

NetDragon (777.HK)

Education business to take off with support by stable growth of game business

Hong Kong | TMT | Company report

13 February 2018

Investment Summary

NetDragon is the leading developer, operator and publisher in game industry since it started to develop online game in 2001. In 2010 the company set up Huayu to explore education business and now education income has made up over 50% topline. Although the education business is still in loss, we see that game segment provides strong cash flow to the company. It is expected that the company is likely to turn from loss to positive earnings in 2017E. We are positive on the steady growth of game business. It is expected more new orders for education hardware and programme as well as potential monetization of software products. Our SOTP model derives the target price of HKD23.88, 'BUY' recommendation.

Business Overview

NetDragon, established in 1999 and headquartered in Fuzhou China, is a global leading creator of online community. In 2001 NetDragon published 17173.com, China's top online game portal, which was sold to Sohu two years later for USD20.5mn. In 2013 NetDragon transferred its self-developed and popular smart phone service platform 91 Wireless to Baidu with a consideration of USD1.9bn, which prepared amplified cash capital for education business development. Recent years, the company focus gradually shifts from game industry to education sector. In 2015, the company acquired Promethean, the famous education hardware manufacturer, to take first steps towards global education market; for China market, the company established a wholly-owned subsidiary Huayu (Eternity) aiming to build the largest and the most complete service platform system for education market by growing hardware, software, platform and resources. At the same time, the company proactively explores VR/AR field and tries to commercialize the technology in areas involving game, education and household, and invested in two AR technology firms in 2016.

Figure: Milestones

Time	Event
1999	NetDragon was founded
2001	Established 17173.com, which became No.1 Chinese online game portal
2003	Sold 17173.com to Sohu.com Ltd. at USD20,050,000
2006	Launched Eudemons Online
2007	Listed on GEM of The SEHK in November
2008	Successfully listed on Main Board of the SEHK (Code: 777.HK)
2010	Established the subsidiary Huayu
2013	Sold 91 Wireless to Baidu with consideration of USD1.9 bn
2014	Entered into a sale and purchase agreement to acquire the mobile solutions business of Cherrypicks for an aggregate amount up to US\$30.5 million
2015.4	Huayu's 101 Smart Classroom made its national debut
2015.6	Acquired Suzhou Chivox
2015.9	Announced the acquisition of Promethean
2016.4	Acquired Cherrypicks Alpha and invested in ARHT Media
2016.12	Inclusion in the eligible shares under Shenzhen-Hong Kong Stock Connect.
2017.3	Included in HSLMI
2017.7	Acquired educational product provider Jumpstar

Source: Company, Phillip Securities

BUY

CMP HKD17.90

(Closing price at 9 Feb 2018)

TARGET HKD23.88 (+33%)

COMPANY DATA

O/S SHARES (MN)	533.32
MARKET CAP (HKDMN)	9,546
52 - WK HI/LO (HKD)	18.64/17.76

SHARE HOLDING PATTERN, %

Liu Dejian	47.75
DJM Holding Ltd.	35.66
He Zhicheng	14.62
Zhou Quan	13.72

PRICE PERFORMANCE, %

	1M	3M	1Y
NetDragon	-16.55	-31.29	-23.18
HSI	-5.18	1.33	25.16

RETURN VS. HSI



Source: Aastocks, Phillip Securities

KEY FINANCIALS

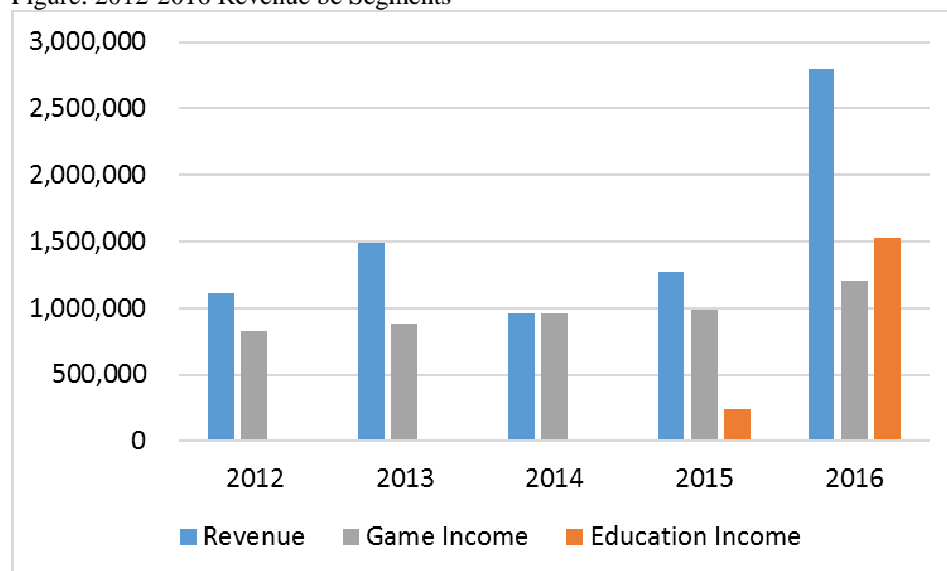
RMB mn	FY15	FY16	FY17E	FY18E
Net Sales	1,272	2,793	3,786	4,569
Net Profit	-143.0	-202.7	76.7	174.8
EPS, RMB	-0.29	-0.41	0.14	0.33
PER, x	-51.42	-36.25	103.32	45.36
BVPS, RMB	8.63	7.77	7.24	7.40
P/BV, x	2.07	2.30	2.47	2.42
ROE, %	-3.34	-5.27	1.98	4.42

Source: Company, Wind, Phillip Securities Est.

Eurus Zhou (2277 6515)
euruszhou@phillip.com.hk

We see the company revenue continues to increase these years given the FY12-16 revenue CAGR of 25.99%. By segments, game business has been growing stably while contribution from education business has surged since 2015. Now education business accounts for more than 50% turnover.

Figure: 2012-2016 Revenue be Segments

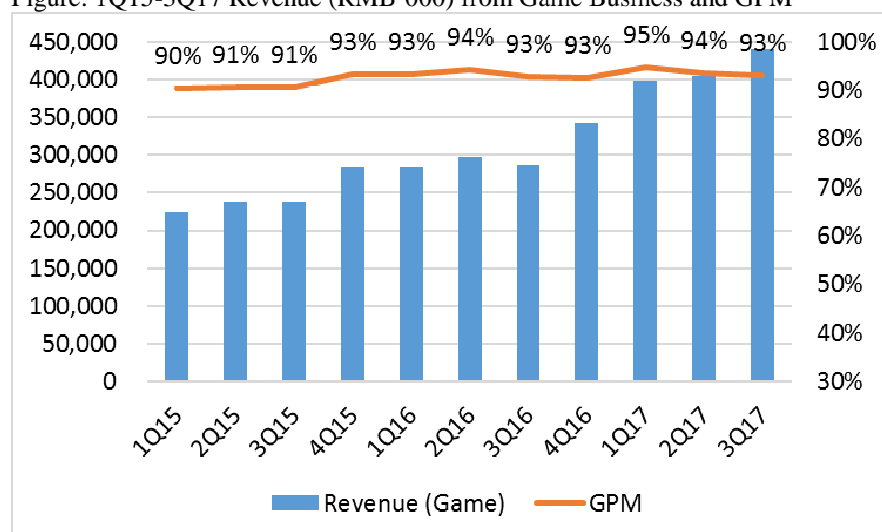


Source: Company, Phillip Securities

The company has started to set up team for developing large-scale online games since 2001. Now it has become the prominent developer, operator and publisher of online games in China, with 50 self-developed online games and quality mobile apps covering more than 180 countries. As up to end of June 2017, NetDragon operates game products including Conquer Online, Eudemons Online, Heroes Evolved, Zero Online, Way of the Five, Tou Ming Zhuang Online, Tian Yuan and other games, ranging from online games to mobile apps. One of its classic game IP (intellectual property), Eudemons (魔域), has absorbed plenty of players since launched in 2006 with currently over 170mn registered users and makes significantly contribution to turnover every year.

NetDragon adopts the main IP strategy, which is to enhance operation of existing classic IP online games (like Eudemons and Heroes Evolved) and place more importance on developing mobile apps under these popular IPs. Game business generated income of RMB1.21bn in 2016 representing 22.8% YoY growth, in which over 70% revenue was from Eudemons series. NetDragon spends power to analyze active quality users, in order to improve user experience of most active and valuable customers. As a result, game ARPU reached RMB369 in 4Q16, growing by 28.6% compared with last year. And we see income from game segment during first three quarters in 2017 increased by 43.4% YoY to RMB1.24. We attribute this to rising contribution from flagship online games (mainly Eudemons and Heroes Evolved) and mobile apps. In 17Q3 we see 51.7% increase in ARPU and 38.4% increase in APA. These progresses reflect the management's efficient operation and correct strategic vision.

Figure: 1Q15-3Q17 Revenue (RMB'000) from Game Business and GPM



Source: Company, Phillip Securities

Figure: Main IPs

IP	User Base	Progress
Eudemons	Registered users >170mn	17Q3 Revenue +70% YoY
Heroes Evolved	Registered users >100mn, MAU>9mn	Mobile version kept ranked at top 3 on Tencent app platform for nine months
HBQ	--	Top 3 on Tencent Wechat weekly ranking; Selected into Sony "PlayStation China Star" Project
Conquer	Registered users >110mn	Stable 17Q3 revenue

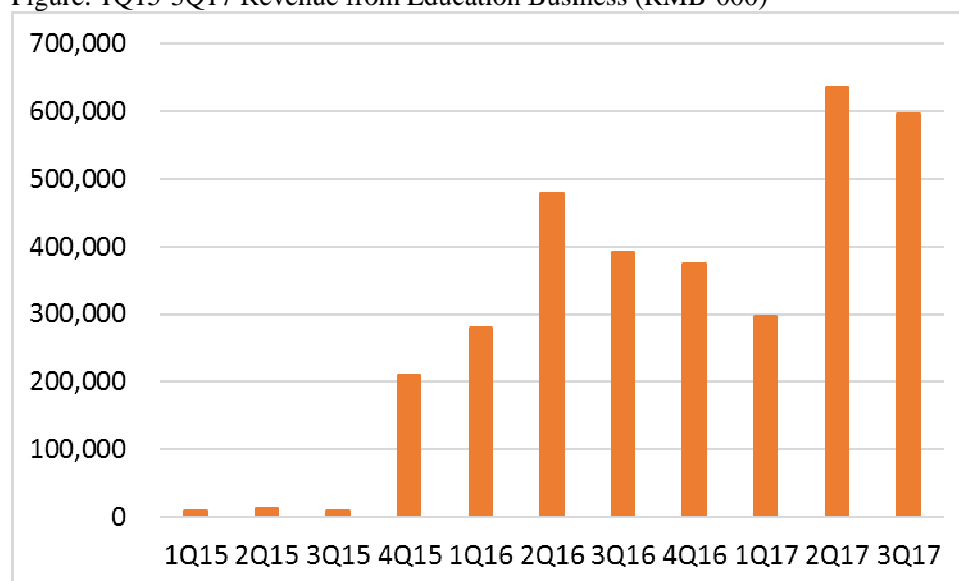
Source: Company, Phillip Securities

NetDragon is a pioneer in field of global online education and mobile internet education. Being engaged in internet and game industry for so many years, the company has accelerated abundant technical experience and talent resources, and continues external expansion to enhance technical strength (i.e. acquiring Cherrypicks International & Chivox) as well as distribution network (i.e. acquiring Promethean). Nowadays the company is able to provide integrated educational solutions ranging from hardware to software, from platform to content resources. Meanwhile, NetDragon cooperates with authoritative educational institutions to invest in R&D of smart learning and collect top educational resources at home and abroad. The company has established strategic cooperation with educational institutions such as PEP, NCET, BNU and Harvard, and has built collaborative partnership with BBC and Pearson International (which is known as the largest education publisher in US). Through strategic investments, its education business has entered over 100 countries and 1 million classrooms, offering services and products to over 2 million teachers and 30 million students. We see income from education segment has dramatically increased since 2015. In 17Q3 education revenue reached RMB595.9mn growing by 52% YoY and taking up over 56% in topline. Currently main sales comes from hardware products.

(1) International education business. The company acquired the global educational hardware giant, Promethean in 2015. Promethean is one of two famous interactive educational technology developers (another is Smart Education). It provides teaching hardware products (i.e. ActivBoards, ActivPanels) and interactive teaching software (i.e. ClassFlow), covering 100 countries in the world. It focuses on Britain, US and other developed countries, with targeting K12 (kindergarten through twelfth grade) students and teachers as core customers. Promethean’s core product, Classflow, is a lesson preparation software, which helps to enrich classroom learning experience. With Classflow and interactive whiteboards, it is convenient for teachers to present teaching contents, share digital data with students, conduct testing and voting, and arrange group study. This segment keeps developing quickly since the acquisition, given 17Q3 revenue of RMB525.9mn up by 56.2% YoY.

(2) Domestic education segment. NetDragon set up a wholly-owned subsidiary, Huayu (Elernity), aiming to build the largest and most complete service platform system for education market segments, by growing hardware, software, platform and resources. Now, domestic education business covers six study phases, namely preprimary education, basic education, higher education, vocational education, enterprise training, non-degree and life-long education. The company incorporates Promethean’s outstanding hardware technology into its own production and builds the first K12 education tablet “101 Student Pad”. NetDragon integrates the open education cloud platform and education resource base, and an intelligent teaching and learning overall solution “101 Smart Classroom” targeted at K12 stage was researched and developed.

Figure: 1Q15-3Q17 Revenue from Education Business (RMB’000)



Source: Company, Phillip Securities

NetDragon strives to facilitate the synergies among game, education and acquisition of edge-cutting technologies. We highlight that this pattern is going to present good complementary effect in terms of cash flows and technology application. Growing game segment gives cash support to education business expansion as well as technology acquisition; while favorable policies and developing market demand are likely to drive education business to achieve notable growth in long run; at the same time, proactively improving technology strengths by external expansion and applying advanced technologies such as VR/AR and intelligent voice in fields like game, education and household, help to underpin the future development of the company.

Game Business to stably Grow

Growing industry. 1) Chinese game industry recorded revenue of RMB151.3bn in first three quarters during 2017 and it is estimated to generate totally RMB201.1bn (+23.1%) income in 2017E. After rapid growth during past years, Chinese game industry is predicted to experience slower expansion in future, when further activating existing clients and upgrading service quality become more important. Increasing per capita income and more popular entertainment lifestyle are expected to secure steady growth of game industry. 2) Trendy mobile apps keep relatively quick expansion. Mobile apps, client-end game and web game respectively contributed 55.8%, 34.6% and 9.6% to industry turnover in 2017E. By customer base, the user number of mobile apps scaled up by 9% to 460mn; client-end game kept similar user base (150mn) to 2016; while the number of web game players decreased by 2% to 240mn. 3) VR games is likely to boom. As the development of related devices and ever-growing need for better playing experience, VR games leveraging on its unique charm and powerful infectivity attract more and more players. In 2017 the user amount of VR games grew by 100% to 40mn and more consumers have visited VR experience halls. It is estimated that VR ecosystem will form in 2020 and the value of global VR game industry is expected to reach USD14.95bn then.

We highlight that the future growth momentums come from following aspects: 1) New mobile apps. The company is going to launch more mobile game apps this year under popular IPs. Its classic IPs (Eudemons, Heroes Evolved) has accumulated broad users who may be transferred into players of related mobile apps. New apps are likely to achieve great user base, given the company has technical advantage, strong distribution channel and affluent operation experience in game industry. 2) New VR/AR games. The company proactively explores VR/AR fields given its investment in two advanced AR firms (Cherrypicks Alpha & ARHT Media) in 2016. VR HBQ is a VR game launched in 2016 which combines action competition and virtual reality technology to bring excellent playing experience to users. In 2018, NetDargon is going to launch a VR app under Eudemon and another AR app under Heroes Evolved. It is projected that the VR game player base will continue to grow in following years assuming more devices going into commercialization. 3) Increasing ARPU through further understanding of user habit and improving playing experience.

Figure: New games launched in 2018

IP	Game Product	Client-end	Mobile App	AR/VR
Eudemons	魔域互通版		Yes	
	3D 魔域		Yes	
	第三人稱射擊類遊戲	Yes	Yes	VR
Heroes Evolved	集換式卡牌類遊戲		Yes	
	策略 MOBA 類遊戲		Yes	
	模擬類遊戲		Yes	AR
Launched soon	休閒類遊戲		Yes	

Source: Company, Phillip Securities

Monetization of Education Business

We address the monetization path of education business as “Hardware—Software—Community/ Platform”. Currently the majority of education segment revenue is from international education business, of which consist of hardware sales while software do not create much cash until now. We estimate that in short run, hardware distribution will still serve as the cash cow; in long run, developed software products will cultivate a social e-commerce platform, after absorbing enough users and building high customer loyalty. Potential revenue of this platform may come from students, parents and resource suppliers and other users.

The software products procure customers starting from catching teacher users (by offering lecture preparation and quiz tools) then accessing students (by offering homework tools) as well as parents (by providing communication tools). We are positive on monetization potential of this path. The teachers play key role in education and make important instructions during students study, so that they could directly encourage the students and parents to use these apps to finish quiz and deal with other stuff. This gives the company a chance to charge for customized products and services. For example, the app could automatically produce exercises for students according to their weaknesses grasped by the data center. We roughly estimate that if current 60mn student users all can use the apps to do their homework and 50% of them choose to pay for customized products, RMB15 per students every year, thus RMB450mn may be generated from this channel.

Figure: Promotion method



Source: Company, Phillip Securities

Besides, NetDragon’s study resource platform can combine buyers (teachers, students and parents) and content suppliers (i.e.publishers) thus to charge commission fees to suppliers. As its study software attains students study records, this could help suppliers to find most targeted potential buyers who really need their products. This platform is now still striving for broadening customer base.

International Education Business

Now the international education business is main stream of education segment income. Promethean delivered revenue over USD200mn as up to Sep end last year, with GPM 28%. According to Futuresource Consulting, NetDragon's K12 interactive display solution is ranked at NO.1 in terms of market share in the world (excluding China). We predict future drivers coming from: 1) Coming monetization of software products in developed market. Promethean users include 1.7mn teacher and 1.3mn students overseas. This year the company is trying to charge some fees through these apps. We expect the income from software to increase if this commercialization goes smoothly. 2) New orders from developing regions. One Belt One Road policies benefit the company in expanding business abroad. In 17Q1 NetDragon obtained an USD30mn contract in Russian which means that the interactive display products will be installed in 7,600 classrooms. We also know from our checks that the company is actively preparing and striving for new orders in Turkey and Malaysia. We expect more purchasing contracts to be obtained in developing countries. Although GPM of this business is slightly lower than orders in developed areas, OPM is approximately the same due to lower distribution expenses.

Domestic Education Business

We see that revenue from China education business continue to hike, given 17Q3 contract sales reached RMB150mn. Chinese government continues to increase budgetary expenditure for education. In an educational reform scheme, it is clearly put forward that fiscal expenditure on education should account for more than 4% in GDP. With continuous growth of GDP, funds for education increases year over year, up by 8.2% to RMB3.16trn in 2016. A plan for education informatization also specifies that related state expenditure should not be less than 8% of education expenditure. Thus it is estimated that the expenditure for educational informatization in 2016 is about RMB252.8bn. With the implementation of national policies, local governments pay more attention to secure educational information outlay and launch more related procurement projects.

In 2017, NetDragon has won a number of government/school contracts, involving classroom renovation and facilities. In addition to public fiscal procurement, the company promotes software products through various channels, like through cooperation with PC hardware manufacturers, courseware competition or Education Bureau promotion. It tries to extend flagship product "101 Education PPT" to more teachers users. At the end of Nov 2017, the installation amount of 101 PPT for K12 teacher users reached 1.1mn in Nov 2017, finishing the whole year target ahead of schedule. In future, the company will continue to expand user base through various resource.

Figure: NetDragon tender information

Time	Contract Amount (RMB10k)	Contract Name	Region
2017.11	72.27	2017 年電子實訓室改造第 1 包	Anhui
2017.11	112.18	2017 年公共機房雲桌面等建設	Anhui
2017.9	451.00	四川文理學院四川文理學院智慧製造學院實驗室建設政府採購項目政府採購合同	Sichuan
2017.9	195.01	VR 智慧教室建設項目政府採購合同	Fujian
2017.1	372.12	甘肅省 2017 年“全面改薄”省級集中採購“班班通”設備第二期採購專案第六包	Gansu
2017.1	370.63	甘肅省 2017 年“全面改薄”省級集中採購“班班通”設備第二期採購專案第七包	Gansu

Source: Government, Phillip Securities

Investment Thesis & Valuation

We adopt SOTP valuation to calculate the stock price. 1) Game business: PE method. We expect the game business to keep stable growth with consideration of new game products to launch soon and efficient operation of the management. Assuming revenue growth of game business to be 20%/18% in 18E/19E, relatively steady profit margin and tax rate of 15%, we predict earnings of game business in 18E to be RMB505mn. We choose 8 listing game firms and get the PE median of 15.98. Conservatively, we give target PE 12x and derive the NAV of game business to be HKD9.39 per share. 2) Education business. 11 HK listed education firms has PS median of 13.45x. The company's education business still reports loss now, so we refer to PS of two firms which reported loss (2371.HK & 1082.HK) and use their average PS 3.73x to get value of education business should be HKD14.48 per share. Therefore we get our target price HKD23.88. Considering the great market volatile recently, we suggest buying during price dips. (Exchange rate=0.8228)

Figure: SOTP Valuation

	Rev 18E /rmb mn	Earnings 18E /rmb mn	Target PE	Target PS	Exchange Rate	NAV /hkd mn	Price /hkd
Game	1,985	505	12.00	-	0.8288	5,018	9.39
Education	2,505	-	-	3.73		7,738	14.48
						Price per share/hkd	23.88

Source: Phillip Securities

Figure: Key Assumption

	16A	17E	18E	19E
Revenue	2,793	3,786	4,569	5,428
<i>YoY</i>	<i>119.55%</i>	<i>35.54%</i>	<i>20.69%</i>	<i>18.80%</i>
Game Income	1,210	1,654	1,985	2,342
<i>YoY</i>	<i>22.79%</i>	<i>36.68%</i>	<i>20.00%</i>	<i>18.00%</i>
Education Income	1,526	2,054	2,505	3,007
<i>YoY</i>	<i>528.62%</i>	<i>34.55%</i>	<i>22.00%</i>	<i>20.00%</i>
Gross Profit	1,583	2,138	2,578	3,057
<i>GPM</i>	<i>56.92%</i>	<i>56.47%</i>	<i>56.41%</i>	<i>56.31%</i>
Game Income	1,128	1,522	1,826	2,155
<i>GPM</i>	<i>93.21%</i>	<i>92.00%</i>	<i>92.00%</i>	<i>92.00%</i>
Education Income	455	616	752	902
<i>GPM</i>	<i>29.84%</i>	<i>30.00%</i>	<i>30.00%</i>	<i>30.00%</i>

Source: Phillip Securities

Figure: Target PE/PS

Code	Firm	Mkt Cap /hkd mn	PS (TTM)	PE (TTM)
0777.HK	網龍	10,165.10	2.04	-135.92
Education Firms				
Code	Firm	Mkt Cap /hkd mn	PS (TTM)	PE (TTM)
0839.HK	中教控股	15,959.60	15.31	34.70
1565.HK	成實外教育	15,073.15	14.97	41.43
6169.HK	宇華教育	14,365.73	14.29	38.62
1317.HK	楓葉教育	13,450.97	10.30	27.64

6068.HK	睿見教育	10,699.84	9.13	45.08
2001.HK	新高教集團	7,098.26	13.45	43.49
1569.HK	民生教育	6,227.47	11.71	20.63
8417.HK	大地教育	1,610.37	70.77	-20913.87
8055.HK	中國網路資訊科技	1,455.04	27.85	-9.20
2371.HK	創聯教育金融	591.25	5.35	-3.14
1082.HK	香港教育國際	328.54	2.10	-0.99
Average		8,653.17	13.60	21.46
Median		8,899.05	13.45	27.64
Target PS		-	3.73	-
Game Firms				
Code	Firm	Mkt Cap /hkd mn	PS (TTM)	PE (TTM)
3888.HK	金山軟體	33,038.18	2.90	28.40
0799.HK	IGG	10,480.41	2.86	10.90
1089.HK	樂遊科技控股	5,128.42	5.03	68.91
6899.HK	聯眾	2,823.84	3.36	577.08
0434.HK	博雅互動	2,334.97	2.53	8.95
1022.HK	飛魚科技	1,368.73	8.03	-9.52
0484.HK	雲遊控股	1,202.23	3.65	-3.61
8345.HK	火岩控股	910.40	11.38	21.07
Average		8849.10	4.25	22.44
Median		2579.40	3.51	15.98
Target PE		-	-	12.00

Source: Wind (as at Feb 8), Phillip Securities

Risks

Fail to attain international education purchase orders;
 International education business fail to monetize;
 Domestic education business fail expectation;
 Game business fail expectation;
 Fierce competition.

Financials

FYE	FY2014	FY2015	FY2016	FY2017E	FY2018E
Valuation Ratios					
Price to Earnings (P/E)	42.67	-51.42	-36.25	103.32	45.36
Price to Book (P/B)	1.96	2.07	2.30	2.47	2.42
Per Share Data (RMB)					
EPS	0.35	-0.29	-0.41	0.14	0.33
Book Value Per Share	9.14	8.63	7.77	7.24	7.40
Dividend Per Share	0.32	0.17	0.17	0.07	0.16
Growth (%)					
Revenue	-35.50	32.13	119.55	35.54	20.69
Gross Profit	-35.49	11.40	65.95	-	20.58
Operating Income	-52.45	-124.27	533.58	-	173.44
Net Profit	-97.12	-180.92	41.80	-	127.80
Margins (%)					
Gross Profit Margin	89.32	75.31	56.92	56.47	56.41
Operating Profit Margin	26.17	-4.81	-13.87	1.71	3.87
Net Profit Margin	18.35	-11.24	-7.26	2.03	3.82
Key Ratios					
ROE (%)	3.81	-3.34	-5.27	1.98	4.42
ROA (%)	4.48	-1.52	-3.89	1.51	3.36

FYE	FY2014	FY2015	FY2016	FY2017E	FY2018E
Income Statement (RMB Mn)					
Revenue	962.82	1272.20	2793.10	3785.75	4569.11
- Cost of Goods Sold	-102.84	-314.16	-1203.23	-1648.07	-1991.58
Gross Income	859.97	958.04	1589.87	2137.67	2577.53
- Operating Expenses	-607.97	-1019.19	-1977.31	-2073.02	-2400.74
Operating Income	252.00	-61.15	-387.44	64.66	176.79
-Financing Expenses	-0.42	0.59	-8.65	-9.70	-12.38
-Non Recurring Items	-15.57	-26.69	187.33	0.00	0.00
Pretax Income	236.02	-87.25	-208.76	54.96	164.42
- Minority Interest	-4.86	-44.95	-34.04	-30.00	-35.00
Net Profit	176.68	-142.98	-202.74	76.71	174.75

Source: Wind, Company, Phillip Securities (HK) Research Estimates

Exchange rate (0.8228) is HKDCNY1Y forward contract price on Feb 9 from Wind.

(Financial figures as at 9 Feb 2018)

PHILLIP RESEARCH STOCK SELECTION SYSTEMS

Total Return	Recommendation	Rating	Remarks
>+20%	Buy	1	>20% upside from the current price
+5% to +20%	Accumulate	2	+5% to +20% upside from the current price
-5% to +5%	Neutral	3	Trade within $\pm 5\%$ from the current price
-5% to -20%	Reduce	4	-5% to -20% downside from the current price
<-20%	Sell	5	>20% downside from the current price

We do not base our recommendations entirely on the above quantitative return bands. We consider qualitative factors like (but not limited to) a stock's risk reward profile, market sentiment, recent rate of share price appreciation, presence or absence of stock price catalysts, and speculative undertones surrounding the stock, before making our final recommendation

GENERAL DISCLAIMER

This publication is prepared by Phillip Securities (Hong Kong) Ltd ("Phillip Securities"). By receiving or reading this publication, you agree to be bound by the terms and limitations set out below.

This publication shall not be reproduced in whole or in part, distributed or published by you for any purpose. Phillip Securities shall not be liable for any direct or consequential loss arising from any use of material contained in this publication.

The information contained in this publication has been obtained from public sources which Phillip Securities has no reason to believe are unreliable and any analysis, forecasts, projections, expectations and opinions (collectively the "Research") contained in this publication are based on such information and are expressions of belief only. Phillip Securities has not verified this information and no representation or warranty, express or implied, is made that such information or Research is accurate, complete or verified or should be relied upon as such. Any such information or Research contained in this publication is subject to change, and Phillip Securities shall not have any responsibility to maintain the information or Research made available or to supply any corrections, updates or releases in connection therewith. In no event will Phillip Securities be liable for any special, indirect, incidental or consequential damages which may be incurred from the use of the information or Research made available, even if it has been advised of the possibility of such damages.

Any opinions, forecasts, assumptions, estimates, valuations and prices contained in this material are as of the date indicated and are subject to change at any time without prior notice.

This material is intended for general circulation only and does not take into account the specific investment objectives, financial situation or particular needs of any particular person. The products mentioned in this material may not be suitable for all investors and a person receiving or reading this material should seek advice from a financial adviser regarding the suitability of such products, taking into account the specific investment objectives, financial situation or particular needs of that person, before making a commitment to invest in any of such products.

This publication should not be relied upon as authoritative without further being subject to the recipient's own independent verification and exercise of judgment. The fact that this publication has been made available constitutes neither a recommendation to enter into a particular transaction nor a representation that any product described in this material is suitable or appropriate for the recipient. Recipients should be aware that many of the products which may be described in this publication involve significant risks and may not be suitable for all investors, and that any decision to enter into transactions involving such products should not be made unless all such risks are understood and an independent determination has been made that such transactions would be appropriate. Any discussion of the risks contained herein with respect to any product should not be considered to be a disclosure of all risks or a complete discussion of such risks.

Nothing in this report shall be construed to be an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in this research should take into account existing public information, including any registered prospectus in respect of such security.

Disclosure of Interest

Analyst Disclosure: Neither the analyst(s) preparing this report nor his associate has any financial interest in or serves as an officer of the listed corporation covered in this report.

Firm's Disclosure: Phillip Securities does not have any investment banking relationship with the listed corporation covered in this report nor any financial interest of 1% or more of the market capitalization in the listed corporation. In addition, no executive staff of Phillip Securities serves as an officer of the listed corporation.

Availability

The information, tools and material presented herein are not directed, intended for distribution to or use by, any person or entity in any jurisdiction or country where such distribution, publication, availability or use would be contrary to the applicable law or regulation or which would subject Phillip Securities to any registration or licensing or other requirement, or penalty for contravention of such requirements within such jurisdiction.

Information contained herein is based on sources that Phillip Securities (Hong Kong) Limited ("PSHK") believed to be accurate. PSHK does not bear responsibility for any loss occasioned by reliance placed upon the contents hereof. PSHK (or its affiliates or employees) may have positions in relevant investment products. For details of different product's risks, please visit the Risk Disclosures Statement on <http://www.phillip.com.hk>.

© 2018 Phillip Securities (Hong Kong) Limited

Contact Information (Regional Member Companies)

SINGAPORE

Phillip Securities Pte Ltd
Raffles City Tower
250, North Bridge Road #06-00
Singapore 179101
Tel : (65) 6533 6001
Fax : (65) 6535 6631
Website: www.poems.com.sg

HONG KONG

Phillip Securities (HK) Ltd
Exchange Participant of the Stock Exchange of Hong Kong
11/F United Centre 95 Queensway
Hong Kong
Tel (852) 22776600
Fax (852) 28685307
Websites: www.phillip.com.hk

INDONESIA

PT Phillip Securities Indonesia
ANZ Tower Level 23B,
Jl Jend Sudirman Kav 33A
Jakarta 10220 – Indonesia
Tel (62-21) 57900800
Fax (62-21) 57900809
Website: www.phillip.co.id

THAILAND

Phillip Securities (Thailand) Public Co. Ltd
15th Floor, Vorawat Building,
849 Silom Road, Silom, Bangrak,
Bangkok 10500 Thailand
Tel (66-2) 6351700 / 22680999
Fax (66-2) 22680921
Website: www.phillip.co.th

UNITED KINGDOM

King & Shaxson Capital Limited
6th Floor, Candlewick House,
120 Cannon Street,
London, EC4N 6AS
Tel (44-20) 7426 5950
Fax (44-20) 7626 1757
Website: www.kingandshaxson.com

AUSTRALIA

PhillipCapital Australia
Level 12, 15 William Street,
Melbourne, Victoria 3000, Australia
Tel (613) 96188238
Fax (613) 92002272
Website: www.phillipcapital.com.au

MALAYSIA

Phillip Capital Management Sdn Bhd
B-3-6 Block B Level 3 Megan Avenue II,
No. 12, Jalan Yap Kwan Seng, 50450
Kuala Lumpur
Tel (603) 21628841
Fax (603) 21665099
Website: www.poems.com.my

JAPAN

PhillipCapital Japan K.K.
Nagata-cho Bldg.,
8F, 2-4-3 Nagata-cho,
Chiyoda-ku, Tokyo 100-0014
Tel (81-3) 35953631
Fax (81-3) 35953630
Website: www.phillip.co.jp

CHINA

Phillip Financial Advisory (Shanghai) Co. Ltd
No 436 Hengfeng Road,
Greentech Unit 604,
Postal code 200070
Tel (86-21) 51699400
Fax (86-21) 63532643
Website: www.phillip.com.cn

FRANCE

King & Shaxson Capital Limited
3rd Floor, 35 Rue de la Bienfaisance 75008
Paris France
Tel (33-1) 45633100
Fax (33-1) 45636017
Website: www.kingandshaxson.com

UNITED STATES

Phillip Futures Inc
141 W Jackson Blvd Ste 3050
The Chicago Board of Trade Building
Chicago, IL 60604 USA
Tel +1.312.356.9000
Fax +1.312.356.9005