



# CFA Institute

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## CFA Institute Research Challenge in Thailand

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# Bangkok Dusit Medical Services PCL

**Ticker: BDMS; Exchange Rate 31.79 Baht/1 USD**

**The Stock Exchange of Thailand (SET); Health Care Services Sector**

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## TEAM 06

**Recommendation: BUY**

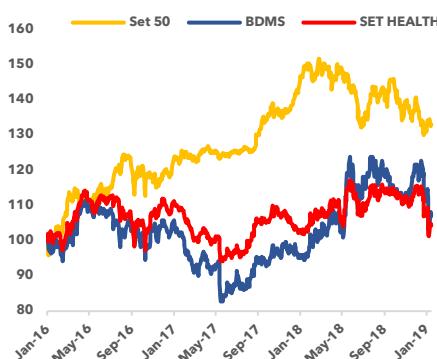
**Current Price THB 23.60**

**Target Price THB 27.00**

**Upside 14.41%**

**On January 17, 2019**

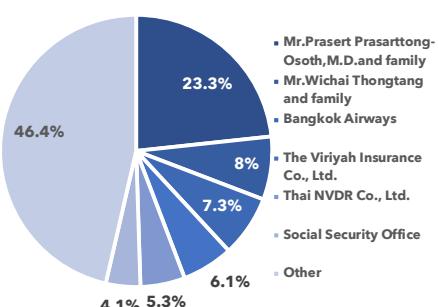
### Share price



### Market profile

<b>52-week price range (THB)</b>	<b>20.70 - 28.00</b>
<b>2018 average daily turnover (THBmm)</b>	<b>52.56%</b>
<b>Market Capitalization (THBmm)</b>	<b>369,787.36</b>
<b>Market Capitalization (USDmm)</b>	<b>11,647.21</b>
<b>Shares outstanding (million shares)</b>	<b>15,665.63</b>
<b>Free float (%)</b>	<b>53.48%</b>
<b>BV per share (THB)</b>	<b>4.41</b>
<b>2019E ROE</b>	<b>14.9%</b>
<b>Current P/BV</b>	<b>5.35</b>
<b>Current P/E</b>	<b>37.44</b>
<b>Current EV/EBITDA</b>	<b>22.81</b>
<b>Dividend yield</b>	<b>1.51</b>
<b>Beta</b>	<b>0.651</b>

### Major shareholder



## Time to Harvest from Investment Seed

After well establishing strong hospital network coverage in all potential areas in Thailand (with competitive size), BDMS is now slowing their expansion strategy down and ready to focus more on efficiency enhancement.

### Valuation

We issue a BUY recommendation on BDMS with a 1-year target price of 27.00 Baht, presenting 14.41% upside performance. Our valuation is based on Discounted Free Cash Flow to Firm model and Price/Earning multiplier model, with a 75%-25% of weighted. According to the difference between subsidiaries (3 sub-groups of hospital companies and non-hospital companies) and strategy transforming period, we use 2 methods of revenue forecasting (Main method and Alternative method) to cross-check each other to enhance the accuracy of the DCFF calculation. Our recommendation also scrutinizes the upcoming new drug law and position changing on Ramkhamhaeng's stock.

### Investment Highlight

#### (1) Efficiency-focused strategies from the solid business model

Center of Excellence with Hub & Spoke model is the key of top-line growth and cost reduction. In addition, the continuum of healthcare and non-hospital business creates vertical and horizontal business synergy that also support BDMS's efficiency.

#### (2) Business Opportunities for both overseas and domestic demand

The medical hub policy will benefit BDMS to obtain more international patients through medical tourism. While urbanization with higher household income and growing health insurance among Thai patients begin to shift services from public to private hospital.

#### (3) Commitment management team

BDMS has an excellent management team not only establishing capable strategies but also achieving their business goals. Moreover, retaining the high standard of services, maintaining the income level and cost control and managing relatively low cost of debt at approximately of 3% are the results of their competences as well.

#### (4) Investment Risk

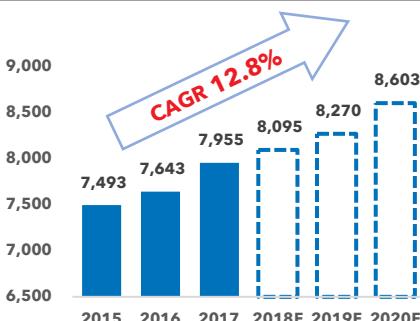
There are many legal issues that possibly affect the healthcare industry. Especially considering medicine and medical treatment as controlled goods and services. This is the risk that BDMS's management has to keep an eye on; nevertheless, it is accounted in our scenario analysis.

	2015	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
Revenue (THB mm)									
Hospital revenue	60,262	65,237	69,123	74,486	80,918	87,375	93,992	99,688	104,824
CoE			38,764	41,504	44,593	47,577	51,007	54,078	56,867
Mature			24,009	27,600	29,817	31,924	33,829	35,598	37,108
Ramping			5,494	5,383	6,507	7,874	9,156	10,012	10,849
Non-Hospital revenue	2,595	2,667	2,810	4,197	4,998	5,584	6,044	6,451	6,887
Gross profit	22,690	22,627	23,957	26,870	30,071	32,536	35,513	37,679	40,216
EBITDA	14,238	14,489	15,252	17,497	20,880	22,313	24,269	25,658	27,585
Net income1	8,317	8,750	10,559	10,287	11,818	12,877	14,428	15,341	16,814
Net income2*					17,825				
EBITDA Margin	22.3%	21.3%	21.2%	22.2%	24.3%	24.0%	24.3%	24.2%	24.7%
ROE	15.7%	15.3%	17.0%	14.6%	14.9%	14.8%	15.4%	15.1%	15.4%
ROA	8.4%	8.4%	9.2%	8.2%	9.1%	9.7%	10.7%	11.0%	11.6%
ROIC	9.9%	9.5%	10.4%	9.6%	11.4%	12.0%	12.9%	13.3%	13.9%
EPS (Baht per share)	0.54	0.56	0.68	0.65	0.75	0.81	0.91	0.97	1.06
DPS (Baht per share)	0.26	0.29	0.36	0.32	0.56	0.41	0.45	0.48	0.53
Cash	5,557	4,765	5,091	8,927	19,166	20,571	25,563	31,254	34,896
Current asset	13,582	12,595	14,394	18,655	28,939	31,088	36,811	43,145	47,355
Net PP&E	53,620	57,159	71,559	72,620	70,678	68,857	67,139	66,469	66,860
Total Asset	102,335	107,015	122,627	128,816	131,893	132,297	136,385	142,136	146,830
Total Debt	47,338	48,710	56,756	53,887	48,051	42,017	38,891	36,972	33,258
Total Equity	54,997	58,305	65,871	74,929	83,842	90,280	97,494	105,164	113,571
Number of Share	15,491	15,491	15,491	15,862	15,862	15,862	15,862	15,862	15,862
Number of Bed	7,493	7,643	7,955	8,095	8,270	8,603	8,603	8,603	8,603

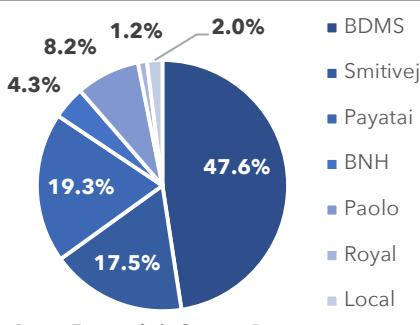
\*Including sale of investment in 2019 (ROE = 22.45% ROA = 13.67% ROIC = 17.12% EPS = 1.12)

**Figure1: Hospital Business**

Source: Team analysis, Company Data

**Figure 2: Number of Total beds**

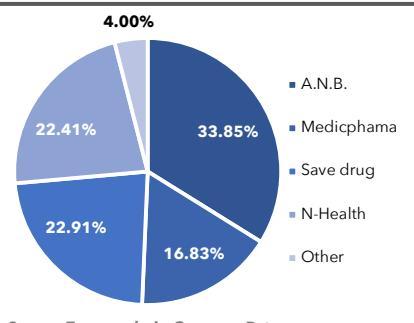
Source: Team analysis, Company Data

**Figure 3: Revenue of Hospital**

Source: Team analysis, Company Data

**Figure 4: Non-hospital Companies**

Source: Team analysis, Company Data

**Figure 5: Revenue of Non-Hospital**

Source: Team analysis, Company Data

**Figure 6: Investment**

Investment	2018	2019
Bumrungrad Hospital	24.88%	24.88%
Ramkhamhaeng Hospital	38.24%	0.00%
Eak Udon Hospital	25.11%	25.11%

Source: Team analysis, Company Data

## Business Description

The largest private hospital company in Thailand, Bangkok Dusit Medical Services Public Company Limited (BDMS) was established as a Bangkok Hospital in 1972 then listed on Stock Exchange of Thailand in 1991. By acquiring other hospitals as an expansion strategy, BDMS is now holding 6 chained hospitals in all strategic locations consisting of 45 hospitals in Thailand and 2 in Cambodia. Compared with the international peers, the company's market capitalization of THB 419 billion is the second largest and NPM at 13.24% in 2017 is the best in industry.

### Types of Business

**(1) Hospital Business (95% of Operating revenue):** BDMS holds 8,011 beds, mostly in Thailand, across 46 hospitals in 7 major groups of hospital. (Figure1, 3)

**1.1. Bangkok Hospital:** The original chained hospital of BDMS. There are 21 branches with 3,547 beds (around 44% of total beds) located all over Thailand. This group represents 47.5% of total BDMS revenues.

**1.2. Samitivej Hospital:** With 5 branches in Bangkok and other 2 in Chonburi, this chained provided 17% of total revenue. 1,288 beds made this the 2nd biggest hospital group of BDMS.

**1.3. BNH:** A stand-alone hospital, Bangkok Nursing Home is founded in 1897 as the first private hospital in Thailand. Now its operation contains 144 beds and generates 4% of revenue to BDMS.

**1.4. Phyathai Hospital:** BDMS obtained 18% of their revenue from this chain. Phyathai group, acquired in 2011, with 4 hospitals in Bangkok and 1 in Chonburi, is focusing on a lower-income customer segment when compared to Bangkok and Samitivej hospitals.

**1.5. Paolo Hospital:** 88% of total BDMS's revenue is gained from 5 Paolo hospitals that located in Bangkok and vicinities. This chained hospital acquired in 2011 as well as Phyathai group.

**1.6. Royal Hospital:** The only oversea hospital group of BDMS, 2 hospitals in Cambodia at Phnom Penh and Siem Reap. Royal hospitals, with 130 beds, provide 1% of revenue.

**1.7. Local Hospital:** There are 5 hospitals in this group: Sirayong, Thepakorn, Dibuk, Siriroj international and Jomtien (under construction). These hospitals are aimed to attain lower-income segment when compared to other above mentioned chained hospitals. They mostly located in the potential areas like Rayong (industrial estates) and Phuket (tourist destination). Now local hospital group is reaching the 2% of total revenue for BDMS.

**(2) Non-hospital Business (5% of Operating revenue):** (Figure 4,5) There are 3 major non-health businesses (FY2017) that provide more than 90% of income from BDMS's non-health business. BDMS Wellness Center will be a new landmark of non-hospital businesses.

**2.1. A.N.B.:** Leader of BDMS non-hospital business with more than 50% of market share in saline solution business.

**2.2. Medic Pharma:** BDMS Pharmaceutical manufacturing business. Bakamol, 500mg paracetamol, is now the product champion.

**2.3. Save Drug:** Acquired in 2014, with 140 branches located nationwide, the store provides medicines, supplementaries, medical equipment and skincare.

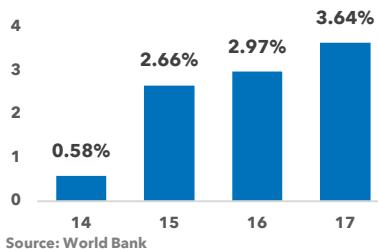
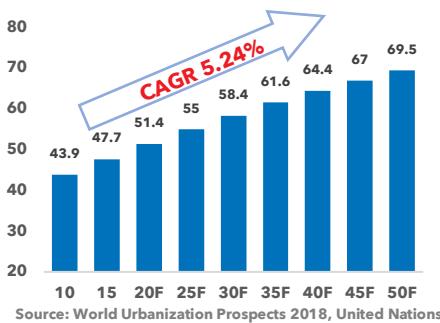
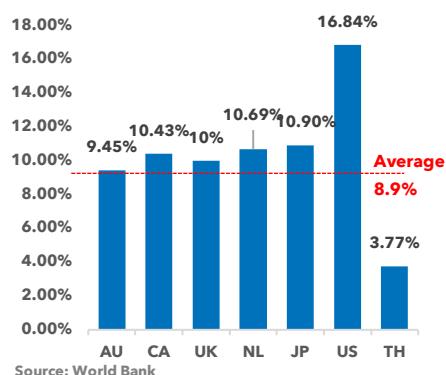
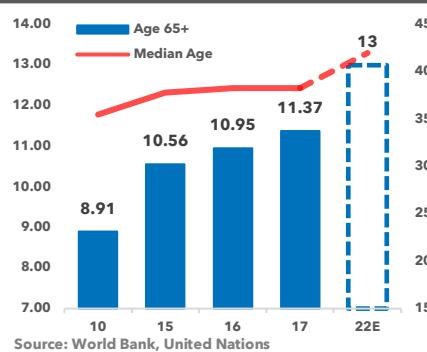
**2.4. BDMS Wellness Center:** New investment in 6 acres, located in the heart of Bangkok, will complete the BDMS's continuum of healthcare strategy. Wellness centers are not only focusing on modern medicine to promote longevity, prevent disease and provide groundbreaking treatments for a long and healthy life, but also creating new business for BDMS such as Movenpick hotel.

**(3) Investment in Associates:** After liquidating all their investment in Ramkhamhaeng Hospital (RAM) at 2,800 Baht per share on 11th of January 2019, the main investment of BDMS is now only in Bumrungrad Hospital as a major shareholder with 24.88% of holding. Eak-udon Hospital (25.11% of shareholding) is another BDMS investment but insignificant to the whole group in terms of revenues. (Figure 6)

### Competitive advantages

**(1) Well-known brand:** BDMS is known for their premium quality of services in hospital business, with over 15 JCI accreditations, for more than 30 years.

**(2) Diversify and Strategic locations:** With 45 hospitals across Thailand and 2 in Cambodia, BDMS's hospitals are not concentrated and take all the best locations in this region. Their 7 groups of the hospital with different target customer also create the mix in BDMS income

**Figure 7: GDP growth per capita****Figure 8: Percentage of population at Mid-year residing in Urban Area 2010-2050****Figure 9: Healthcare expenditure to GDP****Figure 10: Populations of Age 65+ and Median age****Figure 11: JCI Standard**

stream. Moreover, the growth of a non-hospital business is also a way to diversify BDMS business.

**(3) Superb cost controlling:** As chained hospital business, strategies like hub & spoke, resource sharing and centralize procurement are very effective in cost reductions as well as the non-hospital business that enhances a stronger BDMS's supply chain. In addition, good financing management, with AA- credit rating, reduces the financial cost for the business. As a result, BDMS can create best EBITDA and NPM in the industry worldwide (Appendix: B.1.1.).

## Industry Overview and Competitive Positioning

### Industry overview

**(1) Stimulate growth from government policy:** The government runs the policies which promote and support trades and investments, allowing business operators at greater convenience. Eastern Economic Corridor (EEC) is the driving force to enhance the competitive capabilities of Thailand. In addition, EEC will support FDI private hospital investment and other businesses in that area. According to World bank, Thailand had 11.65 billion of US dollar in foreign direct investment in 2017 with 12.56% growth from 2016 and 262 projects in the pipe-line were 172,142 THBmm in 2017. (see appendix: B.2.1.)

**(2) Higher middle-income people:** According to NESDB, Thailand is expected with 4.7% GDP growth in 2018 and had 3.64% GDP per capita growth in 2017 (Figure 7). In 1Q2018, public and private sectors grew in both consumption and investment (see appendix: B.2.2.). From BCG's center for customer insight, it estimates 41% Thailand's middle class in 2020, rising from 36% in 2015. Therefore, they are anticipated more purchasing power and increasing healthcare expenditures.

**(3) Expanding urbanization:** People are moving away from rural area to urban area so more people in urban area have resulted in an increasing healthcare demand. According to UN, they expected the urbanization rate to expand from 35.6% of population in 2015 to 40.7% in 2025. This reflects more opportunity of hospital's future investment in urban area and earn higher revenue from surging demand. (Figure 8)

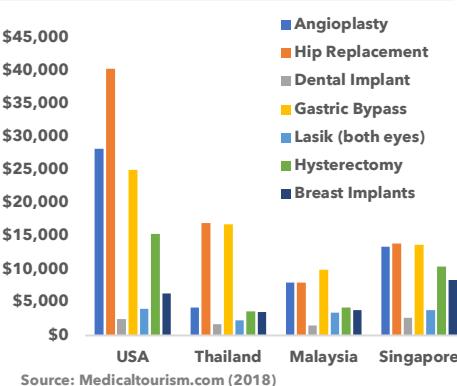
**(4) Large gap to grow in Thailand healthcare industry:** The world health expenditure is becoming upside trend. Especially, North America Canada and US have high percentage of health expenditure to GDP, but South East Asia's growth remain slow. Thailand still had low healthcare expenditures relative to other countries. Thailand's current healthcare expenditure percentage of GDP was 3.77% (2015) which compared to an average of 8.9% of developed countries (Figure 9). It can be implied that Thailand healthcare industry still have more gap to grow.

**(5) Aging population:** According to Global Age-Watch Index (2015), Thailand had a third largest proportion of people aged 60 and over in Asia (15.8%) and expected to grow to 26.9% in 2030. Japan had the most proportion of elderly people (33.1%) and South Korea (18.5%). From World bank 2017, Thailand had 11.37% of population ages 65 and above (% of total population) with 3.45% 8-Year CAGR (Figure 10). Consequently, higher number of elderly people will stimulate the demand for healthcare service.

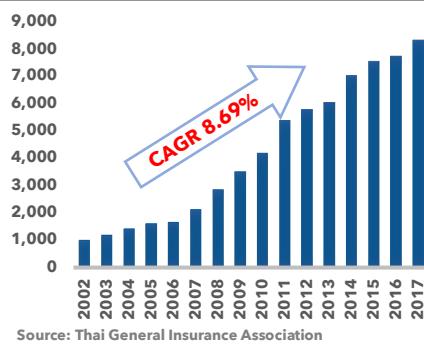
**(6) Medical Tourism:** Thailand is ranked 18th global ranking of medical tourism index and Thailand medical tourism market was worth over US\$ 4.6 Billion in 2016. Moreover, Thai private hospitals are top destinations for medical tourism with world-class medical facilities and premium healthcare available at highly competitive prices (Figure 12). The Joint Commission International (JCI) accredits 65 Thai medical institutes as meeting international standards with the largest number in ASEAN (Figure 11). The number of the foreign patients receiving treatment reached 2.35 million people in 2014 and The Kasikorn Research Centre claimed that the foreign patients are expected to reach 3.4 million visits in 2018. From KPMG, global medical tourism is expected to grow 17.9% CAGR from 2013 to 2019 and it will become one of the highest growth areas in Thai economy, \$32 billion per year by 2019.

**(7) Improving insurance industry:** (Figure 13) People, who buy insurance and pay higher premiums, want to get better quality of medical treatments from hospitals (especially private hospitals). Currently, there are more cooperation between insurance companies and private hospitals to expand target customers in health insurance groups. This expansion will respond the demand for middle-income people. From the latest Sigma study, Thailand's life insurance has been ranked as the world's top 30 and Asia's top 10 in terms of premium income over recent years. These direct premiums in 2016 were up 5.7% to US\$16.1 billion from US\$15.6 billion in 2015 and the total number of life insurance policies grew 2.8% from 2015 to 2016,

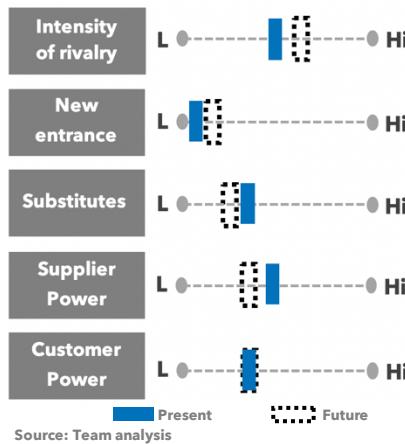
**Figure 12: Medical services price compares (\$)**



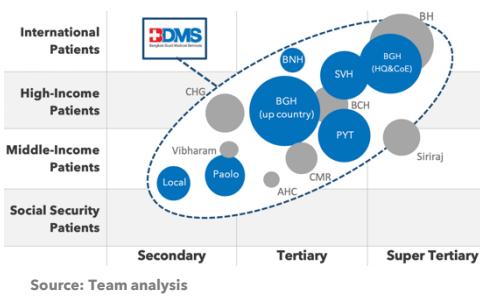
**Figure 13: Health insurance Direct Premium**



**Figure 14: Porter's Five Force**



**Figure 15: Competitive Positioning in Domestic**



according to the office of insurance commission (OIC). Therefore, increasing trend for health insurance will encourage the healthcare expenditure. The report from EY's global insurance trend analysis 2018, suggested 3-4% global insurance growth between 2017 and 2019.

## Five Force Analysis

There are a large number of private hospitals; thus, the competition in private hospital industry in Thailand is intense and has high barriers to entry. Moreover, high switching cost causes low power of customers. In the future, competition is becoming more intense because expansion project among rival increased in new entry. As a result, supplier power is going to decrease due to BDMS is the large company and has supply chain (appendix: B.2.4.). In addition, each group of hospital has difference target group thus there are many competitors both domestic and international. (Figure 14)

## Competitive Positioning

BDMS has a solid market position as the largest operator of private hospitals in Thailand with strong reputations of its brands and locations across Thailand. Center of excellence with hub and spoke model allows customers to easily access services. All these factors put BDMS in a competitive position compared to competitors.

Since BDMS has large target customers which diversified to cover many levels of patients. This causes the company to encounter many levels of competitors. In the premium market, Bumrungrad Hospital is the only rival to compete while Bangkok Hospital, Smitivej and BNH are the representatives of BDMS in this level. 10 CoEs of BDMS take the advantage in term of accessibility when compared with 1 campus of BH. The second group is mid-level and social security hospitals which are BDMS's Phayathai and Paolo. There are many competitors in this group with a similar treatment level. So, the important factors that mentioned by patients are switching costs and convenience regarding location. The third group is the famous public hospital in Bangkok, which competes with BDMS in term of the ability to treat complex diseases at the lower price. The last group of domestic competitors is the local private hospitals that compete with BDMS in up-country. Local hospitals in this group have the advantage since they were founded before then causing more familiarity for the patient. The foreign patient is also their target customer; thus, they lead BDMS to face with foreign competitors. Singapore and Malaysia are 2 competitive countries in medical tourism in this region. According to the Global Wellness Tourism Economy, Thailand has been reported as a leader in the wellness tourism destination market in South East Asia. However, BH is still the main domestic competitor in this segment.

### Domestic Competitors (Figure 15, appendix: B.2.5.)

#### (1) Bangkok

**1.1. Premier Hospitals:** Bangkok, Samitivej and BNH Hospital focus on premium and international patients. As a niche market, number of this group's competitors are modest. The main and only competitor is Bumrungrad Hospital (BH). Although wellness center and Centre of Excellence (CoE) of BDMS are appealing to international patients, BH is still the leader in this segment with more than half of their revenues are from the foreign patients. In addition, BH has more than 10 years of experiences in preventive care from their Vital Life wellness center. So, this segment is still challenging for BDMS.

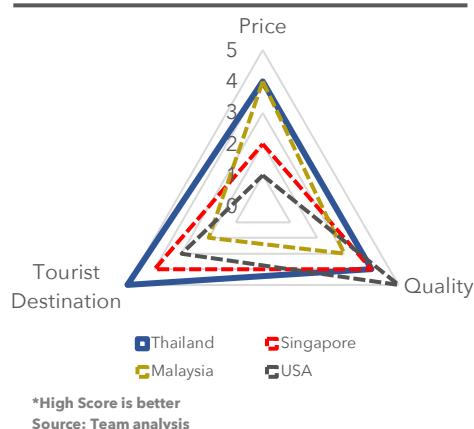
**1.2. Hospitals in the Social Security Scheme and Middle Level Hospital:** There are many competitors due to a large number of private hospitals in the middle level. In addition, some of Phayathai and Paolo Hospital also provide medical services in the social security scheme which face both public and private opponents, for example, Siriraj, Ramathibodi, Vibharam, Praram 2 and Kasemrad Hospitals. However, the most important factor for patients in this group is the location where convenience for them.

**1.3. Public Hospital in Bangkok:** There are many public hospitals that expand their private hospital division to provide better services such as Siriraj Piyamaharajkarun Hospital. This kind of hospital may share some BDMS customer due to the lower medical expense with the same level of complex treatment.

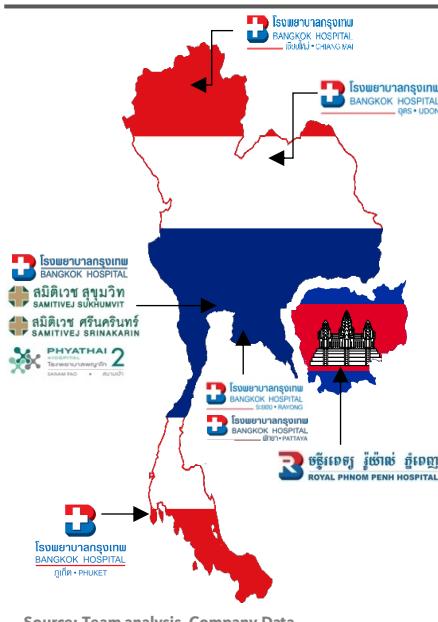
#### 2) Up-country

**Local private hospital:** BDMS are well-distributed over the high-growth domestic location. So, competitors in this segment are the large and famous local hospitals with has more experiences in the area before, such as Chiang Mai Ram and Aikchol Hospital. Although BDMS branding and quality of services are renowned, it is challenging for BDMS to compete with the local competitors.

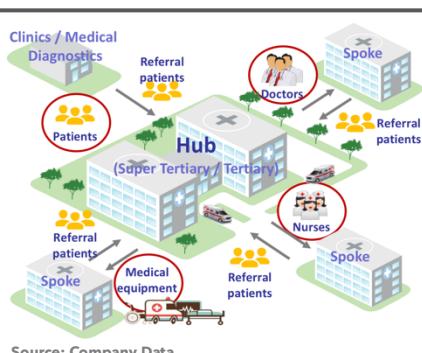
**Figure 16: International Competitive Positioning**



**Figure 17: BDMS CoE**



**Figure 18: Hub and Spoke Model**



**Figure 19: Continuum of healthcare**



## International Competitors (Figure 16, appendix: B.2.6.)

BDMS competes with international competitors in medical tourism destination with advantages 1) located in popular tourist destination 2) high quality of medical services with 8 Gold Seals of Approval from JCI (highest in Asia Pacific region) and 3) affordable price (appendix 2.7). However, the obvious competitors in the region are IHH and KPJ.

**(1) IHH** manages hospitals in 9 countries by focusing on both inorganic growth with the M&A expansion strategy and organic growth with the complicated quaternary care. IHH is trying to expand their Chinese customer base by establishing a Gleneagles Hong Kong Hospital. This may affect BDMS's Chinese customers in medical tourism.

**(2) KPJ** manages more than 25 specialist hospitals located in various parts of Malaysia, including in 1 hospital in Thailand. Its extensive reach affects to accessibility and offer a diverse range of medical specialist services. KPJ's customers are mostly from the region such as Indonesia, while BDMS customers come from all over the world.

### (3) Hospitals in the countries of the main medical tourist:

In the **USA**, there is a large hospital group called HCA. Although, HCA is one of the most advanced hospital in the world but the treatment fees are very expensive. So, some group of patients may choose to go abroad for the treatment. **The Middle East**, which is one of the main medical tourists in Thailand, has begun to develop their own medical facilities. For instance, Qatar established a large medical city with an investment of 23,000 million baht. This is the biggest healthcare facility expansion in its region. Also, Kuwait invested 35,000 million baht in the hospital complex as a part of the plan to improve national healthcare to raise the capacity of hospital by 60%. This attempt may affect the number of Arab medical tourists in Thailand. In **China**, demand for higher quality healthcare is escalating as a result of their population, economy and birth control exemption along with insufficient supplies in terms of number of hospitals and treatment quality. This imbalance will create the opportunity to gain more Chinese patients from medical tourism since Thailand is the nearest medical hub compared to competitors offering the same price range.

## Business strategy

According to their efficiency-focused strategy, BDMS is now implementing these following business model. (Appendix B.3.1.)

**(1) Center of Excellence:** 10 existing hospitals located in the strategic area nationwide are upgraded to be the CoE. These international accredited hospitals provide tertiary and super-tertiary care services. The main target customer groups of CoE are international and high-income patients. CoE will increase the top-line growth of the company. (Figure 17)

**(2) Hub-and-Spoke Model:** As a result of CoE, the hub & spoke model is installed by setting CoE as a hub and the surrounding hospitals as spokes. This model strengthens BDMS's hospital network with effective patient referral system and creates efficiency through scale within and across each hub & spoke. This synergy supports BDMS's revenue and also reduce cost. (Figure 18)

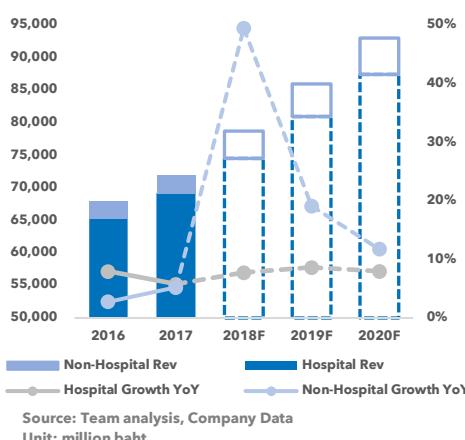
**(3) Continuum of Healthcare:** Not only the curative care, BDMS is now concerned the needs of preventive and rehabilitative care in order to expand and diversify their customer base. The wellness center serves every aspect of preventive care from promotive, preventive and early detection. While Chiva transitional care is created to support the transitional and rehabilitative services. In addition, the continuum of healthcare will reduce the overcrowded and will indirectly increase the capacity of curative care. (Figure 19)

**(4) Non-hospital businesses:** Investments in non-hospital businesses, such as medical laboratory, pharmaceuticals and drug stores, are the strategy that enhances strong supply chain and creates the efficiency via economy of scale for BDMS. (Figure 19)

## Financial Analysis

BDMS invested more in assets, including acquisition, greenfield, holding a stock in BH, RAM and Eak-Udon and enhance a quality of service. So, BDMS are also covering the healthcare industry, including prevention, treatment and care; hence, continuing revenue growth over the past five years.

**(1) Revenue has grown steadily:** (Figure 20) The total revenue has continued to grow. Revenue had jumped in 2011 (55% YoY 2010-2011) with the increase of investment in hospital and stocks. Furthermore, the Bangkok Hospital brand is more reliable and well known with outstanding services. Revenue of healthcare sector has a continuous growth

**Figure 20: Revenue**

mainly from COE and EEC (8.89% CAGR 2013-2017) while growth of non-hospital sector has increasing rapidly in 2014-2015. (51.53% YoY 2014-2015) Revenue will be continuous growth in the next 5 years because Bangkok Wellness Clinic Center and International hospital will be opening, focusing on hospitals in COE, increasing efficiency of hospital and expanding health insurance customers to other segments.

**2) Costs and profit were affected by investment and funding:** (Figure 21) In the last two years, Cost of goods sold and administrative costs was 66.7% and 20% of sales, respectively which increased from the previous year. As a result, EBITDA margin decreased to 21.57% in 2017. Anyway, EBITDA margin will return from shrinking investment of BDMS and expected increasing revenue from expanding the customer base to increase occupancy. In 2017 Net profit margin decreased from 11.92% in 2016 to 10.84% (Adjust Sale of investment) from issuing bonds in the amount of 7,000 million baht, which boost financial expenses in its income statement, up from 881 million baht to 1,535.5 million baht. Compared to the industry, EBITDA margin and Net profit margin are lower than the healthcare industry of Thailand, with an average EBITDA margin and Net profit margin of 24.32% and 14% (SETHEALTH). However, compared to the healthcare industry of the world, BDMS is better, 16.43% and 8.7% (MSCI HEALTHCARE). (Appendix B.4.2.)

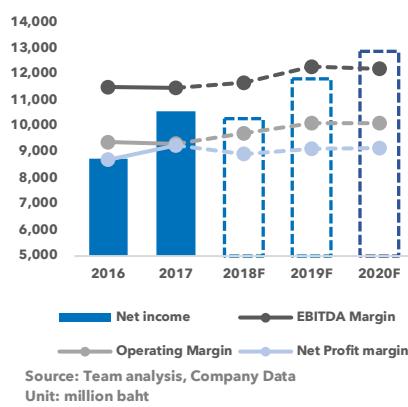
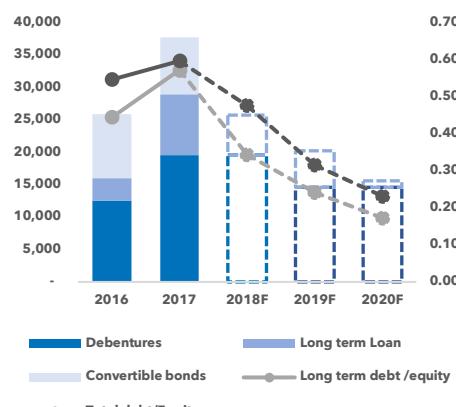
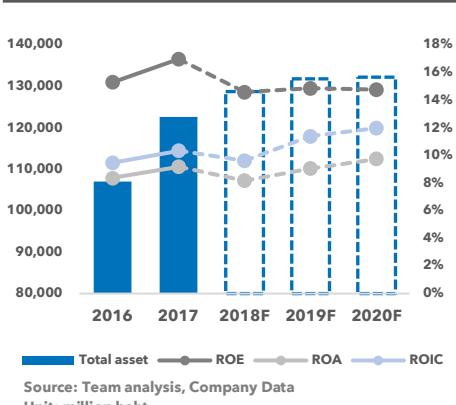
**(3) Maintaining total debt/equity ratio and low-cost of financing:** (Figure 22) In 2014, the company issued a convertible bond in amount of 10,000 million baht, with just over 2% interest per year and convertible bond, reduced total debt to equity ratio from 0.56x to 0.45x (2014-2016). In 2017, BDMS has issued medium term bonds, 3-7 years amount 10,000 million baht, to invest in both investments, Wellness clinic hospital and hospital expansion hospitals. Hence, total debt to equity ratio had jumped to 0.57x in 2017 but this series of bonds are considered relatively low cost of debt because the company has a good credit rating AA- and these bonds have seen issued before upward interest rate trend. But compared to the industry over the past 5 years, BDMS has a relatively higher total debt to equity ratio, possibly due to the continuous expansion of the BDMS group; therefore, the need of external funding. We expect that the company will not use any external funding and the total debt to equity ratio will continue to decline steadily.

**(4) The constant of ROIC, ROE and ROA:** (Figure 23) ROIC, ROE and ROA of BDMS has been constant average of 9.79% 16.42% and 8.4%, respectively (2014-2017) but ROE and ROA exclude profit from sale of investment decreased to 13.3% and 6.88% in 2017 because profit is shrinking and the asset are rapidly expanding at 13.6% (YoY 2016-2017). BH compared with the BDMS, ROIC, ROE and ROA of BH were higher than BDMS (BH ratio 18.59% 27% and 16.65% respectively 2014-2017), but compared to SETHEALTH ,BDMS ratio is slightly better. (Appendix B.4.2.) We expected ROIC ROE and ROA will increase to 12.0% 14.79% and 9.75% in 2020F from continuing growth of revenue and slowdown investment.

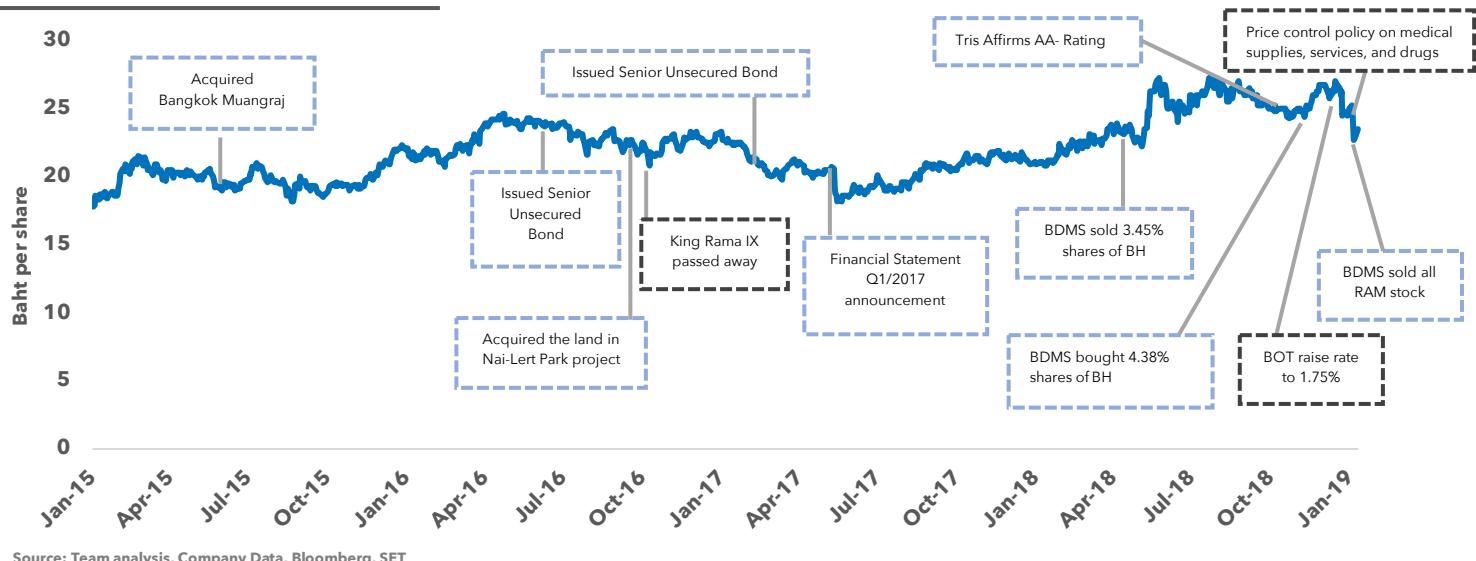
**(5) Effected from bond to EPS conversion:** In 2014 BDMS has issued convertible bonds in amount of 10,000 million baht. In Q3 / 2018 outstanding convertible bond was 4,764 million baht. In the future if all rights are exercised, this will increase a number of shares from 15,665 to 15,862 million shares. As a result, EPS will be 0.75 in 2019F.

	2015	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
<u>Revenue (THB mm)</u>									
Hospital revenue									
Growth	10.34%	7.93%	5.79%	7.76%	8.64%	7.98%	7.57%	6.06%	5.15%
Non-Hospital revenue	2,595	2,667	2,810	4,197	4,998	5,584	6,044	6,451	6,887
Growth	41.56%	2.75%	5.21%	49.38%	19.09%	11.72%	8.24%	6.72%	6.76%
<u>SOLVENCY</u>									
Depreciation	4,181.03	4,573.00	4,904.00	5,100.16	6,237.20	6,469.60	6,719.69	7,038.10	7,429.09
CAPEX	5,979.20	9,668.58	15,311.75	4,928.00	4,295.80	4,647.94	5,001.79	6,368.31	7,819.73
Long term debt /equity									
Total debt/Equity									
<u>LIQUIDITY</u>									
Long term debt/Equi	0.49x	0.44x	0.57x	0.34x	0.24x	0.17x	0.13x	0.07x	0.04x
Debt/Equity	0.55x	0.55x	0.60x	0.48x	0.32x	0.23x	0.17x	0.13x	0.07x
Debt ratio	0.29x	0.30x	0.32x	0.28x	0.20x	0.16x	0.12x	0.09x	0.06x
<u>EFFICIENCY</u>									
Current ratio	0.96x	0.70x	1.07x	0.82x	1.42x	1.54x	1.87x	1.92x	2.27x
Quick ratio	0.85x	0.62x	0.94x	0.75x	1.33x	1.44x	1.76x	1.82x	2.16x
<u>PROFITABILITY</u>									
TA turnover	0.64x	0.65x	0.63x	0.63x	0.66x	0.70x	0.74x	0.76x	0.77x
FA turnover	0.74x	0.74x	0.71x	0.72x	0.81x	0.91x	1.00x	1.07x	1.13x
Gross margin	35.54%	33.32%	33.31%	34.15%	35.00%	35.00%	35.50%	35.50%	36.00%
Operating margin	15.75%	14.60%	14.39%	15.75%	17.04%	17.04%	17.54%	17.54%	18.04%
EBITDA margin	22.30%	21.34%	21.20%	22.24%	24.30%	24.00%	24.26%	24.17%	24.69%
Net margin	13.03%	12.89%	14.68%	13.07%	13.76%	13.85%	14.42%	14.45%	15.05%
ROE	15.65%	15.32%	17.01%	14.61%	14.89%	14.79%	15.37%	15.14%	15.37%
ROA	8.41%	8.38%	9.20%	8.18%	9.07%	9.75%	10.74%	11.02%	11.64%
ROIC	9.92%	9.49%	10.17%	9.63%	11.41%	12.00%	12.93%	13.30%	13.87%

\*Exclude sale of investment in 2019 (Including sale of investment in 2019, net margin = 20.75% ROE = 22.45% ROA = 13.67% ROIC = 17.12%)

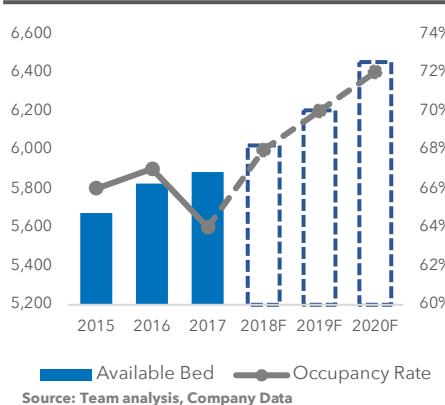
**Figure 21: Margin****Figure 22: Solvency****Figure 23: ROIC, ROE and ROA**

**Figure 24: BDMS's share price and key event**

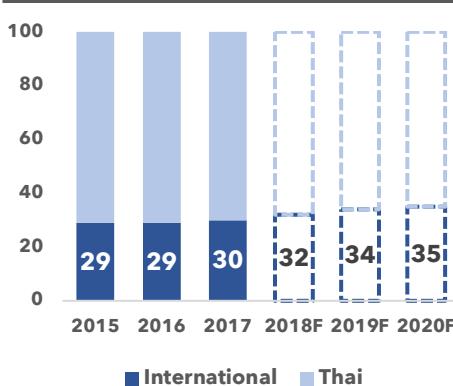


Source: Team analysis, Company Data, Bloomberg, SET

**Figure 25: Bed Occupancy Rate**



**Figure 26: Patients Proportion**



## Share Price and Events

### Investment Summary

After implementing the expansion strategy, BDMS obtained all strategic locations, strong hospital network and the solid economy of scale and bargaining power. Along with the lacking of acquisition opportunities due to the shortage of suitable locations and medical staffs, BDMS is now focusing on efficiency optimization with 2 objectives: 1) Increasing bed utilization (Figure 25) that provide more incomes at the same level of fixed cost and 2) Expanding customer base especially the foreign patient (Figure 26) which has higher expenses. Moreover, multinational customer helps BDMS diversify their source of income.

**(1) Business Opportunities:** With the world's aging society megatrend, BDMS will gain more oversea customers via Thailand's medical hub policy. Their high-quality medical services are provided at relatively low price in one of the most admired tourist destinations. Domestic factors like urbanization, increase in purchasing power and popularity of health insurance are shifting customer from public to private hospitals. All factors will encourage the demand for medical needs and also will raise the private hospitals' revenues.

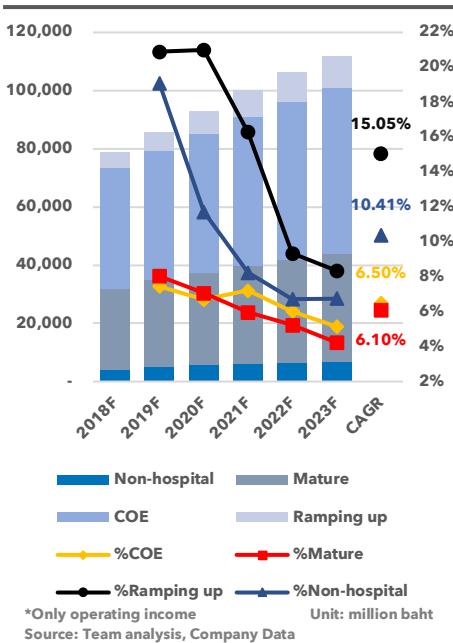
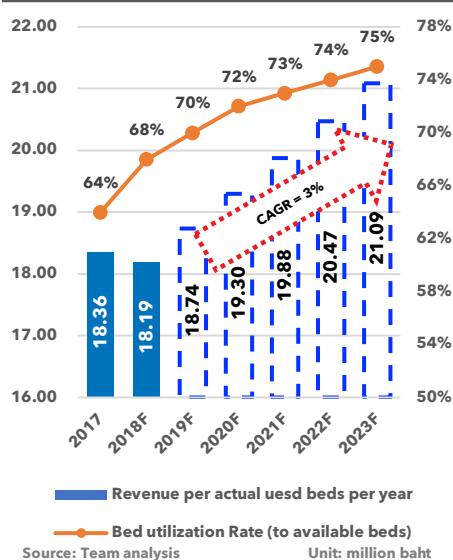
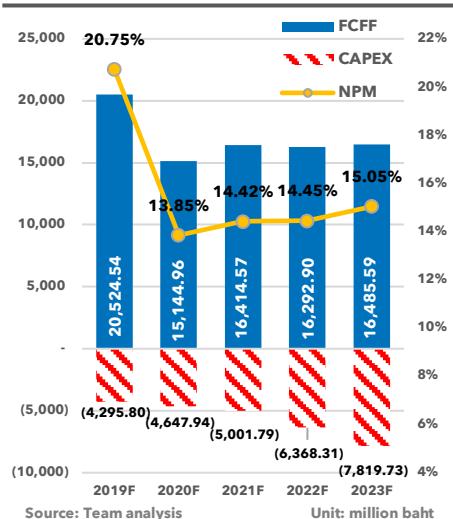
**(2) Revenue:** 10 centers of excellence are created to response their objectives. This group of hospital provides super tertiary cares that generate higher income for the firm in all strategic locations across Thailand. While continuum of healthcare expands BDMS's customer base by offering preventive and rehabilitative care. BDMS is ready for upcoming opportunities from both domestic and overseas. However, BDMS's revenue is still forecasted in a conservative way with only 7.26% CAGR from FY2019 to FY2023.

**(3) Cost:** Advantages of large and strong hospital network are used to implement the cost control plans. Their economy of scale supports centralized procurement with full power of bargaining as well as Hub & Spoke model that enhances resource sharing among their network. In addition, the growth of their non-hospital business supports supply chain control. Although the company has remarkable cost control by implementing various plans, we estimate that the company is able to reduce costs in a small figure because of the size and their growth over the next 5 years. So, BDMS is forecasted to increase EBITDA margin from 22.24% in 2018 to maintain the level 24.69% during FY2021 to FY2023.

**(4) Risk to concern:** Recently, the consideration of medicine and medical service as controlled product and service is the significant issue to watch closely. The consequence of this risk is still unclear but price control is expected. We take this factor in our scenario analysis.

## Valuation

BDMS's 1-year target price is 27.00 baht. Our valuation is based on 2 models, 75% of DCF model and 25% of Price/Earning multiplier model. First, DFCF model, BDMS's revenue is from 2 main groups (7.26% CAGR for the next 5 year, 8.26% CARG for the last 3 years and 5.95% growth for last year), hospital business (46 hospitals, 30 companies) and non-hospital business (>30 companies). We have concerns about the difference between 2 groups; therefore, we forecast the revenue of each subsidiary companies separately. By this method, the calculation for revenue forecast of the whole BDMS group will be more accurate. We

**Figure 27: Revenue Forecasting****Figure 28: Bed utilization rate (%) VS Revenue per used beds per year****Figure 29: FCFF vs CAPEX vs NPM**

mainly focus on hospital businesses, that we forecast BDMS's revenue through 2 base-case methods (**Main method** and **Alternative method**). Alternative method is used as a robustness check, so we can assure that our valuation is not overfit. Second, due to the diversity of BDMS's group of hospital, we build Bottom-up P/E ratio specifically for our Price to Earning multiplier models.

### Revenue from hospital companies

Currently, BDMS has 46 operating hospitals and will open 2 more in FY2019-FY2020. According to the distinction of age and state of hospitals, location, service performance of hospitals and target customers, the revenue growth of each hospital is different (Figure 27). We separate 46 hospitals into 3 sub-group (Appendix B.5.1.), CoE group, Mature state group and Ramping up state group. Fair price from **main method** is **27.09** baht. (appendix: B.5.8.)

**(1) Center of Excellent:** 10 Hub hospitals, CoE hospitals (51% of total operating revenue in 3Q2018F, expect to grow 6.50% CAGR for the next 5 year, Last 3 years was grow 6.21% CAGR), are located in strategic areas of Thailand, along with advanced equipment's and a plenty of specialist doctors and nurses who capable to treat various of complicated diseases. CoE hospitals can charge a higher price from complex treatment than other hospitals and also higher annual price adjustment (more than 3% increase in price yearly). Other reason that push the growth of CoE hospitals are foreign patients (around 50% of CoE patients are foreigners) which benefit from the rising number of medical tourisms.

**(2) Mature state hospitals:** Half of operating hospitals in BDMS group are in mature state (35.08% of total operating revenue in 2018F). Growth rate of this group is not very noticeably high (6.10% CAGR for the next 5 years), but rather stable. Annual price adjustment (around 3% per year), increase in insurance proportion (22% in FY2015 to 29% in 9M2018F) and increasing of bed utilization will be the main growth drivers.

**(3) Ramping up Hospitals:** Currently, BDMS have 15 hospitals (appendix: B.5.3.) which are in the early state (6.84% of total operating revenue in 2018F and grow to 9.71% of total revenue in 2023F). In this sub-group, the revenue will grow aggressively 15.05% CAGR for the next 5 year. Our criteria to separate between early state and mature state is age of hospital. Less than 5-year old hospital will be classified in ramping up group. This estimation is a static model. So, there is no changing in number of hospitals in this group even its reach the mature state.

### Alternative method to forecast revenue from hospital companies

**As a robustness check of top-line revenue:** Bed utilization rate and medical inflation rate are 2 main factors that affect company revenue. Healthcare demand are growing faster than supply due to aging society, higher income per household, increasing insurance and increasing insurance premium. For all reasons, bed utilization rate is expected to grow (68% in 2018F to 75% in 2023F). Healthcare expenditure to Thailand's GDP (3.8% reported by WHO) is considerably low, compare to world's average (nearly 10% reported by WHO). There is a high potential to grow. World medical inflation is showing an upside trend. World average is expected to be 8.4% (2018F) and Thailand is expected to be 8.5% (2018F) reported by AON. Annual price adjustment for BDMS's group is expected to be 3% (guidance from company), from 18.19 THBmm/bed/year in 2018F to 21.09 THBmm/bed/year in 2023F. Fair price from **Alternative Method** is **26.79** baht. (Figure 28, appendix B.5.3., appendix B.5.9.)

### Revenue from non-hospital

BDMS is not just an empire of hospitals anymore. Since 2017, BDMS opened BDMS Wellness Center which emphasize preventive care and regenerative process (2023F 13.5% of non-hospital revenue). At the second half of FY2018, BDMS opened CHIVA transition care at HQ branch. This new facility provides rehabilitation services to patients who want special care after treatment and enhance capacity of HQ by transferring IPD patients to CHIVA. 3Q2018, BDMS has announce a partnership with MOVENPICK who will manage BDMS wellness resort (2023F 5.1% of non-hospital revenue). MEDICPHAMA, after factory expansion in 2016 (2018F 16.2% of non-hospital revenue), has been increasing its production capacity 3 times. Its revenue growth is predicted around 7.18% CAGR for the next 5 year. The highest non-hospital revenue proportion come from A.N.B. Laboratories (2018F 31% of non-hospital revenue), 5.0% CAGR in the next 5 year. SAVE DRUG will be the growth leader in this group, due to branch expansion. The growth is expected to be 10% CARG for the next 5 year. (Appendix B.5.2.)

**Figure 30: Cost of Capital**

WACC Calculation	
10Y Thailand Government Bond	2.49%
Beta	0.703
Expected Market Return	10.31%
Cost of Equity	7.99%
Cost of Debt After Tax	2.76%
Taxes Rate	20.00%
Financial-debt to Assets	27.68%
<b>WACC</b>	<b>6.27%</b>

Source: Team analysis

**Figure 31: Valuation Methods**

Valuation method	Price	Weighted
DCF-Main Method	27.09	75%
DCF-Alternative Method	26.79	
DDM	14.60	
P/E	26.36	25%
EV/EBITDA	32.25	
<b>Target price</b>	<b>26.91</b>	

Source: Team analysis

**Figure 32: Relative Valuation**

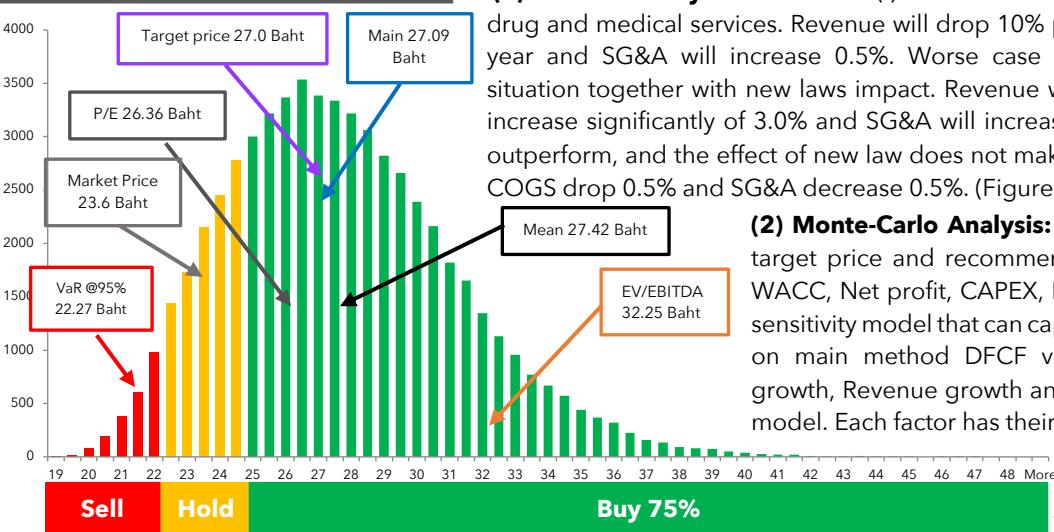
Bottom-up	P/E	EV/EBITDA
Hospital Group		
Top - class	29.09	20.46
Middle - class	38.00	19.50
Local - class	27.85	13.77
Non-Hospital Group	37.77	23.11
Raw Value of BDMS	32.23	20.36
Adjusted Factor	9.80%	20.34%
<b>Final value for BDMS</b>	<b>35.38</b>	<b>24.50</b>
Valuation		
#Shares	15,862.15	15,862.15
Earning 19F	11,818.47	-
EBITDA 19F	-	20,880.11
<b>Price per Shares</b>	<b>26.36</b>	<b>32.25</b>

Source: Team analysis

**Figure 33: Scenario Analysis**

Scenario Analysis	Target Price
DCF-Best Case	29.53
DCF-Base Case	27.09
DCF-Worse Case I	24.07
DCF-Worse Case II	21.95

Source: Team analysis

**Figure 34: Monte-Carlo**

Source: Team analysis

## Key Highlights

**(1) Securely margins:** (Figure 29) More than 12% of net profit margin together with 21% of EBITDA margin over 7-year period, a better ratio in the long run is expected to be seen. Due to Hub and Spoke Model (benefit from resources sharing, equipment and staffs, between hub hospitals and spoke hospitals), we believe COGS will drop over 1.3% in 2023F as same as SG&A but a bit less with 0.5% of drop in 2023F. Thus, at least 13.5% of net profit margin and 23.5% of EBITDA margin in 2023F are extrapolated. (appendix: A.1.4.)

**(2) CAPEX for sustainability growth:** (Figure 29) The new investment is expected to meet the future plan of 50 operating hospitals. With the guidance from the company, CAPEX as 5.0% of total operating revenue in the first 3 year (2019F-2021F) and then increase 1% yearly to be 7% in 2023F are predicted. Mainly focus on improvement of medical equipment, information system and new project expansion. (appendix: B.5.7.)

**(3) Effective WACC:** (Figure 30) Calculation reviews **6.27%** of WACC (appendix B.5.4.). Cost of Equity ( $K_e$ ) is based on CAPM model as 7.99%. 10-year government bond, yielding 2.49%, is used as risk free rate ( $R_f$ ). Data from SET TRI and Bloomberg indicates 10.31% of expected market return ( $R_m$ ). We build bottom-up BETA (appendix B.5.6) and then average our calculation with a BETA from SET and Bloomberg, the final BETA is 0.703x. The cost of debt ( $k_d$ ) is estimated by total interest payment in FY2017 divided by total debt in FY2017. However, we adjust by considering to convertible bond and maturity of every liabilities (appendix B.5.5.). The  $k_d$  after tax is 2.76% and tax rate is 20%.

**(4) Terminal growth rate:** Sustainable growth rate ( $g$ ) for BDMS is **3%** based on long term world GDP growth rate. We believe that this rate also reflects medical inflation and assets annual price adjustment, which BDMS hold numerous lands.

**(5) High cash holding level:** From our calculation, it was found that the company would hold abundant cash in 2021F-2023F. We therefore recommend using excess cash, such as buy back shares, increase dividend payout ratio or investment on project that generate return more than risk-free rate. (Appendix: A.1.1.)

**(6) Other DCF model:** Although, dividend payout ratio is constant but in the past company had to keep cash for big investment. Dividend payout ratio is expected to get higher in the future, thus for now DDM is not reflect future fair price. (see appendix: B.5.10.)

## Relative Valuation (Figure 32)

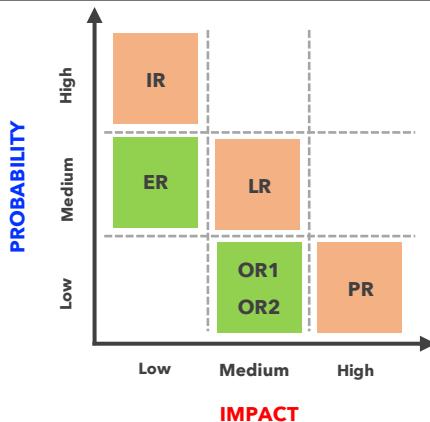
**(1) Price to Earning Multiplier:** All BDMS's hospitals can be divided into 3 large groups, which have their own competitors. The calculation of P/E should be separated according to the diversity of sub-groups to get the most appropriate numbers. We therefore use the bottom-up P/E method to calculate (see appendix: B.5.11.). The raw P/E value equal to 32.23x, but from the past P/E of BDMS is about 9.8% higher than the average. The final value of P/E ratio is 35.38x, which gives the target price as 26.26 baht on earning of 2019F.

**(2) Enterprise value to EBITDA multiplier:** We calculate EV/EBITDA in the same way as P/E ratio due to the diversity. Raw EV/EBITDA is 20.36x and final EV/EBITDA is 24.50x, which gives the target price as 32.25 baht (EBITDA of 2019F). (see appendix: B.5.12.)

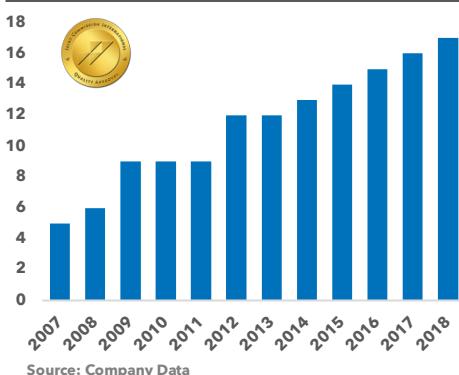
## Risk to target price

**(1) Scenario Analysis:** Worse case (I) is concerned only about new laws, of price controls on drug and medical services. Revenue will drop 10% per year, COGS will increase 1.0% each year and SG&A will increase 0.5%. Worse case (II) presents extreme underperformed situation together with new laws impact. Revenue will drop over 15% per year, COGS will increase significantly of 3.0% and SG&A will increase 1.0%. In the best case, company will outperform, and the effect of new law does not make an impact. Revenue rise 5% per year, COGS drop 0.5% and SG&A decrease 0.5%. (Figure 33, appendix: B.5.13.)

**(2) Monte-Carlo Analysis:** There are many factors that can affect target price and recommendation such as terminal growth, Beta, WACC, Net profit, CAPEX, Depreciation and etc. We try to make a sensitivity model that can capture volatility as much as possible. Base on main method DFCF valuation, we choose WACC, terminal growth, Revenue growth and %COGS as variables in our sensitivity model. Each factor has their own descriptive statistic, distribution, mean and standard deviation. We make a simulation of 60,000 times to be sure that the result is unbiased. 27.42 baht is

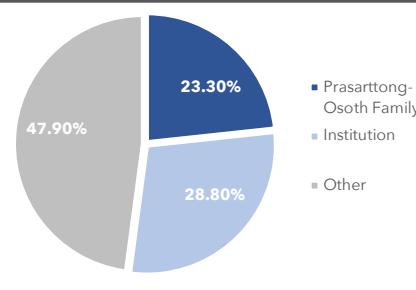
**Figure 35: Risk Metrics**

Source: Team analysis, Company Data

**Figure 36: JCI Accreditation****Figure 37: Risk Mitigation**

Risk	Mitigation
Economy risk (ER)	Multinational customer base
Political risk (PR)	Diversify of income source
Interest rate risk (IR)	Interest rate swap
Human resource risk (OR1)	Retain and recruit plans
Medical standard risk (OR2)	International cooperations and HA and JCI accredited
Legal risk (LR)	Diversify of income source

Source: Team analysis, Company Data

**Figure 38: Ownership structure**

Source: Company Data

presented as a mean of the model which is higher than our target price (Figure 34). We have 95% confidence level that the price will not drop below 22.27 baht. (appendix: B.5.14.)

## Investment Risk (Figure 35, 37)

**(1) Economy Risk (ER); Medium Probability Low Impact:** Healthcare business is insensitive to the economy due to their high switching costs. However, some economic downturn may affect BDMS's revenue via the lower numbers of foreign patients. As seen in the past, when Arab's economy was in recession due to the falling of oil price, revenue from Middle East patients dropped relatively. International patients as a main target group, Chinese economy is a must to keep an eye on. Their economic slowdown will affect both BDMS and Ping-An collaboration in healthcare tourism strategy.

**(2) Political Risk (PR); Low Probability High Impact:** Political instability risks two key drivers of BDMS. Since Thailand is expecting an election in Feb 2019, the result will make an impact on the economy in terms of the investment and tourist confidence of foreigners as well as the policy that was established by the former government. EEC and medical hub projects may be postponed or cancelled. All will consequently affect the revenue from foreign patients.

**(3) Interest rate risk (IR); High Probability Low Impact:** Since the inorganic growth is one of their major business strategies, upward interest rate trend is expected to affect BDMS in term of higher financing costs for their future acquisition and vertical business projects.

### (4) Operational Risk

**4.1. Human resource risk (OR1); Low Probability Medium Impact:** Despite BDMS has an appropriate plan to recruit and retain their staffs, lacking medical staff is always recognized as a very significant issue of this industry. The performance of the hospital is mostly dependent on knowledge and experiences of its medical staffs. This issue involves both business expansion and cost control.

**4.2. Medical standard risk (OR2); Low Probability Medium Impact:** It is mandatory for BDMS to fulfil the service quality (Figure 36). Because this is exposed to litigations on treatment error. Although BDMS win legal cases and no compensations have been paid to the prosecutors, still, the negative impacts on firm's image may fail the business goals.

**(5) Legal Risk (LR); Medium Probability Medium Impact:** Since BDMS activities are subject to governmental healthcare policies, all newly enacted laws are likely to affect the business. For example, the latest consideration of making medicine and medical treatment on the list of controlled goods and services will depress BDMS's revenue. Besides, the Universal Coverage for Emergency Patients (UCEP) which grants the right for trauma patient to emergency care without payment within 72 hours or until off the crisis will raise the fee receiving risk.

## Corporate Governance and Social Responsibility

### Corporate Governance

**(1) CG-Score:** BDMS was rated as a very good CG firm (4 out of 5 in CG scores) by Thai institute of directors Association (Thai IOD) for 4 consecutive years. We value this as relatively high compared to industry peers in Thailand.

**(2) Ownership Structure:** (Figure 38) As in 2018, BDMS has 15,665.63 million shares outstanding with 53.48% as free float. Without any preference shares, the company has only one class of shares that equally in voting rights. The biggest shareholder of BDMS is the eighth-wealthiest Thai billionaire and their CEO, Prasert Prasarttong-Osoth, holding a stake of 18.47% (23.3% in total of Prasarttong-Osoth family).

**(3) Board of Directors:** There is a separation between Chairman and CEO. 6 of 14 board members, including the chairman are independent (43%).

### Corporate Social Responsibility

The group's focus is on both CSR in-process and CSR after-process. The CSR in-process is to ensure that BDMS's clients receive are good standard medical service and safety. This will help sustain the growth of business and benefit to all stakeholders as well. While CSR after-process is about giving back to society, mostly by providing medical needs in all sorts such as co-founding with the local administration to build the eye hospital in Myanmar, providing medical information to the public through their websites, magazine and TV shows and organizing the First-aid and CPR training for rescue foundation nationwide.

## Appendix A.1.1 Balance Sheet

<b>Unit: THBmm</b>	<b>2017</b>	<b>2018F</b>	<b>2019F</b>	<b>2020F</b>	<b>2021F</b>	<b>2022F</b>	<b>2023F</b>
<b>Assets</b>							
Cash - pliug	5,091	8,927	19,166	20,571	25,563	31,254	34,896
ST investment	572	568	568	568	568	568	568
A/R	6,975	7,510	7,398	7,962	8,522	8,994	9,416
Inv	1,735	1,637	1,794	1,974	2,145	2,315	2,461
Other current assets	21	13	13	13	13	13	13
<b>&gt;Total current assets</b>	<b>14,394</b>	<b>18,655</b>	<b>28,939</b>	<b>31,088</b>	<b>36,811</b>	<b>43,145</b>	<b>47,355</b>
Long term investment in associates	15,807	16,429	11,090	11,090	11,090	11,090	11,090
Other long term investment	646	549	549	549	549	549	549
Investment properties	308	311	311	311	311	311	311
Net PPE	71,559	72,620	70,678	68,857	67,139	66,469	66,860
goodwill	17,539	17,539	17,539	17,539	17,539	17,539	17,539
Intangibla assets	1,237	1,233	1,306	1,384	1,466	1,553	1,646
Deferred tax assets	68	78	78	78	78	78	78
Other non current assets	1,068	1,401	1,401	1,401	1,401	1,401	1,401
<b>&gt;Total non current assets</b>	<b>108,233</b>	<b>110,160</b>	<b>102,953</b>	<b>101,209</b>	<b>99,574</b>	<b>98,991</b>	<b>99,474</b>
<b>&gt;&gt;Total assets</b>	<b>122,627</b>	<b>128,816</b>	<b>131,893</b>	<b>132,297</b>	<b>136,385</b>	<b>142,136</b>	<b>146,830</b>
<b>Liabilities &amp; Shareholder's Equity</b>							
O/D and ST loan	139	1,644	682	682	682	682	682
<b>&gt;Institution</b>	<b>72</b>	<b>1,577</b>	<b>615</b>	<b>615</b>	<b>615</b>	<b>615</b>	<b>615</b>
<b>&gt;Non-related parties</b>	<b>67</b>						
LT Debt within 1 year	1,463	3,185	506	4,636	-	-	1,000
Debentures within 1 year		-	5,000	-	3,100	5,000	1,500
Total A/P	10,679	11,265	12,713	13,354	14,407	15,287	16,132
<b>&gt;Trade A/P</b>	<b>4,750</b>	<b>3,541</b>	<b>3,866</b>	<b>4,183</b>	<b>4,502</b>	<b>4,776</b>	<b>5,027</b>
<b>&gt;Accrued expense</b>	<b>5,223</b>	<b>7,081</b>	<b>7,732</b>	<b>8,366</b>	<b>9,003</b>	<b>9,552</b>	<b>10,054</b>
<b>&gt;Income tax payable</b>	<b>706</b>	<b>643</b>	<b>1,114</b>	<b>805</b>	<b>902</b>	<b>959</b>	<b>1,051</b>
Convertible bonds		5,086					
Laiabilities of life long medical care program	440	438	438	438	438	438	438
Deferred income from membership due in 1 year	224	227	227	227	227	227	227
Other current liabilities	472	840	840	840	840	840	840
<b>&gt;Total current liabilities</b>	<b>13,417</b>	<b>22,686</b>	<b>20,406</b>	<b>20,178</b>	<b>19,694</b>	<b>22,475</b>	<b>20,819</b>
Debentures	19,585	19,600	14,600	14,600	11,500	6,500	5,000
Long term Loan	9,335	6,142	5,636	1,000	1,000	1,000	-
Convertible bonds	8,774						
Non-current provision for employee	2,006	2,192	2,258	2,326	2,395	2,467	2,541
Deferred incom - membership	632	611	611	611	611	611	611
Deferred tax liabilities	2,847	2,493	4,378	3,141	3,529	3,757	4,125
Other long term liabilities	159	162	162	162	162	162	162
<b>&gt;Total long term liabilities</b>	<b>43,338</b>	<b>31,201</b>	<b>27,645</b>	<b>21,840</b>	<b>19,197</b>	<b>14,497</b>	<b>12,439</b>
<b>&gt;&gt;Total Liabilities</b>	<b>56,756</b>	<b>53,887</b>	<b>48,051</b>	<b>42,017</b>	<b>38,891</b>	<b>36,972</b>	<b>33,258</b>
Share holder	19,744	23,850	23,850	23,850	23,850	23,850	23,850
Total Retain earning	34,490	39,634	48,546	54,985	62,199	69,869	78,276
<b>&gt;Retian earning in year</b>		5,143	8,913	6,438	7,214	7,670	8,407
Other components of Shareholder	8,837	8,485	8,485	8,485	8,485	8,485	8,485
Minority interest	2,800	2,960	2,960	2,960	2,960	2,960	2,960
<b>&gt;&gt;Total Equity</b>	<b>65,871</b>	<b>74,929</b>	<b>83,842</b>	<b>90,280</b>	<b>97,494</b>	<b>105,164</b>	<b>113,571</b>
<b>&gt;&gt;&gt;Total Liabilities &amp; Equity</b>	<b>122,627</b>	<b>128,816</b>	<b>131,893</b>	<b>132,297</b>	<b>136,385</b>	<b>142,136</b>	<b>146,830</b>

### Appendix A.1.2 Income Statement

	2015	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
<b>Revenue</b>	<b>63,841.58</b>	<b>67,903.50</b>	<b>71,932.50</b>	<b>78,682.87</b>	<b>85,916.00</b>	<b>92,958.84</b>	<b>100,035.79</b>	<b>106,138.48</b>	<b>111,710.47</b>
>>Hospital				74,485.92	80,917.83	87,374.85	93,991.53	99,687.92	104,823.67
>>Non-hospital				4,196.95	4,998.17	5,583.99	6,044.27	6,450.56	6,886.80
%Revenue	100%	100%	100%	100%	100%	100%	100%	100%	100%
Growth	6.36%	5.93%	5.93%	9.38%	9.19%	8.20%	7.61%	6.10%	5.25%
<b>COGS</b>	<b>41,151.35</b>	<b>45,276.81</b>	<b>47,975.23</b>	<b>51,813.24</b>	<b>55,845.40</b>	<b>60,423.25</b>	<b>64,523.09</b>	<b>68,459.32</b>	<b>71,494.70</b>
%COGS	64.46%	66.68%	66.69%	65.85%	65.00%	65.00%	64.50%	64.50%	64.00%
Growth	10.03%	5.96%	8.00%	7.78%	8.20%	6.79%	6.10%	4.43%	
<b>Gross profit</b>	<b>22,690.24</b>	<b>22,626.69</b>	<b>23,957.27</b>	<b>26,869.63</b>	<b>30,070.60</b>	<b>32,535.60</b>	<b>35,512.71</b>	<b>37,679.16</b>	<b>40,215.77</b>
Gross profit margin	35.54%	33.32%	33.31%	34.15%	35.00%	35.00%	35.50%	35.50%	36.00%
<b>Other operating income</b>	<b>940.46</b>	<b>839.56</b>	<b>820.88</b>	<b>896.34</b>	<b>969.82</b>	<b>1,043.65</b>	<b>1,107.32</b>	<b>1,165.45</b>	
%Other operating income	1.38%	1.17%	1.04%	1.04%	1.04%	1.04%	1.04%	1.04%	1.04%
<b>SG&amp;A</b>	<b>12,633.32</b>	<b>13,651.20</b>	<b>14,449.31</b>	<b>15,294.08</b>	<b>16,324.04</b>	<b>17,662.18</b>	<b>19,006.80</b>	<b>20,166.31</b>	<b>21,224.99</b>
%SG&A	19.79%	20.10%	20.09%	19.44%	19.00%	19.00%	19.00%	19.00%	19.00%
Growth	8.06%	5.85%	5.85%	6.73%	8.20%	7.61%	6.10%	5.25%	
<b>Operating income</b>	<b>10,056.91</b>	<b>9,915.94</b>	<b>10,347.52</b>	<b>12,396.43</b>	<b>14,642.90</b>	<b>15,843.24</b>	<b>17,549.56</b>	<b>18,620.17</b>	<b>20,156.23</b>
Operating income margin	15.75%	14.60%	14.39%	15.75%	17.04%	17.04%	17.54%	17.54%	18.04%
<b>Interest</b>	<b>1,088.57</b>	<b>828.79</b>	<b>1,483.69</b>	<b>1,053.94</b>	<b>908.44</b>	<b>817.03</b>	<b>616.54</b>	<b>579.41</b>	<b>308.14</b>
%Interest	1.71%	1.22%	2.06%	1.34%	1.06%	0.88%	0.62%	0.55%	0.28%
Growth	-23.86%	79.02%							
<b>Non-operating income</b>	<b>1,258.97</b>	<b>1,369.96</b>	<b>1,417.31</b>	<b>1,516.00</b>	<b>1,038.63</b>	<b>1,069.79</b>	<b>1,101.88</b>	<b>1,134.94</b>	<b>1,168.99</b>
%Non-operating income	1.97%	2.02%	1.97%	1.93%	1.21%	1.15%	1.10%	1.07%	1.05%
<b>Net profit before tax</b>	<b>10,227.31</b>	<b>10,457.11</b>	<b>10,281.14</b>	<b>12,858.50</b>	<b>14,773.09</b>	<b>16,095.99</b>	<b>18,034.91</b>	<b>19,175.70</b>	<b>21,017.08</b>
%NPBT	16.02%	15.40%	14.29%	16.34%	17.19%	17.32%	18.03%	18.07%	18.81%
<b>Abnormal return</b>	<b>- 15.24</b>	<b>215.68</b>	<b>2,841.51</b>		<b>7,508.68</b>				
%Abnormal return	0.32%	3.95%							
<b>Pretaxes income (adj)</b>	<b>10,212.07</b>	<b>10,672.79</b>	<b>13,122.65</b>	<b>12,858.50</b>	<b>22,281.77</b>	<b>16,095.99</b>	<b>18,034.91</b>	<b>19,175.70</b>	<b>21,017.08</b>
%Pretaxes income (adj)	16.00%	15.72%	18.24%	16.34%	25.93%	17.32%	18.03%	18.07%	18.81%
<b>Taxes</b>	<b>1,895.31</b>	<b>1,922.30</b>	<b>2,563.54</b>	<b>2,571.70</b>	<b>4,456.35</b>	<b>3,219.20</b>	<b>3,606.98</b>	<b>3,835.14</b>	<b>4,203.42</b>
%Taxes	2.97%	2.83%	3.56%	3.27%	5.19%	3.46%	3.61%	3.61%	3.76%
<b>Net income</b>	<b>8,316.77</b>	<b>8,750.49</b>	<b>10,559.11</b>	<b>10,286.80</b>	<b>17,825.42</b>	<b>12,876.79</b>	<b>14,427.92</b>	<b>15,340.56</b>	<b>16,813.67</b>
Net profit margin	13.03%	12.89%	14.68%	13.07%	20.75%	13.85%	14.42%	14.45%	15.05%
<b>Depreciation</b>	<b>4,181.03</b>	<b>4,573.00</b>	<b>4,904.00</b>	<b>5,100.16</b>	<b>6,237.20</b>	<b>6,469.60</b>	<b>6,719.69</b>	<b>7,038.10</b>	<b>7,429.09</b>
%Depreciation				4.23%	5.00%	5.00%	5.00%	5.00%	5.00%
Growth	9.37%	7.24%	4.00%	22.29%	3.73%	3.87%	4.74%	5.56%	
<b>CAPEX</b>	<b>5,979.20</b>	<b>9,668.58</b>	<b>15,311.75</b>	<b>4,928.00</b>	<b>4,295.80</b>	<b>4,647.94</b>	<b>5,001.79</b>	<b>6,368.31</b>	<b>7,819.73</b>
%CAPEX	9.37%	14.24%	21.29%		5.00%	5.00%	5.00%	6.00%	7.00%
<b>EBITDA</b>	<b>14,237.95</b>	<b>14,488.94</b>	<b>15,251.52</b>	<b>17,496.59</b>	<b>20,880.11</b>	<b>22,312.84</b>	<b>24,269.25</b>	<b>25,658.27</b>	<b>27,585.32</b>
EBITDA Margin	22.30%	21.34%	21.20%	22.24%	24.30%	24.00%	24.26%	24.17%	24.69%

### Appendix A.1.3. Cash Flow Statement

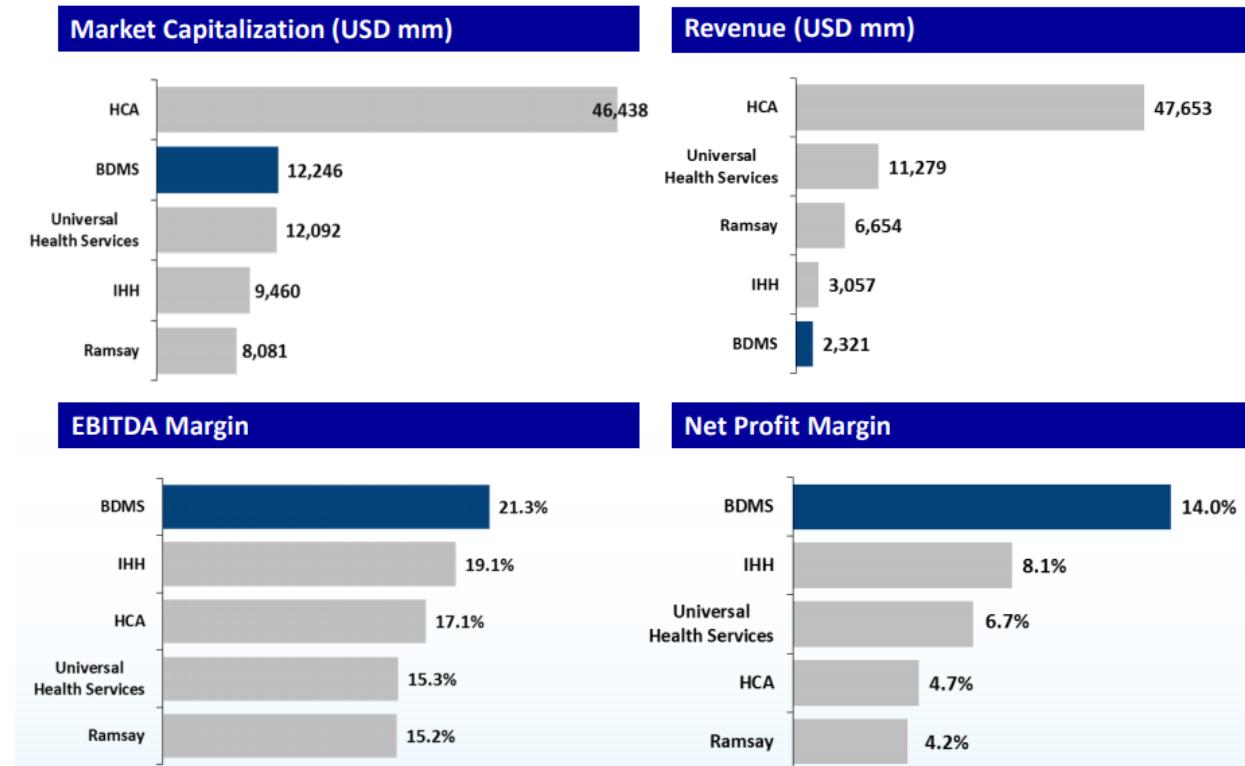
	2018F	2019F	2020F	2021F	2022F	2023F
<b>Cash Flow from Operating Activities</b>						
Net income	10,286.80	17,825.42	12,876.79	14,427.92	15,340.56	16,813.67
D&A	5,100.16	6,237.20	6,469.60	6,719.69	7,038.10	7,429.09
Change in working capital	8,842.65	(2,324.87)	(971.82)	(1,214.83)	2,138.03	(2,223.99)
Other						
<b>Total Cash Flow from Operating Activities</b>	<b>24,229.61</b>	<b>21,737.75</b>	<b>18,374.57</b>	<b>19,932.79</b>	<b>24,516.69</b>	<b>22,018.77</b>
<b>Cash Flow from Investing Activities</b>						
Capital expenditure	(6,160.48)	(4,295.80)	(4,647.94)	(5,001.79)	(6,368.31)	(7,819.73)
Investment in Associates	(524.91)	5,338.91	0.00	0.00	0.00	0.00
Others	(342.29)	(73.33)	(77.70)	(82.32)	(87.21)	(92.40)
<b>Total Cash Flow from Investing Activities</b>	<b>(7,027.68)</b>	<b>969.77</b>	<b>(4,725.64)</b>	<b>(5,084.11)</b>	<b>(6,455.52)</b>	<b>(7,912.13)</b>
<b>Cash Flow from Financing Activities</b>						
Dividend	(5,143.40)	(8,912.71)	(6,438.40)	(7,213.96)	(7,670.28)	(8,406.83)
LT debt repayment	(12,137.72)	(3,555.49)	(5,805.67)	(2,642.45)	(4,699.98)	(2,057.70)
other	3,914.48	0.00	0.00	0.00	0.00	0.00
<b>Total Cash Flow from Financing Activities</b>	<b>(13,366.65)</b>	<b>(12,468.20)</b>	<b>(12,244.07)</b>	<b>(9,856.41)</b>	<b>(12,370.26)</b>	<b>(10,464.54)</b>
Net cash in the year	3,835.29	10,239.33	1,404.86	4,992.27	5,690.91	3,642.10
Beginning cash	5,091.15	8,926.51	19,165.83	20,570.70	25,562.97	31,253.88
<b>Ending cash</b>	<b>8,926.44</b>	<b>19,165.83</b>	<b>20,570.70</b>	<b>25,562.97</b>	<b>31,253.88</b>	<b>34,895.98</b>

#### Appendix A.1.4. Financial Ratio

	2017	2018F	2019F	2020F	2021F	2022F	2023F
<b>Solvency</b>							
Long term debt /equity	0.57x	0.34x	0.24x	0.17x	0.13x	0.07x	0.04x
D/E ratio	0.60x	0.48x	0.32x	0.23x	0.17x	0.13x	0.07x
Debt ratio	0.32x	0.28x	0.20x	0.16x	0.12x	0.09x	0.06x
Interest coverage ratio	6.97x	11.76x	16.12x	19.39x	28.46x	32.14x	65.41x
<b>Liquidity</b>							
Current ratio	1.07x	0.82x	1.42x	1.54x	1.87x	1.92x	2.27x
Quick ratio	0.94x	0.75x	1.33x	1.44x	1.76x	1.82x	2.16x
<b>Efficiency</b>							
A/R turnover	10.90x	10.86x	11.53x	12.10x	12.14x	12.12x	12.14x
DSO (day)	33.48	33.60	31.67	30.15	30.07	30.12	30.08
Inventory turnover	29.51x	30.73x	32.55x	32.07x	31.33x	30.70x	29.93x
DIO (day)	12.37	11.88	11.21	11.38	11.65	11.89	12.19
TA turnover	0.63x	0.63x	0.66x	0.70x	0.74x	0.76x	0.77x
FA turnover	0.71x	0.72x	0.81x	0.91x	1.00x	1.07x	1.13x
<b>Profitability</b>							
Gross margin	33.31%	34.15%	35.00%	35.00%	35.50%	35.50%	36.00%
Operating margin	14.39%	15.75%	17.04%	17.04%	17.54%	17.54%	18.04%
Net margin	14.68%	13.07%	13.76%	13.85%	14.42%	14.45%	15.05%
ROE	17.01%	14.61%	14.89%	14.79%	15.37%	15.14%	15.37%
ROA	9.20%	8.18%	9.07%	9.75%	10.74%	11.02%	11.64%
ROIC	10.17%	9.63%	11.41%	12.00%	12.93%	13.30%	13.87%

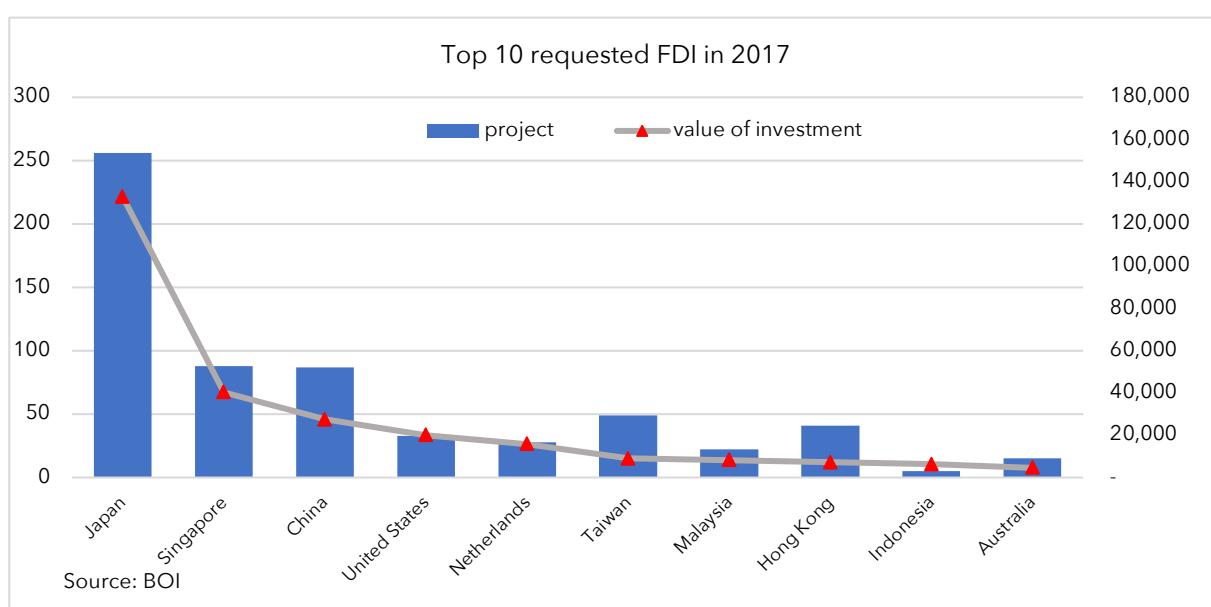
\*Exclude sale of investment in 2019 (Including sale of investment in 2019, net margin = 20.75% ROE = 22.45% ROA = 13.67% ROIC = 17.12%)

#### Appendix B.1.1 Global Hospital Rankings



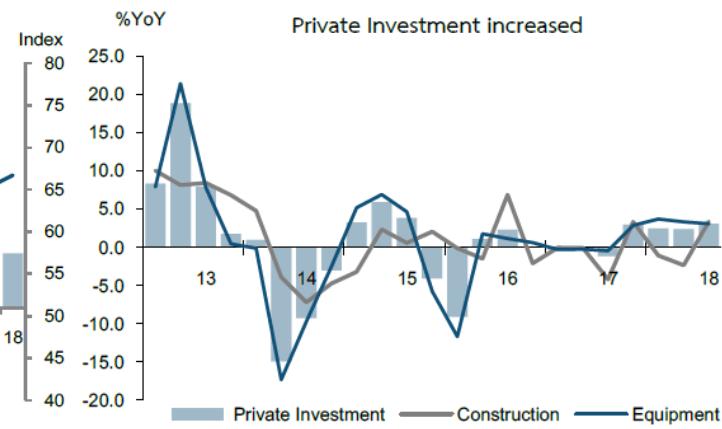
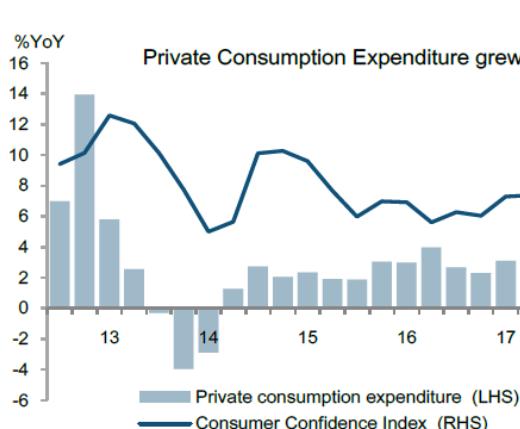
Source: Company Data

### Appendix B.2.1 Foreign Direct Investment



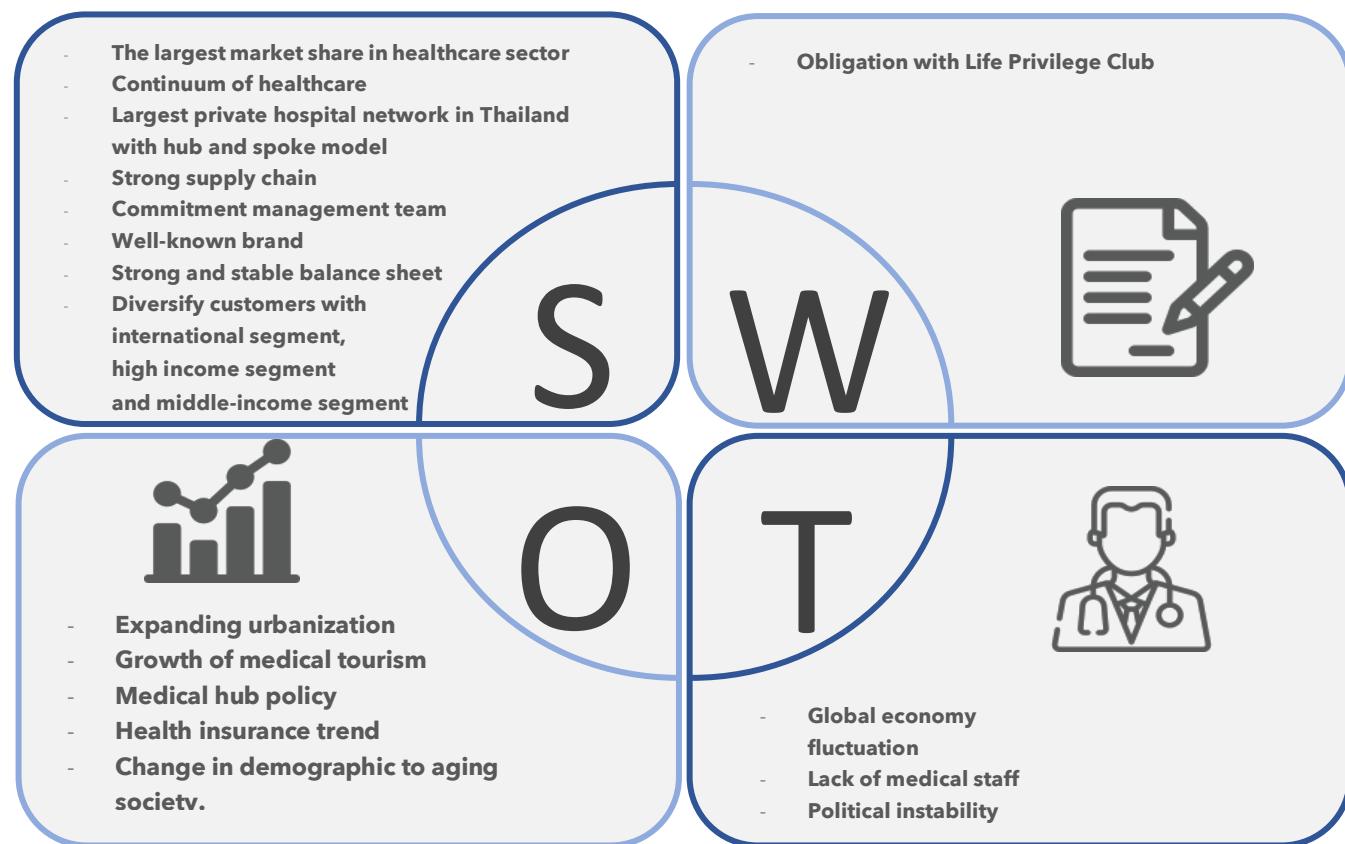
Projects that had been waiting for approval in 2017, are mostly in services and utilities. Japan had the highest proportion of requesting FDI (47%), Singapore (14%) and China (10%) respectively. There were 262 projects in EEC (Eastern Economic Corridor) and had more than 172,142 million Baht of investment value.

### Appendix B.2.2. Private consumption and investment grew in 1Q2018



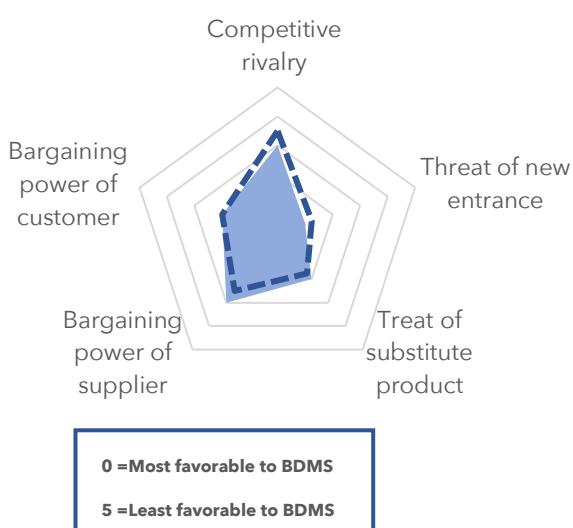
Source: NESDB, University of the Thai Chamber of Commerce

### Appendix B.2.3. SWOT Analysis



Source: Team Analysis

### Appendix B.2.4 Porter's Five Force Analysis



Source: Team Analysis

**Threat of new entrance:** Threat of new entrance in private healthcare industry is very low. Due to this business is in capital intensive industry and lack of medical staff. In addition, the legal, standard, reputation, and reliability in service quality are also importance for this sector. However, increasing of new entrance is still possible because of high demand.

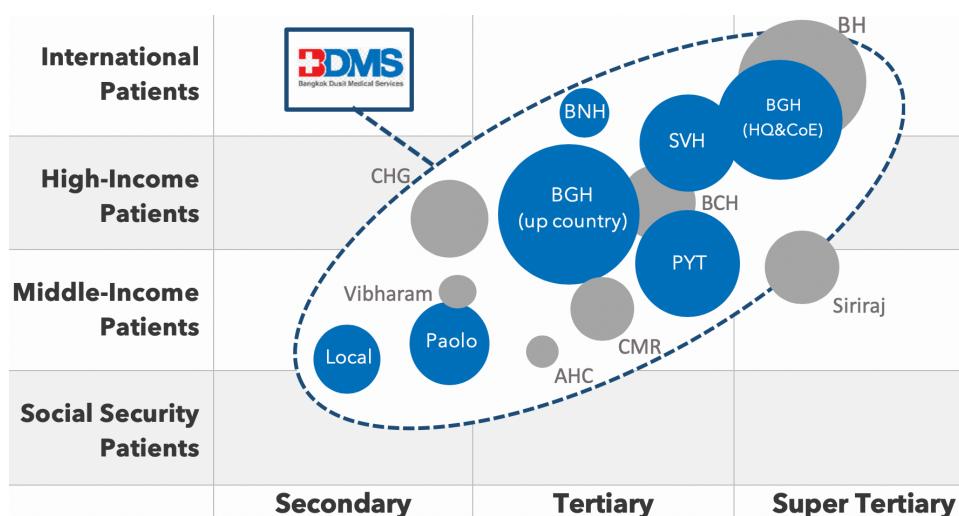
**Treat of substitute product and service:** Threat of substitute service is low. Special clinic of public hospital with lower price may be a substitute. But private hospitals have competitive advantage in convenience and time saving.

**Bargaining power of supplier:** Bargaining power of supplier is moderate. There are many medicine and medical suppliers in both domestic and international. In the future, BDMS's investment in pharmaceuticals will lower the bargaining power in medical suppliers. However, the bargaining of medical staff is always high.

**Bargaining power of customer:** Bargaining power of customer is low due to the trust in BDMS's brand and high switching cost. In addition, there are many potential customers with mid to high income that concerned on quality than price. This event will lower the bargaining power of customer for BDMS in the future.

**Competitive rivalry:** Rivalry is intense as a result of numbers of private hospitals that makes this industry highly competitive. From competitive positioning, it depicts

## Appendix B.2.5 Domestic Competitive Positioning

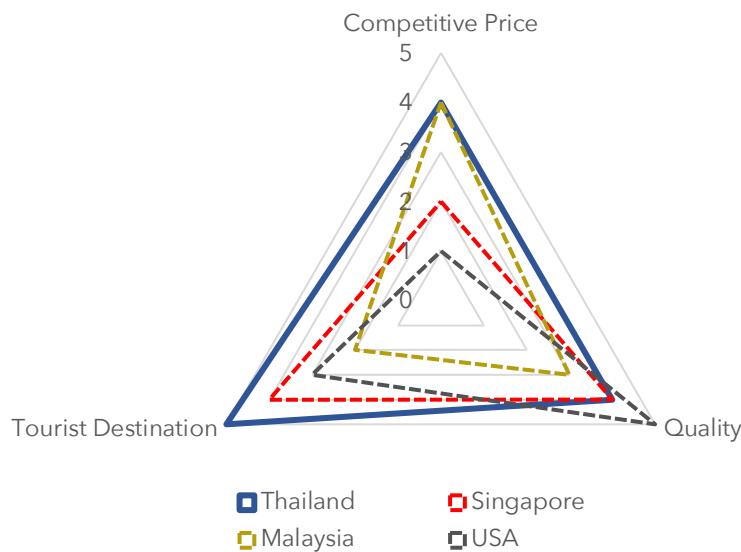


Size of circle shows revenue of hospital

	Revenue (mm)
BGH headquarter	77,136.78
Phayathai	13,188.5
Smitivej	11,933.48
Paolo	5,620.2
BNH	2,903.41
BGH Local	1,350.46
BH	18,530.13
SVH	11,036.57
BCH	7,362.04
VIBHA	6,432.21
RAM	4,628.82
CMR	3,822.31
Siriraj Piyamaharajkarun	3,314.26
AHC	1,584.01

Source: SET

## Appendix B.2.6 International Competitive Positioning



### Competitive Price

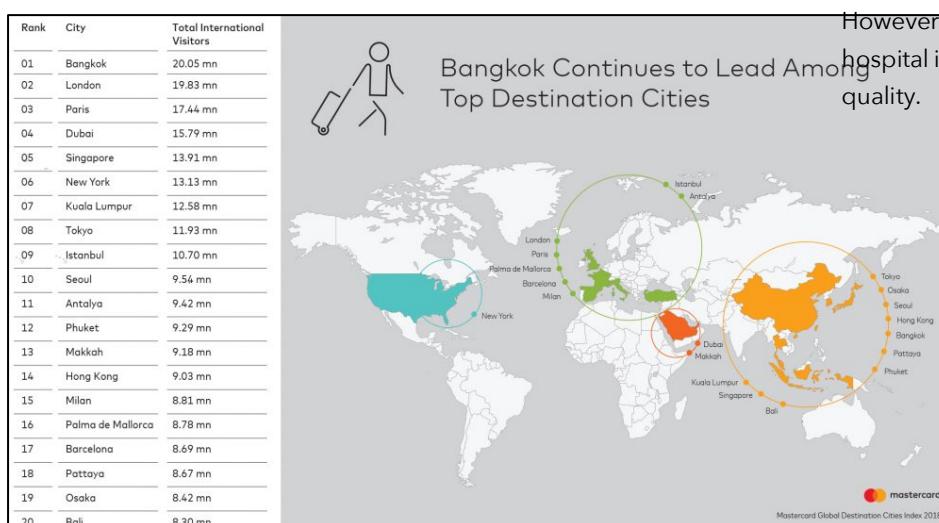
As shown in appendix: B.2.7., Medical expenditure of Thailand and Malaysia are relatively low compared to USA. While Singapore is the most expensive in South East Asia.

### Quality

Medical services quality is measured by using JCI accredited. Thailand, with 65 JCI hospitals, is the highest in the region followed by 22 hospital in Singapore and 13 in Malaysia as the best standard.

However, 22 JCI hospitals in Singapore and we evaluate this as a high

hospital in Thailand and we evaluate this as a high



### Tourism Destination

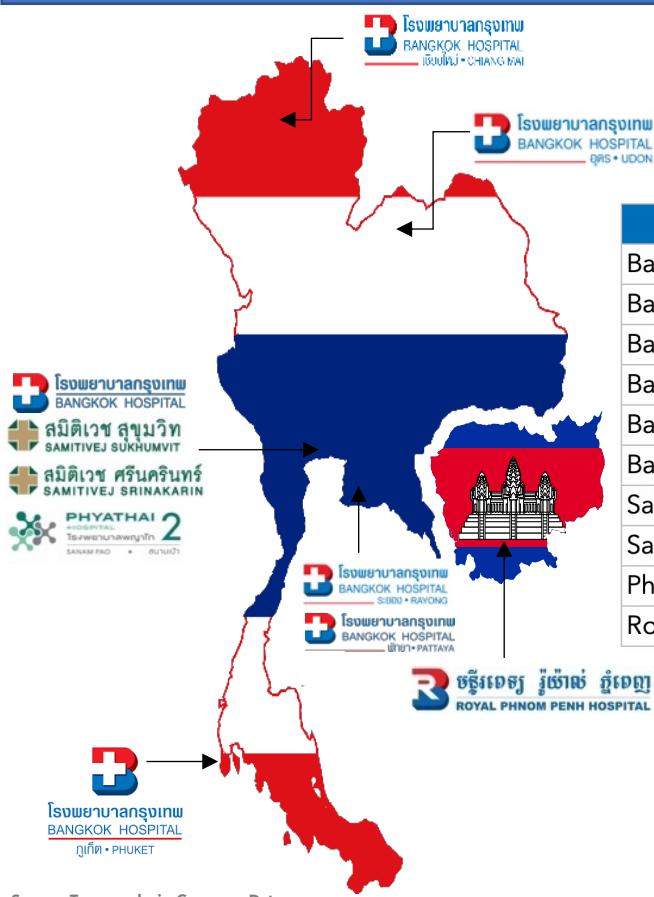
According to MasterCard Global Destination Cities Index, Bangkok is ranked as the most admired tourist destination city in 2018. While Singapore, USA and Malaysia are ranked in the 5<sup>th</sup>, 6<sup>th</sup>

## Appendix B.2.7 Price Comparison

Medical procedure	USA	Thailand	Malaysia	Singapore
Heart Bypass	\$123,000	\$15,000	\$12,100	\$17,200
Angioplasty	\$28,200	\$4,200	\$8,000	\$13,400
Heart Valve Replacement	\$170,000	\$17,200	\$13,500	\$16,900
Hip Replacement	\$40,364	\$17,000	\$8,000	\$13,900
Knee Replacement	\$35,000	\$14,000	\$7,700	\$16,000
Dental Implant	\$2,500	\$1,720	\$1,500	\$2,700
Gastric Bypass	\$25,000	\$16,800	\$9,900	\$13,700
Hysterectomy	\$15,400	\$3,650	\$4,200	\$10,400
Rhinoplasty	\$6,500	\$3,300	\$2,200	\$2,200
Face Lift	\$11,000	\$3,950	\$3,550	\$440
Lasik (both eyes)	\$4,000	\$2,310	\$3,450	\$3,800
IVF Treatment	\$12,400	\$4,100	\$6,900	\$14,900

Source: medicaltourism.com

## Appendix B.3.1. CoE Hospital and Location



CoE Hospital	Location
Bangkok Hospital	Bangkok
Bangkok Hospital Chiangmai	Chiang mai
Bangkok Hospital Udon	Udon-thani
Bangkok Hospital Rayong	Rayong
Bangkok Hospital Pattaya	Chonburi
Bangkok Hospital Phuket	Phuket
Samitivej Sukhumvit Hospital	Bangkok
Samitivej Srinakarin Hospital	Bangkok
Phyathai 2 International Hospital	Bangkok
Royal Phnom Phen Hospital	Phnom Phen - Cambodia

Source: Team analysis, Company Data

## Appendix B.4.1. Historical Financial statement

BDMS Financial Income Statement Historical (Millions of THB)					
	2013	2014	2015	2016	2017
<b>Revenue</b>	<b>50,615.4</b>	<b>56,702.2</b>	<b>63,841.6</b>	<b>67,903.5</b>	<b>71,932.5</b>
- Cost of Revenue	32,977.0	36,473.4	41,151.3	45,276.8	47,975.2
<b>Gross Profit</b>	<b>17,638.5</b>	<b>20,228.8</b>	<b>22,690.2</b>	<b>22,626.7</b>	<b>23,957.3</b>
+ Other Operating Income	543.0	—	—	940.5	839.6
- Operating Expenses	10,548.7	11,237.2	12,633.3	13,651.2	14,449.3
<b>Operating Income (Loss)</b>	<b>7,632.8</b>	<b>8,991.5</b>	<b>10,056.9</b>	<b>9,915.9</b>	<b>10,347.5</b>
- Non-Operating (Income) Loss	-131.1	-381.9	-188.3	-562.5	50.8
<b>Pretax Income (Loss), Adjusted</b>	<b>7,763.9</b>	<b>9,373.4</b>	<b>10,245.2</b>	<b>10,478.5</b>	<b>10,296.7</b>
- Abnormal Losses (Gains)	-148.1	31.2	15.2	-215.7	-2,841.5
<b>Pretax Income (Loss), GAAP</b>	<b>7,912.0</b>	<b>9,342.2</b>	<b>10,230.0</b>	<b>10,694.2</b>	<b>13,138.2</b>
- Income Tax Expense (Benefit)	1,392.0	1,671.0	1,895.3	1,922.3	2,563.5
- Minority Interest	258.5	277.8	314.0	385.4	359.0
<b>Net Income, GAAP</b>	<b>6,261.5</b>	<b>7,393.5</b>	<b>8,020.7</b>	<b>8,386.5</b>	<b>10,215.7</b>
<b>Depreciation &amp; Amortization</b>	3,248	3,727	4,417	4,803	5,168
<b>EBITDA</b>	10,880.8	12,719.0	14,474.3	14,719.2	15,515.2
<b>EBITDA Margin (T12M)</b>	21.50%	22.43%	22.67%	21.68%	21.57%

BDMS Financial Balance Sheet Historical (Millions of THB)					
	2013	2014	2015	2016	2017
<b>Total Assets</b>					
+ Cash, Cash Equivalents & STI	4,181.7	5,486.0	5,556.8	4,764.9	5,662.8
+ Accounts & Notes Receiv	4,680.2	5,518.0	6,194.5	5,753.7	6,428.8
+ Inventories	918.7	1,110.8	1,285.8	1,515.7	1,735.3
+ Other ST Assets	448.4	583.3	545.3	561.0	532.2
<b>Total Current Assets</b>	<b>10,229.0</b>	<b>12,698.1</b>	<b>13,582.4</b>	<b>12,595.3</b>	<b>14,359.1</b>
+ Property, Plant & Equip, Net	40,103.6	47,635.6	53,620.1	57,158.8	72,224.2
+ Property, Plant & Equip	68,523.4	80,785.9	88,987.1	96,173.4	115,089.4
- Accumulated Depreciation	28,419.8	33,150.3	35,367.0	39,014.6	42,865.2
+ LT Investments & Receivables	500.7	1,272.1	1,369.9	1,142.7	953.6
+ Other LT Assets	25,565.7	31,763.8	33,762.6	36,117.7	35,089.8
<b>Total Noncurrent Assets</b>	<b>66,170.0</b>	<b>80,671.6</b>	<b>88,752.6</b>	<b>94,419.2</b>	<b>108,267.6</b>
<b>Total Assets</b>	<b>76,399.0</b>	<b>93,369.7</b>	<b>102,335.0</b>	<b>107,014.5</b>	<b>122,626.7</b>
<b>Liabilities &amp; Shareholders' Equity</b>					
+ Payables & Accruals	6,977.3	7,816.9	10,516.6	10,011.8	10,678.7
+ ST Debt	4,072.4	4,262.1	2,938.8	5,963.6	1,624.7
+ Other ST Liabilities	711.6	814.7	1,839.4	1,902.0	1,113.7
<b>Total Current Liabilities</b>	<b>11,761.3</b>	<b>12,893.8</b>	<b>15,294.9</b>	<b>17,877.4</b>	<b>13,417.1</b>
+ LT Debt	18,728.8	27,410.9	27,059.6	25,933.5	37,710.7
+ Other LT Liabilities	3,265.3	4,066.9	4,983.5	4,898.8	5,627.8
<b>Total Noncurrent Liabilities</b>	<b>21,994.1</b>	<b>31,477.8</b>	<b>32,043.1</b>	<b>30,832.2</b>	<b>43,338.5</b>
<b>Total Liabilities</b>	<b>33,755.4</b>	<b>44,371.6</b>	<b>47,337.9</b>	<b>48,709.7</b>	<b>56,755.6</b>
+ Preferred Equity and Hybrid Capita	0.0	0.0	0.0	0.0	0.0
+ Share Capital & APIC	22,030.6	22,335.6	22,335.6	22,335.6	22,427.0
+ Retained Earnings	18,856.7	23,229.1	26,368.0	29,239.1	34,490.3
+ Other Equity	-206.72	1,215.42	3,795.30	4,143.79	6,153.90
<b>Equity Before Minority Interest</b>	<b>40,680.6</b>	<b>46,780.2</b>	<b>52,498.9</b>	<b>55,718.6</b>	<b>63,071.2</b>
+ Minority/Non Controlling Interest	1,963.0	2,217.9	2,498.1	2,586.3	2,799.9
<b>Total Equity</b>	<b>42,643.6</b>	<b>48,998.1</b>	<b>54,997.1</b>	<b>58,304.9</b>	<b>65,871.1</b>
<b>Total Liabilities &amp; Equity</b>	<b>76,399.0</b>	<b>93,369.7</b>	<b>102,335.0</b>	<b>107,014.5</b>	<b>122,626.7</b>

BDMS Financial Ratio Historical (Millions of THB)						
	2013	2014	2015	2016	2017	Average
<b>Returns</b>						
Return on Common Equity	16.15%	16.91%	16.16%	15.50%	17.20%	16.38%
Return on Assets	8.64%	8.71%	8.20%	8.01%	8.90%	8.49%
Return on Invested Capital	9.8%	9.6%	9.4%	9.1%	10.5%	9.68%
<b>Margins</b>						
Gross Margin	34.85%	35.68%	35.54%	33.32%	33.31%	34.54%
EBITDA Margin	21.79%	22.38%	22.65%	21.99%	25.52%	22.87%
Operating Margin	15.37%	15.80%	15.73%	14.92%	18.34%	16.03%
Net Income Margin	12.37%	13.04%	12.56%	12.35%	14.20%	12.91%
<b>Solvency</b>						
Long-Term Debt/Equity	0.44	0.56	0.49	0.44	0.57	0.50
Long-Term Debt/Total Assets	0.25	0.29	0.26	0.24	0.31	0.27
Total Debt/Equity	0.53	0.65	0.55	0.55	0.60	0.57
Total Debt/Total Assets	0.30	0.34	0.29	0.30	0.32	0.31
<b>Liquidity</b>						
Cash Ratio	0.36	0.43	0.36	0.27	0.42	0.37
Current Ratio	0.87	0.98	0.89	0.70	1.07	0.90
Quick Ratio	0.75	0.85	0.77	0.59	0.90	0.77
Asset Turnover	0.70	0.67	0.65	0.65	0.63	0.66

#### Appendix B.4.2. Peers Analysis

	SETHEALTH				MSCI WORLD HEALTHCARE			
	2014	2015	2016	2017	2014	2015	2016	2017
Gross Margin (%)	34.60	34.56	34.28	33.22	39.45	38.87	38.76	39.11
Operating Margin (%)	17.09	17.72	17.53	18.64	11.93	12.25	11.67	11.54
Profit Margin (%)	14.27	13.49	13.42	14.77	8.73	9.22	8.57	8.27
EBITDA Margin (%)	23.49	24.26	24.16	25.38	16.58	16.82	16.16	16.17
Return on Assets (%)	9.27	8.95	8.74	8.93	6.83	6.61	5.98	5.71
Return on Equity (%)	17.54	16.50	15.86	16.42	16.18	16.65	15.47	14.63
Return on Capital (%)	11.67	11.74	11.38	11.54	11.19	10.86	9.93	9.61
Total Debt to Total Equity	0.49x	0.44x	0.43x	0.46x	0.60x	0.68x	0.73x	0.70x
Total Debt to Total Assets	0.28x	0.25x	0.25x	0.27x	0.25x	0.28x	0.29x	0.28x

Peer Financial Analysis ( Average 2014-2017 )							
	BDMS	BH	BCH	IHH	SETHEALTH	MSCI WORLD HEALTHCARE	
<b>Margin</b>							
Gross Margin	<b>34.46%</b>	40.59%	31.41%		34.16%		39.04%
EBITDA Margin	<b>23.13%</b>	30.46%	27.01%	22.59%	24.32%		16.43%
Operating Margin	<b>16.19%</b>	24.00%	19.14%	22.59%	17.74%		11.84%
Profit Margin	<b>13.03%</b>	19.89%	10.80%	7.45%	13.98%		8.69%
<b>Returns</b>							
Return on Common Equity	<b>16.44%</b>	26.99%	15.05%	3.88%	8.92%		15.73%
Return on Assets	<b>8.45%</b>	16.65%	6.33%	2.46%	24.32%		6.28%
Return on Capital	<b>9.65%</b>	20.16%	10.21%	3.48%	16.58%		10.39%
<b>Solvency</b>							
Total Debt/Equity	<b>0.58x</b>	0.33x	0.88x	0.26x	0.46x		0.67x
Total Debt/Total Assets	<b>0.31x</b>	0.21x	0.41x	0.17x	0.26x		0.27x

## Appendix B. 4.2. Peers Analysis (Continues)

	BH (Millions of THB)						Peer Financial Analysis					
	2014	2015	2016	2017	2014	2015	BCH (Millions of THB)	2016	2017	2014	2015	IHH (Millions of MYR)
<b>Market Capitalization</b>	<b>102,732.7</b>	<b>153,740.0</b>	<b>131,884.8</b>	<b>137,722.2</b>	<b>19,700.6</b>	<b>22,568.4</b>	<b>36,907.5</b>	<b>40,398.7</b>	<b>39,420.7</b>	<b>54,109.6</b>	<b>52,271.3</b>	<b>48,284.0</b>
<b>Revenue</b>	<b>15,290.6</b>	<b>17,331.2</b>	<b>17,850.7</b>	<b>18,279.3</b>	<b>5,301.1</b>	<b>5,766.3</b>	<b>6,511.3</b>	<b>7,254.5</b>	<b>7,339.3</b>	<b>8,447.6</b>	<b>10,013.9</b>	<b>11,140.5</b>
Growth %, YoY	7.3	13.3	3.0	2.4	12.8	8.8	12.9	11.4	8.7	15.1	18.5	11.3
<b>Gross Profit</b>	<b>5,795.0</b>	<b>6,935.2</b>	<b>7,440.7</b>	<b>7,819.5</b>	<b>1,630.6</b>	<b>1,777.4</b>	<b>2,039.1</b>	<b>2,377.8</b>	-	-	-	-
Margin %	37.9	40.0	41.7	42.8	30.8	30.8	31.3	32.8	-	-	-	-
<b>EBITDA</b>	<b>4,285.7</b>	<b>5,101.8</b>	<b>5,595.5</b>	<b>6,039.2</b>	<b>1,411.8</b>	<b>1,461.5</b>	<b>1,805.9</b>	<b>2,056.8</b>	<b>1,846.2</b>	<b>2,000.1</b>	<b>2,137.4</b>	<b>2,250.4</b>
Margin %	28.0	29.4	31.3	33.0	26.6	25.3	27.7	28.4	25.2	23.7	21.3	20.2
<b>Net Income</b>	<b>2,730.3</b>	<b>3,435.8</b>	<b>3,627.5</b>	<b>3,942.9</b>	<b>521.9</b>	<b>527.3</b>	<b>753.1</b>	<b>918.5</b>	<b>688.7</b>	<b>841.1</b>	<b>585.5</b>	<b>479.3</b>
Margin %	17.9	19.8	20.3	21.6	9.8	9.1	11.6	12.7	9.4	10.0	5.8	4.3
<b>EPS</b>	<b>3.15</b>	<b>3.96</b>	<b>4.18</b>	<b>4.55</b>	<b>0.21</b>	<b>0.21</b>	<b>0.30</b>	<b>0.37</b>	<b>0.08</b>	<b>0.10</b>	<b>0.07</b>	<b>0.06</b>
Growth %, YoY	8.2	25.7	5.6	8.8	-8.6	1.0	42.4	21.9	20.8	21.7	-30.5	-18.2
<b>Margin</b>												
Gross Margin (%)	37.90	40.02	41.68	42.78	30.76	30.82	31.32	32.78	-	-	-	-
Operating Margin (%)	21.20	23.41	24.97	26.44	18.47	17.35	19.83	20.94	16.88	15.52	13.36	11.42
Profit Margin (%)	17.86	19.82	20.32	21.57	9.84	9.15	11.57	12.66	9.38	9.96	5.85	4.65
<b>Returns</b>												
Return on Common Equity (%)	26.67	29.10	26.66	25.55	12.88	12.41	16.52	18.42	4.02	4.49	2.77	4.25
Return on Assets (%)	15.00	16.99	17.01	17.60	5.21	5.12	7.12	7.89	2.70	2.91	1.68	2.55
Return on Capital (%)	18.51	20.64	20.58	20.91	9.06	8.75	11.27	11.79	4.15	4.21	2.38	3.21
Return on Invested Capital (%)	16.01	18.21	19.97	20.15	8.80	8.38	10.67	11.83	3.87	4.40	3.17	4.11
<b>Solvency</b>												
Common Equity/Total Assets	0.56x	0.6x	0.67x	0.69x	0.41x	0.41x	0.45x	0.41x	0.67x	0.62x	0.59x	0.56x
Long-Term Debt/Equity	0.45x	0.27x	0.24x	0.15x	0.73x	0.51x	0.46x	0.73x	0.16x	0.26x	0.29x	0.23x
Long-Term Debt/Total Assets	0.26x	0.17x	0.17x	0.1x	0.34x	0.24x	0.24x	0.34x	0.12x	0.18x	0.18x	0.16x
Total Debt/Equity	0.45x	0.39x	0.24x	0.22x	0.9x	0.92x	0.76x	0.92x	0.2x	0.28x	0.31x	0.26x
Total Debt/Total Assets	0.27x	0.24x	0.17x	0.16x	0.42x	0.43x	0.39x	0.43x	0.15x	0.19x	0.2x	0.18x
Revenue/Avg Assets	0.84x	0.86x	0.84x	0.82x	0.53x	0.56x	0.62x	0.62x	0.26x	0.26x	0.28x	0.29x

### Appendix B.5.1. Revenue from Hospital Business (Main method)

CoE

No.	CoE hospital (THB mm)	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
1	Bangkok Dusit Medical Services PLC.	13,223.8	13,317.3	13,850.0	14,542.5	15,124.2	16,334.2	17,314.2	18,179.9
2	Samitivej PLC. (SVH)	9,918.2	10,723.5	11,474.1	12,392.0	13,383.4	14,186.4	15,037.6	15,789.4
3	Prasit Pattana PLC. (PPCL) PT2 *	-	3,559.7	3,808.8	4,075.4	4,279.2	4,493.2	4,717.8	4,906.5
4	Bangkok Hospital Pattaya Co., Ltd.	3,544.5	3,755.5	4,056.0	4,380.5	4,687.1	4,968.3	5,216.7	5,477.6
5	Bangkok Hospital Rayong Co., Ltd.	2,241.7	2,424.3	2,666.7	2,880.0	3,110.4	3,328.2	3,527.9	3,704.2
6	Bangkok Hospital Phuket Co., Ltd.	2,549.6	2,697.2	2,912.9	3,146.0	3,397.6	3,669.4	3,852.9	4,045.6
7	Bangkok Hospital Udon Co., Ltd.	731.6	870.3	1,044.3	1,253.2	1,441.2	1,657.4	1,823.1	1,969.0
8	Bangkok Hospital Chiangmai Co., Ltd.	612.0	798.6	998.3	1,148.0	1,285.7	1,414.3	1,555.8	1,680.2
9	Phnom Penh Medical Services Co., Ltd.	550.1	618.2	692.4	775.5	868.5	955.4	1,031.8	1,114.4
	Total	33,371.5	38,764.5	41,503.5	44,593.1	47,577.5	51,006.7	54,077.8	56,866.8

Mature State

No.	Mature hospital (THB mm)	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
1	BNH Medical Center Co., Ltd.	2,668.5	2,903.4	3,135.7	3,355.2	3,590.0	3,841.3	4,033.4	4,194.8
2	Prasit Pattana PLC. (PPCL)	11,797.7	8,426.9	8,848.2	9,290.6	9,755.1	10,242.9	10,652.6	11,078.7
3	Paolo Medic Co., Ltd.	2,582.8	2,917.2	3,500.6	4,025.7	4,428.3	4,782.5	5,165.1	5,423.4
4	Siam Medical Co., Ltd.	977.1	1,138.2	1,274.8	1,402.3	1,514.4	1,590.2	1,669.7	1,736.4
5	Thai Medical Center PLC.	1,188.1	1,202.0	1,298.1	1,402.0	1,514.2	1,589.9	1,669.4	1,736.1
6	Paolo Samutprakarn Co., Ltd.	1,312.7	1,269.8	1,333.3	1,400.0	1,470.0	1,543.4	1,620.6	1,685.4
7	Bangkok Hospital Prapraedaeng Co., Ltd.	297.0	295.0	318.6	344.1	371.7	390.2	409.8	430.2
8	Bangkok Hospital Trat Co., Ltd.	489.5	532.5	596.4	656.0	708.5	758.1	803.6	835.8
9	Wattanavej Co., Ltd.	1,267.5	1,366.7	1,503.4	1,623.6	1,753.5	1,841.2	1,933.3	2,010.6
10	Bangkok Hospital Hatyai Co., Ltd.	1,419.4	1,525.5	1,708.6	1,879.5	2,029.8	2,131.3	2,237.9	2,327.4
11	Bangkok Hospital Samui Co., Ltd.	687.1	655.0	687.7	722.1	758.2	796.1	835.9	877.7
12	Bangkok Hospital Ratchasima Co., Ltd.	1,481.6	1,602.6	1,762.9	1,939.2	2,094.3	2,261.8	2,374.9	2,469.9
13	Bangkok Hospital Phitsanulok Co., Ltd.	629.2	642.9	694.3	749.9	809.9	850.4	892.9	937.5
14	Thonburi Medical Centre PCL.	612.3	668.5	748.7	823.6	905.9	978.4	1,056.7	1,109.5
15	Angkor Pisith Co. Ltd.	179.1	174.5	188.5	203.5	219.8	230.8	242.4	254.5
	Total	27,589.6	25,320.7	27,599.8	29,817.2	31,923.7	33,828.7	35,598.1	37,108.1

Ramping-up State

No.	Ramping up hospital (THB mm)	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
25	Bangkok Hospital Khon Kaen Co., Ltd.	395.4	536.1	670.1	804.1	924.7	1,035.7	1,139.3	1,230.4
26	Bangkok Hospital Sanamchan Co., Ltd. (BSN)	1,037.9	1,145.7	1,317.5	1,449.3	1,565.2	1,643.5	1,725.6	1,811.9
27	Tepakorn Hospital Co., Ltd.	133.5	146.4	168.4	188.6	207.5	224.1	242.0	254.1
28	Bangkok Phuket International Hospital Co., Ltd.	1,079.3	1,204.0	1,384.6	1,550.8	1,705.9	1,842.3	1,934.4	2,031.2
29	Samitivej Chonburi Co., Ltd.	395.0	541.5	704.0	880.0	1,056.0	1,214.4	1,360.1	1,496.1
30	Bangkok Hospital Muangraj Co., Ltd.	499.7	508.5	584.8	643.3	694.7	729.5	766.0	804.2
31	Bangkok Hospital Suraj Co., Ltd.	-	100.6	553.1	691.4	829.7	954.2	1,049.6	1,133.5
32	Bangkok Hospital Chiangrai Co., Ltd.	-	-	-	300.0	390.0	487.5	585.0	672.8
33	Bangkok Hospital International Co., Ltd.	-	-	-	-	500.0	625.0	750.0	862.5
34	Jomtien Hospital Co., Ltd	-	-	-	-	-	400.0	460.0	552.0
	Total	3,540.8	4,182.8	5,382.6	6,507.5	7,873.7	9,156.1	10,012.0	10,848.8

Total

No.	Hospital Revenue	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
1	CoE Hospitals (Companies)	33,371.5	38,764.5	41,503.5	44,593.1	47,577.5	51,006.7	54,077.8	56,866.8
		51.74%	56.78%	55.72%	55.11%	54.45%	54.27%	54.25%	54.25%
2	Mature State Hospitals (Companies)	27,589.6	25,320.7	27,599.8	29,817.2	31,923.7	33,828.7	35,598.1	37,108.1
		42.77%	37.09%	37.05%	36.85%	36.54%	35.99%	35.71%	35.40%
3	Ramping-up State Hospital (Companies)	3,540.79	4,182.83	5,382.57	6,507.47	7,873.72	9,156.10	10,012.01	10,848.78
		5.49%	6.13%	7.23%	8.04%	9.01%	9.74%	10.04%	10.35%
	Total	64,501.80	68,267.99	74,485.92	80,917.83	87,374.85	93,991.53	99,687.92	104,823.67

Non-hospital

No.	Non-hospitals (THB mm)	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F
1	A.N.B. Laboratories Co., Ltd.	1,252.12	1,240.40	1,302.42	1,367.54	1,435.92	1,507.71	1,583.10	1,662.25
2	Medicphama Co., Ltd	571.30	616.68	678.35	746.18	805.88	870.35	913.86	959.56
3	Save drug center Co., Ltd.	743.24	839.40	940.13	1,052.94	1,179.30	1,297.23	1,401.00	1,513.08
4	First Health Food Co., Ltd.	100.32	113.10	130.07	145.67	163.15	182.73	201.01	221.11
5	National Healthcare System Co., Ltd.	708.18	821.35	845.99	913.67	986.76	1,065.70	1,118.99	1,174.94
6	BDMS wellness clinic Co., Ltd.	-	0.21	300.00	500.00	700.00	770.00	847.00	931.70
7	Chiva transition care	-	-	-	45.36	52.16	58.42	64.27	70.69
8	Movenpick	-	-	-	226.80	260.82	292.12	321.33	353.46
9	Other	-	33.37	-	-	-	-	-	-
	Total revenue of non-hospitals	3,375.16	3,664.51	4,196.95	4,998.17	5,583.99	6,044.27	6,450.56	6,886.80

### Appendix B.5.3. Revenue from Hospital Business – Alternative Method

No.	Hospital	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018F	2019F	2020F	2021F	2022F	2023F	Total
1	Bangkok Hospital	343												100			443
2	Bangkok Heart Hospital	97															97
3	Wattanosoth Hospital	48															48
4	Bangkok Hospital Hua Hin		60														60
5	Bangkok Hospital Samanchan						200										200
6	Bangkok Hospital Phetchaburi						255										255
7	Muangraj Hospital							125									125
8	Bangkok Hospital Pattaya	400															400
9	Bangkok Hospital Rayong	220															220
10	Bangkok Hospital Chantaburi	170															170
11	Bangkok Hospital Trat	114															114
12	Bangkok Hospital Ratchasima	180															180
13	Bangkok Hospital Pakchong		31														31
14	Bangkok Hospital Udon			120													120
15	Bangkok Hospital Khon Kaen						140										140
16	Bangkok Hospital Phitsanulok					195											195
17	Bangkok Hospital Chiangmai							181									181
18	Bangkok Hospital Samui	52															52
19	Bangkok Hospital Phuket	266															266
20	Bangkok Hospital Had Yai	200															200
21	Bangkok Hospital Surat										150						150
22	Samitivej Sukhumvit Hospital	275															275
23	Samitivej Srinakarin Hospital	400															400
24	Samitivej Sriracha Hospital	184															184
25	Samitivej China Town Hospital						59										59
26	Samitivej Thonburi Hospital					150											150
27	Samitivej Chonburi Hospital							220									220
28	BNH Hospital	144															144
29	Royal Angkor Pisith	30															30
30	Royal Phnom Penh Hospital							100									100
31	Phyathai 1 Hospital			350													350
32	Phyathai 2 International Hospital				260												260
33	Phyathai 3 Hospital				240												240
34	Phyathai Hospital Siracha				350												350
35	Phyathai Hospital Nawamin				140												140
36	Paolo Hospital Phaholyothin				300												300
37	Paolo Rangsit Hospital							150									150
38	Paolo Hospital Kaset										162						162
39	Bangkok Hospital Prapradang											60					60
40	Paolo Hospital Chokchai 4	148															148
41	Paolo Hospital Samutprakan	200															200
42	Sri-Rayong Hospital																195
43	Tepakom Hospital						100										100
44	Dibuk Hospital							100									100
45	Siriraj International Hospital							151									151
46	Bangkok Hospital Chiangrai										80						80
47	Bangkok Hospital International											175					175
48	Jomtien Hospital														233		
	<b>Total Beds Increase in year</b>	<b>3,123</b>	<b>-</b>	<b>2,079</b>	<b>120</b>	<b>345</b>	<b>1,186</b>	<b>640</b>	<b>150</b>	<b>312</b>	<b>140</b>	<b>175</b>	<b>233</b>	<b>100</b>	<b>-</b>	<b>-</b>	<b>8,603</b>
	Accumulate Registered beds	3,123	3,123	5,202	5,322	5,667	6,853	7,493	7,643	7,955	8,095	8,270	8,503	8,603	8,603	8,603	
	Revenue (THB mm)	21,597	23,513	35,224	44,307	49,170	54,341	60,262	65,237	69,123	74,486						
	Available beds					4,652	5,380	5,674	5,826	5,884	6,022	6,203	6,377	6,452	6,452	6,452	
	Bed utilization Rate					66%	65%	66%	67%	64%	68%	70%	72%	73%	74%	75%	
	Actual used beds					3,070	3,497	3,745	3,903	3,766	4,095	4,342	4,592	4,710	4,775	4,839	
	Revenue per actual used beds					16.01	15.54	16.09	16.71	18.36	18.19	18.74	19.30	19.88	20.47	21.09	
	Price adjustment							3.56%	3.86%	9.83%	-0.90%	3.00%	3.00%	3.00%	3.00%	3.00%	
	Forecast revenue (THB mm)									74,486	81,344	88,606	93,620	97,750	102,043		

Ramp-up state  
 New hospital

### Appendix B.5.4. WACC Calculation method

Factors	Description	Value
Risk Free rate (Rf)	10-Y Thailand Government Bond	<b>2.49%</b>
Beta		<b>0.703</b>
	>bloomberg 1Y - SET50	0.752
	>bloomberg 1Y - SET	0.799
	>SET	0.680
	>Bottom up beta	0.583
Expected Market Return (Rm)		<b>10.31%</b>
	>Set TRI	11.37%
	>Bloomberg	9.26%
Cost of Equity (Ks)		<b>7.99%</b>
Cost of Debt (kd)	From Calculation Appendix B.5.5.	3.45%
Cost of Debt after taxes (kd)		<b>2.76%</b>
Weighted of Kd	Financial-debt to Assets	<b>27.68%</b>
Weighted of Ks	1 - W(kd)	<b>72.32%</b>
WACC		<b>6.27%</b>
	>From Bloomberg	6.00%
	>From Calculation	6.54%

### Appendix B.5.5. Debt

Long-term loan (THBmm)	2018F	2019F	2020F	2021F	2022F	2023F
Total Long-term Loan	9,328	6,142	5,636	1,000	1,000	1,000
More than 1 year	6,142	5,636	1,000	1,000	1,000	-
Loan that paid in 1 year	3,185	506	4,636	-	-	1,000

Debentures (THBmm)				30/12/2018	30/12/2019	30/12/2020	30/12/2021	30/12/2022	30/12/2023
issued date	mature date	issued amount	coupon rate						
1/8/2012	1/8/2022	500	4.50%	500	500	500	500	-	-
1/8/2012	1/8/2022	100	4.50%	100	100	100	100	-	-
1/3/2013	1/3/2023	4,000	4.63%	4,000	4,000	4,000	4,000	4,000	-
1/5/2013	1/5/2020	2,000	4.19%	2,000	2,000	-	-	-	-
1/5/2013	1/5/2023	1,000	4.39%	1,000	1,000	1,000	1,000	1,000	-
1/6/2015	1/6/2025	2,000	3.95%	2,000	2,000	2,000	2,000	2,000	2,000
1/6/2016	1/6/2026	3,000	2.99%	3,000	3,000	3,000	3,000	3,000	3,000
1/2/2017	1/2/2020	3,000	2.41%	3,000	3,000	-	-	-	-
1/2/2017	1/2/2022	2,500	2.97%	2,500	2,500	2,500	2,500	-	-
1/2/2017	1/2/2024	1,500	3.46%	1,500	1,500	1,500	1,500	1,500	1,500
<b>Total Debenture</b>		<b>19,600</b>		<b>19,600</b>	<b>19,600</b>	<b>14,600</b>	<b>14,600</b>	<b>11,500</b>	<b>6,500</b>
	More than 1 year			19,600	14,600	14,600	11,500	6,500	5,000
	Due less than 1 year			-	5,000	-	3,100	5,000	1,500

Interest of Debentures (THBmm)	30/12/2018	30/12/2019	30/12/2020	30/12/2021	30/12/2022	30/12/2023
1/8/2012 1/8/2022	500	4.50%	22.50	22.50	22.50	22.50
1/8/2012 1/8/2022	100	4.50%	4.50	4.50	4.50	4.50
1/3/2013 1/3/2023	4,000	4.63%	185.20	185.20	185.20	185.20
1/5/2013 1/5/2020	2,000	4.19%	83.80	83.80	-	-
1/5/2013 1/5/2023	1,000	4.39%	43.90	43.90	43.90	43.90
1/6/2015 1/6/2025	2,000	3.95%	79.00	79.00	79.00	79.00
1/6/2016 1/6/2026	3,000	2.99%	89.70	89.70	89.70	89.70
1/2/2017 1/2/2020	3,000	2.41%	72.30	72.30	36.15	-
1/2/2017 1/2/2022	2,500	2.97%	74.25	74.25	74.25	37.13
1/2/2017 1/2/2024	1,500	3.46%	51.90	51.90	51.90	51.90
<b>Total interest payment in year</b>	<b>707.05</b>	<b>707.05</b>	<b>629.00</b>	<b>550.95</b>	<b>513.83</b>	<b>242.55</b>

Unit: THBmm	2017	2018F	2019F	2020F	2021F	2022F	2023F	Note
ST loan from institution	73	1,577	615	615	615	615	615	
LT loan	10,799	9,328	6,142	5,636	1,000	1,000	1,000	
Convertible bond	5,086	5,086						
Debentures	19,600	19,600	19,600	14,600	14,600	11,500	6,500	
<b>Total debt</b>	<b>35,558</b>	<b>35,590</b>	<b>26,357</b>	<b>20,851</b>	<b>16,215</b>	<b>13,115</b>	<b>8,115</b>	
Rate of ST-L	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%	8.50%	MOR%
Rate of LT-L	2.64%	2.64%	2.64%	2.64%	2.64%	2.64%	2.64%	
Rate of CB								
Interest of ST-L	4.68	100.54	39.18	39.18	39.18	39.18	39.18	
Interest of LT-L	285.20	246.35	162.22	148.86	26.41	26.41	26.41	
Interest of debentures	680.13	707.05	707.05	629.00	550.95	513.83	242.55	
>> Real payout from CF/S	<b>970.00</b>							
Other interest	513.69							
Forecast Interest		1,053.94	908.44	817.03	616.54	579.41	308.14	
<b>Total Interest</b>	<b>1,483.69</b>	<b>1,053.94</b>	<b>908.44</b>	<b>817.03</b>	<b>616.54</b>	<b>579.41</b>	<b>308.14</b>	
<b>Cost of debt (Kd)</b>	<b>4.17%</b>	<b>2.96%</b>	<b>3.45%</b>	<b>3.92%</b>	<b>3.80%</b>	<b>4.42%</b>	<b>3.80%</b>	

### Appendix B.5.6. Bottom-up BETA

	LTD/E	TTD/E	1Y Beta
<b>BDMS</b>	<b>0.570</b>	<b>0.600</b>	<b>0.309</b>

Top-class peers	LTD/E	TTD/E	1Y Beta
BH	0.150	0.220	0.823
IHH MK	0.240	0.260	1.034
IHH SP	0.240	0.260	0.472
RHC AU	1.570	1.610	0.793
RMSYF US	1.570	1.610	0.135
KPJ MK	0.684	0.877	0.418
<b>Average</b>	<b>0.742</b>	<b>0.806</b>	<b>0.613</b>

Middle-class peers	LTD/E	TTD/E	1Y Beta
BCH	0.730	0.920	0.888
CHG	0.110	0.450	1.056
RAM	0.004	0.230	0.330
VIBHA	0.180	0.480	0.753
LPH	0.080	0.130	0.482
NTV	0.000	0.000	0.381
SKR	0.250	0.360	0.297
THG	0.400	0.430	0.712
<b>Average</b>	<b>0.219</b>	<b>0.375</b>	<b>0.612</b>

Local peers	LTD/E	TTD/E	1Y Beta
AHC	0.000	0.000	0.242
CMR	0.200	0.460	0.632
EKH	0.000	0.000	0.506
M-CHAI	0.430	0.790	0.130
NEW	0.180	0.220	-0.226
RJH	0.001	0.001	0.662
RPH	0.000	0.050	0.300
WPH	0.000	0.001	0.561
VIH	0.282	0.710	0.745
<b>Average</b>	<b>0.121</b>	<b>0.248</b>	<b>0.395</b>

#### % of Operating Revenue

BGH 45.15%

Phyathai 18.33%

Smitivej 16.59%

Paolo 7.81%

BNH 4.04%

Local 1.88%

Royal 1.10%

Non-hospital 5.09%

#### % Weight

Top 65.78%

Middle 28.02%

Local 1.88%

Non-Hospital 5.09%

#### BDMS bottom-up Beta

LTD/E 0.606

TTD/E 0.583

We class the business units of BDMS into 4 groups. The first is top-class hospital group including BGH, SVH and BNH. While Phyathai, Paolo and Royal are in the Middle-class hospital group. The third and the fourth are local hospital and non-hospital business respectively. Then using leverage ratio and raw regression betas from Bloomberg database to calculate the bottom-up beta of BDMS.

Weighted average the unlevered betas by operating revenue proportions of each business class then take the leverage ratio of BDMS to get the final bottom-up betas.

We choose 0.583 as the bottom-up beta calculated from total debt to equity (TTD/E).

### Appendix B.5.7. Assumption

Income Statement	Value	2018F	2019F	2020F	2021F	2022F	2023F	Note
Revenue Growth		9.38%	9.19%	8.20%	7.61%	6.10%	5.25%	CAGR = 7.26%
COGS % of Revenue		65.82%	65.00%	65.00%	64.50%	64.50%	64.00%	
Other % of Revenue	1.04%	Constantly at 1.04% of Operating revenue						
SG&A % of Revenue		19.43%	19.00%	19.00%	19.00%	19.00%	19.00%	
Interest		See appendix B.5.7.						
Non-operating income	3.00%	2018E is base value and increase 3% per year						
Taxes	20.00%	Law						
Abnormal return		Liquidate Ramkhamheng Hospital in January 2019						
Sell all shares of RAM		12,847.59						
Dividend from RAM	73.41							
RAM operating income	507.62							
RAM Hospital value in B/S	5,338.91							
Dividend Payout Ratio	52.81%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	Policy

Balance Sheet	Value	2018F	2019F	2020F	2021F	2022F	2023F	Note
Inv turnover		31.65	31.13	30.61	30.09	29.57	29.05	Regression 7 yrs
Inv days		11.38	11.57	11.76	11.97	12.18	12.39	
A/R turnover		11.55	11.61	11.68	11.74	11.80	11.86	Regression 5 yrs
A/R days		31.17	31.00	30.83	30.67	30.51	30.35	
Short tem investment	568.03	< Constant value equal to 9M2018 >						
Other CA	13.45	< Constant value equal to 9M2018 >						
CAPEX		5.50%	5.00%	5.00%	5.00%	6.00%	7.00%	Of Revenue
Depreciation	5.00%	5% of Gross PPE each year						
LT investment	11,089.87	Total Value of 2018 decrease by value of RAM's stock						
Goodwill	17,538.87	< Constant value equal to 9M2018 >						
Intangible assets		1,232.94	1,306.27	1,383.97	1,466.29	1,553.50	1,645.90	CAGR = 5.95%
A/P	4.50%	< 4.5% of operating revenue for year >						
Accrual	9.00%	< 9.0% of operating revenue for year >						
Income taxes		< Total taxes in year devided by 4 >						
ST debt from institution	614.51	< Constant = 614.51 (AVG (2013-9M2018) >						
ST debt from non relate parties	67.00	< Constant value equal to 9M2018 >						
Debentures		Appendix B.5.5.						
Long term Loan		Appendix B.5.5.						
Convertible bonds		Mature in 2019, appendix B.5.5.						
Non-current provision for employee	3%	< Grwoth 3% base on 2018F >						
Deferred incom - membership	227.24	< Constant equal to 9M2018 >						
Deferred tax liabilities		< Total taxes in year minus by deferred tax assets >						
		2,493.22	4,377.88	3,140.72	3,528.51	3,756.66	4,124.94	
Other long term liabilities	162.17	< Constant equal to 9M2018 >						

### Appendix B.5.8. Discounted Free Cash Flow to Firm – Main methods

Main method		2019F	2020F	2021F	2022F	2023F
Profit after tax		17,825.42	12,876.79	14,427.92	15,340.56	16,813.67
Add back depreciation		6,237.20	6,469.60	6,719.69	7,038.10	7,429.09
Change in net working capital		30.96	(207.12)	(224.48)	(180.99)	(183.94)
Subtract capital expenditures		4,295.80	4,647.94	5,001.79	6,368.31	7,819.73
Add back after tax interest		726.76	653.63	493.23	463.53	246.51
<b>FCFF</b>		<b>20,524.54</b>	<b>15,144.96</b>	<b>16,414.57</b>	<b>16,292.90</b>	<b>16,485.59</b>
WACC	<b>6.27%</b>					
Long term growth	<b>3.00%</b>					
Terminal Value						518,945.27
Discount factor		1.06	1.13	1.20	1.28	1.36
FCFF - discounted	<b>454,183.50</b>	19,313.20	13,410.04	13,676.42	12,773.86	395,009.99
long term debt	30,398.64					
adback Cash	5,856.43					
Adjusted PV-FCFF	429,641.29					
Number of share	15,862.15					
<b>Price per share</b>	<b>27.09</b>					

### Appendix B.5.9. Discounted Free Cash Flow to Firm – Alternative methods

Alternative hospital revenue forecast					
Alternative hospital revenue forecast	2019F	2020F	2021F	2022F	2023F
Profit after tax	17,881.29	13,042.23	14,373.22	15,065.83	16,409.43
Add back depreciation	6,238.27	6,473.74	6,722.91	7,035.51	7,416.76
Change in net working capital	19.02	(229.80)	(179.32)	(136.39)	(159.34)
Subtract capital expenditures	4,317.12	4,709.52	4,983.23	6,252.03	7,625.08
Add back after tax interest	726.76	653.63	493.23	463.53	246.51
<b>FCFF</b>	<b>20,548.21</b>	<b>15,230.28</b>	<b>16,426.80</b>	<b>16,176.45</b>	<b>16,288.27</b>
WACC	<b>6.27%</b>				
Long term growth	<b>3.00%</b>				
Terminal Value					512,733.93
Discount factor		1.06	1.13	1.20	1.28
FCFF - discounted	<b>449,472.27</b>	19,335.48	13,485.59	13,686.60	12,682.56
long term debt	30,398.64				
adback Cash	5,856.43				
Adjusted PV-FCFF	424,930.06				
Number of share	15,862.15				
Price per share	<b>26.79</b>				

### Appendix B.5.10. Dividend Discounted Model

DDM	2018F	2019F	2020F	2021F	2022F	2023F
Dividend		8,912.71	6,438.40	7,213.96	7,670.28	8,406.83
Cost of Equity	7.99%					
Long term growth for dividend	5%					
Terminal Value						294,877.83
Discount factor		1.08	1.17	1.26	1.36	1.47
PV	<b>231,613.06</b>	8,253.00	5,520.55	5,727.71	5,639.24	206,472.55
Number of share	15,862.15					
Price per share	<b>14.60</b>					

### Appendix B.5.11. Price to Earning Multiplier

Top Peers	P/E
BH	34.62
KPJ MK	23.9
RHC AU	29.09
<b>Median</b>	<b>29.09</b>
Middle Peers	P/E
BCH	42.55
CHG	38.97
RAM	23.28
VIBHA	41.95
LPH	23.34
NTV	23.12
SKR	37.02
THG	50.39
<b>Median</b>	<b>37.995</b>
Local Peers	P/E
AHC	21.05
CMR	27.85
EKH	33.91
M-CHAI	18.85
NEW	23.34
RJH	29.54
RPH	42.13
VIH	21.1
WPH	45.83
<b>Median</b>	<b>27.85</b>

% of Operating Revenue	
BGH	45.15%
Phyathai	<b>18.33%</b>
Smitivej	16.59%
Paolo	7.81%
BNH	4.04%
Local	1.88%
Royal	1.10%
Non-hospital	5.09%

% Weight	
Top	65.78%
Middle	<b>28.02%</b>
Local	1.88%
Non-Hospital	5.09%

Class	P/E	Weighted P/E
Top	29.09	19.14
Middle	38.00	10.65
Local	27.85	0.52
Non-Hospital	37.77	1.92
Total (Unadjusted)		32.23
Adjusted Value		9.80%
<b>P/E (2019F)</b>	<b>35.38</b>	
Earning 2019F (THBmm)		11,818.47
#Share		15,862.15
<b>Price per Share</b>	<b>26.36</b>	

According to historical, BDMS always has higher P/E compared to its industry (SETHEALTH). Therefore, after build a bottom-up P/E, it is necessary to add back their premium in the calculation. 9.8% is an adjusted value for BDMS's P/E.

### Appendix B.5.12. Enterprise value to EBITDA Multiplier

Top Peers	EV/EBITDA
BH	20.46
KPJ MK	24.9
RHC AU	12.06
<b>Median</b>	<b>20.46</b>

% of Operating Revenue	
BGH	45.15%
<b>Phyathai</b>	<b>18.33%</b>
Smitivej	16.59%
<b>Paolo</b>	<b>7.81%</b>
BNH	4.04%
Local	1.88%
<b>Royal</b>	<b>1.10%</b>
Non-hospital	5.09%

Middle Peers	EV/EBITDA
BCH	19.84
CHG	19.5
RAM	28.5
VIBHA	20.58
LPH	17.05
NTV	12.45
SKR	13.57
<b>Median</b>	<b>19.5</b>

Local Peers	EV/EBITDA
AHC	7.81
CMR	14.43
EKH	18.36
M-CHAI	13.11
NEW	11.06
RJH	14.6
RPH	27.24
VIH	11.35
<b>Median</b>	<b>13.77</b>

% Weight	
Top	65.78%
Middle	<b>28.02%</b>
Local	1.88%
Non-Hospital	5.09%

Class	EV/EBITDA	Weighted EV/EBITDA
Top	20.46	13.46
Middle	19.5	5.46
Local	13.77	0.26
Non-Hospital	23.11	1.18
Total (Unadjusted)		20.36
Adjusted Value		20.34%
<b>EV/EBITDA (2019F)</b>	<b>24.50</b>	
EBITDA 2019F (THBmm)		20,880.11
#Share		15,862.15
<b>Price per Share</b>	<b>32.25</b>	

According to historical, BDMS always has higher EV/EBITDA compared to its industry (SETHEALTH). Therefore, after build a bottom-up EV/EBITDA, it is necessary to add back their premium in the calculation. 20.34% is an adjusted value for BDMS's EV/EBITDA.

### Appendix B.5.13. Scenario Analysis

Best Case	2019F	2020F	2021F	2022F	2023F
<b>COGS</b>	65.00%	64.50%	64.50%	64.00%	64.00%
<b>SG&amp;A</b>	19.00%	19.00%	19.00%	18.50%	18.50%
<b>Revenue</b>	Increase from base case 5%				
<b>Description</b>	Outperformed				

Worse case I	2019F	2020F	2021F	2022F	2023F
<b>COGS</b>	66.00%	66.00%	65.50%	65.50%	65.00%
<b>SG&amp;A</b>	19.50%	19.50%	19.00%	19.00%	19.00%
<b>Revenue</b>	Decrease from base case 10%				
<b>Description</b>	Concerned about upcoming law of drug and medical services control				

Worse case II	2019F	2020F	2021F	2022F	2023F
<b>COGS</b>	68.00%	67.50%	67.00%	66.50%	66.00%
<b>SG&amp;A</b>	20.00%	19.50%	19.50%	19.00%	19.00%
<b>Revenue</b>	Decrease from base case 15%				
<b>Description</b>	1. Concerned about upcoming law of drug and medical services control 2. Underperformed				

## Appendix B.5.14. Monte-Carlo

