70% of the remaining part can be reimbursed (Capped at Rmb2,000, assuming patients go to primary medical institutions for treatment)	*2,000*	
- The remaining part need to be paid out-of-pocket	*3,510*	*5,888*
Total reimbursed cost	**5,290**	**3,290**
Total out-of-pocket payment	**4,710**	**6,710**
Reimbursement ratio	**53%**	**33%**

Source: Nanjing Municipal Human Resources and Social Security Bureau, SWS Research

Chinese authorities are trying to provide better insurance coverage for chronic diseases. With widening reimbursement coverage and improving affordability of patients, we think an increasing percentage of HBV patients will receive antiviral treatment. Thus, we see potential for entecavir sales volume to grow at a low-teens Cagr over the next three years.

In the Chinese entecavir market, the original drug, *Baraclude,* produced by BMS (BMY:US – N-R), accounts for a c.49% market share, while generics account for 51%. There are nine manufacturers producing generic entecavir in China. As of 2016, Sino Biopharmaceutical's *Runzhong* and *Tianding* command a combined 38% market share, *Leiyide* by Dawnrays (2348:HK – N-R) has a c.5% market share and *Enganding* by Fujian Cosunter (300436:CH – N-R) accounts for c.4% of the market. Sino Biopharmaceutical launched *Tianding* (entecavir maleate tablet) in 2012. This is a good supplement to *Runzhong*. Sales of *Tianding* reached HK$275m in 16A, up 118% YoY. So far, *Tianding* has won tenders in seven regions, namely, Heilongjiang, Chongqing, Sichuan, Inner Mongolia, Shanghai, Anhui and Hainan.

Fig 18: Sample hospital sales split of entecavir (2016A)



Source: Pharma Database, SWS Research

We believe *Runzhong* and *Tianding* will continue to take market share from *Baraclude* thanks to significant price advantages. The average tender price of *Runzhong* represents a 39% discount to *Baraclude*, while *Tianding*'s tender price represents a discount to *Baraclude* of 42%.

Fig 19: Price comparison of entevavir

Brand name	Manufacturer	Generic name	Status	Formulation	Year of CFDA approval	2016-now average tender price (Rmb per 0.5mg dose)	Lowest tender price nationwide (Rmb per 0.5mg dose)	% difference between average tender price and lowest tender price
Baraclude	Bristol-Myers Squibb	Entecavir	Original drug	Tablet	2005	28.72	25.10	-13%
Runzhong	Chia Tai Tianqing	Entecavir	First-to-market generic	Dispersible tablet	2010	17.41	11.10	-36%
Tianding	Chia Tai Tianqing	Entecavir Maleate	Generic	Tablet	2012	16.69	16.43	-2%
Leiyide	Dawnrays	Entecavir	Second-to-market generic	Dispersible tablet	2010	18.09	15.00	-17%
Weiliqing	Qingfeng Pharma	Entecavir	Third-to-market generic	Dispersible tablet	2010	18.17	10.75	-41%
Enganding	Cosunter Pharma	Entecavir	Fourth-to-market generic	Capsule	2011	10.84	6.52	-40%

Source: Pharma Database, Insight, Yaozh.com, SWS Research

We see pricing pressure in *Runzhong* mainly due to potential tender price cuts and substitution threat from *Viread*. After price cuts, the yearly treatment cost of *Viread* is Rmb5,962, c. 6% lower than that of *Runzhong* (Rmb6,353 assuming ASP of Rmb17.41 per 0.5mg, or Rmb122 per box).

Runzhong experienced a 49% price cut in Zhejiang Province's tenders in 2015 and the Rmb77.7 price in Zhejiang has been its lowest tender price nationwide. Its ASP of Rmb122 is 36% below the lowest price level.

For the 23 regions where *Runzhong* has historically won tenders, 17 regions have already completed the new round of tenders. *Runzhong* exited the Guangdong provincial market in 4Q16 and the Fujian provincial market in 1Q16. Nevertheless, driven by increasing penetration and steady market share gain from the original drug, we forecast *Runzhong* sales volume to grow 10% YoY in 17E and accelerate to 15% growth per annum in 2018-19E.

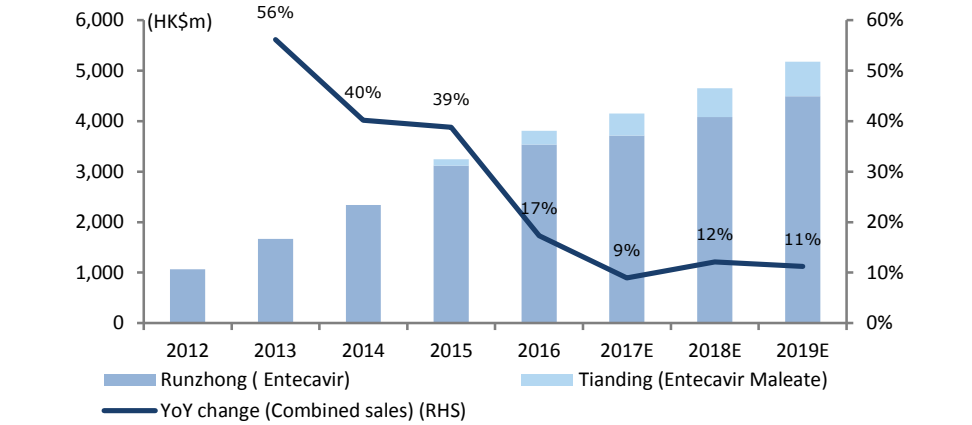
Fig 20: Tender prices of *Runzhong* (2010-2017)

(0.5mg*7 dispersible tablets)	2010	2011	2012	2013	2014	2015	2016	2017	% of price cut	Population weight	Assumed % of price cut	% impact on ASP
Zhejiang	153.00					77.70			-49.2%	5.1%		
Hubei				146.96			77.70		-47.1%	5.3%		
Inner Mongolia		172.73					108.00		-37.5%	2.3%		
Guangxi		188.00					125.88		-33.0%	4.4%		
Sichuan						118.23		88.00	-25.6%	7.5%		
Shandong				127.96			99.98		-21.9%	9.0%		
Yunnan		181.39						160.95	-11.3%	4.3%		
Hunan					153.64	140.00			-8.9%	6.2%		
Shanghai						138.00		128.19	-7.1%	2.2%		
Chongqing								79.72	NA	2.8%		
Tianjin							77.70		NA	1.4%		
Jilin					142.10				NA	2.5%		
Heilongjiang								116.06	NA	3.5%		
Hainan					140.00				NA	0.8%		
Anhui					118.00				NA	5.6%		
Guangdong						141.13	Tender lost		NA	10.0%		
Fujian			129.50					Tender lost	NA	3.5%		
Shanxi		172.00							Tenders ongoing	3.5%	-54.8%	-1.9%
Qinghai			159.80						Tenders ongoing	0.5%	-51.4%	-0.3%
Jiangsu	166.88								Tenders ongoing	7.3%	-53.4%	-3.9%
Hebei		166.88							Tenders ongoing	6.8%	-53.4%	-3.6%
Beijing				146.96					Tenders ongoing	2.0%	-47.1%	-0.9%
Shaanxi			155.76						Tenders not started	3.5%	-50.1%	-1.7%
Total												**-12.4%**

Source: Yaozh.com, SWS Research

If we assume the prices in the remaining six regions will be cut to Rmb77.7, *Runzhong*'s population-weighted ASP still has 12% downside from the current level with the next 2-3 years. Considering the lag in impact from price cuts, as it may take a few months for new tender results to be executed, we forecast ASP of *Runzhong* to decline at a 5% Cagr in 17-19E.

Fig 21: Sales of *Runzhong* and *Tianding* (2012-2019E)



Source: Company data, SWS Research

Liver protective drugs to face pressure

Sino Biopharmaceutical's adjuvant drugs for the protection of liver functions include *Tianqingganmei* (magnesium isoglycyrrhizinate injection, HK$2.16bn sales in 16A), *Tianqingganping* (diammonium glycyrrhizinate enteric capsule, HK$483m sales in 16A) and *Ganlixin* (diammonium glycyrrhizinate injection and capsule, HK$130m sales in 16A). Combined sales of these liver protective drugs amounted to HK$2.8bn, or 18% of Sino Biopharmaceutical's total sales.

Ganlixin injections and capsules, *Tianqingganping* and *Tianqingganmei* are made with ingredients extracted from licorice, providing the dual effect of liver protection and lowering enzyme levels.

Tianqingganmei injection, made with isoglycyrrhizinate separated from licorice, is a patent drug launched by CTTQ in 2005. The patent of *Tianqingganmei* will expire by 2022. Hence, *Tianqingganmei* will continue to enjoy its exclusive status in the Chinese market in the next five years. *Tianqingganping* comes in an exclusive enteric-coated capsule formulation. *Ganlixin* faces intense competition as there are seven players in the diammonium glycyrrhizinate capsule market and 67 players in the diammonium glycyrrhizinate injection market.

In February 2017, the new NRDL removed reimbursement restrictions on *Tianqingganmei* for work-related injuries, but reimbursement is still limited to patients with liver failure or those that cannot take oral formulations. So far, Shanghai, Jilin Province and Jiangsu Province allow the reimbursement of *Tianqingganmei* without the limitation of work-related injuries.

Fig 22: Sino Biopharmaceutical's liver protective drugs

Brand name	Generic name	Year of CFDA approval	Status	Treatment cost	Reimbursement coverage
Tianqingganmei injection	Magnesium isoglycyrrhizinate	2005	Exclusive drug, patent drug	Rmb1,925 per treatment cycle	NRDL Type 2 (for patients with liver failure or cannot take oral formulation) 26 PRDLs (limited to emergent treatment, liver failure or work-related injuries), 3 PRDLs (no reimbursement restriction)
Tianqingganping enteric capsule	Diammonium glycyrrhizinate	2004	Exclusive formulation	Rmb3,479 per year	NRDL Type 2
Ganlixin injection	Diammonium glycyrrhizinate	1994	First-to-market generic	Rmb391 per treatment cycle	NRDL Type 2 (for patients with liver failure or cannot take oral formulation) 24 PRDLs (limited to emergent treatment, liver failure or work-related injuries) 6 PRDLs (no reimbursement restriction)
Ganlixin capsule	Diammonium glycyrrhizinate	1994	First-to-market generic	Rmb1,943 per year	NRDL Type 2

Source: CFDA, Yaozh.com, SWS Research

Given that liver protective drugs have no antiviral effect, they can only be used as assistant therapies for hepatitis. We do not expect reimbursement coverage of liver protective drugs to further expand due to the tight budget of Chinese medical insurance funds. *Tianqingganmei* injection is included in the adjuvant drug list in Suzhou city, Jiangsu Province as it is often taken by inpatients for the adjunctive treatment of liver damages. Thus, we think the clinical use of *Tianqingganmei* will be depressed in the future.

In addition, as patients have an increasing awareness of antiviral treatment, we think liver protective drugs will gradually be substituted by antiviral drugs, such as NAs and interferon alpha. According to hepatitis drug sales in sample hospitals, the share of liver protective drugs has decreased from 62% in 2007 to 52% in 2016.

Tianqingganmei and *Tianqingganping* face moderate competition due to their exclusive status. The lowest tender price of *Tianqingganmei* is Rmb30.56 per injection, which is 7% lower than the average tender price in the past 18 months. *Tianqingganping*'s lowest tender price nationwide is Rmb0.96 per 50mg, which is 7% lower than its average tender price of Rmb1.04 in the past 18 months. We expect ASP of these two drugs to remain steady (less than 3% downside per annum) in the next three years.

Fig 23: Tender prices of *Tianqingganmei* (Rmb per 10ml:50mg, 2008-2017)

(50mg per injection)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	% Change
Tianjin						39			31		-21%
Zhejiang			37					31			-18%
Inner Mongolia				39					33		-16%
Guangdong									36	32	-11%
Heilongjiang	38									34	-11%
Jilin	39						36				-9%
Shandong						36			33		-9%
Sichuan								34		31	-8%
Shanghai								36	33		-8%
Hubei						36					NA
Hunan								31			NA

Source: Yaozh.com, SWS Research

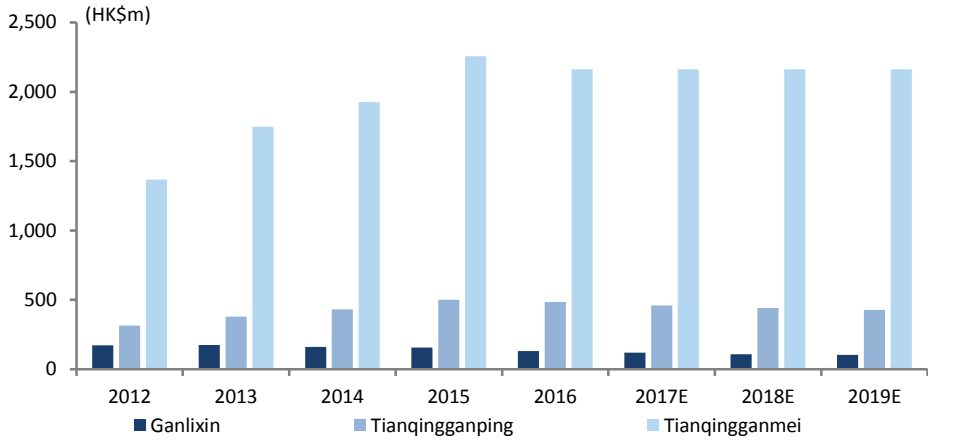
Fig 24: Tender prices of *Tianqingganping* (Rmb per 50mg ,2008-2017)

(50mg per enteric capsule)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	% Change
Shanghai				1.35					1.08		-20%
Inner Mongolia				1.18					1.05		-12%
Jilin	1.17						1.09				-7%
Beijing			1.15				1.08				-7%
Yunnan				1.16						1.10	-5%
Shanxi				1.09				1.09			-1%
Sichuan								1.04			NA
Hubei						1.09					NA
Chongqing										1.05	NA
Zhejiang								1.01			NA
Shandong									1.02		NA
Liaoning										0.96	NA
Anhui							1.03				NA

Source: Yaozh.com, SWS Research

Sales of *Tianqingganmei* fell 4.2% YoY in 16A to HK$2.2bn, accounting for 14% of Sino Biopharmaceutical's total sales, while *Tianqingganping* and *Ganlixin* declined 3.5% YoY and 16.3% YoY, respectively. Given the potential substitution threat from NAs and depressed use of adjuvant drugs, we forecast that sales of *Tianqingganmei* remain largely flattish in 2017-19E, while *Tianqingganping* will decline at a 4% Cagr in 2017-19E and *Ganlixin* will fall at an 8% Cagr.

Fig 25: Revenue of Sino Biopharmaceutical's liver protective drugs (2012-2019E)



Source: Company data, SWS Research

Oncology drugs to become a new growth pillar

With a young oncology drug portfolio, Sino Biopharmaceutical has been catching up quickly in Chinese oncology market. As of 2016, sales of oncology drugs reached HK$1.76bn, up 19% YoY, and accounting for 11% of the company's total revenue.

We are positive on the potential for sales of *Yinishu* (dasatinib tablet), *Genike* (imatinib mesylate capsule), *Qingweike* (decitabine injection) and *Shoufu* (capecitabine tablet). As these products came to market in 2012-14, they can quickly raise market penetration through tender wins. In addition, *Yinishu*, *Genike* and *Qingweike* were included in the new NRDL released in February 2017, which will significantly stimulate sales.

Fig 26: Sino Biopharmaceutical's key oncology drugs

Brand name	Generic name	Indication	Time of CFDA approval	Manufacturer	Status	Sales (16A, HK$m)	% of company sales (16A)	Reimbursement
Zhiruo 止若	Palonoside hydrochloride injection 盐酸帕洛诺司琼注射液	Chemotherapy induced nausea and vomiting	2008	Chia Tai Tianqing	Generic	392	2.5%	NRDL Type 2 (limited to the second-line treatment for patients receiving chemo or radio therapies and having difficulties in swallowing) 7 PRDLs (limited to the second-line treatment)
Saiweijian 赛维健	Raltitrexed injection 注射用雷替曲塞	Advanced colorectal cancer	2009	Nanjing Chia Tai Tianqing	First-to-market generic, exclusive drug	347	2.2%	4 PRDLs (no reimbursement restriction) 1 PRDL (limited to patients with advanced colorectal cancer, class 3 hospitals or specialized cancer hospitals)) 1 PRDL (limited to advanced colorectal cancer or head and neck tumor)
Tianqingyitai 天晴依泰	Zoledronic acid injection 唑来膦酸注射液	Bone metastatic cancer pain	2004	Chia Tai Tianqing	Generic	238	1.5%	NRDL Type 2 (limited to severe osteoporosis or bone metastatic cancer) 28 PRDLs (limited to severe osteoporosis, bone metastatic cancer and work-related injury) 1 PRDL (no reimbursement restriction) 1 PRDL (limited to hypercalcemia caused by malignant tumor)
Qingweike 晴唯可	Decitabine injection 注射用地西他滨	Myelodysplastic syndrome (MDS)	2012	Chia Tai Tianqing	First-to-market generic	156	1.0%	NRDL Type 2 (limited to severe MDS) 2 PRDLs (no reimbursement restriction)
Shoufu 首辅	Capecitabine tablet 卡培他滨片	1. Breast cancer 2. Colorectal cancer 3. Advanced or metastatic gastric cancer	2014	Chia Tai Tianqing	Third-to-market generic	179	1.1%	NRDL Type 2
Genike 格尼可	Imatinib mesylate capsule 甲磺酸伊马替尼胶囊	Ph+ Chronic myeloid leukemia (CML)	2013	Chia Tai Tianqing	First-to-market generic	155	1.0%	NRDL Type 2 (limited to Ph+ CML or GIST) 2 PRDLs (no reimbursement restriction) 1 PRDL (limited to CML or GIST) 1 PRDL (limited to Class 3 hospitals or specialized oncology hospitals)
Yinishu 依尼舒	Dasatinib tablet 达沙替尼片	Imatinib resistant Ph+ Chronic myeloid leukemia (CML)	2013	Chia Tai Tianqing	First-to-market generic	87	0.5%	NRDL Type 2 (limited to CML patients with imatinib resistance or intolerance)

Source: MHRSS, Yaozh.com, Company data, SWS Research

Genike is a first-to-market generic of *Gleevec* (imatinib) and obtained China Food & Drug Administration (CFDA) approval in 2013. *Genike* is primarily used for the treatment of Philadelphia-chromosome–positive chronic myeloid leukemia (Ph+ CML). CML has an incidence rate of 0.36-0.55 per 100,000 people in China. There are approximately 100,000 existing CML patients in China.

The original drug, *Gleevec*, made by Novartis (NVS:US - N-R), was approved by the US Food & Drug Administration (FDA) in 2001 and was the first-to-market tyrosine kinase inhibitor (TKI) in the world. *Gleevec* sales peaked at US$4.7bn in 2014.

Imatinib is still the golden standard of first-line treatment of CML worldwide. 85-90% of patients receiving imatinib therapy record a 10-year-plus survival period. Nevertheless, around 25-40% of patients will become resistant to imatinib. Second generation TKI drugs, such as *Tasigna* (nilotinib) and *Sprycel* (dasatinib), can be used as rescue therapies for imatinib-resistant patients and are usually used as second-line treatment options for CML. Global sales of *Tasigna* and *Sprycel* were US$1.74bn, US$1.82bn in 2016, respectively. Sino Biopharmaceutical's *Yinishu* (dasatinib) is a first-to-market generic of *Srycel* and received CFDA approval in 2013.

For CML patients, the goal of the treatment is to prevent progression, so as to ensure a normal survival. For that goal, TKI treatment should be continued indefinitely. Patients are highly price sensitive due to the expensive costs and long period of treatment. Factoring in the drug donation of buy three and get nine free, the yearly treatment cost of *Gleevec* is approximately Rmb66,800, which is almost three times the cost of domestic generics. In addition, *Sprycel* (the original dasatinib) costs around Rmb112,200 per year, about three times higher than *Yinishu* (the only approved generic in China). We believe generics will continue to substitute *Gleevec* and *Sprycel* thanks to price advantages.

To date, imatinib has been included in four PRDLs; dasatinib is not in any PRDL yet. In February 2017, imatinib and dasatinib were added into the new NRDL as type-2 drugs, indicating significant reimbursement expansion from early 2018. Thus, we think sales of *Genike* and *Yinishu* will ramp up rapidly from 18E.

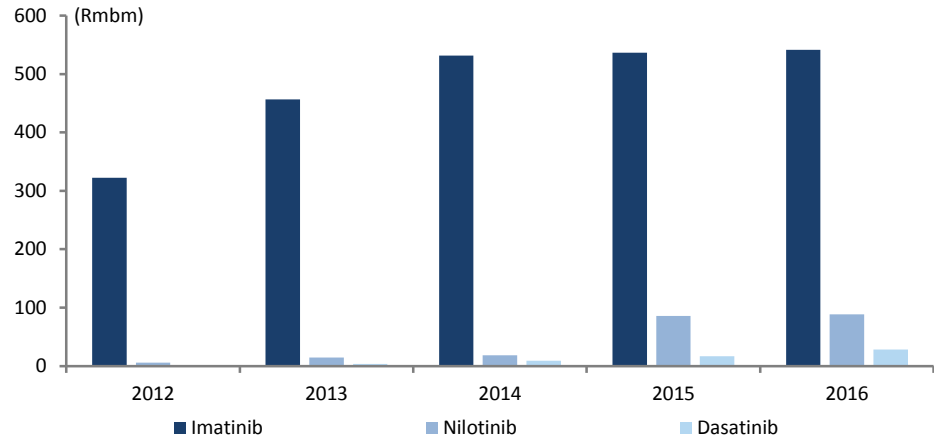
Fig 27: TKI drugs for treatment of CML

Trade name	Generic name	Formulation	Manufacturer	Indication	Year of CFDA approval	Status	Average bidding price (2016-now)	Yearly treatment cost	Reimbursement
Gleevec	Imatinib	Tablet / capsule	Novartis	Ph+ CML, Ph+ ALL, GIST	2002	Original drug	Rmb183 per 100mg tablet	Rmb66,795 (buy three get nine free)	NRDL Type 2 (limited to Ph+ CML or GIST) 2 PRDLs (no reimbursement restriction) 1 PRDL (limited to CML or GIST) 1 PRDL (limited to Class 3 hospitals or specialized oncology hospitals)
Genike	Imatinib	Capsule	Chia Tai Tianqing	Ph+ CML	2013	First-to-market generic	Rmb17 per 100mg capsule	Rmb24,820	NRDL Type 2 (limited to Ph+ CML or GIST) 2 PRDLs (no reimbursement restriction) 1 PRDL (limited to Ph+ CML or GIST) 1 PRDL (limited to Class 3 hospitals or specialized oncology hospitals)
Xinwei	Imatinib	Tablet	Hansoh	Ph+ CML	2013	Second-to-market generic	Rmb19 per 100mg tablet	Rmb27,740	NRDL Type 2 (limited to Ph+ CML or GIST) 2 PRDLs (no reimbursement restriction) 1 PRDL (limited to Ph+ CML or GIST) 1 PRDL (limited to Class 3 hospitals or specialized oncology hospitals)
Nuolining	Imatinib	Tablet	CSPC	Ph+ CML，Ph+ ALL	2014	Third-to-market generic	Rmb18 per 100mg tablet	Rmb26,280	NRDL Type 2 (limited to Ph+ CML or GIST) 2 PRDLs (no reimbursement restriction) 1 PRDL (limited to Ph+ CML or GIST) 1 PRDL (limited to Class 3 hospitals or specialized oncology hospitals)
Tasigna	Nilotinib	Capsule	Novartis	Imatinib resistant Ph+ CML	2007	Original drug	Rmb246 per 200mg tablet	Rmb108,770 (buy three get nine free)	1 PRDL (limited to Ph+ CML patients with imatinib resistance or intolerance)
Sprycel	Dasatinib	Tablet	Bristol-Myers Squibb	Imatinib resistant Ph+ CML	2006	Original drug	Rmb298 per 20mg tablet	Rmb112,238 (buy three get nine free)	NRDL Type 2 (limited to Ph+ CML patients with imatinib resistance or intolerance)
Yinishu	Dasatinib	Tablet	Chia Tai Tianqing	Imatinib resistant Ph+ CML	2013	First-to-market generic	Rmb33 per 20mg tablet	Rmb30,113 (Buy three months of treatment and get free treatment for another three months)	NRDL Type 2 (limited to Ph+ CML patients with imatinib resistance or intolerance)

Source: MHRSS, Yaozh.com, Company data, SWS Research

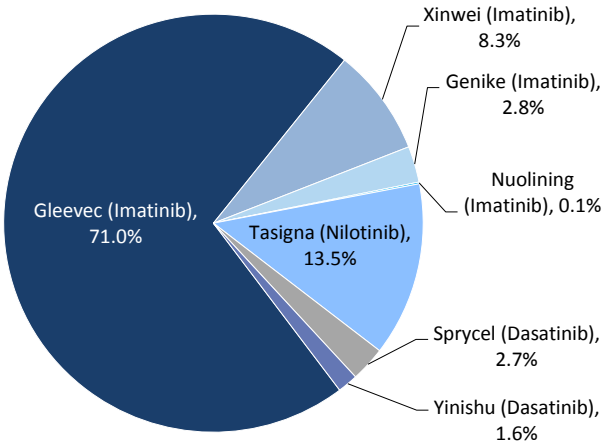
We estimate that sales of TKI drugs for treatment of CML in China came to Rmb3.3bn in 2016, five times the sales recorded in sample hospitals. Assuming the average cost of TKI therapy is Rmb60,000 per year, the penetration rate of TKI treatment among Chinese CML patients is approximately 55% in 2016. With national reimbursement coverage, we think the penetration rate of TKIs will increase. We also believe *Genike* and *Yinishu* will take market share from original drugs thanks to cheaper prices.

Fig 28: Imatinib, dasatinib and nilotinib sales in sample hospitals (2012-2016)



Source: Pharma Database, SWS Research

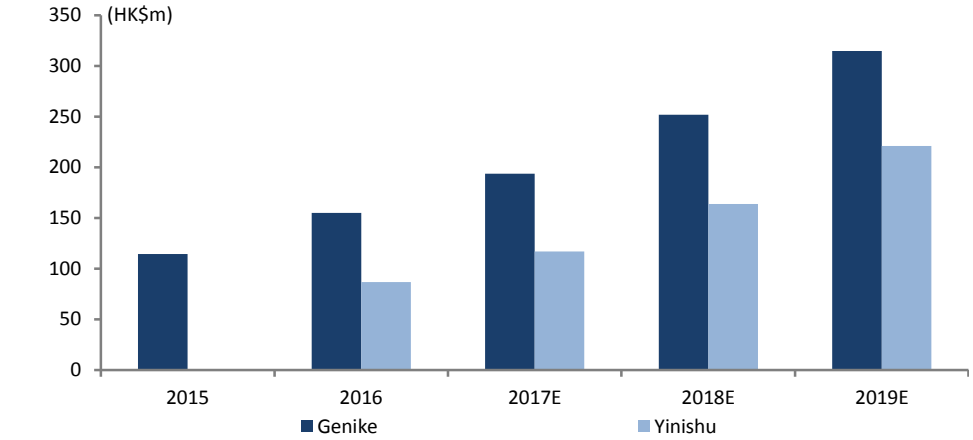
Fig 29: Market share split of imatinib, dasatinib and nilotinib in sample hospitals (2016A)



Source: Pharma Database, SWS Research

Driven by tender wins and reimbursement coverage expansion, we forecast *Genike's* sales to grow at a 27% Cagr in 2017-19E, reaching HK$315m in 19E and sales of *Yinishu* to grow at a 37% Cagr to HK$221m during the same period. Assuming a 15% share in the Chinese anti-CML TKI market for *Genike* and 10% for *Yinishu*, we estimate *Genike* to reach peak sales of Rmb500m while peak sales of *Yinishu* may reach Rmb350m.

Fig 30: Sales of *Genike* and *Yinishu* (2015-2019E)

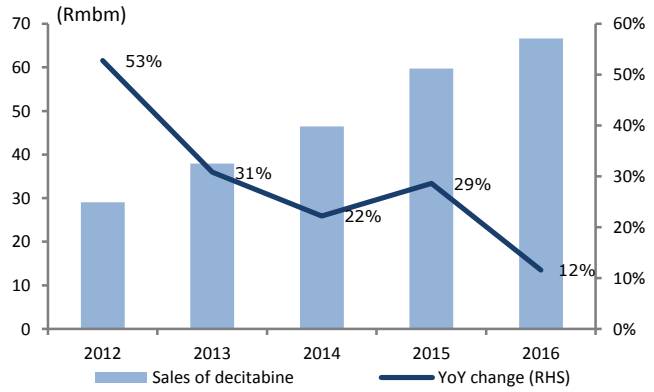


Source: Company data, SWS Research

Qingweike (decitabine injection) is a first-to-market generic of Janssen's *Dacogen*. Launched in 2012, sales of *Qingweike* reached HK$156m in 16A. Decitabine and azacitidine are used globally as first-line demethylation therapies for the treatment of medium or severe myelodysplastic syndrome (MDS). Azacitidine has just received the CFDA approval in May, 2017. The incidence rate of MDS in China is approximately 1.5 per 100,000 people.

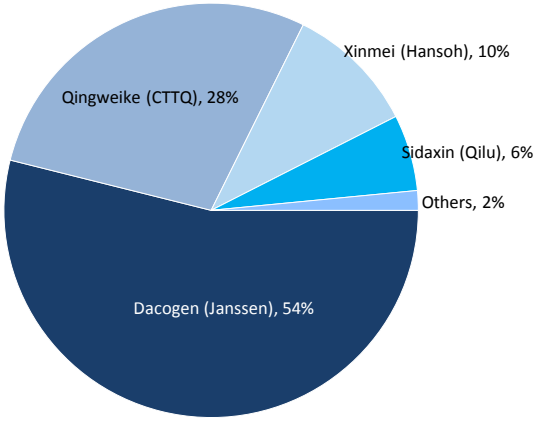
In terms of sample hospital sales, decitabine has grown at 21% Cagr in 2013-16A. The CFDA has approved seven decitabine generics. As such, we see intensified competition for *Qingweike* in the future. *Dacogen*, the original drug, has a 54% market share in sample hospitals, followed by CTTQ's *Qingweike* with a 28% market share and Hansoh's *Xinmei* with a 10% market share.

Fig 31: Sample hospital sales of decitabine (2012-2016)



Source: Pharma Database, SWS Research

Fig 32: Market share split of decitabine by revenue (2016A)



Source: Pharma Database, SWS Research

Dacogen provides drug donations for low-income patients. Factoring in free drugs from donations, the cost of *Dacogen* is similar to *Qingweike* and *Xinmei*. Other generics such as *Kangdalai*, *Aodixi* are much more expensive than *Qingweike*. Given that there are already seven generics on the market, we think price competition will be significant.

We estimate that decitabine penetration is c.5%, assuming the market size of decitabine is Rmb450m, and China has approximately 100,000 existing MDS patients. Decitabine was added into the new NRDL in February 2017, but reimbursement is only available for high-risk MDS patients. In our view, the expanded reimbursement coverage will lift the drug's penetration rate.

Fig 33: Comparison of decitabine players

Trade name	Manufacturer	Year of CFDA approval	Status	Average bidding price (2016-now, 50mg)	Cost of four treatment cycles
Dacogen	Janssen	2009	Original drug	Rmb10,280	Rmb102,800 (buy 2 treatment cycles and get free treatment for another 2 cycles)
Qingweike	Chia Tai Tianqing	2012	First-to-market generic	Rmb4,700	Rmb94,000
Kangdalai	Shandong Xinshidai	2012	Second-to-market generic	Rmb7,128	Rmb142,560
Aodixi	Jiangsu Aosaikang	2013	Third-to-market generic	Rmb7,060	Rmb141,200
Xinmei	Hansoh	2013	Generic	Rmb4,891	Rmb97,820
NA	JARI Pharmaceutical	2014	Generic	Rmb5,908	Rmb118,160
Sidaxin	Qilu	2014	Generic	Rmb4,788	Rmb95,760
NA	Zhongmei Huadong	2016	Generic	NA	NA

Source: CFDA, Pharma Database, SWS Research

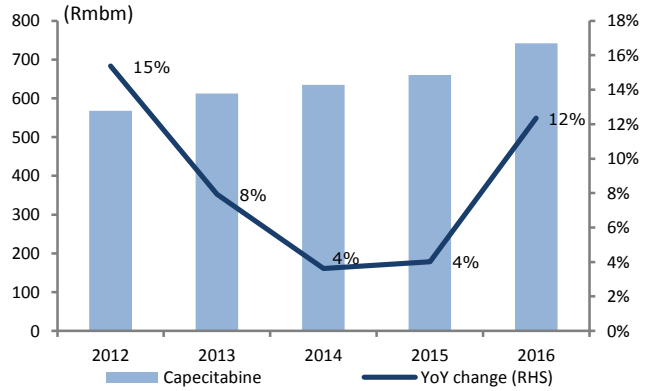
Driven by the expansion in reimbursement coverage, sales of *Qingweike* may grow at a 15% Cagr in 2017-19E and reach HK$237m in 2019E.

Shoufu (capectitabine tablet) is a third-to-market generic of Roche's (ROG:VX) *Xeloda*. Capectitabine is a third-generation 5-fluorouracil (5-FU) drug, widely used as first-line chemotherapies for the treatment of colorectal cancer, breast cancer and advanced or metastatic stomach cancer. Compared with traditional FU drugs such as 5-FU and tegafur gimeracil oteracil potassium (S-1) capsules, capectitabine has stronger efficacy and lower toxicity.

Sales of capectitabine in sample hospitals have grown at a 7% Cagr in 2013-16A. As of 2016, Roche's *Xeloda* has a 76% market share, followed by Hengrui's *Aibin* with 10% market share, Qilu's *Zhuolun* with 8% share and CTTQ's *Shoufu* with a 6%

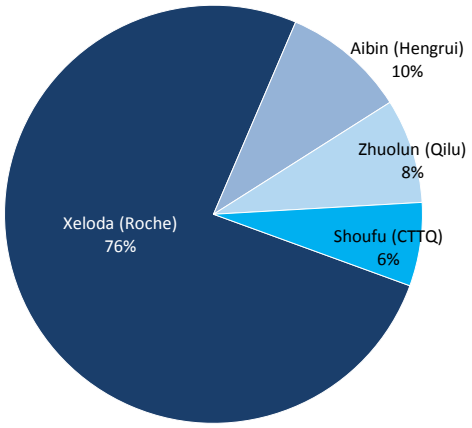
share. We see significant room for generics to gain market share from *Xeloda,* thanks to their 40-60% cheaper pricing than the original drug.

Fig 34: Sample hospital sales of decitabine (2012-2016)



Source: Pharma Database, SWS Research

Fig 35: Market share split of decitabine by revenue (2016A)



Source: Pharma Database, SWS Research

Given Sino Biopharmaceutical is likely to expand its oncology sales force, we expect *Shoufu* to penetrate into more hospitals. In 2016, *Shoufu*'s sales rallied 67% YoY to HK$179m. We forecast sales of *Shoufu* to grow at 30% Cagr in 2017-19E and reach HK$393m in 19E.

Fig 36: Comparison of capecitabine players

Trade name	Manufacturer	Year of CFDA approval	Status	Average bidding price (2016-now, 500mg, Rmb)	Cost of four treatment cycles (Rmb)
Xeloda	Roche	2007	Original drug	32.03	3,587
Aibin	Hengrui	2013	First-to-market generic	16.41	1,838
Zhuolun	Qilu	2013	Second-to-market generic	18.44	2,065
Shoufu	Chia Tai Tianqing	2014	Third-to-market generic	13.01	1,457

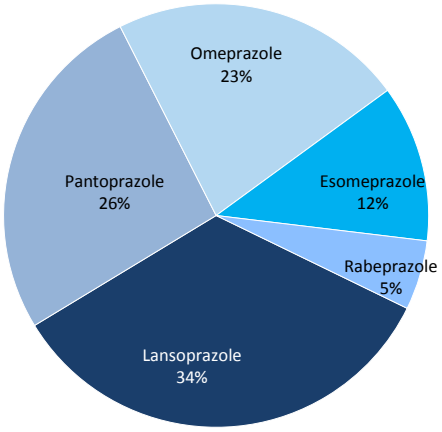
Source: CFDA, Pharma Database, SWS Research

Esomeprazole to ramp up rapidly

Aisuping (esomeprazole) injection, a first-to-market generic of *Nexium* injection, was newly launched in September 2016. Esomeprazole is a new generation of proton pump inhibitor (PPI) which reduces stomach acid. The injection formulation of esomeprazole is an alternative treatment for gastroesophageal reflux disease, acute gastric or duodenal ulcer bleeding when oral therapy is not applicable. Compared with conventional PPI drugs like omeprazole, esomeprazole (the s-isomer of omeprazole) displays lower first-pass hepatic metabolism and slower plasma clearance. As a result, esomeprazole has greater predictability of response, enhanced speed and duration of effect.

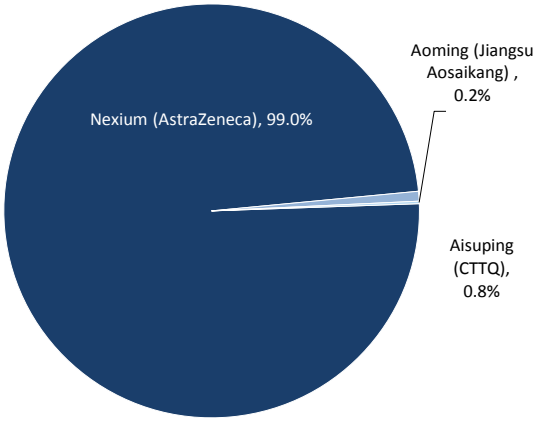
We estimate that the market size of PPI drugs in China exceeds Rmb10bn while injection formulation PPIs account for the majority of total PPI sales. As of 2016, in terms of sales in sample hospitals, esomeprazole injection accounted for 12% of PPI injection sales. We expect esomeprazole to take market share from conventional PPIs thanks to its superior efficacy.

Fig 37: Market share split of PPI injections (2016A)



Source: Pharma Database, SWS Research

Fig 38: Market share split of esomeprazole injection (2016A)



Source: Pharma Database, SWS Research

Fig 39: Comparison of PPI injections

Generic name	Original producer	Major generic drug producer	Brand name of major generic drug	Dose	Average selling price (Rmb)	Daily treatment cost (Rmb)	Reimbursement
Omeprazole	AstraZeneca	Jiangsu Aosaikang	Aoxikang	40mg	55	55	NRDL (Type 2, Limited to fasting patients or those have difficulty in swallowing)
Lansoprazole	Takeda	Jiangsu Aosaikang	Aoweijia	30mg	75	150	NRDL (Type 2, Limited to fasting patients or those have difficulty in swallowing)
Pantoprazole	BykGulden	Yangtze River Pharma	Weidi	40mg	34	34	NRDL (Type 2, Limited to fasting patients or those have difficulty in swallowing)
Rabeprazole	NA	Nanjing Chang'ao	Aoboping	20mg	216	216	None
Esomeprazole	AstraZeneca	Chia Tai Tianqing	Aisuping	40mg	88	88	NRDL (Type 2, Limited to fasting patients or those have difficulty in swallowing)

Source:Yaozh.com, SWS Research

The Chinese esomeprazole injection market is dominated by the original drug, AstraZeneca's (AZN:LN) *Nexium,* with a 99% market share in sample hospitals in 2016. There are only two *Nexium* generics in the market; Sino Biopharmaceutical's *Aisuping* has a 0.8% market share and Jiangsu Aosaikang's *Aoming* has a 0.2% share. As *Aisuping* is selling at a 23% price discount to *Nexium*, it may take market share from the original drug thanks to its attractive pricing.

Sales of *Aisuping* injection ramped up rapidly and reached Rmb61m in 1Q17. We forecast peak sales of *Aisuping* injection to reach Rmb650m in about five years, assuming esomeprazole will take a 30% share in the PPI injection market and *Aisuping* will account for 20% of the Chinese esomeprazole injection market.

Fig 40: Price comparison of esomeprazole

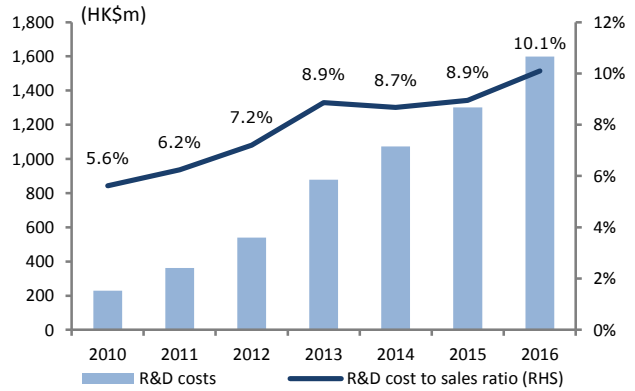
Brand name	Manufacturer	Generic name	Status	Year of CFDA approval	Average selling price (Rmb per 40mg)	Lowest tender price nationwide (Rmb per 40mg)	% difference between lowest tender price and ASP
Nexium	AstraZeneca	Esomeprazole injection	Original drug	2012 (injection formulation)	115	102	-11%
Aoming	Jiangsu Aosaikang	Esomeprazole injection	First-to-market generic	2016	93	79	-15%
Aisuping	Chia Tai Tianqing	Esomeprazole injection	Second-to-market generic	2016	88	79	-10%

Source: CFDA, Yaozh.com, SWS Research

Fruitful pipelines

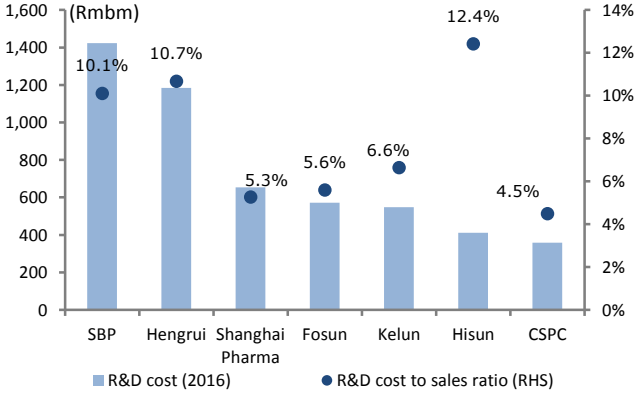
Sino Biopharmaceutical's R&D expenditure is the highest among major Chinese pharmaceutical companies. Its R&D costs reached HK$1.6bn in 16A, which was 10.1% of the company's total sales, while Jiangsu Hengrui Medicine (600276:CH -N-R) spent Rmb1.2bn on R&D during the same period, Shanghai Pharma (601607:CH -N-R) invested Rmb654m and Fosun Pharma (2196:HK -N-R) spent Rmb572m during the same period.

Fig 41: Sino Biopharmaceutical's R&D costs (2010-2016)



Source: Company data, SWS Research

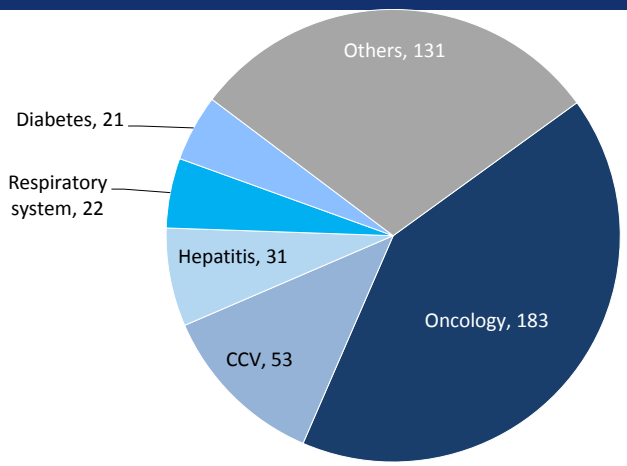
Fig 42: R&D costs of Chinese pharmaceutical companies (excluding capitalized expenses)



Source: Company data, SWS Research

Thanks to persistent R&D investment, Sino Biopharmaceutical has built comprehensive pipelines. As of March 2017, Sino Biopharmaceutical has 441 drug applications in clinical trials or for which it has filed production applications. Of these, 183 applications are for oncology, 53 are for cardio-cerebral vascular diseases and 31 are hepatitis drugs. We think Sino Biopharmaceutical will become a leading player in Chinese oncology market given its rich pipeline in this area, especially the potential launch of anlotinib.

Fig 43: Number of Sino Biopharmaceutical's drug applications (including applications under clinical trials and pending production)



Source: Company data, SWS Research

According to our calculation, Sino Biopharmaceutical now has 14 innovative chemical drugs under development, while 11 drug candidates are in clinical trials. We expect anlotinib to receive CFDA approval as a third-line therapy for advanced NSCLC by end-17E.

Fig 44: Sino Biopharmaceutical's innovative chemical drug pipelines

Drug candidates	Chinese name of drug candidates	Registration type	Indication	Progress	Date of receiving clinical trial approval	Fast track
Anlotinib capsule	盐酸安罗替尼胶囊	Class 1 chemical drug	Third-line therapy for NSCLC, Soft tissue sarcoma, Medullary thyroid carcinoma (MTC), Advanced renal cell carcinoma (mRCC), etc.	NSCLC indication pending CFDA production approval; Other indications under clinical trials	NA	Special review (特殊审评)
Tenofovir dipivoxil fumarate tablet	富马酸替诺福韦双特戊酯片	Class 1.1 chemical drug	Chronic hepatitis B	Clinical trials	2013/7/12	Key science and technology program (重大专项)
NA	马来酸舒布替尼胶囊	Class 1.1 chemical drug	NA	Clinical trials	2012/8/6	Special review (特殊审评)
TQ-B3203 injection	注射用 TQ-B3203	Class 1 chemical drug	NA	Clinical trials	2017/4/17	Special review (特殊审评)
TQ-B3101 capsule	TQ-B3101 胶囊	Class 1.1 chemical drug	NA	Clinical trials	2016/8/4	Special review (特殊审评)
TQ-B3139 capsule	TQ-B3139 胶囊	Class 1.1 chemical drug	NA	Clinical trials	2016/8/1	
TQ-B3233 capsule	TQ-B3233 胶囊	Class 1 chemical drug	NA	Clinical trials	2017/4/20	Special review (特殊审评)
TQ-B3234 capsule	TQ-B3234 胶囊	Class 1.1 chemical drug	NA	Clinical trials	2016/3/25	Special review (特殊审评)
TQ-B3395 capsule	TQ-B3395 胶囊	Class 1.1 chemical drug	NA	Clinical trials	2016/4/7	Special review (特殊审评)
TQ-B3525 tablet	TQ-B3525 片	Class 1 chemical drug	NA	Clinical trials	2017/6/9	Special review (特殊审评)
TQ-F3083 capsule	TQ-F3083 胶囊	Class 1.1 chemical drug	NA	Clinical trials	2016/12/8	Special review (特殊审评)
TQ-A3326 tablet	TQ-A3326 片	Class 1 chemical drug	NA	Pending clinical trial approval	NA	Special review (特殊审评)
TQ-A3334 tablet	TQ-A3334 片	Class 1 chemical drug	NA	Pending clinical trial approval	NA	Special review (特殊审评)
TQB2450 injection	TQB2450 注射液	Class 1 chemical drug	NA	Pending clinical trial approval	NA	

Source: Insight, SWS Research

Anlotinib is a novel multi-target tyrosine kinase inhibitor (TKI) that is designed to primarily inhibit VEGFR2/3, FGFR1-4, PDGFR α/β, c-KIT and Ret. Anlotinib has shown promising results in phase-III clinical trials on NSCLC. Sino Biopharmaceutical is also conducting phase-II clinical trials on soft tissue sarcoma (STS), medullary thyroid carcinoma (MTC), advanced renal cell carcinoma (mRCC), metastatic colorectal cancer (mCRC) and advanced gastric cancer, among other diseases. Sino Biopharmaceutical has initiated a phase-I trial for anlotinib in the US and the drug received orphan drug status for ovarian cancer from the US FDA in 2015.

Fig 45: Anlotinib clinical trials in China

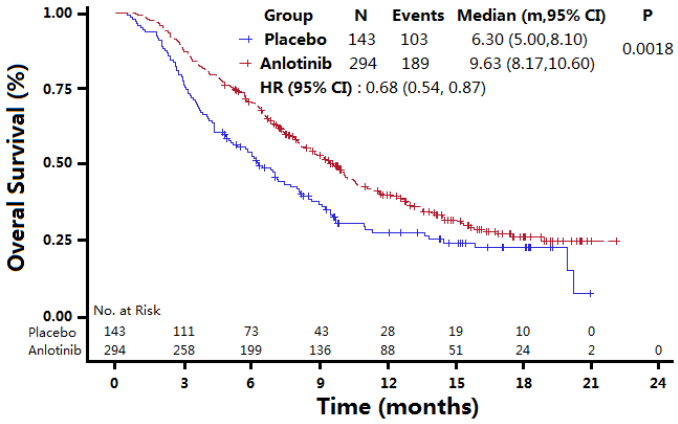
Indication	Clinical trial stage	Intervention	Target enrollment	Date of first patient enrollment	Progress
Advanced non-small cell lung cancer (NSCLC)	Phase III	Placebo	450	2015-03-04	Data unblinded
Advanced soft tissue sarcoma (STS)	Phase II	Single arm	150	2013-05-09	Completion of patient enrollment
Soft tissue sarcoma (STS)	Phase IIb	Placebo	319	2015-05-15	Recruiting patients
Advanced medullary thyroid carcinoma (MTC)	Phase IIa	Single arm	15-48	2013-07-13	Completion of patient enrollment
Advanced medullary thyroid carcinoma (MTC)	Phase IIb	Placebo	90	2015-09-01	
Advanced renal cell carcinoma (mRCC)	Phase IIa	Sutent	180	2014/1/21	Completion of patient enrollment
Advanced renal cell carcinoma (mRCC)	Phase IIb	Single arm	60	2014-03-03	Completion of patient enrollment
Metastatic colorectal cancer (mCRC)	Phase IIb	Placebo	450	2014-12-09	Recruiting patients
Advanced gastric cancer (GC)	Phase II	Placebo	378	2015-07-20	Recruiting patients
Differentiated thyroid carcinoma	Phase II	Placebo	120	2015-09-01	Recruiting patients
Small cell lung cancer (SCLC)	Phase II	Placebo	90	Not yet	Recruiting patients
Esophageal squamous cell carcinoma (ESCC)	Phase II	Placebo	144	Not yet	Recruiting patients

Source: CDE, SWS Research

In the absence of a well-recognised third-line treatments for advanced NSCLC, anlotinib is designed to meet unmet clinical need. In the 2017 American Society of Clinical Oncology (ASCO) meeting, the results of a randomised, double-blind, placebo-controlled phase-III trial for advanced NSCLC were released. The primary

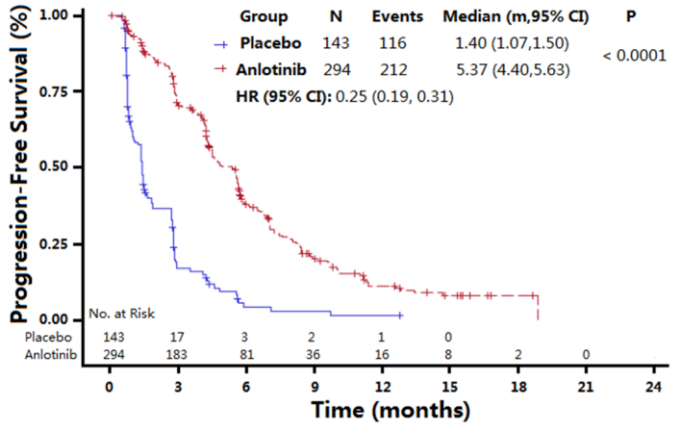
endpoint of overall survival (OS) was met as anlotinib improved OS by 3.33 months (9.63m in the anlotinib group vs. 6.30m in the placebo group (P=0.0018, HR=0.54)). Anlotinib also improved progression-free survival (PFS) by 3.97 months (5.37m in anlotinib group vs. 1.40m in the control group (P<0.001, HR=0.25)). In the anlotinib group, overall response rate (ORR) was 9.18% vs. 0.7% in the placebo group and disease control rate (DCR) reached 80.95% vs 37.06% in the placebo group.

Fig 46: Overall survival (OS) in anlotinib and placebo



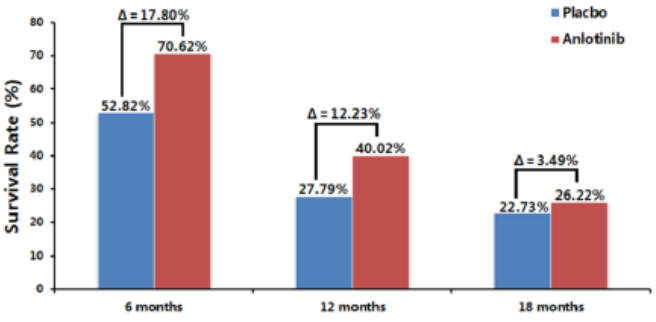
Source: ASCO 2017, SWS Research

Fig 47: Progression-free survival (PFS) in anlotinib and placebo



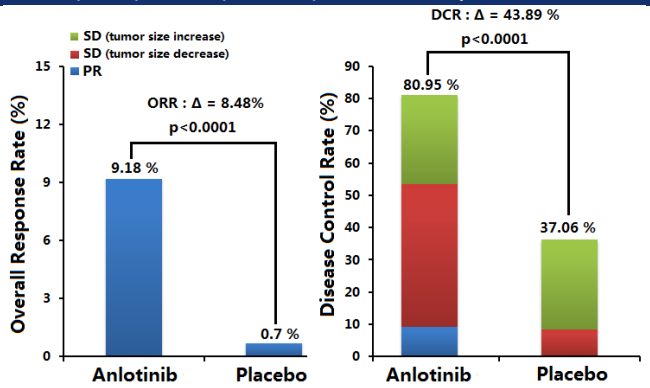
Source: ASCO 2017, SWS Research

Fig 48: Survival rate of anlotinib and placebo



Source: ASCO 2017, SWS Research

Fig 49: ORR (CR+PR) and DCR (CR+PR+SD) of anlotinib and placebo



Source: ASCO 2017, SWS Research

According to research article "Cancer Statistics in China, 2015", published in CA: A Cancer Journal for Clinicians, China has around 730,000 new incidences of lung cancer cases every year and c.85% of lung cancer patients are diagnosed with NSCLC. When diagnosed, approximately 70% of NSCLC patients are already in advanced stages (stages -III and -IV). The targeted therapies available now are mainly for patients with EGFR mutations or ALK mutations. Approximately 40-50% Chinese NSCLC patients have EGFR mutation while 3-7% have ALK mutation. *Iressa* (gefitinib), *Tarceva* (erlotinib) and *Conmana* (icotinib) are first generation EGFR-TKIs and can be used as first-line therapies for EGFR mutation-positive NSCLC. Nevertheless, patients receiving first-generation EGFR-TKIs will develop drug resistance within 8-13 months. In March 2017, the CFDA approved *Tagrisso* (osimertinib), a third-generation EGFR-TKI, which can be a rescue therapy for first-generation EGFR-TKI-resistant patients with T790M mutations.

Immune therapies, such as *Opdivo* (nivolumab) and *Keytruda* (pembrolizumab), are approved by the US FDA for treatment as second-line treatments for advanced NSCLC but they are not available in China yet.

Hence, there are very limited therapeutic options for NSCLC patients who are 1) negative on EGFR/ALK-mutation (approximately 50% of NSCLC patients in China) and 2) positive on EGFR/ALK-mutation but exhibiting EGFR/ALK targeted drug resistance. Anlotinib is likely to meet the unmet clinical need and become a gold standard for third-line treatment of advanced NSCLC.

Fig 50: Targeted therapies for NSCLC

Generic name	Generic name in Chinese	Brand name	Manufacturer	Targets	Year of CFDA approval	Indication
Gefitinib	吉非替尼	Iressa	AstraZeneca	EGFR	2005	First line therapy for EGFR mutation positive advanced NSCLC patients
Erlotinib	厄洛替尼	Tarceva	Roche	EGFR	2007	First line therapy for EGFR mutation positive advanced NSCLC patients
Icotinib	埃克替尼	Conmana	Betta Pharma	EGFR	2011	First line therapy for EGFR mutation positive advanced NSCLC patients
Afatinib	阿法替尼	Giotrif	BI	EGFR	2017	First line therapy for EGFR mutation positive advanced NSCLC patients
Osimertinib	奥希替尼	Tagrisso	AstraZeneca	EGFR, T790M	2017	Second line therapy for EGFR mutation positive advanced NSCLC patients
Crizotinib	克唑替尼	Xalkori	Pfizer	ALK	2013	First line therapy for ALK mutation positive advanced NSCLC patients
Ceritinib	色瑞替尼	Zykadia	Novartis	ALK	Not yet	Second line therapy for ALK mutation positive advanced NSCLC patients
Alectinib	艾乐替尼	Alecensa	Roche	ALK	Not yet	Second line therapy for ALK mutation positive advanced NSCLC patients
Bevacizumab	贝伐珠单抗	Avastin	Roche	VEGF	2015 (NSCLC indication)	First line therapy for advanced NSCLC
Nivolumab	纳武单抗	Opdivo	BMS	PD-1	Not yet	Second line therapy for advanced NSCLC
Pembrolizumab	帕姆单抗	Keytruda	Merck	PD-1	Not yet	Second line therapy for PD-L1 mutation positive advanced NSCLC

Source: CFDA, SWS Research

According to Menet, the market for lung cancer drugs in China reached Rmb23bn in 15A while targeted small molecule drugs accounted for 14% of the total lung cancer drug market. *Conmana*, a domestically patented EGFR TKI, was cut in price by approximately 55% in 2015 during negotiation with the National Health and Family Planning Commission (NHFPC), in order to obtain reimbursement coverage. After the price cut, *Conmana*'s yearly treatment cost was c.Rmb73,000. We think anlotinib is likely to be priced at a similar level to *Conmana*, ie c.Rmb70,000 per year, when it first comes to market in 18E. We think the price may gradually drop to Rmb58,000 by end 2024E (-3% per annum). Assuming the penetration rate of anlotinib among advanced NSCLC patients reaches 10%, we estimate peak sales for anlotinib may reach Rmb2.5bn within seven years of launch.

Fig 51: Sales projection for anlotinib (NSCLC indication)

	2018E	2019E	2020E	2021E	2022E	2023E	2024E
Incidence of lung cancer (ppl)	730,000	730,000	730,000	730,000	730,000	730,000	730,000
NSCLC as % of total lung cancer	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Stage III & IV patients as % of total NSCLC	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Penetration rate of anlotinib among advanced NSCLC patients	1.0%	2.0%	3.0%	5.0%	7.0%	8.5%	10.0%
Number of patients receiving anlotinib (ppl)	4,344	8,687	13,031	21,718	30,405	36,920	43,435
Annual treatment cost of anlotinib (Rmb)	70,000	70,000	68,000	66,000	63,000	60,000	58,000
Annual sales of anlotinib (Rmbm)	**304**	**608**	**886**	**1,433**	**1,915**	**2,215**	**2,519**

Source: SWS Research

Moreover, in January 2016, CTTQ, a subsidiary of Sino Biopharmaceutical, agreed to grant the exclusive international development license of a potential innovative drug to Janssen Pharmaceuticals, a subsidiary of Johnson & Johnson (JNJ:US - N-

R). The drug stimulates the immune functions of the patients to remove HBV. CTTQ will receive one-off payments, including an upfront payment and milestone payments, of up to US$253m in total; and after commercialisation of the drug, receive royalty payments during the royalty term. We believe this demonstrates Sino Biopharmaceutical's strong capability in developing innovative drugs.

Sino Biopharmaceutical is also a fast follower in the area of chemical generics. We notice that Sino Biopharmaceutical has 14 generics pending CFDA's production approval, indicating that these drugs have a high chance to come to the market within the next 18 months. Bendamustine injection, gadoxetate disodium injection and ganirelix injection enjoy priority review designation from the CFDA because they are potentially first-to-market generics. CFDA also granted priority review designation for tenofovir disoproxil tablet, because it is a treatment for HIV.

Fig 52: Sino Biopharmaceutical's selected generic chemical drug pipelines

Drug candidates	Chinese name of drug candidates	Registration type	Indication	Progress	Fast track
Levpantoprazole injection	注射用左泮托拉唑钠	Class 3.1 chemical drug	Duodenal ulcer, gastric ulcer, acute gastric mucosal lesion, acute upper digestive tract hemorrhage	Pending production approval	
Fosaprepitant / Dimeglumine injection	注射用福沙匹坦双葡甲胺	Class 3.1 chemical drug	Nausea and vomiting caused by chemotherapy	Pending production approval	
Polymyxin E injection	注射用多黏菌素 E 甲磺酸钠	Class 3.1 chemical drug	Bacterial infection	Pending production approval	
Bendamustine injection	注射用盐酸苯达莫司汀	Class 3 chemical drug	Chronic lymphocytic leukemia (CLL), Non-Hodgkin's lymphoma (NHL), multiple myeloma (MM), breast cancer, etc.	Pending production approval	Priority review as a potential first-to-market generic（首仿品种优先审评）
Azacitidine injection	注射用阿扎胞苷	Class 3 chemical drug	Myelodysplastic syndrome(MDS), acute non-lymphocytic leukemia	Pending production approval	
Caspofungin injection	注射用醋酸卡泊芬净	Class 6 chemical drug	Neutropenia, fungal infection with fever, aspergillosis	Pending production approval	
Fasudil injection	盐酸法舒地尔注射液	Class 6 chemical drug	Cerebral angiospasm and ischemia after the operation of spontaneous subarachnoid hemorrhage (SAH)	Pending production approval	
Lenalidomide capsule	来那度胺胶囊	Class 6 chemical drug	2nd line treatment of multiple myeloma, Myelodysplastic syndrome(MDS)	Pending production approval	
Gefitinib tablet	吉非替尼片	Class 6 chemical drug	2nd line treatment of advanced or metastatic Non-small Cell Lung Cancer (NSCLC)	Pending production approval	
Gadoxetate disodium injection	钆塞酸二钠注射液	Class 6 chemical drug	Diagnosis of focal hepatic lesions	Pending production approval	Priority review as a potential first-to-market generic（首仿品种优先审评）
Docetaxel injection	多西他赛注射液	Class 6 chemical drug	Advanced or metastatic breast cancer, advanced or metastatic Non Small-Cell Lung Cancer (NSCLC)	Pending production approval	
Ganirelix injection	醋酸加尼瑞克注射液	Class 6 chemical drug	Prevention of preovulatory LH surge	Pending production approval	Priority review as a potential first-to-market generic（首仿品种优先审评）
Tenofovir disoproxil tablet	富马酸替诺福韦二吡呋酯片	Class 4 chemical drug	HIV, Hepatitis B	Pending production approval	Priority review as a potential HIV drug (艾滋病治疗药物优先审评)
Apixaban tablet	阿哌沙班片	Class 4 chemical drug	Prevention of venous thromboembolism	Pending production approval	
Pixantrone injection	注射用马来酸匹杉琼	Class 3.1 chemical drug	Relapsed or refractory invasive B cell Non-Hodgkin's lymphoma (NHL)	Clinical trials	
Indacaterol / Glycopyrrolate powder for inhalation	茚达特罗格隆溴铵吸入粉雾剂	Class 3.2 chemical drug	Respiratory obstruction of patients with chronic obstructive pulmonary disease	Clinical trials	
Tenofovir alafenemide fumarate tablet	艾酚福韦片	Class 2.1 chemical drug	Hepatitis B	Received clinical trial approval	

Source: Insight, SWS Research

We expect Sino Biopharmaceutical's tenofovir to receive approval from CFDA by end-17E. Within the past two months, the CFDA has approved three tenofovir generics, the applicants of which are Fujian Cosunter Pharma (300436:CH - N-R), Chengdu Brilliant Pharma and Qilu Pharma. We think Sino Biopharmaceutical will be the fourth to receive tenofovir generic approval in China.

Compared with other NAs, tenofovir has potent efficacy and the least chance of resistance. In addition, tenofovir can be a rescue therapy for lamivudine or

adefovir refractory patients. By volume, tenofovir has a 3% share of the Chinese NA market in 2016. We think tenofovir will take market share due to demand from patients resistant to lamivudine, adefovir or telbivudine and increase its market share by volume to 30% by 2024E. We expect the proportion of HBV patients receiving NA therapies may also climb from 15% in 18E to 25% in 2024E.

Chengdu Brilliant Pharma's tenofovir is sold at Rmb456 per 30 tablets in Chongqing, merely 7% lower than *Viread*. However, given that there will be at least four generic players in the market, we think Sino Biopharmaceutical's tenofovir is likely to be priced at a 30% discount to *Viread* and cost c.Rmb4,000 per year. Considering fierce competitions between generic manufacturers, we expect the selling price of tenofovir to decline at a 5% Cagr in 2018-24E. Assuming Sino Biopharmaceutical can obtain a 25% market share in the Chinese tenofovir market thanks to its strong marketing capability in the hepatitis area, we estimate Sino Biopharmaceutical's tenofovir generic to record peak sales of Rmb1.6bn in 2024E.

Fig 53: Sales projection of tenofovir

	2018E	2019E	2020E	2021E	2022E	2023E	2024E
Number of patients with chronic HBV ('000 ppl)	28,000	28,000	28,000	28,000	28,000	28,000	28,000
Patients taking NA treatment as % of total chronic HBV patients	15.0%	18.0%	20.0%	22.0%	23.0%	24.0%	25.0%
Penetration rate of tenofovir among patients receiving NA treatment	10.0%	15.0%	20.0%	23.0%	26.0%	28.0%	30.0%
Sino Biopharmaceutical's market share in Chinese tenofovir market	5.0%	8.0%	12.0%	16.0%	19.0%	22.0%	25.0%
Annual treatment cost of Sino Biopharmaceutical's tenofovir generic (Rmb)	4,000	3,950	3,900	3,800	3,600	3,300	3,000
Annual sales of tenofovir (Rmbm)	**84**	**239**	**524**	**861**	**1,145**	**1,366**	**1,575**

Source: Company data, SWS Research

We also highlight that Sino Biopharmaceutical's lenalidomide generic is pending CFDA production approval and may come to market in 18E. The original drug, *Revlimid*, produced by Celgene (CELG:US – N-R) registered US$6.97bn in sales in 16A, entering the top-10 of besting selling drugs in the world. *Revlimid* was launched in China in 2013.

As approved by CFDA, *Revlimid* is used in combination with dexamethasone for the treatment of patients with multiple myeloma (MM) who have received at least one prior therapy. *Revlimid* also received the MDS indication approval from US FDA, i.e. for the treatment of transfusion-dependent anaemia due to low- or intermediate-1-risk MDS associated with a deletion 5q cytogenetic abnormality (c.10-15% of total MDS patients).

The incidence rate of MM is c.2-3 per 100,000 population. There are approximately 80,000 existing MM patients in China. *Revlimid* provides discounts for low income patients (buy three and get nine free). Despite of that, the annual treatment cost of *Revlimid* still amounts to Rmb175,500 per year. Assuming Sino Biopharmaceutical's lenalidomide generic is priced at 70% price discount to *Revlimid*, and if the drug can cover c.4,000 patients per year, its annual peak sales can reach Rmb500m, in our view.

Moreover, Sino Biopharmaceutical is expanding into biological drugs. According to our calculation, Sino Biopharmaceutical now has eight biological drugs in the pipeline, of which four are monoclonal antibodies (mAbs) drugs with the potential to become blockbusters. However, these drugs are in early stages of clinical trials and may take 3-5 years before commercialisation.

Fig 54: Sino Biopharmaceutical's selected biological drug pipelines

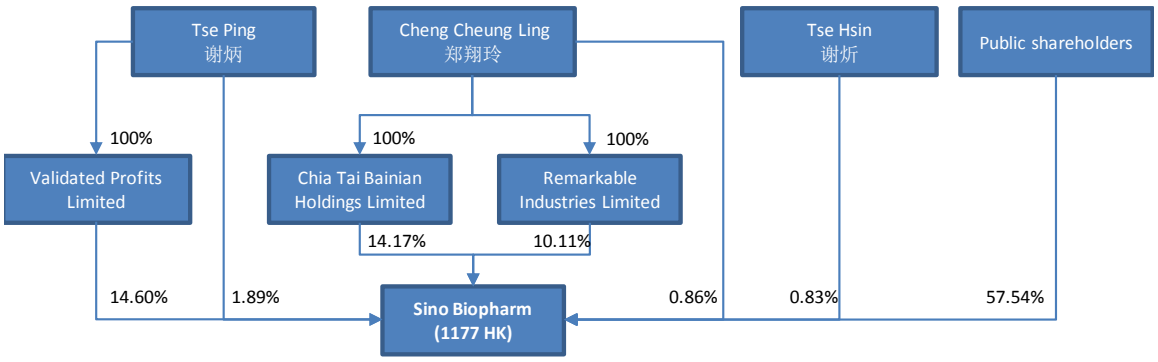
Drug candidates	Chinese name of drug candidates	Registration type	Indication	Progress	Date of receiving clinical trial approval	Fast track
Trastuzumab injection	注射用曲妥珠单抗	Class 2 biological drug	Metastatic breast cancer (mBC)	Clinical trials	2016/9/26	
Adalimumab injection	阿达木单抗注射液	Class 2 biological drug	Rheumatoid arthritis (RA), Ankylosing Spondylitis (AS)	Clinical trials	2017/2/13	
Bevacizumab injection	贝伐珠单抗注射液	Class 2 biological drug	Metastatic colorectal cancer (mCRC)	Clinical trials	2016/9/26	
Rituximab injection	利妥昔单抗注射液	Class 2 biological drug	Non-Hodgkin lymphoma (NHL)	Clinical trials	2016/9/4	
Recombinant coagulation factor VIII injection	注射用重组人凝血因子Ⅷ	Class 10 biological drug	Hemophilia	Clinical trials	2015/10/29	
Peg-interferon α-2a injection	聚乙二醇干扰素 α-2a 注射液	Class 15 biological drug	Chronic hepatitis B	Clinical trials	2016/7/14	
Phosphatidyl choline Cu/Zn superoxide dismutase (PC-SOD)	注射用磷脂化重组人铜锌超氧化物歧化酶	Class 1 biological drug	Myocardial preservation after percutaneous coronary intervention (PCI)	Clinical trials	2015/6/25	Key science and technology program (重大专项)
Recombinant human thrombopoietin mimic peptide-Fc fusion protein injection	注射用重组人促血小板生成素模拟肽-Fc 融合蛋白	Class 7 biological drug	Immune thrombocytopenic purpura (ITP)	Pending clinical trial approval		

Source: Insight, SWS Research

Corporate governance risk is not a big concern

The Tse family controls a combined 42.46% stake in Sino Biopharmaceutical. Ping Tse (founder and CEO and executive director) holds 16.49% in the company, Cheung Ling Cheng (vice chair, executive director, mother of Theresa Tse) holds 25.14% and Hsin Tse (executive director, cousin of Ping Tse) holds 0.83% stake. Theresa Tse, daughter of Ping Tse, is chairperson and an executive director of Sino Biopharmaceutical.

Fig 55: Shareholding structure of Sino Biopharmaceutical



Source: Company data, SWS Research

In addition, the Tse family holds four out of a total of seven executive directorships currently comprising the board. Seven members of Tse family have senior management positions in Sino Biopharmaceutical.

Fig 56: Tse family members taking management positions in Sino Biopharmaceutical

	Title	Relationship with the Founder family	Remuneration (2016,HK$m)
Miss Tse, Theresa Y Y（谢其润）	Executive Director, Chairlady	Daughter of Tse Ping	7.0
Mr. Tse Ping （谢炳）	Founder, CEO, Executive Director	Founder	33.1
Ms. Cheng Cheung Ling（郑翔玲）	Executive Director, Vice Chairlady	Mother of Theresa Tse	3.9 (bonus not included)
Mr. Tse Hsin （谢炘）	Executive Director, Vice President	Cousin of Tse Ping	1.9
Ms. Chia Fai（谢辉）	Assistant to the president, Vice President	Sister of Tse Ping	NA
Ms. Tse Wun（谢媛）	Assistant to the president	Cousin of Tse Ping	NA
Mr. Tse Hsuan, Johnny（谢炫）	General manager of information management department	Cousin of Tse Ping	NA

Source: Company data, SWS Research

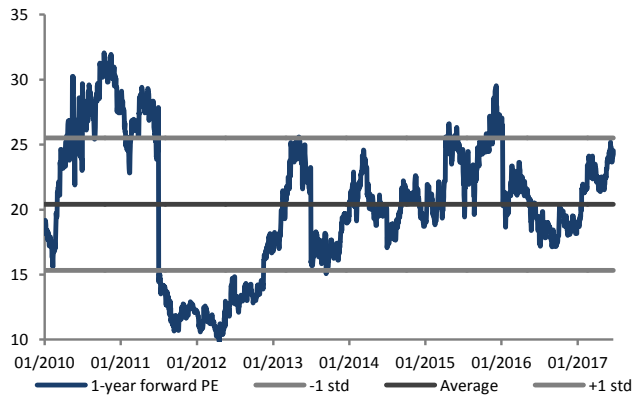
As the Tse family controls the majority shareholding in the company and the key management positions, there is a risk that they may encounter a conflict of interests with minority shareholders. A recent event that concerns investors is a proposed deal with China Cinda Asset Management (1359:HK - BUY). In January 2016, the board proposed to subscribe to 1.9bn new H-shares of Cinda for a total consideration of Rmb4.9bn. However, after that many minority shareholders voiced disagreement with the proposal, the board terminated the deal in February 2016, one month after the proposal. We believe this demonstrates the management's respect for minority shareholders' opinions. Given the good track record of the company's business performance since listing in 2000, we think corporate governance risks of Sino Biopharmaceutical are limited.

Sino Biopharmaceutical stock price dropped 27% in the two weeks after the announcement of the Cinda deal. The stock has since re-rated to 24x 17E PE after the concerns over the company's corporate governance eased.

Fig 57: Share price of Sino Biopharmaceutical

Source: Bloomberg, SWS Research

Fig 58: Historical 1-year forward PE ratio



Source: Bloomberg, SWS Research

Long term winner in pharma industry

Sino Biopharmaceutical will continue to expand its product portfolio thanks to its strong capability in drug innovation, in our view. Sino Biopharmaceutical also has a sizable and capable in-house sales team which will help its new drugs to quickly ramp up after commercialisation. In the long-term, Sino Biopharmaceutical may even compete with large multi-national corporations (MNCs) in overseas markets because its innovative drugs, such as anlotinib, may complete registration in overseas markets.

In January 2017, the company changed its reporting currency from Hong Kong dollars to renminbi. To maintain consistency, our model remains denominated in Hong Kong dollars. We forecast Sino Biopharmaceutical's total sales to grow 8.9% YoY in 17E, 10.3% YoY in 18E and 10.1% YoY in 19E, with growth driven mainly by a 4% Cagr in hepatitis drug sales in 17-19E, a 15% Cagr in oncology drugs and rapid ramp-ups in sales of esomeprazole, anlotinib and tenofovir.

Fig 59: Key financial assumptions

	2014	2015	2016	2017E	2018E	2019E	17-19E Cagr
Revenue (HK$m)							
Hepatitis	5,778	6,948	7,252	7,470	7,797	8,139	4%
CCV	1,193	1,372	1,613	1,836	2,060	2,272	12%
CCV (including drugs not being consolidated but under the management of Sino Biopharmaceutical)	3,035	3,220	3,378	3,686	3,995	4,289	8%
Oncology	1,125	1,474	1,759	2,016	2,329	2,660	15%
Analgesia	1,095	1,422	1,746	2,036	2,343	2,665	15%
Orthopedic diseases	949	1,041	1,170	1,346	1,520	1,703	13%
Parenteral nutritious	858	914	893	875	849	823	-3%
Anti-infection	677	906	1,013	1,044	1,064	1,086	2%
Respiratory system diseases	364	529	621	776	932	1,099	21%
Anorectal diseases	246	253	301	603	743	897	44%
Diabetes	72	93	107	123	139	156	13%
New drugs					376	830	
Others	1,116	1,020	1,095	1,150	1,208	1,268	5%
Total	**12,378**	**14,550**	**15,825**	**17,240**	**19,017**	**20,934**	**10%**
Revenue YoY change							
Hepatitis	18.71%	20.24%	4.38%	3.01%	4.38%	4.38%	
CCV	21.20%	15.03%	17.56%	13.83%	12.15%	10.31%	
CCV (including drugs not being consolidated but under the management of Sino Biopharmaceutical)	10.69%	6.10%	4.90%	9.12%	8.36%	7.36%	
Oncology	35.89%	31.00%	19.34%	14.61%	15.51%	14.24%	
Analgesia	29.94%	29.85%	22.77%	16.62%	15.10%	13.75%	
Orthopedic diseases	30.67%	9.65%	12.43%	15.00%	13.00%	12.00%	
Parenteral nutritious	8.94%	6.49%	-2.31%	-2.00%	-3.00%	-3.00%	
Anti-infection	44.00%	33.90%	11.82%	3.00%	2.00%	2.00%	
Respiratory system diseases	35.42%	45.28%	17.53%	25.00%	20.00%	18.00%	
Anorectal diseases	9.75%	2.73%	18.82%	100.64%	23.05%	20.78%	
Diabetes	13.48%	30.01%	15.22%	15.00%	13.00%	12.00%	
New drugs						120.78%	
Others	63.90%	-8.57%	7.35%	5.00%	5.00%	5.00%	
Total	**25.02%**	**17.55%**	**8.76%**	**8.94%**	**10.30%**	**10.08%**	

Source: Company data, SWS Research

In Hong Kong dollar terms, we forecast net profit of Sino Biopharmaceutical to grow 8.9% YoY in 17E, 11.9% YoY in 18E and 12.9% YoY in 19E. Converting into renminbi, we estimate net profit growth of 11.5% YoY in 17E, 11.9% YoY in 18E and 12.9% YoY in 19E. Although near-term growth is not exciting, we think the solid pace of growth will be sustainable over the long-term because its heavy investment in R&D will pay off. Our discounted cash flow-based model suggests a fair value of HK$8.5, indicating 25% upside from the stock's current share price in the long-term. Our assumptions include a weighted average cost of capital (WACC) of 8.7% and a terminal growth rate of 3%.

Fig 60: DCF valuation

Terminal value	40,518
Total present value	60,463
Net debt	(2,396)
Equity value	62,859
Total shares outstanding	7,412,192,209
DCF per share (in HK$)	**8.48**

Source: Company data, SWS Research

Fig 61: DCF sensitivities

Equity Beta \ Terminal growth rate	2.00%	2.50%	3.00%	3.50%	4.00%
0.70	9.15	9.77	10.53	11.48	12.70
0.80	8.31	8.81	9.40	10.11	11.00
0.90	7.62	8.01	8.48	9.04	9.71
1.00	7.03	7.35	7.73	8.17	8.70
1.10	6.53	6.80	7.10	7.46	7.88

Source: Company data, SWS Research

Sino Biopharmaceutical is trading at 24x 17E PE and 22x 18E PE. It Hong Kong-listed peers are trading at an average 19x 17E PE, 16x 18E PE while A-share peers at 32x 17E PE and 26x 18E PE. We believe Sino Biopharmaceutical deserves a valuation premium to its peers due to its strong R&D capability and rich pipelines.

Our 12-month target price for Sino Biopharmaceutical is HK$7.9, indicating 25x 18E PE. With 16% upside, we initiate coverage of Sino Biopharmaceutical with an Outperform recommendation.

Fig 62: Comparable peers of Sino Biopharmaceutical

Company	Code	Rating	Market cap (US$m)	17E PE	18E PE	17E PB	17E ROE
SINO BIOPHARMACEUTICAL	**1177 HK**	**Outperform**	**6,453**	**24.2**	**21.6**	**3.5**	**21.4**
H share peers							
SHANGHAI FOSUN PHARMACEUTICAL	2196 HK	N-R	10,619	18.3	15.7	2.4	14.0
CSPC PHARMACEUTICAL GROUP	1093 HK	Outperform	8,743	25.1	20.1	5.8	24.9
3SBIO INC	1530 HK	Buy	3,352	26.0	18.9	3.0	12.6
SIHUAN PHARMACEUTICAL	460 HK	N-R	3,917	14.2	13.1	2.2	16.1
LUYE PHARMA GROUP LTD	2186 HK	N-R	1,820	11.6	10.2	1.7	15.0
H share peers average				**19.1**	**15.6**	**3.0**	**16.5**
A share peers							
JIANGSU HENGRUI MEDICINE	600276 CH	N-R	20,225	42.3	34.2	9.1	21.9
SHENZHEN SALUBRIS PHARMACEUTICAL	002294 CH	N-R	5,250	22.3	18.5	5.7	25.9
HUADONG MEDICINE	000963 CH	N-R	6,995	26.2	21.1	5.4	21.7
TONGHUA DONGBAO PHARMACEUTICAL	600867 CH	N-R	4,487	36.3	28.4	6.9	19.4
A share peers average				**31.8**	**25.5**	**6.8**	**22.2**

Source: Bloomberg, SWS Research Note: We use Bloomberg consensus for non-rated stocks

Risks

Downside risks mainly lie in larger-than-expected price cuts of *Runzhong*, slower-than-expected rollout of anlotinib and tenofovir, and corporate governance risks.

Appendix

Management team

Tse, Theresa is an executive director, the chairlady of the board and the chairman of the Executive Board Committee and the Nomination Committee, respectively. Miss Tse is also a director of CT Tianqing. Miss Tse is a daughter of Mr. Tse Ping, an executive director and a substantial shareholder of the company, and Ms. Cheng Cheung Ling, a substantial shareholder of the company.

Tse Ping is the founder of the company and now serves as the chief executive officer of the company. He is responsible for the overall operations of the group. With more than 24 years of experience in investment and management in the pharmaceutical industry in the PRC, he is currently a director of CT Tianqing, NJCTT, Jiangsu Fenghai, Jiangsu Qingjiang, Qingdao Haier, Qingdao Chia Tai Haier Medicines Co., Ltd., Qingdao Heng Seng Tang Pharmacy Co., Ltd., and Beijing Tide. Mr. Tse is still a director of Chia Tai Qingchunbao Pharmaceutical Co., Ltd., a council member of the Association of Pharmaceutical Biotechnology of China and an honorary professor of Shenyang University of Pharmacy.

Cheng Cheung Ling is an executive director, the vice chairlady of the board, and a member of the Executive Board Committee of the company. Ms. Cheng graduated from the Guanghua School of Management of Peking University and obtained a Master Degree in Business Administration. She is a clinician. Ms.Cheng has extensive experience in and a discerning vision for management and investment in the pharmaceutical industry. She is also the chairman of Beijing Tide.

Tse Hsin is an executive director and the vice president of the company. He is mainly responsible for the acquisition and merger activities of the group. He is also the group's spokesman. He is currently a director of CT Tianqing, NJCTT, and Qingdao Haier and the president of Chia Tai Shaoyang Orthopedic Hospital. He is an uncle of Tse, Theresa, and a first cousin of Tse Ping. He is also the brother of Miss Tse Wun and a first cousin of Ms. Chia Fai and Mr. Tse Hsuan, Johnny, all being senior management of the company.

Wang Shanchun is the president of CT Tianqing. Mr. Wang has extensive management experience in the PRC pharmaceutical field. His design of the new production plant of CT Tianqing in Haizhou achieved a number of innovations in the country and obtained the first new edition national GMP certificate.

Tian Zhoushan is responsible for the business of NJCTT and joined the Group in April, 1997. Mr. Tian is currently the general manager of NJCTT. He was the head of production, the assistant to the president, and the vice president of CT Tianqing, and has 28 years of experience in the pharmaceutical industry.

Consolidated Income Statement

HK$m	2015	2016	2017E	2018E	2019E
Revenue	**14,550**	**15,825**	**17,240**	**19,017**	**20,934**
Cost of Sales	**(3,250)**	**(3,291)**	**(3,620)**	**(4,013)**	**(4,396)**
Gross Profit	**11,301**	**12,534**	**13,620**	**15,004**	**16,538**
Other Income	**392**	**321**	**322**	**339**	**353**
Selling/General/Admi. Expenses	(7,131)	(7,587)	(8,274)	(9,033)	(9,839)
Ebitda	3,485	3,906	4,233	4,701	5,258
Ebit	3,132	3,512	3,834	4,302	4,859
Finance Costs	(80)	(90)	(102)	(84)	(67)
Profit before tax	**3,444**	**3,743**	**4,053**	**4,557**	**5,145**
Income tax expense	(533)	(555)	(608)	(684)	(772)
Minority interests	(1,132)	(1,275)	(1,362)	(1,542)	(1,742)
Profit for the year	**1,779**	**1,913**	**2,084**	**2,332**	**2,632**

Source: Company data, SWS Research

Consolidated Cash Flow Statement

HK$m	2015	2016	2017E	2018E	2019E
Profit before taxation	**3,444**	**3,743**	**4,053**	**4,557**	**5,145**
Plus： Depr. and amortisation	399	399	399	39	0
Finance cost	80	90	102	84	67
Losses from investments	(195)	(159)	(160)	(160)	(160)
Change in working capital	(445)	306	(55)	(244)	(262)
Others	(992)	(927)	(1,064)	(835)	(939)
CF from operating activities	**2,291**	**3,452**	**3,275**	**3,441**	**3,852**
Capex	(4,462)	(948)	(850)	(850)	(850)
Other CF from investing activities	2,629	(1,347)	332	349	363
CF from investing activities	**(1,833)**	**(2,294)**	**(518)**	**(501)**	**(487)**
Equity financing	0	0	0	0	0
Net change in liabilities	2	1,677	(500)	(500)	(500)
Dividend and interest paid	(376)	(534)	(518)	(550)	(593)
Other CF from financing activities	(514)	(680)	(644)	(720)	(813)
CF from financing activities	**(888)**	**462**	**(1,662)**	**(1,770)**	**(1,906)**
Net cash flow	**(430)**	**1,619**	**1,095**	**1,169**	**1,459**
FCFF	(1,909)	2,714	2,720	2,564	2,975
FCFE	(1,987)	4,301	2,118	1,980	2,409

Source: Company data, SWS Research

Consolidated Balance Sheet

HK$m	2015	2016	2017E	2018E	2019E
Current Assets	9,936	14,212	15,371	16,885	18,705
Bank balances and cash	2,711	4,203	5,298	6,468	7,927
Trade and other receivables	1,866	2,228	2,220	2,449	2,696
Inventories	950	999	1,071	1,187	1,301
Other current assets	4,408	6,782	6,782	6,782	6,782
Long-term investment	1,258	999	1,283	1,606	1,969
PP&E	2,656	3,000	3,490	3,980	4,470
Intangible and other assets	2,632	2,329	2,290	2,251	2,212
Total Assets	**16,483**	**20,540**	**22,434**	**24,722**	**27,356**
Current Liabilities	5,524	6,314	6,323	6,424	6,523
Borrowings	1,420	1,529	1,529	1,529	1,529
Trade and other payables	768	923	932	1,033	1,132
Other current liabilities	3,336	3,862	3,862	3,862	3,862
Long-term liabilities	516	2,288	1,788	1,288	788
Total Liabilities	**6,040**	**8,602**	**8,111**	**7,712**	**7,311**
Minority Interests	2,687	3,053	3,771	4,593	5,522
Shareholder Equity	7,756	8,885	10,552	12,417	14,522
Share Capital	185	185	185	185	185
Reserves	7,571	8,699	10,366	12,232	14,337
Total Equity	10,443	11,938	14,323	17,010	20,045
Total Liabilities and equity	**16,483**	**20,540**	**22,434**	**24,722**	**27,356**

Source: Company data, SWS Research

Key Financial Ratios

	2015	2016	2017E	2018E	2019E
Ratios per share (HK$)					
Earnings per share	0.24	0.26	0.28	0.31	0.36
Diluted EPS	0.24	0.26	0.28	0.31	0.36
Operating CF per share	0.44	0.47	0.44	0.46	0.52
Dividend per share	0.06	0.06	0.06	0.06	0.07
Net assets per share	1.99	1.61	1.93	2.29	2.70
Key Operating Ratios (%)					
ROIC	21.88	19.46	18.92	18.84	18.82
ROE	24.76	23.00	21.44	20.30	19.54
Gross profit margin	77.67	79.20	79.00	78.90	79.00
Ebitda Margin	23.95	24.68	24.55	24.72	25.12
Ebit Margin	21.53	22.19	22.24	22.62	23.21
Growth rate of Revenue(YoY)	17.55	8.76	8.94	10.30	10.08
Growth rate of Profit(YoY)	17.54	7.57	8.90	11.90	12.87
Debt-to-asset ratio	36.64	41.88	36.16	31.20	26.73
Turnover rate of net assets	1.39	1.33	1.20	1.12	1.04
Turnover rate of total assets	0.88	0.77	0.77	0.77	0.77
Effective tax rate (%)	15.47	14.83	15.00	15.00	15.00
Dividend yield (%)	0.94	0.88	0.83	0.93	1.04
Valuation Ratios (x)					
PE	28.33	26.35	24.19	21.62	19.15
PB	3.41	4.22	3.52	2.96	2.51
EV/Sale	3.58	3.33	3.00	2.68	2.38

Source: Company data, SWS Research

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