

Shanghai Haohai Biological Technology Co., Ltd.

Leader of absorbable biomedical materials; initiate with OW

We initiate coverage of Shanghai Haohai Biotech with an OW rating and Dec-17 PT of HK\$50.00. Shanghai Haohai is China's leading absorbable biomedical materials provider in fast-growing therapeutic areas including orthopedics, anti-adhesion and hemostasis, ophthalmology & HA dermal fillers. We project 24% /20% top-/bottom-line CAGR in 2015-2018.

- **Leading absorbable biomedical materials provider with distinct advantages:** 1) Market leadership in key therapeutic areas (No. 1 player in intra-articular visco-supplement, anti-adhesion and ophthalmic viscoelastic medical devices in China, which are estimated to grow at more than 20% CAGR in 2015-19E. 2) Extensive & continuous enlarging distribution network with limited customer concentration. 3) Strong R&D capability with a rich pipeline. 4) Executed M&A strategy and potential upside surprise.
- **Rapidly growing HA dermal filler business:** Haohai launched its HA dermal filler brand "Matrill" in 2015 and quickly became the No. 2 domestic brand, after Bloomage. We forecast robust sales CAGR of 50%+ in 2015-2018 on deeper sales channel penetration and new product launches.
- **Attractive valuation:** Shanghai Haohai trades at a 15x FY17E P/E, approximately 30% below the peer group average of 22x. Our DCF-based price target of HK\$50.0 implies ~30% upside potential, 20x 2017E P/E. Its peer group consists of competitors serving the orthopedics and HA dermal filler markets, as well as similar biotech companies. Over time, we believe there is potential for Haohai to trade at a higher P/E to peers due to market leadership in a majority of its therapeutic areas and higher earnings growth ahead.
- **Investment risks:** (1) Potential pricing pressure from tenders; (2) Dependence on a limited number of key products. (3) Competition from substitute materials. (4) Reliance on distribution network. (5) M&A and integration risks.

Shanghai Haohai Biological Technology Co., Ltd. (Reuters: 6826.HK, Bloomberg: 6826 HK)

Rmb in mn, year-end Dec	FY14A	FY15A	FY16E	FY17E	FY18E
Revenue (Rmb mn)	516	664	793	963	1,162
Net Profit (Rmb mn)	184	273	275	329	376
EPS (Rmb)	1.53	1.86	1.72	2.06	2.35
DPS (Rmb)	0.59	0.34	0.00	0.00	0.00
Revenue growth (%)	28.6%	28.7%	19.5%	21.4%	20.6%
EPS growth (%)	29.7%	21.5%	(7.5%)	19.4%	14.2%
ROCE	32.1%	14.8%	8.1%	9.3%	9.6%
ROE	32.6%	16.8%	9.8%	10.6%	10.9%
P/E (x)	21.6	17.7	19.2	16.0	14.1
P/BV (x)	6.7	1.8	1.8	1.6	1.4
EV/EBITDA (x)	22.6	10.5	10.6	7.7	6.1
Dividend Yield	1.8%	1.0%	0.0%	0.0%	0.0%

Source: Company data, Bloomberg, J.P. Morgan estimates.

See page 42 for analyst certification and important disclosures, including non-US analyst disclosures.

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**Initiation
Overweight**

6826.HK, 6826 HK

Price: HK\$38.30

Price Target: HK\$50.00



Hong Kong

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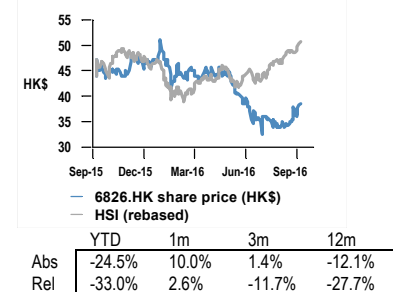
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Price Performance



Company Data

Shares O/S (mn)	147
Market Cap (Rmb mn)	4,847
Market Cap (\$ mn)	726
Price (HK\$)	38.30
Date Of Price	05-Sep-16
Free Float(%)	-
3M - Avg daily vol (mn)	0.11
3M - Avg daily val (HK\$ mn)	3.76
3M - Avg daily val (\$ mn)	0.5
HSI	23,649.55
Exchange Rate	7.76
Price Target End Date	31-Dec-17

Key catalysts for the stock price: <ul style="list-style-type: none"> • Market leadership in key therapeutic areas. • Attractive and growing core markets. • Extensive distribution network with limited customer concentration. • Strong research and development capabilities. • Executed M&A strategy & potential upside surprise. 	Upside risks to our view: <ul style="list-style-type: none"> • Excess cash leads to an increase in M&A and hence increase in revenue and market share. • Higher-than-expected growth in absorbable biomedical materials market. • Early approval of pipeline products. 	Downside risks to our view: <ul style="list-style-type: none"> • Dependence on a limited number of key products. • Competition from substitute materials. • Reliance on distribution network. • M&A and integration risks.
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Key financial metrics	FY15A	FY16E	FY17E	FY18E
Revenues (LC)	664	793	963	1,162
Revenue growth (%)	28.7%	19.5%	21.4%	20.6%
EBITDA (LC)	316	298	380	440
EBITDA margin (%)	47.7%	37.5%	39.4%	37.8%
Tax rate (%)	14.8%	14.8%	15.0%	15.0%
Net profit (LC)	273	275	329	380
EPS (LC)	1.859	1.721	2.055	2.377
EPS growth (%)	57.7%	-7.5%	19.4%	15.7%
DPS (LC)	0.59	0.34	-	-
BVPS (LC)	4.95	18.11	18.35	20.41
Operating cash flow (LC mn)	142	269	221	302
Free cash flow (LC mn)	45	166	52	157
Interest cover (x)	(63.4)	(8.3)	(5.1)	(8.1)
Net margin (%)	41.2%	34.7%	34.2%	32.8%
Sales/assets (X)	0.2	0.3	0.3	0.3
Debt/equity (%)	0.00	0.00	0.00	0.00
Net debt/equity (%)	-30.5%	-81.7%	-79.5%	-79.0%
ROE (%)	32.6%	16.8%	9.8%	10.6%
Key model assumptions	FY15A	FY16E	FY17E	FY18E
Price Cuto from Tender	10.0%	15.0%	15.0%	15.0%
GM assumption	84.2%	82.0%	81.8%	81.5%
Operating margin	42.5%	33.4%	35.3%	34.1%

Source: Company data and J.P. Morgan estimates.

Sensitivity analysis	EBITDA		EPS	
Sensitivity to	FY17E	FY18E	FY17E	FY18E
1% chg in sales volume growth	1.0%	1.0%	1.0%	1.0%
100bp chg in GM	2.0%	2.0%	2.0%	2.0%
1% increase in interest rate	-0.5%	-0.5%	-0.5%	-0.5%
AR days change by 1 day	-0.2%	-0.2%	-0.2%	-0.2%

Source: J.P. Morgan estimates.

Comparative metrics	CMP	Mkt Cap	P/E (x)		EV/EBITDA (x)		P/BV (x)		YTD
	LC	HKD Mn	FY16E	FY17E	FY16E	FY17E	FY16E	FY17E	Stock perf.
Bloomage	12.80	4,635	18.3	14.8	12.1	10.4	2.9	2.4	(33.2)
MEDY-TOX INC	3102.72	17,551	42.0	32.6	31.2	24.6	14.7	10.5	(13.8)
L'OREAL	1502.53	842,828	26.9	25.1	16.2	15.0	4.0	3.7	14.1
UNILEVER PLC-ADR	377.15	1,127,143	23.3	21.6	15.3	14.2	7.2	6.5	15.4
PROCTER & GAMBLE	684.03	1,825,930	22.7	21.0	14.7	14.0	4.1	4.1	13.8
ESTEE LAUDER	695.04	254,185	25.8	23.2	14.6	13.3	8.6	8.2	2.8
JOHNSON&JOHNSON	925.37	2,531,710	17.8	16.8	12.3	11.6	4.4	4.0	18.6
SHISEIDO CO LTD	201.27	80,509	33.5	33.3	13.5	11.4	2.6	2.4	6.8

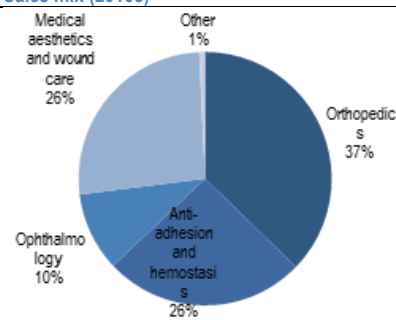
Source: Bloomberg. Prices as of 09/05/2016.

Valuation and price target basis

Our Dec-17 PT is based on a DCF valuation that assumes a market risk premium of 6.0% and a risk-free rate of 4.2% (yield on 10-year government notes in China). We assume a beta of 1.0 Accordingly, WACC is assumed at 10.2%. We estimate free cash flow for Haohai until 2020 and assume a terminal growth rate of 4%.

We also analyze the DCF's price sensitivity to WACC and the terminal multiple.

Sales mix (2016e)



Source: Bloomberg, Company data and J.P. Morgan estimates.

JPM vs. consensus, change in estimates

EPS (LC)	FY17E	FY18E
JPM old	NA	NA
JPM new	1.72	2.06
% chg	NA	NA
Consensus	1.91	2.28

Source: Bloomberg, J.P. Morgan estimates.

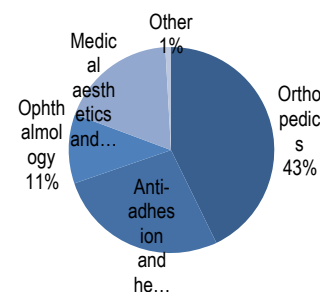
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Investment Summary

Shanghai Haohai Biological Technology Co. Ltd focuses on R&D, manufacturing and selling absorbable biomedical materials. It currently has 14 products in its biomedical portfolio. The key therapeutic areas it operates in are: Orthopedics, Medical aesthetics, Ophthalmology and Anti-adhesion & Hemostasis products. Its products are mainly manufactured from medical sodium hyaluronate, medical chitosan and medical collagen.

Revenue breakdown by business segment (2015)

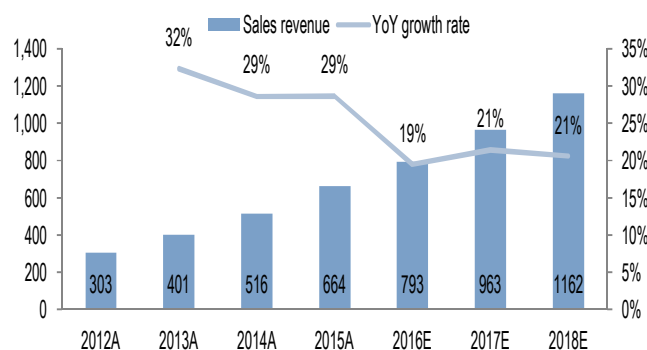


Source: Company data.

Shanghai Haohai is a leading absorbable biomedical materials provider in China. It is the largest manufacturer of intra-articular viscosupplements (32% market share), anti-adhesion (48% market share) and ophthalmic viscoelastic device products (42% market share) as of 2014. The market for orthopedic intra-articular viscosupplements is expected to increase by the highest margin, growing at a CAGR of 26% during 2015-19E to reach Rmb63mn, according to CFDA. The markets for anti-adhesion and ophthalmic viscoelastic are expected to increase by, 23% and 21% during the same period, reaching Rmb52.2mn and 22.8mn by 2019E, respectively. Being the major player, we expect Shanghai Haohai to benefit heavily from this growth.

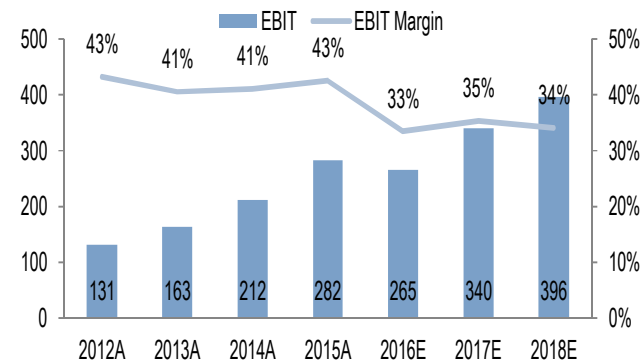
Shanghai Haohai is also the second-largest player in rhEGF products market in China, which is expected to grow by 27% CAGR in 2015-19 and reach Rmb12.1 mn, according to CFDA. Its HA dermal filler product Matrfill became the second CFDA approved HA dermal filler gel for single phase cross-linking injection. China's Aesthetic medical industry is expected to experience significant growth in the coming years because of its ageing population, increased disposable income and increased attention toward beauty, among other factors. It is also a very attractive industry with repeat customers and high ASPs. Being a major player in HA dermal filler market, second only to Bloomage, Shanghai Haohai has significant growth potential we believe. The company also focuses strongly on R&D and has 18 products in the pipeline as of 2015.

Figure 1: Haohai – Revenue and growth rate 2012-18E



Source: J.P. Morgan estimates for FY16E to FY18E, Company data for FY12-FY15.

Figure 2: Haohai – EBIT over revenue 2012-18E



Source: J.P. Morgan estimates for FY16E to FY18E, Company data for FY12-FY15.

1H16 Results Takeaways

Stable 1H16 results. In 1H16, Shanghai Haohai recorded revenue of Rmb373mn, representing an increase of 29.1% yoy. Its normalized income, excluded foreign exchange gains, rose 25.1% yoy to Rmb151mn. Management has guided that the company revenue will grow at a stable pace driven by increasing demand on HA end-products and medical reform which will drive out more small competitors.

Continuous market share gains. The company continues to maintain its leadership in the industry with its domestic market shares of intra-articular viscosupplement, anti-adhesion products, ophthalmic viscoelastic devices products and rhEGF products rose to 34% (ranked 1st), 50% (1st), 42% (1st) and 16.2% (2nd) respectively.

The second generation of “Matrifill” will be launched by 2017. “Matrifill” is one of the most well-known self-developed medical aesthetic products of the company. It is a sodium hyaluronate product that corrects facial wrinkles and folds. As of 1H16, its revenue grew 149% yoy to Rmb80mn, which was just a shy of its full year revenue in 2015 of Rmb87mn. The second generation of “Matifill” which features longer retention time is expected to be launched by 2017, while the third generation which has outstanding line removing power is at clinical trial stage. According to management, the launch of second and third generation will help the company sustain its leadership in research and development, and achieve product differentiation to meet the increasingly segmental and diversified demand on similar product.

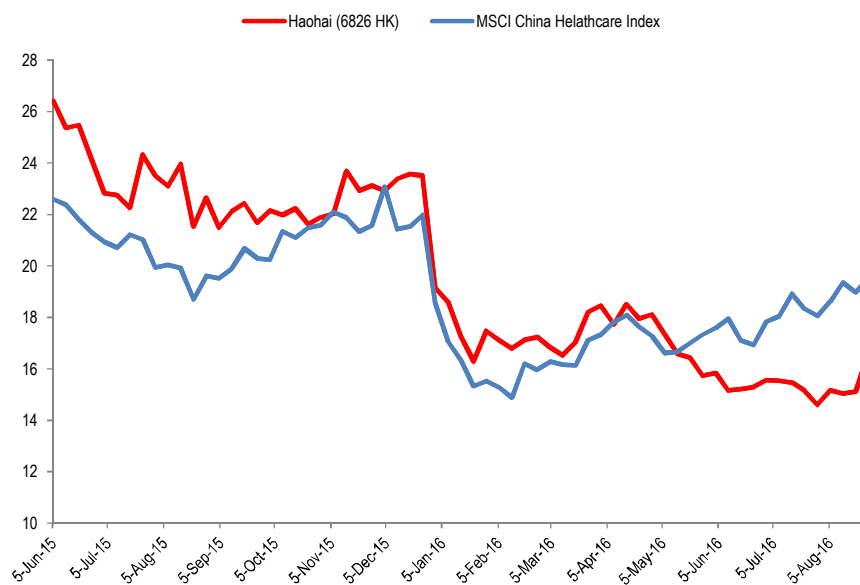
High concentration OVD product has been approved by CFDA. OVD product is a necessary device for cataract surgery and can be used for other ophthalmic operations. High concentration OVD is the advanced version of the existing OVD products which is expected to enter the high-end market. The product has obtained the approval from CFDA in May 2016 and will be launched by 2016. According to management, the product will be tapping the high-end market, which has been largely occupied by imported overseas brands. Management is confident that the product will increase the market share of the company; and if it could successfully penetrate the surgical field, it would be a strong revenue driver.

Focus on ophthalmology product market expansion. Management has eyed the least penetrated domestic ophthalmology product industry, where there is no large competitor, and most importantly, it is one of the sectors that the government is keen to develop. Management is currently looking for M&A opportunities in the domestic and overseas intraocular lens product market. An ideal candidate would be those with mature products, outstanding technology and market resources.

Why own the stock now? (Valuation analysis)

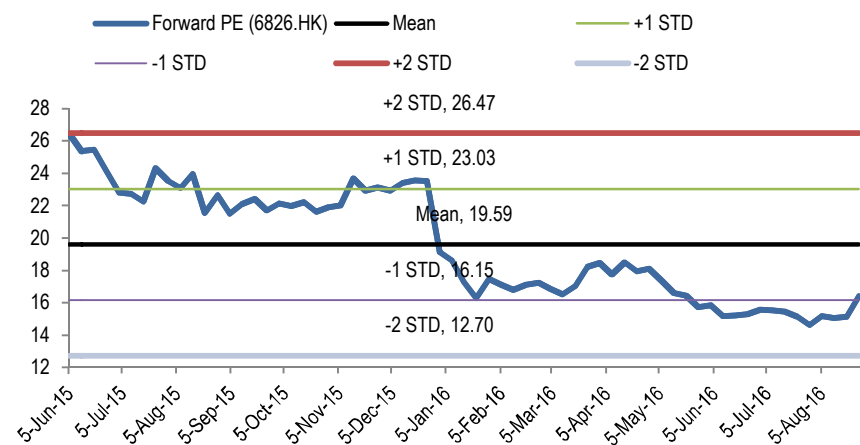
The stock has been down by 27% vs. the MSCI healthcare index YTD as the market concerns about the rising competition, and pricing pressure from lower tender prices on its orthopedics and ophthalmology products. Although the declining margin is a concern, we believe Haohai's new products launch and rapidly growing HA dermal filler will partially offset the margin pressure. We project a healthy 20% bottom line CAGR in 2015-2018. Trading at 15x 2017E EPS vs. its historical range of 14x-26x, we believe Haohai deserves a re-rating for its continued channel expansion, new HA dermal fill products launch, and further upside potential from M&A.

Figure 3: HaoHai underperformed the MSCI Healthcare Index



Source: Bloomberg

Figure 4: Shanghai Haohai is trading at 15x forward P/E vs. historical range of 14x-26x



Source: Bloomberg.

Investment Positives

Market leadership in key therapeutic areas

According to CFDA data, as of 2015, Shanghai Haohai is the largest manufacturer of intra-articular viscosupplement, anti-adhesion and ophthalmic viscoelastic device products in China with 32%, 50% and 42% market share, respectively. Additionally, Haohai is the second-largest manufacturer of rhEGF products, with a positive trending market share that grew from 1% in 2008 to over 15% in 2015. We believe Haohai will continue to strengthen its market leadership in such high-growth therapeutic areas with its extensive customer base, economies of scale and negotiating power, and best-in-class production and research capabilities.

Attractive and fast-growing core markets

Shanghai Haohai is well-positioned to benefit from attractive dynamics across the absorbable biomedical materials market in China. The aggregate revenues in key therapeutic areas including orthopedics, anti-adhesion, ophthalmology, wound care and tissue filling grew from Rmb1.4 billion in 2008 to Rmb4.3 billion in 2015, representing a CAGR of 25%. According to management, Shanghai Haohai continued to lead the market in intra-articular viscosupplement, anti-adhesion products, ophthalmic viscoelastic device (OVD) products in 2015 with market share of 34%, >50%, >40% and 16.2%, respectively. Sales of these products continued to increase in 2015 and ranked top in the market. Meanwhile, rhEGF product consolidated its second place in the market and narrowed its market share gap from the leading product. The markets for orthopedic intra-articular viscosupplement, anti-adhesion and ophthalmic viscoelastic are expected to grow at a CAGR of 26%, 23% and 21% during 2015-2019, respectively, driven by steady growth of personal healthcare spending, aging population and prevalence of chronic health issues, as well as a number of supportive government policies and reforms.

Figure 4: Haohai's market share by product, 2015

Product	Feature	Market share
Intra-articular viscosupplement products	Intra-articular viscosupplementation are used to treat osteoarthritis.	34%
Anti-adhesion products	Anti-adhesion products are used to prevent a wide range of tissue and organ adhesion resulted from trauma and injuries in surgical operations.	>50%
Ophthalmic viscoelastic device	Ophthalmic viscoelastic products are required for cataract surgeries and can be used in other eye surgeries.	>40%
rhEGF products	rhEGF products can significantly accelerate the wound healing process of the outer layer of the skin and mucous membrane.	16.2%

Source: Company reports.

Emerging player in HA dermal filler market

Haohai received the approval of its HA dermal filler end product "Matrifill" in 2015 and quickly became the second domestic brand after Bloomage. Sales of Matrifill doubled in 2015 and in 1H16, sales of Matrifill increased by 149% yoy to Rmb80mn and we expect the strong sales growth momentum to continue at above 50% CAGR in the next three years with increasing penetration of distribution channels and new product launches.

(Please refer to our Priceless Beauty industry report for more details).

Extensive and effective distribution network

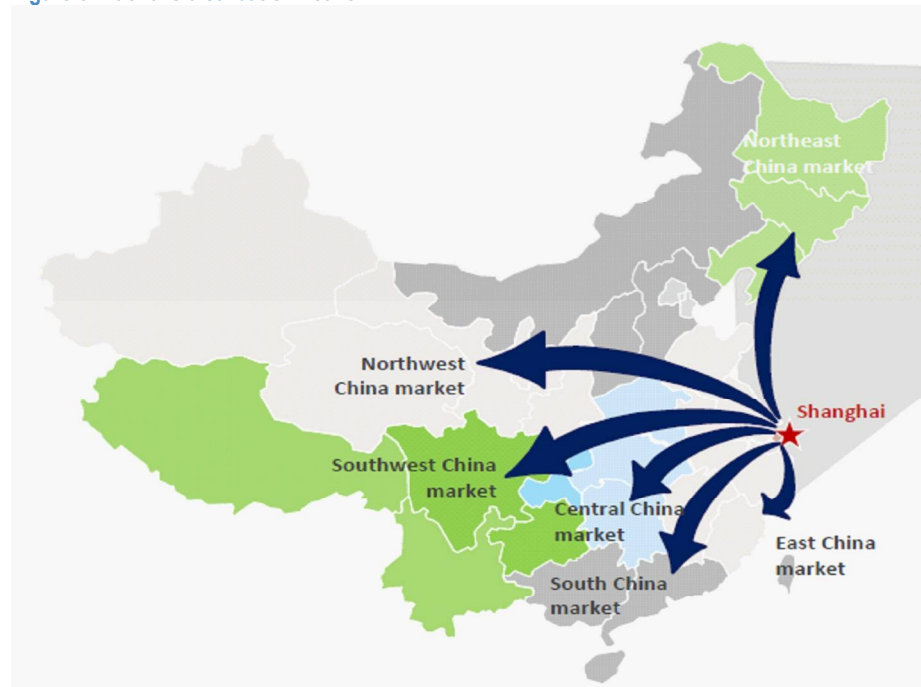
Shanghai Haohai has its strong distribution network consisting of 1,300+ distributors and covering all regions in China. As of 2015, the network covered 1,700+ Class III hospitals and 3,000+ Class II hospitals, penetrating over 90% and 40% of the Class III and Class II hospitals in China, respectively.

Figure 5: Haohai's distribution coverage

Hospital class	Extensive hospital coverage	% of total hospitals covered in respective class
Class III	>1,700	>90%
Class II	>3,000	>40%

Source: Company reports.

Figure 6: Haohai's distribution network



Source: Company reports.

Solid R&D capabilities with new HA end products launch

After the launch of its first-generation HA dermal filler Matrifill, which is used primarily for facial contouring, Haohai has adopted the strategy to diversify its product line and is making progress in developing multiple types of HA dermal filler for various cosmetic uses. In 1H16, its high concentration OVD products have been approved by CFDA and are expected to be launched in 2016, which will enhance the existing range of ophthalmology products and further extend the comparative advantage against the imported overseas brands. Also, the company expects to launch its second- and third-generation HA dermal fillers in 2016 and 2017. Haohai expects to launch Janlane in 2016 and QST gel in 2017 to specifically treat fine lines. Expansion of the HA dermal filler product lines will diversify the customer base and promote a stronger brand image within the fast-growing cosmetic industry in China.

Figure 7: Haohai's product pipeline

Stage	Technology Research	Preparing for Type Inspection	Pre-clinical Trial study	Applying for Clinical Trial	Clinical Trial Started or on the Process	Product Registration	Preparation for manufacturing permit application
Pipeline (with targeted launch year)	Fibrin sealant product (after 2018)	Nerve tube (peripheral nerve defect) (after 2018)	Chitosan (CM) wound healing hydrogel (after 2018)	HALgel for ophthalmology (after 2018)	Thermal-sensitive Chitosan gel (2018)	Cross-linked sodium hyaluronate gel (2016)	Fibrin sealant product (Powder) (2017)
	Drug-loaded sustained-release artificial lacrimal canaliculus		rhEGF gel for ophthalmology use (after 2018)		QST gel (2017)		

Product type

Orthopedics	
Anti-adhesion & hemostasis	
Ophthalmology	
Medical Aesthetics & wound care	

Source: Company reports.

Executed M&A strategy and potential upside surprise

Haohai's management has a clear vision to grow the business through platform investments and has a proven track record of M&A and integration. Haohai has been established through strategic acquisitions, notably Shanghai Jianghua and Shanghai Qisheng in 2007, and Shanghai Likangrui in 2010. Most recently, Haohai acquired Hainan Yuzhou Co and Shanghai Baiyue Medical Equipment Co in 2015. Haohai will continue to strengthen and diversify its product offering by acquisition, which offer further earnings upside, in our view.

Investment Risks

Revenue concentration in limited products

Shanghai Haohai's key products include medical sodium hyaluronate injection, medical sodium hyaluronate gel and medical chitosan, which will continue to account for a substantial portion of total revenues and net profit in the near future. Haohai will be particularly vulnerable to factors that adversely affect the sales volume, cost, or pricing of such key products. As the PRC public hospitals adopt a centralized tender process, the risk of unsuccessful bids remains considerable. Interruptions in the supply of raw materials or an increase in the cost of raw materials are also risky, especially as Haohai purchases a majority of its raw materials from a single supplier.

Competition from substitute materials

Haohai's tissue filling product suite is susceptible to competition from substitute materials, which are rising in share of wallet and possess attractive advantages compared to HA. Medical collagen is increasingly used as filler for facial contouring, and it is a cheaper alternative with similar duration of effects. Artecoll acts as a premium alternative to HA and the results last much longer. Botox products, manufactured by pharmaceutical giant Allergan, are a typical treatment for fine lines and may compete with future-generation fillers designed to treat fine lines. Haohai's first-generation Matrifill product experienced exponential growth and generated CNY87mm revenue in 2015, which accounted for approximately 13% of total

revenue. The future of HA products is subject to consumer preferences, and lower-than-expected growth of the segment could adversely affect the business and prevent us from reaching our price target.

Reliance on distribution network

Shanghai Haohai's in-house sales and marketing team do not sell products directly to end customers, but instead rely on third-party distributors and sub-distributors to connect with hospitals and other medical institutions. Haohai's ability to grow market share and generate revenue is highly dependent on healthy and effective relationships with distributors whom Haohai has limited control over. Distributors could choose not to renew agreements with Haohai for various reasons, including possible PRC price controls or any other factors that potentially compromise their margins.

M&A and integration risks

With the cash proceeds from its IPO, Management intends to complement and grow the business through strategic acquisitions of companies, products and technologies. Failure to select suitable targets could adversely affect Haohai's overall performance. Identifying M&A opportunities and executing the transactions demand substantial time and resources from management. The financing of M&A transactions and the public's perceptions of such transactions could also create uncertainties around Haohai's balance sheet and stock price.

Valuation

DCF Valuation

Our Dec-17 PT is based on a DCF valuation that assumes a market risk premium of 6.0% and a risk-free rate of 4.2% (yield on 10-year government notes in China). We assume a beta of 1.0 Accordingly, WACC is assumed at 10.2%. We estimate free cash flow for Haohai until 2020 and assume a terminal growth rate of 4%.

We also analyze the DCF's price sensitivity to WACC and the terminal multiple.

Table 1: Haohai -Base case DCF analysis

	2015	2016E	2017E	2018E	2019E	Terminal
Cash flow estimates						
Sales	664	793	963	1,162	1,365	1,557
EBIT	282	265	340	396	447	499
NOPAT	235	217	282	329	372	415
Capex, net	(70)	(119)	(106)	(116)	(150)	(171)
Depreciation	34	33	40	44	49	57
Change in working capital	0	(29)	(19)	(24)	(28)	(22)
Free Cash Flow	199	102	197	232	243	279
WACC calculation	DCF Assumptions:					
Liabilities as a % of EV	0%	Terminal growth		4.0%		
WACC	10.20%	Risk-free rate		4.2%		
		Market risk		6.0%		
Enterprise NPV	4,509	Beta		1.05		
+ Net cash (debt), current	2,258	Cost of debt		5.0%		
- Minorities (Market v alue)	(4)					
+/- Other items	0	Implied ex it P/E multiple (x)		16x		
= Equity value	6,764					
/ Number of shares	160					
= Equity value per share (HK\$)	50.0					

Source: Company data, J.P. Morgan estimates.

Table 2: Haohai – Sensitivity analysis based on WACC and perpetual terminal growth rate

		Terminal growth rate					
		3.0%	3.5%	4.0%	4.5%	5.0%	5.5%
WACC	8.5%	54.6	58.1	62.7	68.6	75.5	84.8
	9.0%	52.3	54.6	58.1	62.7	68.6	75.5
	9.5%	48.8	51.1	54.6	58.1	62.7	67.4
	10.2%	46.5	47.6	50.0	53.5	55.8	60.4
	10.7%	44.2	45.3	47.6	50.0	52.3	55.8
	11.2%	41.8	44.2	45.3	47.6	50.0	52.3
	11.7%	40.7	41.8	44.2	45.3	47.6	50.0

Source: J.P. Morgan estimates.

Table 3: Peer valuation table

Ticker	Name	Price (LC)	Mkt Cap (HKD mn)	EV (HKD mn)	EV/Sales			EV/EBITDA			PEG			P/E			EPS CAGR			
					2015	2016E	2017E	2015	2016E	2017E	2015	2016E	2017E	2015	2016E	2017E	Dividend	YTD(%)	2015-2018E	P/Sales (2015)
6826 HK Equity	SHANGHAI HAOHAI BIOI	38.20	6,098	3,500	4.6x	3.8x	3.2x	13.2x	9.4x	7.9x				17.7x	17.3x	14.7x	1.24	-24.3 %	25.1 %	7.6x
Cosmetic Related Companies																				
086900 KS Equity	MEDY-TOX INC	3,144.62	17,673	17,586	23.2x	20.0x	15.8x	38.0x	31.7x	25.0x				46.5x	42.7x	33.1x	0.38	-12.4 %	66.1 %	29.0x
OR FP Equity	L'OREAL	1,511.09	847,630	774,321	3.5x	3.5x	3.3x	17.3x	16.3x	15.1x	4.2x	4.0x	3.7x	33.7x	27.1x	25.2x	1.78	14.6 %	14.9 %	3.9x
UL US Equity	UNILEVER PLC-ADR	377.13	1,131,561	1,244,890		2.7x	2.6x		15.3x	14.2x	3.8x	3.7x	3.4x		23.3x	21.6x	2.86	15.4 %	4.9 %	2.5x
PG US Equity	PROCTER & GAMBLE	684.00	1,825,954	1,980,293	3.9x	3.9x	3.8x	15.5x	14.7x	14.0x	3.6x	3.7x	3.4x	23.4x	22.7x	21.0x	3.02	13.8 %	5.3 %	3.1x
EL US Equity	ESTEE LAUDER	695.02	254,188	260,955	3.0x	2.8x	2.7x	16.6x	14.6x	13.4x	2.9x	2.3x	2.1x	27.6x	25.8x	23.3x	1.34	2.8 %	5.2 %	3.0x
JNJ US Equity	JOHNSON&JOHNSON	925.34	2,531,743	2,404,852	4.4x	4.3x	4.1x	14.0x	12.3x	11.6x	3.0x	2.8x	2.6x	19.8x	17.8x	16.8x	2.60	18.6 %	13.1 %	4.7x
4911 JT Equity	SHISEIDO CO LTD	196.30	78,413	76,662	1.2x	1.2x	1.1x	13.6x	13.2x	11.1x				31.3x	32.7x	32.5x	0.76	4.3 %		1.4x
AVP US Equity	AVON PRODUCTS	45.21	19,760	34,460	0.7x	0.8x	0.7x	15.2x	9.4x	7.8x					51.6x	17.0x	2.06	44.0 %	-267.5 %	0.4x
Average					5.7x	4.9x	4.3x	18.6x	15.9x	14.0x	3.5x	3.3x	3.1x	30.4x	30.5x	23.8x	1.85	12.6 %	-22.6 %	6.0x
China Listed Biotech Companies																				
002422 CH Equity	SICHUAN KELUN-A	18.05	26,017	32,592	3.5x	3.3x	3.0x	17.8x						36.2x	31.8x	27.3x	0.89	-15.5 %	-14.5 %	2.7x
600739 CH Equity	LIAONING CHENG-A	20.65	31,617	40,104	3.9x	3.8x	3.7x	189.5x						4711.5x	26.6x	20.9x		-21.2 %	-8.5 %	3.3x
002007 CH Equity	HUALAN BIOLOGI-A	43.83	40,812	38,974	20.2x	17.2x	13.4x	41.8x	34.2x	26.5x				51.0x	45.8x	35.5x	0.66	38.5 %	26.7 %	22.7x
002038 CH Equity	BEIJING SL -A	36.95	25,337	24,069	19.3x	18.0x	14.9x	42.5x	30.9x	22.4x				48.4x	39.0x	31.3x	0.63	-4.3 %	7.8 %	18.4x
600867 CH Equity	TONGHUA DONGBA-A	26.05	36,999	38,234	18.6x	16.3x	13.4x	40.7x	37.7x	31.5x				56.3x	48.7x	38.1x	0.74	0.0 %	107.9 %	17.9x
600161 CH Equity	BEIJING TIAN-A	44.78	23,109	25,639	13.3x	12.6x	10.0x	45.5x						387.7x	262.7x	83.4x		10.5 %	-45.1 %	11.1x
002030 CH Equity	DA AN GENE CO -A	31.49	22,853	23,349	12.3x			118.3x						185.6x			0.08	-27.4 %	8.4 %	14.4x
002550 CH Equity	CHANGZHOU QIAN-A	9.65	12,366	12,552	13.9x	13.4x	12.1x	46.2x	38.9x	30.9x				39.1x	27.7x	29.7x	0.90	-24.0 %	18.9 %	
300255 CH Equity	HEBEI CHANGSHA-A	9.99	9,347	9,950	8.6x	7.7x	6.4x	33.9x	29.9x	24.4x				43.7x	40.0x	31.9x	0.34	-11.2 %	15.2 %	8.4x
002675 CH Equity	YANTAI DONGCHE-A	18.81	12,465	12,778	12.3x	9.6x	7.4x	58.9x	36.8x	22.5x				106.6x	70.5x	34.1x	0.23		-10.0 %	10.3x
600866 CH equity	STAR LAKE BIOS-A	7.43	4,804	5,103	7.1x										14.9x			-22.1 %		
Average					12.1x	11.3x	9.4x	63.5x	34.7x	26.4x	0.0x	0.0x	0.0x	566.6x	60.8x	36.9x	0.56	-7.7 %	10.7 %	12.1x
Hong Kong Listed Chinese Biotech Companies																				
963 HK Equity	BLOOMAGE BIOTE	12.60	4,562	5,106	6.7x	5.3x	4.2x	15.3x	11.9x	10.3x				19.2x	18.0x	14.6x	0.21	-34.2 %	27.9 %	6.4x
587 HK equity	HUA HAN HEALTH I	0.54	3,992	920	0.5x	0.4x	0.4x	0.7x	1.0x	0.8x				4.8x	6.0x	5.4x	5.00	-50.0 %	25.5 %	1.8x
775 HK equity	CK LIFE SCIENCES	0.73	7,016	10,591	2.1x			18.6x						24.9x			1.23	5.6 %	17.7 %	
1349 HK equity	SHANGHAI FUDAN-H	7.65	7,061	6,688	9.5x	8.3x	6.1x	33.3x	27.1x	17.9x				45.4x	39.9x	29.3x	0.47	-7.8 %	23.2 %	9.9x
950 HK equity	LEE'S PHARM	7.31	4,311	4,035	4.4x	4.1x	3.5x	11.5x	11.7x	10.8x				17.4x	17.1x	15.8x	1.42	-23.7 %	20.8 %	4.0x
8153 HK equity	CODE AGRICULTURE	2.44	1,063	1,376	70.7x													98.4 %	39.7 %	
1061 HK equity	ESSEX BIO-TECH	3.47	1,942	2,019	2.9x	2.4x	1.9x	13.0x	12.4x	9.7x				16.8x	14.8x	12.0x	0.72	-28.0 %	38.3 %	2.9x
8329 HK equity	SHENZHEN NEPTU-H	0.59	990	919	1.1x			10.4x						29.8x				-10.6 %	1.1 %	
690 HK equity	UNI-BIO GROUP	0.20	1,002	892	7.2x													8.9 %	-20.4 %	
Average					12.3x	3.8x	3.0x	14.6x	13.0x	9.8x	0.0x	0.0x	0.0x	23.2x	19.5x	15.6x	1.77	-0.9 %	18.2 %	4.6x
US Listed Biotech Companies																				
CBPO US Equity	CHINA BIOLOGIC P	869.59	23,387	22,523	9.0x	8.4x	7.1x	19.6x	19.3x	16.2x	1.8x	1.6x	1.3x	31.7x	26.8x	22.5x		-21.3 %	26.7 %	10.3x
SVA US Equity	SINOVAC BIOTECH	45.72	2,602	2,536	6.3x													3.1 %		
Average					7.6x	8.4x	7.1x	19.6x	19.3x	16.2x	1.8x	1.6x	1.3x	31.7x	26.8x	22.5x	0.00	-9.1 %	26.7 %	10.3x
US Biotech Companies																				
GILD US Equity	GILEAD SCIENCES	596.29	786,939	772,083	3.1x	3.3x	3.4x	4.6x	4.9x	5.1x	2.9x	3.0x	3.0x	6.5x	6.5x	6.6x	2.29	-23.2 %	126.2 %	3.1x
AGN US Equity	ALLERGAN PLC	1,829.91	724,588	1,065,982	8.7x	9.2x	8.5x	34.0x	17.8x	15.6x	1.2x	1.3x	1.1x	199.0x	16.8x	13.8x		-24.5 %		5.1x
AMGN US Equity	AMGEN INC	1,316.59	985,330	971,226	5.6x	5.5x	5.3x	11.1x	10.2x	9.5x	2.1x	1.9x	1.7x	17.3x	14.9x	13.6x	2.23	6.6 %	18.8 %	5.9x
CELG US Equity	CELGENE CORP	818.09	634,143	695,479	8.8x	8.1x	6.8x	27.4x	16.1x	12.7x	1.0x	0.8x	0.7x	36.4x	18.3x	15.0x		-11.9 %	8.4 %	8.8x
BIIB US Equity	BIOGEN INC	2,431.94	532,912	527,213	6.0x	5.9x	5.7x	11.3x	11.0x	10.9x	2.1x	1.8x	1.7x	17.7x	15.6x	15.0x		2.4 %	39.3 %	6.5x
ALXN US Equity	ALEXION PHARM	959.08	215,081	232,659	10.6x	9.7x	8.2x	31.6x	20.3x	16.1x	0.9x	0.9x	0.7x	56.5x	26.6x	20.9x		-35.2 %	25.5 %	10.6x
CMRX US Equity	CHIMERIX INC	35.83	1,656	(461)														-48.4 %	28.2 %	21.3x
Average					7.1x	7.0x	6.3x	20.0x	13.4x	11.6x	1.7x	1.6x	1.5x	55.6x	16.5x	14.1x	2.26	-19.2 %	41.1 %	8.8x
US Speciality Pharma Companies																				
TEVA US Equity	TEVA PHARM-ADR	397.22	363,109	436,241		2.5x	2.2x		7.1x	5.9x	1.2x	1.3x	1.1x		9.7x	8.5x	2.65	-20.5 %	18.8 %	2.4x
MYL US Equity	MYLAN NV	309.97	165,816	221,078	2.9x	2.5x	2.2x	10.4x	7.9x	6.4x	1.3x	1.1x	0.9x	13.7x	8.1x	6.9x		-26.1 %	8.2 %	2.2x
ENDP US Equity	ENDO INTERNATIONAL	153.71	34,242	93,579	3.3x	3.1x	2.9x		7.5x	6.8x	0.9x	0.9x	0.8x	64.0x	4.3x	4.0x		-67.6 %	-10.1 %	1.4x
MNK US Equity	MALLINCKRODT	561.63	60,498	105,330	3.7x	4.0x	3.9x	9.2x	9.0x	8.6x	1.1x	1.0x	1.0x	14.3x	9.4x	8.6x		-3.0 %		2.3x
Average					3.3x	3.0x	2.8x	9.8x	7.9x	6.9x	1.1x	1.1x	1.0x	30.7x	7.9x	7.0x	2.65	-29.3 %	5.6 %	2.1x
Average of all above					9.2x	6.8x	5.8x	31.6x	17.9x	14.6x	2.1x	2.0x	1.8x	201.4x	32.9x	22.5x	1.47	-6.5 %	11.0 %	7.7x

Financial Analysis

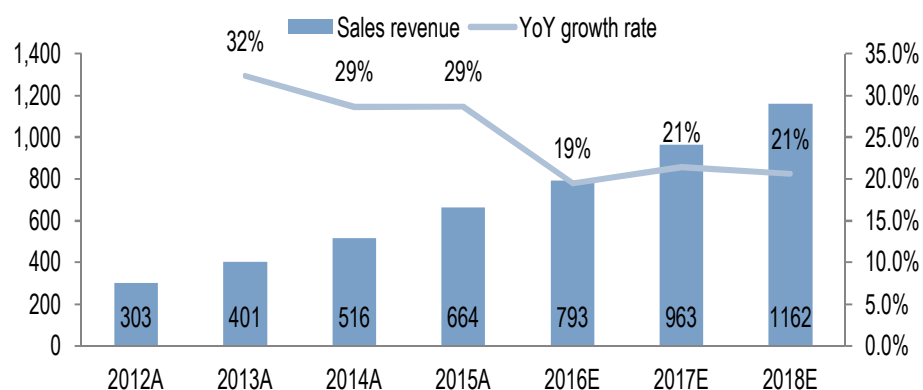
Revenue and Cost Analysis

Shanghai Haohai increased its total sales at a CAGR of 30% in 2012-15, to Rmb664mn in 2015. Of which, orthopedics sales rose at a CAGR of 32% to Rmb284mn in 2015 (up from Rmb123mn in 2012); anti-adhesion and hemostasis sales rose at a CAGR of 14% to Rmb179mn in 2015 (up from Rmb122mn in 2012); ophthalmology sales rose at a CAGR of 13% to Rmb72.4mn in 2015 (up from Rmb50.7mn in 2012) and medical aesthetics and wound care sales rose at a CAGR of 155.9% to Rmb122.3mn in 2015 (up from Rmb7.3mn in 2012), accounting for 43%, 27%, 11% and 18% of the sales, respectively.

As of 1H16, sales rose 19% y/y to Rmb373mn, of which orthopedics sales fell 5% to Rmb135mn; anti-adhesion and hemostasis sales rose 14% to Rmb100mn; ophthalmology sales rose 5% to Rmb38mn; medical aesthetics and wound care sales rose 107% to Rmb96mn, accounting for 36%, 27%, 10% and 26%, respectively.

We project total sales to increase at a CAGR of 21% in 2016-18, to Rmb793.2mn in 2016, Rmb963.2mn in 2017 and Rmb1,161.6mn in 2018, largely driven by: 1) orthopedics sales CAGR of 8% to Rmb295.4mn in 2016, Rmb325.0mn in 2017 and Rmb357.4mn in 2018; 2) anti-adhesion and hemostasis sales CAGR of 12% to Rmb204.1mn in 2016, Rmb228.5mn in 2017 and Rmb256.0mn in 2018; 3) ophthalmology sales CAGR of 12% to Rmb79.6mn in 2016, Rmb91.6mn in 2017 and Rmb105.3mn in 2018 and 4) medical aesthetics (mostly HA dermal filler) and wound care sales CAGR of 45% to Rmb208.0mn in 2016, Rmb312.0mn in 2017 and Rmb436.8mn in 2018.

Figure 5: Sales revenue and growth rate (2012-18E)



Source: Company data, J.P. Morgan estimates.

Table 4: Table Revenue Breakdown

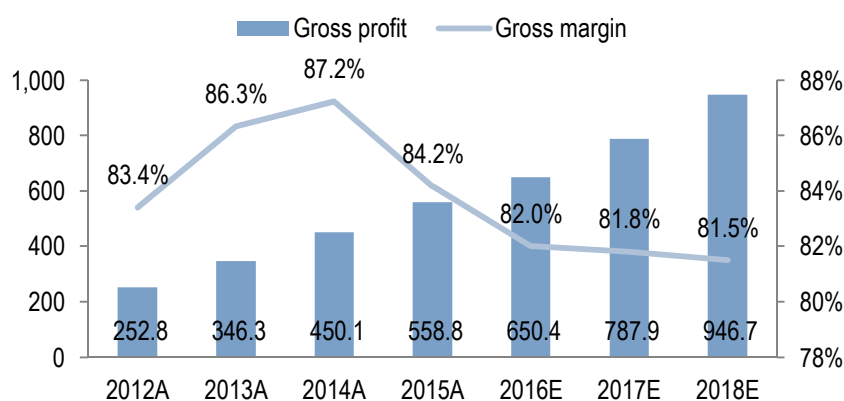
Rmb mm, year-end Dec	2012A	2013A	2014A	2015A	2016E	2017E	2018E
Orthopedics	123	199	237	284	295	325	357
YoY%							
Anti-adhesion and hemostasis	122	140	155	179	204	229	256
YoY%							
Ophthalmology	51	53	67	72	80	92	105
YoY%							
Medical aesthetics and wound care	7	10	57	122	208	312	437
YoY%							
Other	0	0	0	6	6	6	6
Total	303	401	516	664	793	963	1162

Source: Company reports and J.P. Morgan estimates.

Declining gross margin

Shanghai Haohai's overall gross margin decreased from 87.2% in 2014 to 84.2% in 2015, mainly due to upgrading and industrialization reform in the second half of 2014, which led to significant addition of fixed assets and facilities, resulting in substantial increase in depreciation (Rmb12mn) and long-term amortization expenses. In 1H16, overall gross margin decreased by 1.7ppt yoy to 83.3%. Going forward, we expect that margins will come down to 82.0% in 2016, 81.8% in 2017, and then 81.5% in 2018.

Figure 6: Gross Profit and Gross Margin



Source: J.P. Morgan estimates, Company data.

Stable SG&A expense ratio ahead

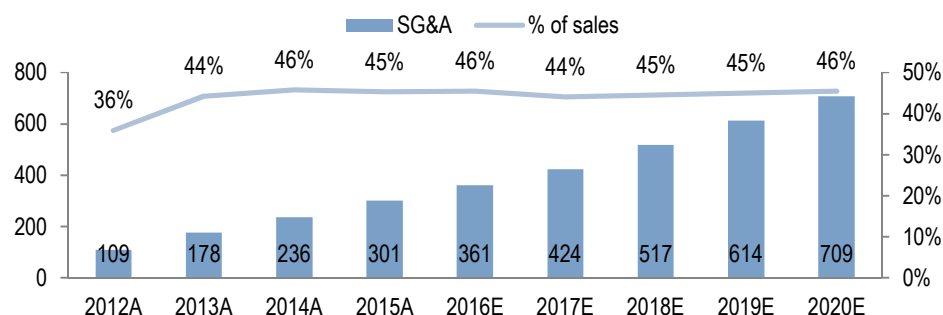
Shanghai Haohai's selling and distribution expense ratio has increased from 24% in 2012 to 36% in 2015. The increase is attributable to an increase in marketing expenses of the medical chitosan products used for intra-articular viscosupplement and new products such as Matrifiil-branded products. We expect selling and distribution expense to account for 37.0% of total revenue in 2016, 36.5% in 2017 and 36.5% in 2018.

Although Shanghai Haohai's general and administrative expenses have increased because of an increase in the number of administrative staff and in service fees of professional institutions, its ratio to total revenue has decreased from 12% in 2012 to 9% in 2015. The decrease is due to cost control efficiency and successful sales and marketing teams that generate higher sales. We expect general and administrative expenses to account for 8.5% of total revenue in 2016, 7.5% in 2017 and 8.0% in 2018.

Its SG&A expenses consist of promotion expenses, staff costs, office expenses, transportation expenses, consulting fees, depreciation & amortization and certain other expenses.

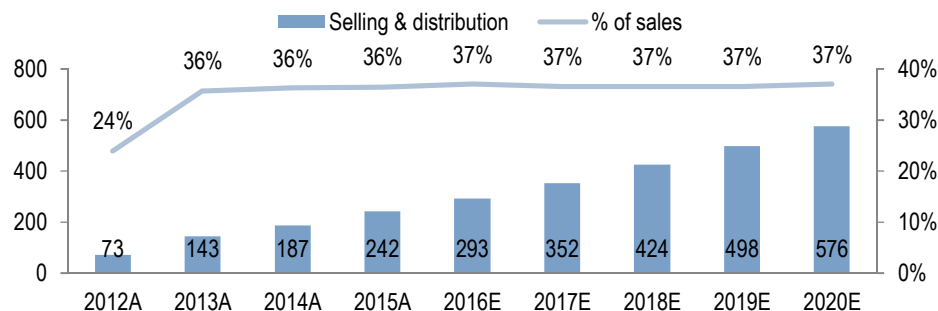
R&D expense is typically around 5% of sales. R&D expense increased from Rmb17.6mn in 2012 to Rmb35.3mn in 2015. In 1H16, R&D expenses increased by 31% yoy to Rmb21mn, accounting for 5.6% of total revenue. We expect the R&D expense ratio to decrease to 5% and remain there until 2020.

Figure 7: SG&A as % of total revenue



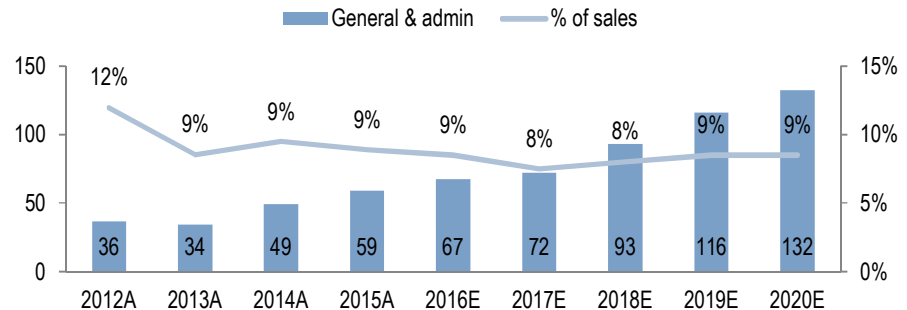
Source: Company data, J.P. Morgan estimates.

Figure 8: selling & distribution expense as % of total revenue



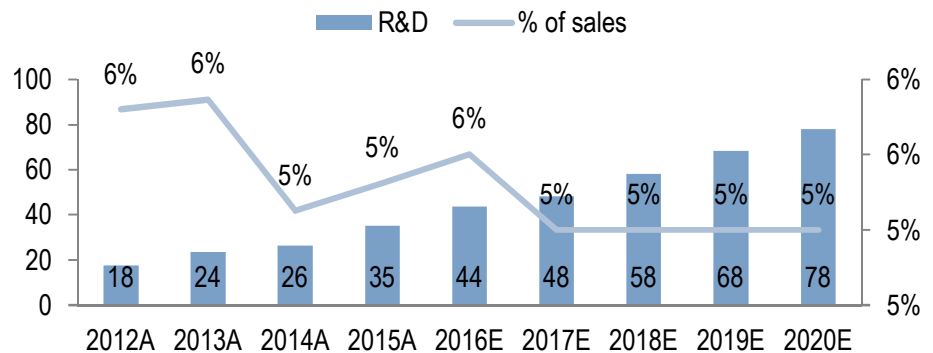
Source: Company data, J.P. Morgan estimates.

Figure 9: General & administrative expense as a % of total revenue



Source: Company data, J.P. Morgan estimates.

Figure 10: R&D expense as % of total revenue

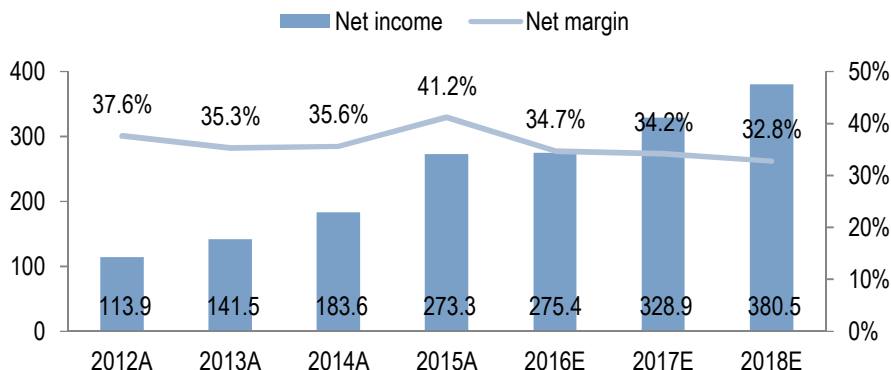


Source: Company data, J.P. Morgan estimates.

Bottom-line growth CAGR

Shanghai Haohai's net income increased at a CAGR of 34% from Rmb113.9mn in 2012 to Rmb273.3mn in 2015. Notably, Haihao recognized a one-time forex gain of Rmb24mn, excluding one-time items, normalized net income was Rmb249mn in 2015. In 1H16, net income rose 7.8% yoy to Rmb151mn. Excluding an insignificant forex loss of Rmb20k, its normalized net income was Rmb151mn. In 2016-18, we expect the company's bottom line CAGR to be 16%.

Figure 11: Net income and net income margin change by year



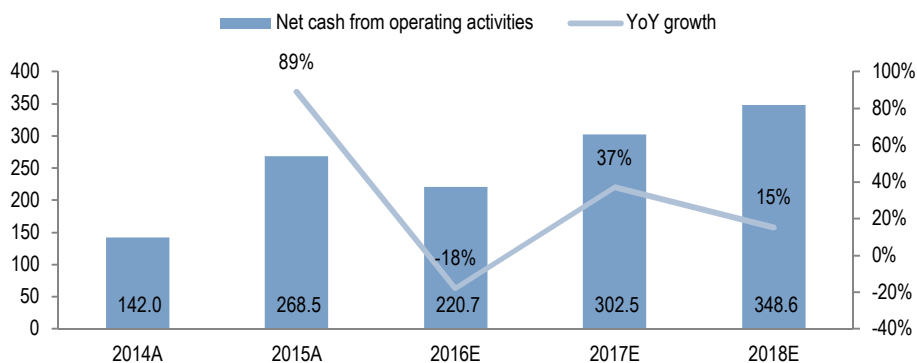
Source: Company data, J.P. Morgan estimates.

Operating cash flow & capital expenditures

The company's net cash generated from operating activities was Rmb142mn in 2014 and Rmb268.5mn in 2015. As of 2015, Shanghai Haohai has cash and equivalents of Rmb2,177.8mn. We believe sufficient capital would further provide management flexibility for expanding the business into new business segments and/or regions. We forecast cash flow from operating activities to be Rmb220.7mn for 2016, Rmb302.5mn for 2017 and Rmb348.6mn in 2018.

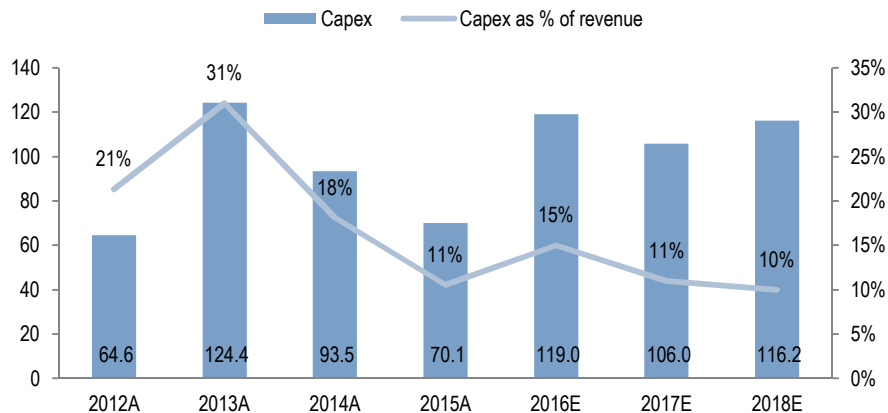
Bloomage's capital expenditures have been used for acquisitions, production facility expansions, and to purchase PPE. In 2015, Shanghai Haohai acquired a 60% equity interest in Shanghai Baiyue by using cash of Rmb 6mn, in order to increase its sales force. It spent RMB 70.1mn and RMB 35.6mn during 2015 and 1H16 on capex, respectively. We forecast capex of Rmb119.0mn for 2016, Rmb106.0mn for 2017 and Rmb116.2mn in 2018, mainly for the expansion and construction of its production facilities in Shanghai.

Figure 12: Strong operating cash flow 2014-2018E



Source: Company data, J.P. Morgan estimates.

Figure 13: Capex 2012-2018E



Source: Company data, J.P. Morgan estimates.

Table 5: Shanghai Haohai's Income Statement

Rmb mm, year-end Dec	2012A	2013A	2014A	2015A	2016E	2017E	2018E
Revenue	303.1	401.1	515.9	663.9	793.2	963.2	1161.6
%YoY change (%)		32%	29%	29%	19%	21%	21%
COGS	(50.3)	(54.8)	(65.9)	(105.1)	(142.8)	(175.3)	(214.9)
%YoY change (%)		9%	20%	59%	36%	23%	23%
Gross profit	252.8	346.3	450.1	558.8	650.4	787.9	946.7
%YoY change (%)		37%	30%	24%	16%	21%	20%
Gross margin	83.4%	86.3%	87.2%	84.2%	82.0%	81.8%	81.5%
SG&A	(108.8)	(177.5)	(236.2)	(301.0)	(360.9)	(423.8)	(516.9)
R&D	(17.6)	(23.5)	(26.5)	(35.3)	(43.6)	(48.2)	(58.1)
Other income	10.8	23.7	30.8	98.7	78.8	71.8	76.6
Other expenses	(3.8)	(2.4)	(2.6)	(0.7)	(0.7)	(0.7)	(0.7)
EBITDA	144.6	175.3	234.8	316.4	297.8	379.7	439.5
EBITDA margin	47.7%	43.7%	45.5%	47.7%	37.5%	39.4%	37.8%
EBIT	131.0	162.6	211.9	282.3	265.2	340.2	396.0
EBIT margin	43.2%	40.6%	41.1%	42.5%	33.4%	35.3%	34.1%
Profit before tax	133.4	166.5	215.6	320.6	324.0	387.0	447.6
%YoY change (%)	na	25%	30%	49%	1%	19%	16%
Tax expense	(19.5)	(24.9)	(32.0)	(47.3)	-48.6	(58.0)	(67.1)
Effective tax rate	15%	15%	15%	15%	15%	15%	15%
Net income	113.9	141.5	183.6	273.3	275.4	328.9	380.5
%YoY change (%)	na	24.2%	29.7%	48.9%	0.8%	19.4%	15.7%
Normalized income	113.9	141.5	183.6	249.0	275.4	328.9	380.5
%YoY change (%)		24%	30%	36%	11%	19%	16%
Net margin	37.6%	35.3%	35.6%	41.2%	34.7%	34.2%	32.8%

Source: Company data, J.P. Morgan estimates.

Table 6: Shanghai Haohai's Balance Sheet

Rmb mm, year-end Dec	2012A	2013A	2014A	2015A	2016E	2017E	2018E
Cash and bank balances	160.8	197.1	181.3	2177.8	2338.3	2581.6	2865.6
Inventories	40.9	42.6	76.4	78.1	124.6	153.0	187.6
Trade and bills receivables	29.5	43.8	62.4	91.3	92.2	112.0	135.1
Prepayments, deposits and other	12.3	12.2	18.6	24.9	28.7	34.8	42.0
Other current assets	1.8	1.6	8.6	—	5.3	6.5	7.8
Total current assets	245.3	297.4	347.4	2372.1	2589.2	2887.9	3238.1
Property, plant and equipment	145.8	270.6	352.0	396.6	484.5	552.4	625.3
Prepaid land lease payments	33.8	33.1	32.4	31.6	31.6	31.6	31.6
Intangible assets	7.4	5.1	4.1	3.3	1.7	0.2	—
Deferred tax assets	2.2	3.8	5.5	4.4	4.4	4.4	4.4
Other LT assets	13.5	11.0	10.7	14.0	14.0	14.0	14.0
Total assets	448.0	621.2	751.9	2821.9	3125.4	3490.5	3913.3
Trade and bills payables	6.3	6.9	8.8	4.8	12.3	15.0	18.1
Other current liabilities	48.4	69.2	130.4	136.2	156.7	190.3	229.5
Total current liabilities	54.7	76.1	139.2	141.0	169.1	205.3	247.6
Deferred tax liabilities	1.0	0.6	0.8	0.6	0.6	0.6	0.6
Deferred income	3.3	13.8	17.7	14.9	14.9	14.9	14.9
Total liabilities	59.0	90.6	157.7	156.5	184.5	220.8	263.1
Issued capital	120.0	120.0	120.0	160.0	160.0	160.0	160.0
Reserves	269.1	410.6	474.2	2501.9	2777.3	3106.2	3486.7
Non-controlling interests	—	—	—	3.5	3.5	3.5	3.5
Total equity	389.1	530.6	594.2	2665.4	2940.8	3269.8	3650.3
Total liabilities & equity	448.0	621.2	751.9	2821.9	3125.4	3490.5	3913.3

Source: Company data, J.P. Morgan estimates.

Table 7: Shanghai Haohai's Cash Flow statement

Rmb mm, year-end Dec	2012A	2013A	2014A	2015A	2016E	2017E	2018E
EBIT	131.0	162.6	211.9	282.3	265.2	340.2	396.0
D&A	13.6	12.7	22.8	34.0	32.6	39.5	43.5
Change in working capital		5.6	(2.6)	(26.5)	(28.5)	(19.2)	(23.8)
Tax expense			(38.0)	(24.7)	(48.6)	(58.0)	(67.1)
Other			(52.1)	3.3	—	—	—
Net cash from operating activities			142.0	268.5	220.7	302.5	348.6
Capital expenditures	(64.6)	(124.4)	(93.5)	(70.1)	(119.0)	(106.0)	(116.2)
Interest income	2.4	3.8	3.7	38.3	58.8	46.8	51.6
Others			1.7	(117.5)	—	—	—
Net cash used in investing activities			(88.2)	(149.3)	(60.2)	(59.2)	(64.5)
Free cash flow			53.8	119.3	160.5	243.3	284.0
Proceeds from issue of shares			—	1863.7	—	—	—
Share issue expenses			—	(59.5)	—	—	—
Dividends paid			(70.3)	(49.7)	—	—	—
Net cash (used in) from financing activities				(70.3)	1754.6	—	—
Change in cash			(16.5)	1873.8	160.5	243.3	284.0
Cash at beginning of year			176.5	160.0	2177.8	2338.3	2581.6
Effect of changes in foreign exchange				—	4.0	—	—
Time deposits			—	140.0	—	—	—
Cash at end of year			160.0	2177.8	2338.3	2581.6	2865.6

Source: Company data, J.P. Morgan estimates.

Company Overview

Shanghai Haohai Biological Technology is a leading company in China focusing on the research and development, manufacture and sales of absorbable biomedical materials. Its absorbable biomedical materials are natural, non-toxic and

biodegradable in the human body and are used for various indications, including general and specialty surgeries. Haohai strategically targets four fast-growing therapeutic areas in the absorbable biomedical materials market in China, including orthopedics, anti-adhesion and hemostasis, ophthalmology, and wound care and tissue filling.

Business Segments & Products Overview

Haohai currently manufactures and sells 14 biomedical products, three of which are classified by CFDA as pharmaceutical products and 11 as Class III medical devices. The products are primarily made of medical sodium hyaluronate, medical sodium hyaluronate, medical chitosan and medical collagen.

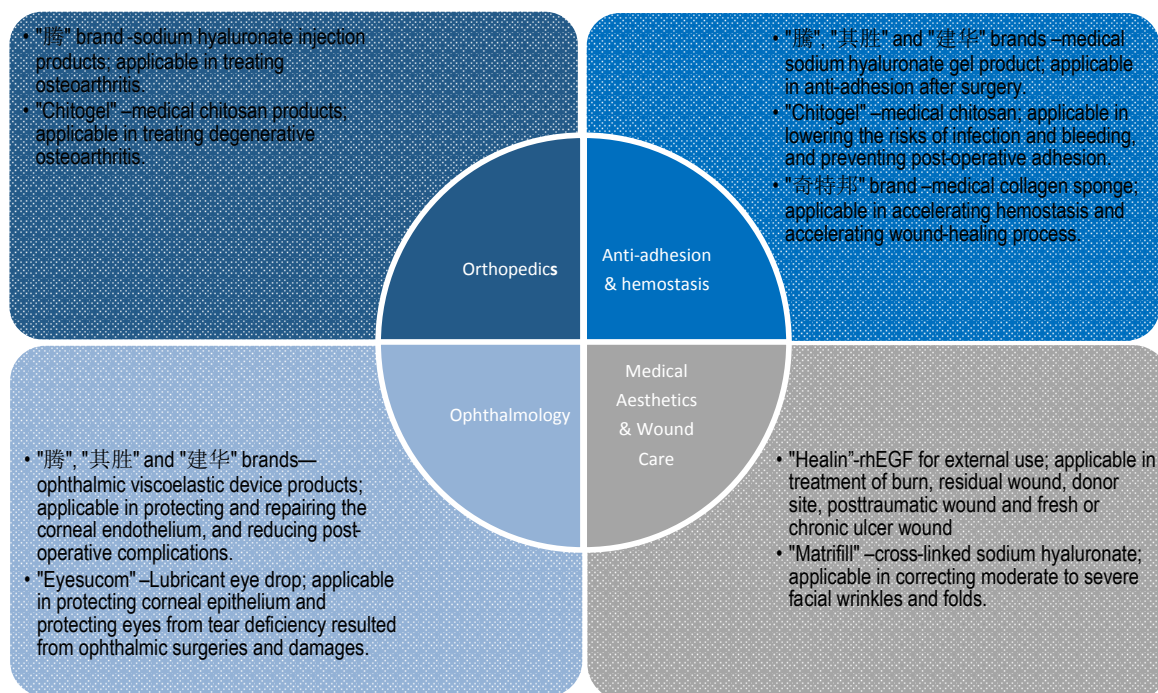
The company offers orthopedics products used for intra-articular viscosupplement, which is a treatment for degenerative osteoarthritis; medical aesthetics and wound care products comprising rhEGF and tissue-filling cross-linked sodium hyaluronate products to correct facial wrinkles and folds; ophthalmology products, including ophthalmic viscoelastic devices for cataract and other eye surgeries, and lubricant eye drop product; and post-operative products used for anti-adhesion and hemostasis comprising hyaluronate and chitosan-based products, as well as medical collagen sponge. The table below summarizes Haohai's core products by product type and therapeutic areas.

Table 8: Shanghai Haohai's key product line

	Hyaluronic acid product	Chitosan Product	Medical Collagen Sponge	rhEGF
Orthopedics	HA injections; approved as pharmaceutical product	Medicalchitosan products; medical device		
Anti-adhesionandhemostasis	HA gel products; medical device	Medical chitosan products;medical device	Medical collagen sponge products; medical device	
Ophthalmology	HA gel products; medical device	Chitosan-basedlubricant eye drop products; medical device		rhEGFgel for ophthalmology use
Medical Aesthetics and Wound Care	Cross-linked HA gel products; medical device	Medical chitosan products:wound healing hydrogel		rhEGF;pharmaceutical product
Key feature	<ul style="list-style-type: none"> - HA products have been extensively used in the fields of clinical medicine, medical cosmetics and beauty products, with broad prospects and strong market potential. 	<ul style="list-style-type: none"> - Our medical chitosan products are proprietary and patented² - Compared with HA products, our Chitosan product has: <ul style="list-style-type: none"> i) Longer in vivo retention time; ii) Medical label that contains anti-microbial and hemostatic functions claims. - Modified chitosan is dissolvable in water 	<ul style="list-style-type: none"> - Medical collagen has good hemostatic effect and is biodegradable. - An unique biomedical material used in gynecological, otolaryngological, cerebral and general surgeries to shorten the operation time and improve the healing of wound and tissue after surgery. 	<ul style="list-style-type: none"> - rhEGF products are registered as Class I new drugs and high-technology products with independent property rights. - rhEGF products are proven effective in treating burns and wound care.

Source: Company reports.

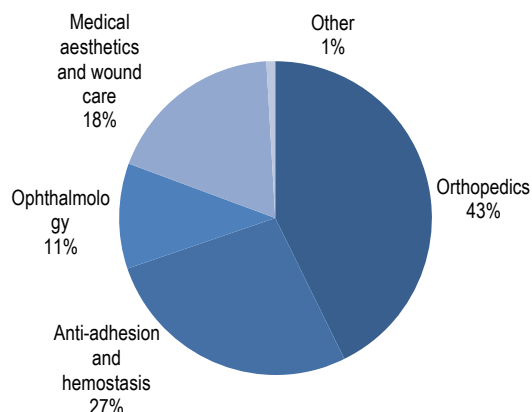
Figure 14: Shanghai Haohai's core product line by therapeutic areas



Source: Company reports.

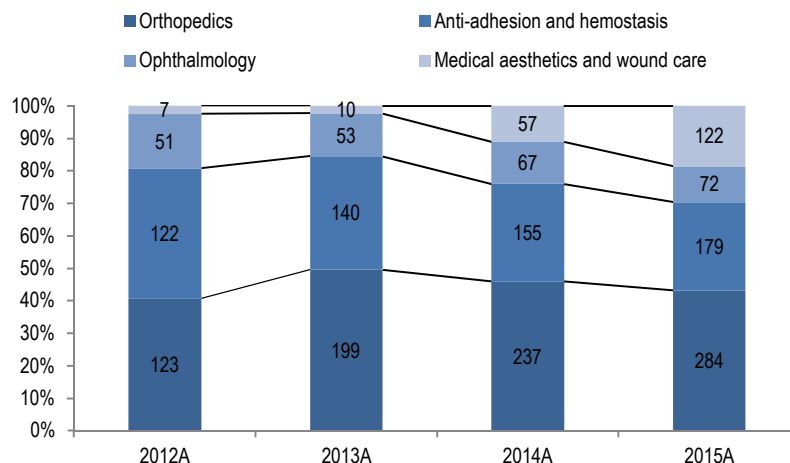
Revenue in all therapeutic areas has grown significantly from 2012 to 2015, and their respective share of total revenue has also trended noticeably over the years. Orthopedics products remain the biggest source of income with steady growth. Ophthalmology, anti-adhesion and hemostasis products are giving their share to the medical aesthetics and wound care segment, whose revenue more than doubled from 2014 to 2015. The following charts illustrate historical revenue breakdown in key therapeutic areas.

Figure 15: Revenue breakdown in 2015



Source: Company data, J.P. Morgan.

Figure 16: Historical Revenue breakdown, 2012-15



Source: Company data, J.P. Morgan.

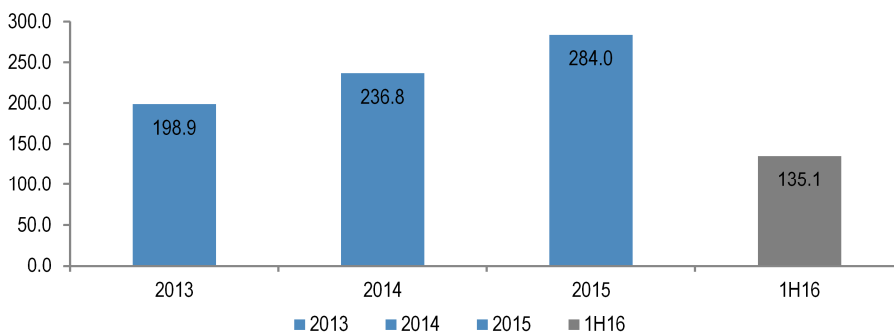
Orthopedic products

Shanghai Haohai is the largest manufacturer of intra-articular viscosupplement products in China as of 2015 with market share increasing to 34% in 2015 from 31.7% in 2014.

The revenue from Chitogel was RMB37.1 million in 1H16, representing an increase of 37.5% YOY. The product strengthened its foothold in Beijing and Shanghai, and was successfully promoted and marketed to provinces including Guangzhou, Liaoning, Hubei, Jiangsu, Heilongjiang, Shandong, etc. The revenue from Sodium hyaluronate injection was Rmb98.0 million in 1H16, representing a decrease of 14.7% YOY. The company adjusted the selling price of this product to secure its broad coverage in the market.

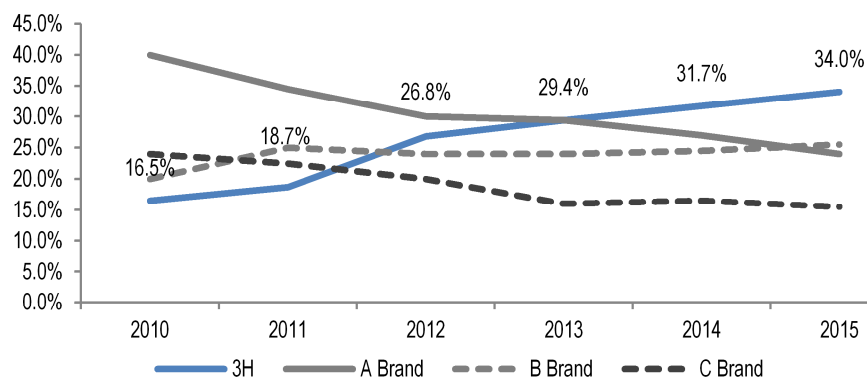
Chitogel is the only product registered as a Class III medical device used for intra-articular viscosupplement product in China. The product has been designated for differentiated clinical applications, target market and price positioning to secure the overall profitability of orthopedics products.

Figure 17: Shanghai Haohai's Orthopedic products segment revenue (In Rmb mn)



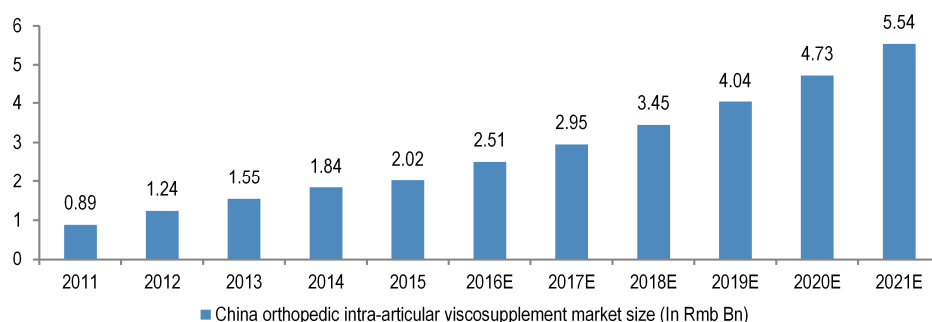
Source: Company data.

Figure 18: Shanghai Haohai's Orthopedic products market share




Source: Company data.

Figure 19: China orthopedic intra-articular viscosupplement market size (In Rmb Bn)



Source: Company data.

Figure 20: Shanghai Haohai's Orthopedics product line

	Sodium hyaluronate injection	Chitogel
Appearance		
Classification	Medicine	Class III medical device
Specification	2ml, 3ml	1ml, 2ml, 3ml
Indication	Degenerative osteoarthritis of the knee	As the joint lubricant, suitable for taking precaution of traumatic or degenerative osteoarthritis
Treatment	Once a week, 4-5 weeks as one treatment	Once in two weeks, 2-3 times as one treatment
Retail price	100~200 RMB	300~700RMB
Coverage of medical Insurance	Class B product under the National Reimbursement Drug list	Mechanic medical insurance (for certain regions)

Source: Company reports.

Medical Aesthetic and wound care products

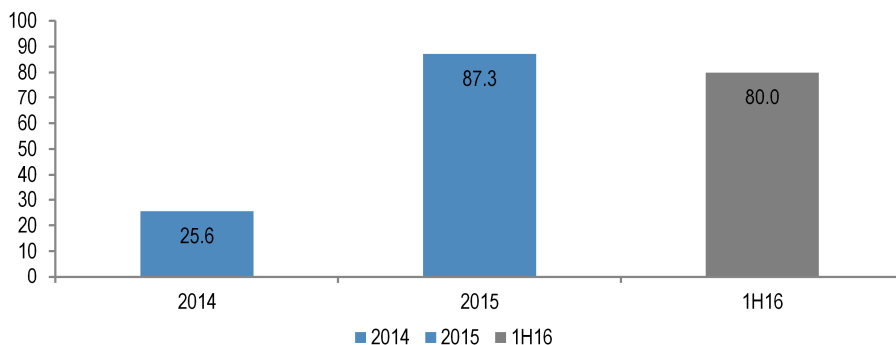
Shanghai Haohai's medical aesthetic and wound care products include "Matrifill" and "Healin."

As of 1H16, revenue generated from "Matrifill" increased to RMB80.0 million, representing an increase of 148.7%YOY, which approximated the revenue of RMB87.26million for 2015.

Clinical trials of the company's second-generation cross-linked sodium hyaluronate gel was completed and the registration for Class III medical device with CFDA is underway. Moreover, the clinical trial of third-generation, QSTgel, has been started. By introducing the follow-up generation of cross-linked sodium hyaluronate gel, the increasing segmental and diversified market demands can be satisfied.

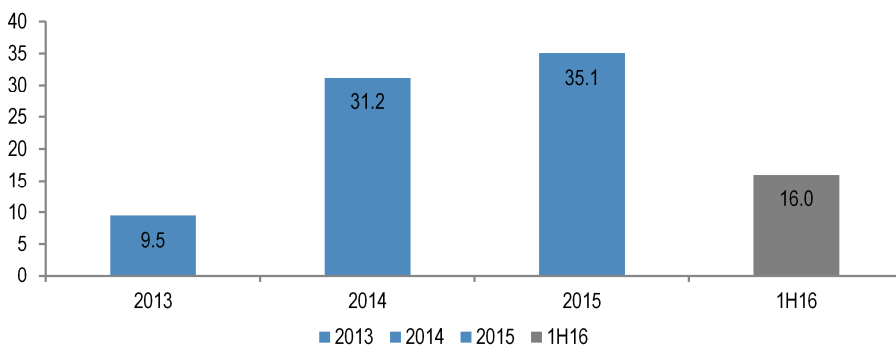
The company is the second-largest manufacturer of rhEGF in China in 2015, whereas the market share of "Healin" products continued to increase from 15.3% in 2014 to 16.2% in 2015, narrowing down the difference with the top-ranking products.

Figure 21: Shanghai Haohai's revenue from "Matrifill" (In Rmb mn)



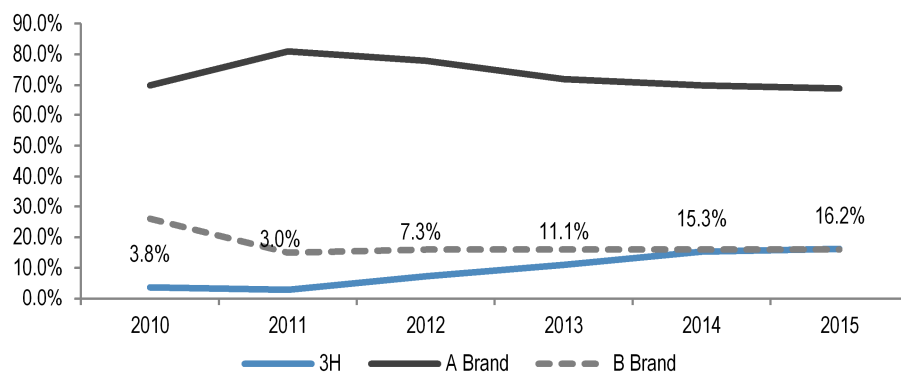
Source: Company reports.

Figure 22: Shanghai Haohai's revenue from "Healin" (In Rmb mn)



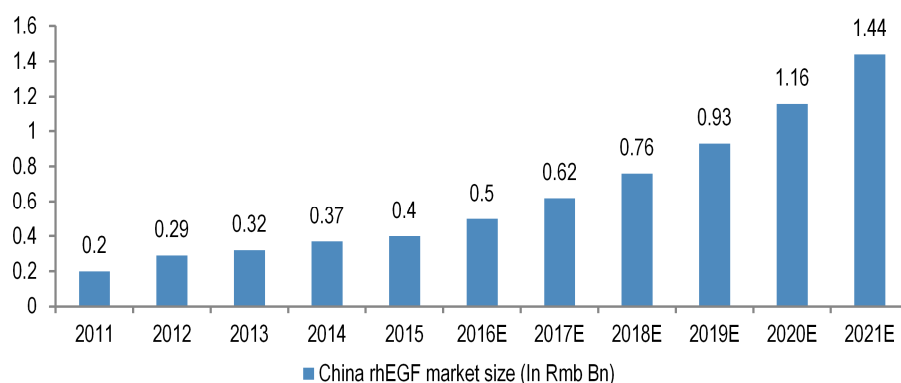
Source: Company reports.

Figure 23: Shanghai Haohai's medical aesthetic and wound care products market share



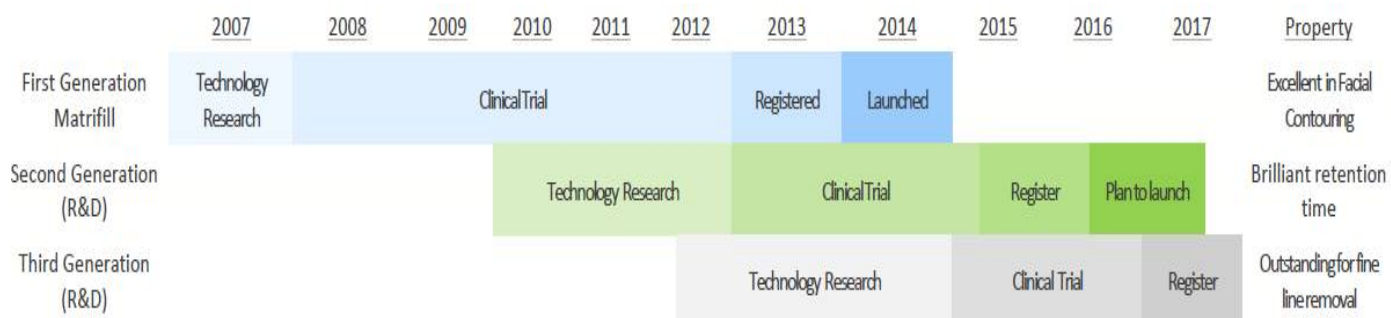
Source: Company reports.

Figure 24: China rhEGF market size (In Rmb Bn)





Source: Company reports.

Figure 25: Shanghai Haohai's "Matrifill" product pipeline



Source: Company reports.

Figure 26: Shanghai Haohai's medical aesthetic and wound care products line

	Matrifill	Healin
Appearance		
Feature	<p>Indicated to correct moderate to severe facial wrinkles and folds by injection into the middle and deep layer of the dermis.</p> <p>The first approved mono-phase cross-linked sodium hyaluronate products in China.</p> <p>Available in five different specifications from 0.5 to 1.5 ml for treatments of different areas, offering more clinical options.</p> <p>CE certified.</p>	<p>Healin-branded rhEGF for external use.</p> <p>Applicable in treatment of burn, residual wound, donor site, posttraumatic wound and fresh or chronic ulcer wound.</p> <p>The first approved rhEGF product in the world.</p> <p>Approved as Class I new drug by CFDA in 2001, and was awarded the Second Prize for National Science and Technology Progress Award in 2002.</p> <p>Exclusive patented technology. The only EGF product featuring the same amino acid sequence as human EGF in China.</p>

Source: Company reports.

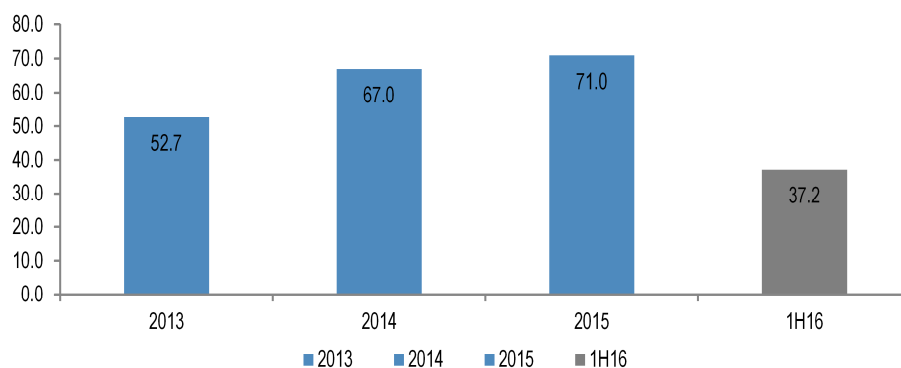
Ophthalmology products

The market share of the company's OVD products was 41.8% in 2015, with a market share of over 40% for the past nine consecutive years, making the company the largest OVD product manufacturer in China.

The new high concentration OVD products have been approved by CFDA. The launch of this product will enhance the existing range of ophthalmology products, and should further extend the comparative advantage against the imported overseas brands.

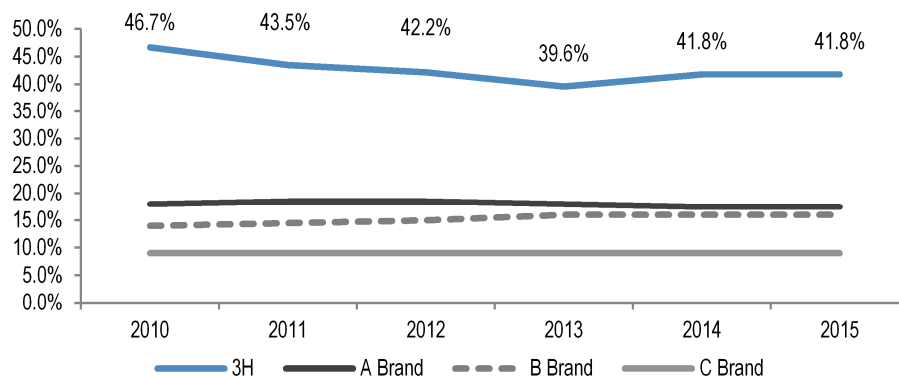
The company will gradually enter the high-valued industry of intraocular lens product, by acquisition and integration of the domestic and overseas targets with mature products, high-end technology and market resources. This will form an enriched ophthalmology product mix, expanding the competitive edge of the ophthalmology products of the Group.

Figure 27: Shanghai Haohai's ophthalmology products revenue (In Rmb mn)



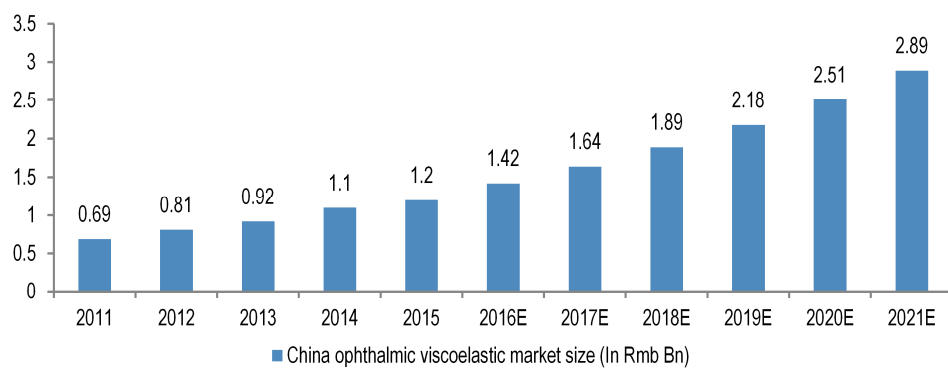
Source: Company reports.

Figure 28: Shanghai Haohai's ophthalmology products market share



Source: Company reports.

Figure 29: China ophthalmic viscoelastic market size (In Rmb Bn)



Source: Company reports.

Figure 30: Shanghai Haohai's ophthalmology product line

Ophthalmic viscoelastic device (OVD) products	
Appearance	
Feature	<p>"腾", "其胜" and "建华" brands—ophthalmic viscoelastic device (OVD) products</p> <p>Applicable in protecting and repairing the corneal endothelium, and reducing post-operative complications</p> <p>OVD product is the necessary material during cataract surgery, and is also widely used glaucoma surgery.</p> <p>CE certified</p>

Source: Company reports.

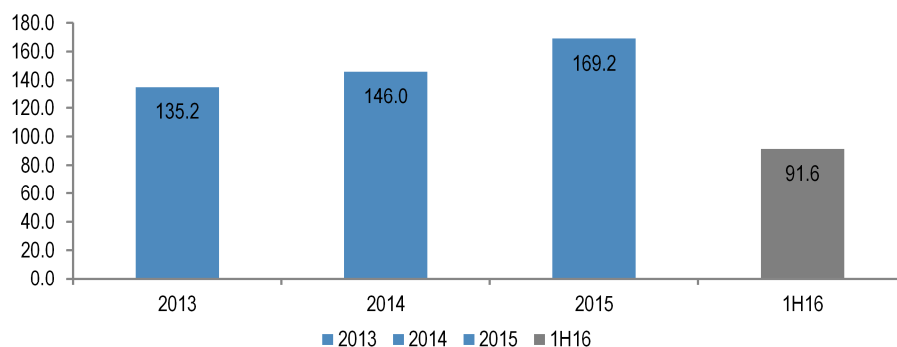
Anti-adhesion and Hemostasis products

Shanghai Haohai's anti-adhesion and hemostasis products include: 1) medical chitosan (chitogel), 2) medical sodium hyaluronate, and 3) collagen sponge.

The market share of the anti-adhesion products further increased from 48% in 2014 to 50.2% in 2015, making the company the largest anti-adhesion product manufacturer in China for the past nine consecutive years.

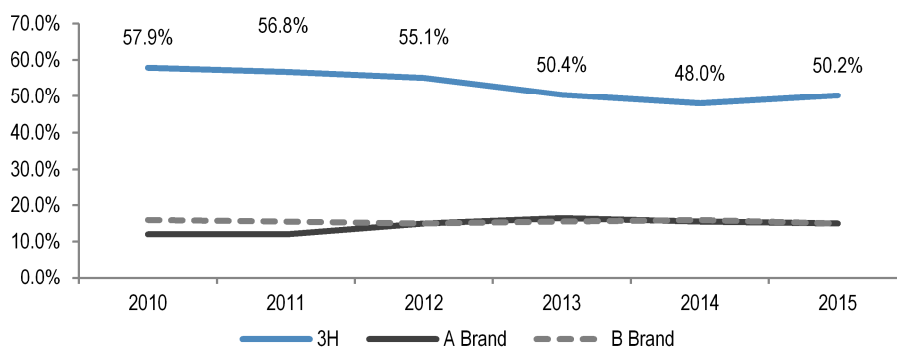
Following a medical publication published by the Society of Gynecology and Obstetrics of the Chinese Medical Association in June 2015, a panel consisting of 13 gynecologic experts jointly published a follow-up publication in July. It clearly indicates the necessity of using anti-adhesion materials including medical sodium hyaluronate gel and medical chitosan to prevent post-surgical adhesion. The company believes the promotion of the publications will help implement the provincial and national cost catalog and medical insurance, and further facilitates the usage of post-operative anti-adhesion products, hence promoting the growth of the sales of anti-adhesion and hemostasis products of the company.

Figure 31: Shanghai Haohai's anti-adhesion products revenue (In Rmb mn)



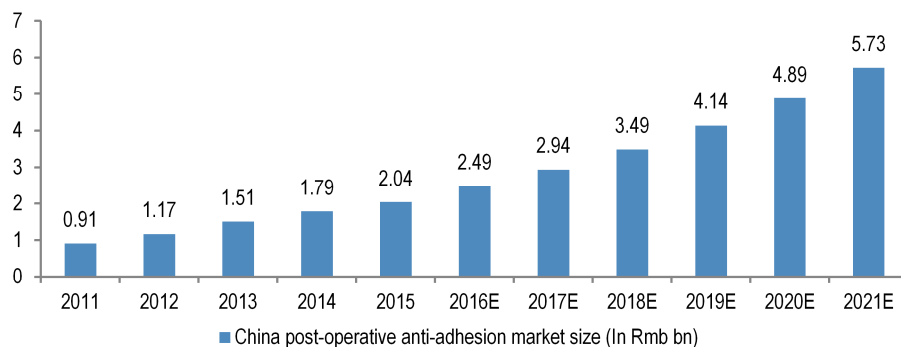
Source: Company reports.

Figure 32: Shanghai Haohai's anti-adhesion product market share



Source: Company reports.

Figure 33: China post-operative anti-adhesion market size (In Rmb Bn)



Source: Company reports.

Figure 34: Shanghai Haohai's anti-adhesion product line

	Sodium hyaluronate gel products	Chitogel
Appearance		
Feature	Applicable in anti-adhesion after surgery	Applicable in lowering the risks of infection and bleeding, and preventing post-operative adhesion

Source: Company reports.

SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Market leader in all key product areas with 15%~50% market share • Strong and continuous revenue growth in key products, including Chitosan and Matrifill • Extensive distribution network and diversified customer base • Meaningful R&D continues to diversify products, expand target customer base, and maintain competitive advantage • Strong balance sheet with zero debt and sufficient cash flow 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Reliance on a limited number of key products, given that more than 90% of sales revenue come from three products • High supplier concentration, given that 60% of raw materials are purchased from a single supplier
<p>Opportunities</p> <ul style="list-style-type: none"> • Strong growth momentum in HA dermal filler products is expected, as second- and third-generation HA dermal filler are to launch in 2016 and 2017 • M&A may bring upside surprise, as Board proposes higher allocation of IPO proceeds to fund M&A • New Shanghai Likangrui facility in construction will upgrade production capabilities 	<p>Threats</p> <ul style="list-style-type: none"> • Competition from new entrants and substitute materials • Higher-than-expected price cuts in dermal filler products • Vulnerable to industry regulations and central tender process • Integration risks remain as the company continues to grow through M&A

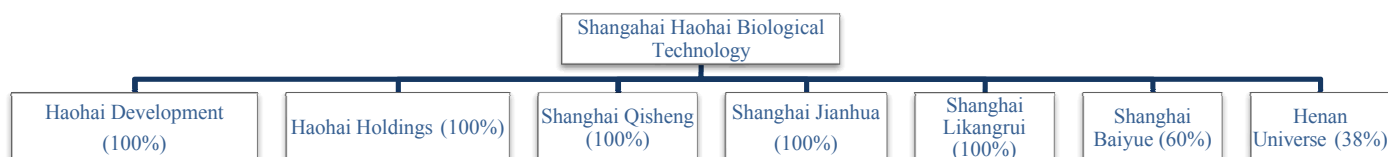
Company History



Source: Company reports.

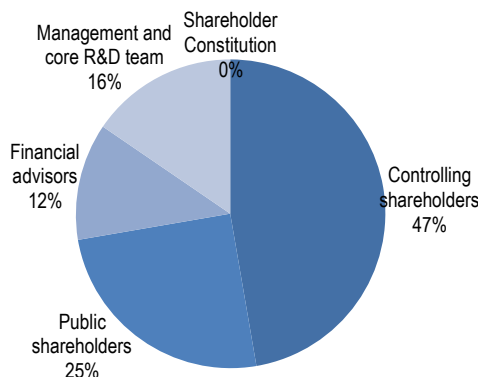
Shareholder Structure

Figure 35: Corporate Structure



Source: Company reports.

Figure 36: Shareholder Constitution



Source: Company reports.

Management Profile

Dr. Hou Yongtai (侯永泰), Chairman and Executive Director

Dr. Hou has been appointed as the Chairman and Director of the company since July 2010, and was re-designated as an Executive Director on December 7, 2014. Dr. Hou has more than 22 years of research and development, industry research and management experience in foreign and domestic bio-pharmaceutical companies. He previously served as the Chairman of Haohai Limited, the predecessor of the Company, from 2009 to 2010. He has also served as the Chairman of Shanghai Qisheng from 2007 to 2010. Dr. Hou obtained a master's degree and a Ph.D. degree from Ohio University in the United States in March 1987 and August 1992, respectively.

Mr. Wu Jianying (吴剑英), General Manager

Mr. Wu has been appointed as the General Manager and Director of the company since July 2010, and was re-designated as an Executive Director on December 7, 2014. Mr. Wu has 10 years of experience working as a general surgery doctor at Shanghai Changzheng Hospital and has more than 14 years of experience in the management of pharmaceutical and biomedical materials companies. He has also been acting as the General Manager of Shanghai Qisheng and Shanghai Likangrui, as well as the Chairman of Shanghai Baiyue. Mr. Wu obtained a master's degree in clinical medicine from the Second Military Medical University in June 1997 and the practicing doctor qualification in the PRC in May 1999.

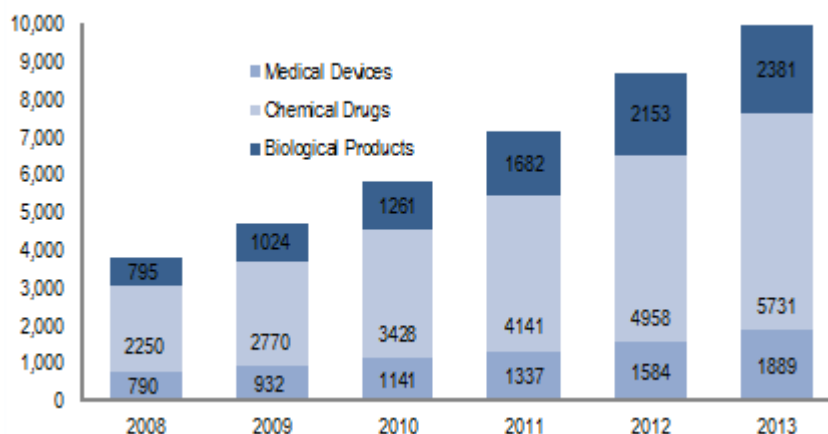
Industry Analysis

Shanghai Haohai operates in the large and rapidly growing healthcare industry in China. Positive socioeconomic drivers include steady growth of GDP and disposable income, aging population and prevalence of chronic health issues, growing urbanization, expansion of medical insurance coverage, as well as a number of supportive policies and reforms implemented by the Chinese government.

Market Size and Trends

The medical devices, biological product and chemical drug markets in China have trended favorably over the past eight years. Aggregate revenues from the sale of medical devices in China grew from Rmb79.0 billion in 2008 to Rmb189 billion in 2013, representing a CAGR of 19%. Aggregate revenues from the sale of chemical drugs in China grew from Rmb225.0 billion in 2008 to Rmb573.1 billion in 2013, representing a CAGR of 20.6%. The aggregate revenues from the sale of biological products market in China grew from 79.5 billion in 2008 to 238.1 billion in 2013, representing a CAGR of 24.5%.

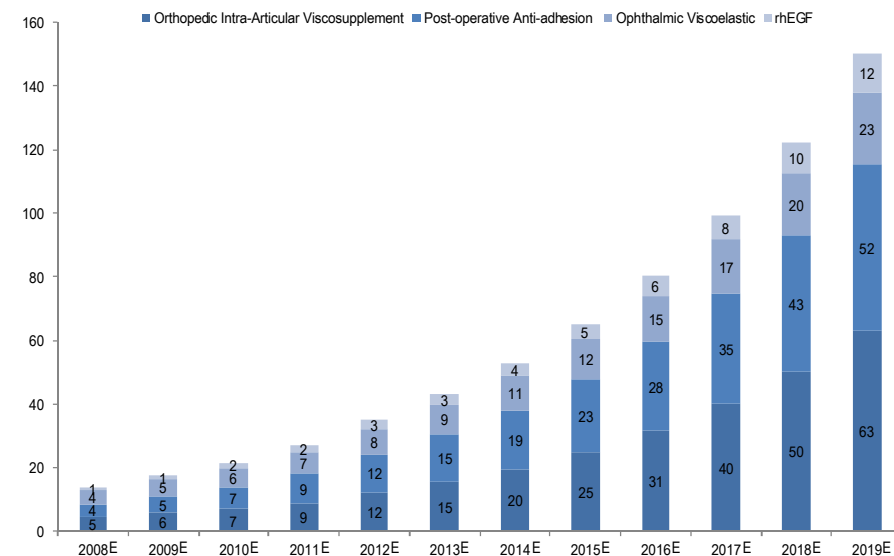
Figure 37: China Pharma Industry Size & Growth
Rmb mm



Source: Company data.

Within the broader medical devices and biopharmaceutical markets, Haohai's therapeutic capabilities span across orthopedics, post-operative anti-adhesion, ophthalmology, wound care and tissue filling. The aggregate revenues in these key areas grew from Rmb1.4 billion in 2008 to Rmb4.3 billion in 2013, representing a CAGR of 25%. The aggregate revenues are projected to grow from 5.3 billion to 15.0 billion in 2019, representing a CAGR of 23%.

Figure 38: Market Size & Growth, 2008-2019E



Source: Company reports.

Market Growth Drivers

Steady growth in the orthopedic intra-articular visco-supplement market in China is mostly driven by the aging population and prevalence of osteoarthritis. Osteoarthritis affects approximately 68% of seniors aged 65 and above, and the number of adults suffering from osteoarthritis in China reached 85 million in 2013. 10% of the patients diagnosed with osteoarthritis treat themselves with orthopedic intra-articular visco-supplement. The potential market is estimated to be 8.5 billion compared to 2013 market size of 1.5 billion, which leaves huge room for growth.

Increased volume of surgery and product awareness contributes to the steady growth of the post-operative anti-adhesion market in China. The number of in-patient surgery operations in China is estimated to be 44 million in 2014, 3.6 million of which demand post-operative anti-adhesion. The manufacturers in China, however, do not have enough capacity yet to meet the increasing demand and are only able to supply anti-adhesion products to approximately 1.5 to 2 million surgical operations on an annual basis. Lack of clinical experience and data has prevented anti-adhesion products from broader acceptance in the past, but this will no longer be the case. With the help of intensified promotion, domestic doctors are recognizing the necessity and high safety standards of post-operative anti-adhesion products.

The ophthalmic viscoelastic market in China grew rapidly from Rmb444 million in 2008 to Rmb924 million in 2013 and is expected to reach Rmb2,278 million in 2019. Major growth drivers include the aging population, government support and effectiveness of cataract surgery.

Cataracts affect 60% to 70% of people aged 50 to 60 years old, and the rate gets as high as 80% for people over 70 years old. The aging population will lead the growth of cataract and related operations. The PRC government also implemented a Prevention of Blindness Project for Millions of Poor Cataract Patients to conduct free

cataract surgeries for a million cataract patients, which will be done during the 12th Five-Year Plan period. Cataract surgery has been proven to be effective in treating cataract, and ophthalmic viscoelastic products will continue to play a key role along with the surgery.

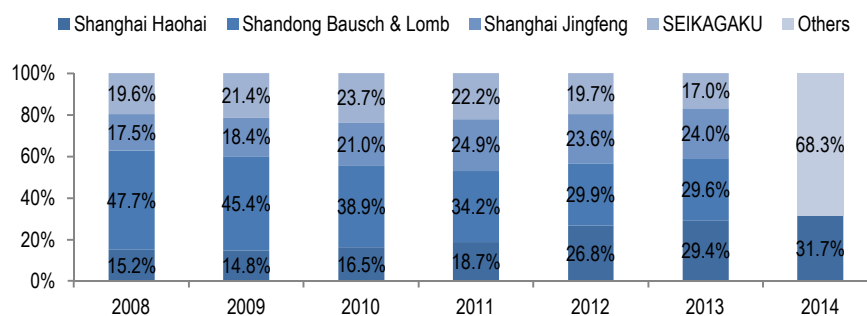
The rhEGF market in China has experienced steady growth in recent years and is estimated to reach 1,208 million in 2019. Major drivers include widening applications for curing damaged human epidermal and supporting government regulations. The high stability of rhEGF due to acid resistance and thermos resistance place it at an advantage over other cytokines. rhEGF can be made into various biopharmaceutical products, applied not only to surgical wounds but also ophthalmology cornea transplant and repair, and diabetic feet. The product is also expected to benefit from the continuous growth of its customer base, given the number of patients receiving orthopedic surgery increases 20% per year. The increasingly stringent PRC government regulation over plastic surgery industry excludes non-GMP certified competitors and protects qualified products such as Haohai's rhEGF.

Additionally, the medical aesthetics sector in China has experienced rapid growth in recent years and provides a favorable market environment for Haohai's HA dermal filler products, a focus of Haohai's ongoing R&D initiatives. The cosmetic surgery industry in China is currently estimated to be 2.5 billion and market size has been increasing 20% each year, due to growing consumer wealth, peer pressure deriving from social media platforms, and the influence of Korean pop culture.

Competitive Landscape

The orthopedic intra-articular viscosupplement market in China is dominated by a few players, with the Top 3 manufacturers sharing 83% of total sales in 2013. Haohai's market share has trended favorably from 15.2% to 29.4% between 2008 and 2013. In 2014, Haohai exceeded Shandong Bausch & Lomb and became the largest player in the market with 32% market share. The chart below illustrates shares of major players in the orthopedic intra-articular viscosupplement market between 2008 and 2013.

Figure 39: Orthopedic Intra-Articular Viscosupplement Market Share

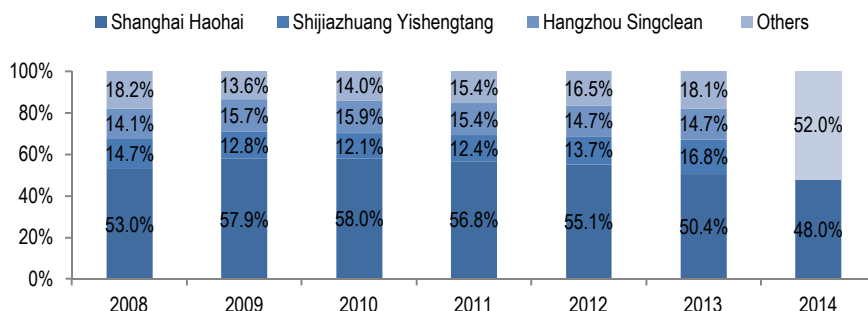


Source: Company data, J.P. Morgan.

Shanghai Haohai is also a leading manufacturer in the PRC post-operative anti-adhesion market and accounts for 48% of the total sales for medical chitosan and

medical sodium hyaluronate gel. The chart below illustrates post-operative anti-adhesion market dynamics among major players between 2008 and 2014.

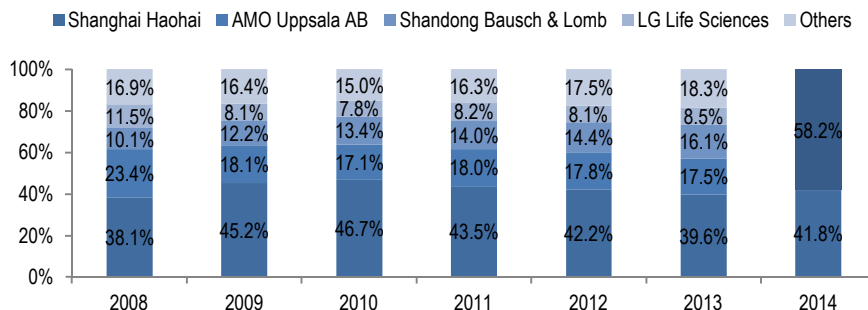
Figure 40: Post-operative Anti-adhesion Market Share



Source: Company data, J.P. Morgan.

Shanghai Haohai has dominated the ophthalmic viscoelastic market in China since 2008 and was able to sustain its market share at 41.8% in 2014. The chart below illustrates ophthalmic viscoelastic market dynamics among major players between 2008 and 2014.

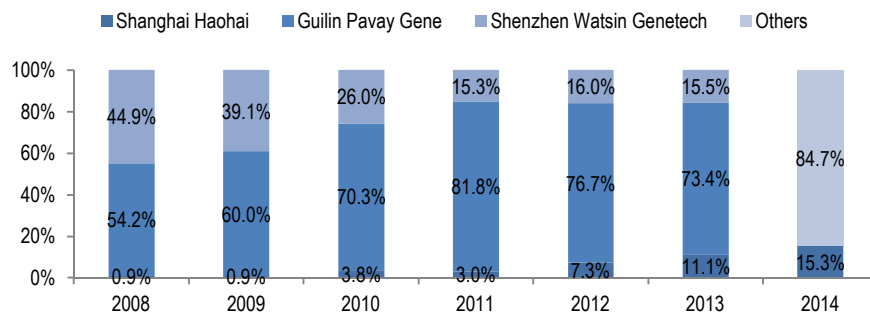
Figure 41: Ophthalmic Viscoelastic Market Share



Source: Company data, J.P. Morgan.

The fast-trending rhEGF market in China leaves Haohai significant room for growth. Shanghai Haohai's market share grew exponentially from 0.9% in 2008 to 15.3% in 2014 and is now the third-largest player. The following chart illustrates market share of major players in the rhEGF market in China between 2008 and 2014.

Figure 42: rhEGF Market Share



Source: Company data, J.P. Morgan.

Investment Thesis, Valuation and Risks

Shanghai Haohai Biological Technology Co., Ltd. (*Overweight;*
Price Target: HK\$50.00)

Investment Thesis

Shanghai Haohai Biological Technology is a high-tech enterprise in China focusing on the research, manufacture and sale of absorbable biomedical materials and medicine. Absorbable biomedical materials are non-toxic, biodegradable in the human body and can address a variety of medical and cosmetic needs. Shanghai Haohai strategically targets the fast-growing therapeutic areas including orthopedics, anti-adhesion and hemostasis, ophthalmology and wound care and tissue filling.

Valuation

Our Dec-17 PT of HK\$50.00 is based on a DCF valuation that assumes a market risk premium of 6.0% and a risk-free rate of 4.2% (yield on 10-year government notes in China). We assume a beta of 1.05. Accordingly, WACC is assumed at 8.5%. We estimate free cash flow for Bloomage until 2020 and assume a terminal growth rate of 4%.

Risks to Rating and Price Target

Key risks to our rating and price target include: (1) Market leadership in key therapeutic areas. (2) Attractive and growing core markets. (3) Extensive distribution network with limited customer concentration. (4) Strong research and development capabilities. (5) Executed M&A strategy and potential upside surprise.

Shanghai Haohai Biological Technology Co., Ltd.: Summary of Financials

Income Statement						Cash flow statement					
Rmb in millions, year end Dec	FY14	FY15	FY16E	FY17E	FY18E	Rmb in millions, year end Dec	FY14	FY15	FY16E	FY17E	FY18E
Revenues	516	664	793	963	1,162	EBIT	212	282	265	340	390
% change Y/Y	28.6%	28.7%	19.5%	21.4%	20.6%	Depr. & amortization	23	34	33	40	44
Gross Profit	450	559	650	788	947	Change in working capital	(3)	(26)	(29)	(19)	(24)
% change Y/Y	30.0%	24.2%	16.4%	21.1%	20.2%	Taxes	-	-	-	-	-
EBITDA	235	316	298	380	434	Cash flow from operations	142	269	221	302	344
% change Y/Y	33.9%	34.8%	(5.9%)	27.5%	14.2%	Capex	(94)	(70)	(119)	(106)	(116)
EBIT	212	282	265	340	390	Net Interest	4	38	59	47	52
% change Y/Y	30.3%	33.2%	(6.1%)	28.3%	14.7%	Other	5	(79)	59	47	52
EBIT Margin	41.1%	42.5%	33.4%	35.3%	33.6%	Free cash flow	48	198	102	197	227
Net Interest	4	38	59	47	52	Equity raised/(repaid)	0	1,864	0	0	0
Earnings before tax	216	321	324	387	442	Debt raised/(repaid)	-	-	-	-	-
% change Y/Y	29.5%	48.7%	1.0%	19.4%	14.2%	Other	0	(59)	0	0	0
Tax	(32)	(47)	(49)	(58)	(66)	Dividends paid	(70)	(50)	0	0	0
as % of EBT	14.9%	14.8%	15.0%	15.0%	15.0%	Beginning cash	176	160	2,178	2,338	2,582
Net income (reported)	184	273	275	329	376	Ending cash	181	2,178	2,338	2,582	2,861
% change Y/Y	29.7%	48.9%	0.8%	19.4%	14.2%	DPS	0.59	0.34	0.00	0.00	0.00
Shares outstanding	120	147	160	160	160						
EPS (reported)	1.53	1.86	1.72	2.06	2.35						
% change Y/Y	29.7%	21.5%	(7.5%)	19.4%	14.2%						
Balance sheet						Ratio Analysis					
Rmb in millions, year end Dec	FY14	FY15	FY16E	FY17E	FY18E	Rmb in millions, year end Dec	FY14	FY15	FY16E	FY17E	FY18E
Cash and cash equivalents	181	2,178	2,338	2,582	2,861	Gross margin	87.2%	84.2%	82.0%	81.8%	81.5%
Accounts receivable	62	91	92	112	135	EBITDA margin	45.5%	47.7%	37.5%	39.4%	37.3%
Inventories	76	78	125	153	188	Operating margin	41.1%	42.5%	33.4%	35.3%	33.6%
Others	9	0	5	6	8	Net margin	35.6%	41.2%	34.7%	34.2%	32.3%
Current assets	347	2,372	2,589	2,888	3,233	Sales per share growth	28.6%	5.1%	9.7%	21.4%	20.6%
LT investments	-	-	-	-	-	Sales growth	28.6%	28.7%	19.5%	21.4%	20.6%
Net fixed assets	352	397	484	552	625	Net profit growth	29.7%	48.9%	0.8%	19.4%	14.2%
Total Assets	752	2,822	3,125	3,491	3,908	EPS growth	29.7%	21.5%	(7.5%)	19.4%	14.2%
Liabilities	-	-	-	-	-	Interest coverage (x)	-	-	-	-	-
Short-term loans	-	-	-	-	-						
Payables	9	5	12	15	18	Net debt to equity	-	-	-	-	-
Others	130	136	157	190	230	Working Capital to Sales	0.4	3.4	3.1	2.8	2.6
Total current liabilities	139	141	169	205	248	Sales/assets	0.8	0.4	0.3	0.3	0.3
Long-term debt	-	-	-	-	-	Assets/equity	1.2	1.1	1.1	1.1	1.1
Other liabilities	19	15	15	15	15	ROE	32.6%	16.8%	9.8%	10.6%	10.9%
Total Liabilities	158	156	185	221	263	ROCE	32.1%	14.8%	8.1%	9.3%	9.6%
Shareholders' equity	594	2,662	2,937	3,266	3,642						
BVPS	4.95	18.11	18.35	20.41	22.75						

Source: Company reports and J.P. Morgan estimates.

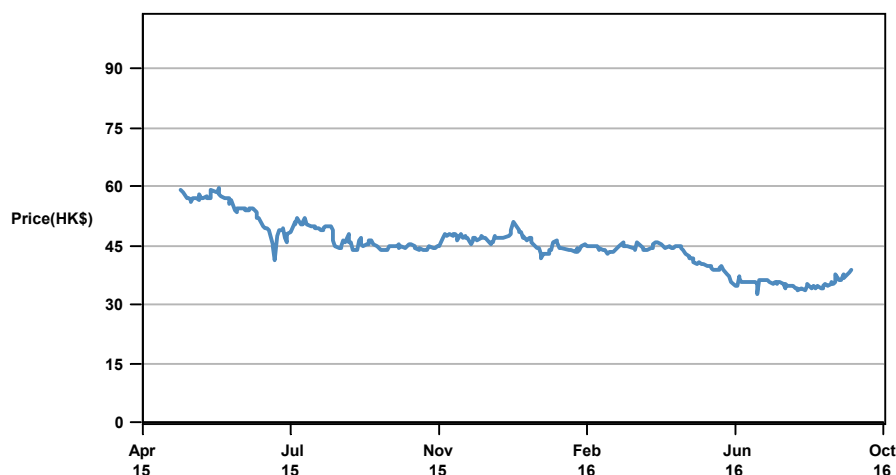
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Shanghai Haohai Biological Technology Co., Ltd. (6826.HK, 6826 HK) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends.

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