

## Recommendation

# BUY

## Upside

# 22%

## Recommendation Factors

Fair Value (¥)	37.11
EBIT (¥M)	665.17
Market Cap (¥ B)	29.07

## Basic Information

Last Trade (¥)	30.35
Trade Date	11/04/2018
Market Value (¥ B)	29.07
P/E	25.12
PEG	0.51
P/B	3.13
EPS	1.32
EBITDA (¥ M)	738
D/V	33.63
Beta	1.2

## Valuation Forecast Analysis

Price target	¥37.11
P/E (2020 year)	16.7X
P/B (2020 year)	2.62X

## Industry & Sector

Industry	Oil Service Equipment
Sector	E&P

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## Key takeaways:

- The demand for fracturing equipment is skyrocketing because of shale gas mining, Jereh's equipment has a strong competitive power:** The oil service cycle is still climbing, three domestic oil giants are increasing their capital expenditure, and shale gas is developing fast, all of these would lead to a considerable profit growth.
- Highly competitive product launches:** Recently, the 7000-type electric driven fracturing skid independently developed and manufactured by the company has been successfully offline. This is the world's first 7000 type electric drive fracturing skid, which carries the world's largest power plunger pump, symbolizing the leading level of electric drive fracturing equipment. It is expected to greatly improve the fracturing efficiency and help the efficient development of shale gas.
- Great potential for net profit growth:** In the first three quarters of 2019, the company's revenue increased by 45.88% year-on-year, but the growth rate of other expenses in the period, except the R & D expense increased by 149% due to the small base, was significantly lower than the growth rate of revenue.
- Clear BUY with 22% upside return:** Under a 3 stage FCFE model, we estimate the target price of Jereh shares is 37.11, which is still about 22% upside from the current share price and there's still a considerable growth room.

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## Company introduction

As a leading domestic private oil and gas field equipment manufacturer and technical engineering service provider, Jereh Group have continuous product innovation

Founded in 1999 in Yantai City, Shandong Province, its main business is to provide products and services for the exploration, development and oil and gas gathering of oil and gas companies. Through continuous product innovation, the company has grown into a leading enterprise in the industry in China.

With its strength in equipment manufacturing, technical services, engineering contracting and investment and operation, Jereh Group has grown into an international company which runs business in more than 70 countries and regions with more than 5000 global employees, engaged in the fields of oil and gas, power and environmental protection.



Figure 1: Jereh business scope

## Company main business

The company's business is bounded by the oil and gas production wellhead. As shown in Figure 2.

The process of exploration, well drilling and completion and formation of the wellhead is called the oil and gas field service. The fracturing, cementing, coiled tubing and other equipment provided in this process belong to the oil and gas field equipment (also known as the drilling and completion equipment).

For the part above the wellhead, the separation, purification, gathering and transportation project after the formation of production wellhead is called oil and gas field engineering service, and the equipment used is called oil and gas engineering equipment.

Above the wellhead	Oil and gas engineering equipment: NG compression equipment NG transmission equipment	Oil and gas field engineering service: separation, purification, collection and transportation
Below the wellhead	Drilling and completion equipment: fracturing equipment cementing equipment coiled tubing	Oil and gas field service: cementing service fracturing & acidizing service coiled tubing service
	<b>Equipment</b>	<b>Service</b>

Figure 2: Main business split of the company

More than 75% of the total revenue of the company comes from the part below the wellhead since 2016, especially the fracturing equipment, fracturing & acidizing service and coiled tubing service (see Figure 3). Detailed analysis will be carried out in the following.

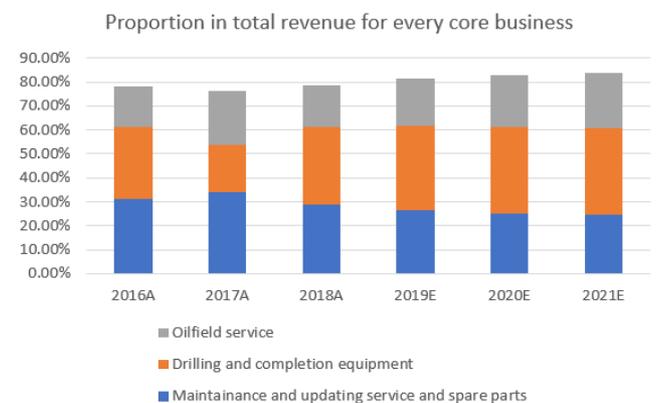


Figure 3: Proportion in total revenue for the core businesses

## Some typical achievements

- The first oilfield service company with API Q2 certification in China;
- The first Chinese company providing large-scale integrated stimulation services to Russia;
- The largest coiled tubing service provider and largest privately-owned enterprise that offers fracturing and acidizing services in China;
- The first Chinese company that provides coiled tubing services for GCC countries;
- The only supplier of complete fracturing equipment for shale gas development in North America from China so far.

## Global Market

The global oilfield service market accounted for a value of US\$ 250 billion in the year 2018 and is estimated to reach US\$ 330 billion by 2026. It is anticipated to post a steady CAGR of 3.7% during the forecast period. Fortune Business Insights recently published this information in a report, titled "Oilfield Service Market Size, Share and Global Trend by Service (Seismic Service, Drilling Service, Completion and Work-over Service, Production Service, Processing and Separation Service, Others), By Application (Onshore, Offshore), and Geography Forecast till 2026."

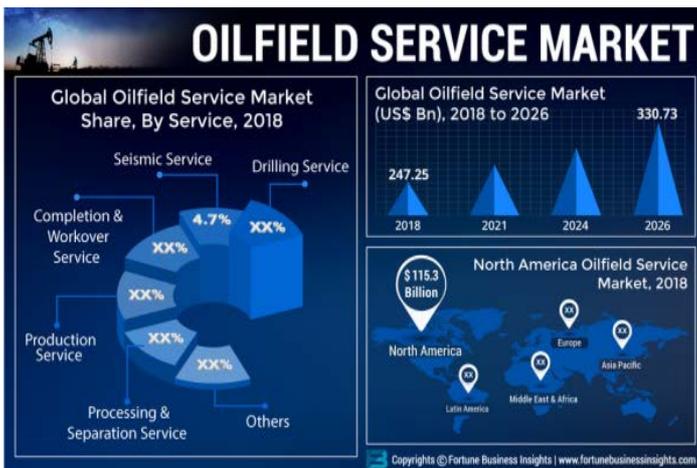


Figure 4: oilfield service market

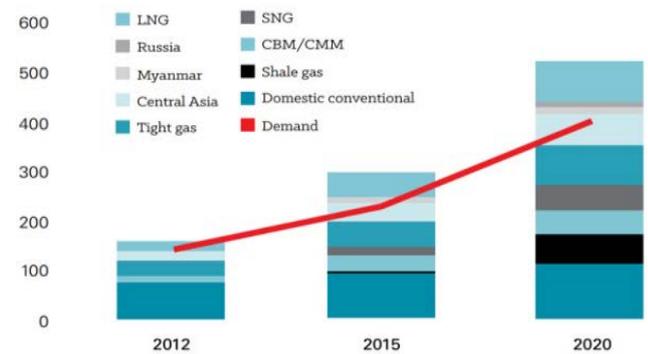
## Chinese Market

**External Causes:** Sino-US trade frictions have brought new challenges to domestic energy security: the occurrence of trade frictions has made the already tense situation even more severe, driving the grand strategy of energy security.

**Internal Causes:** The frequent occurrence of "gas shortage" is an important driving force for the country to carry out energy reform.

China's natural gas recoverable resources are about 50 trillion cubic meters, of which unconventional natural gas reserves can reach 34.5 trillion cubic meters, accounting for 69% of China's remaining recoverable natural gas reserves. The development of unconventional oil and gas resources has long been written. In the national planning, such as the 13th Five-Year Plan for the development of shale gas, it is pointed out that in 2020, we will strive to achieve 30 billion cubic meters of shale gas production, accounting for 8.1% of China's natural gas consumption.

## China's Natural Gas Balance



Sources: BP, NBS, NDRC, EIA, CNPC, SINOPEC, CNOOC, CAE, and author's estimates.

Figure 5: China's Natural Gas Balance

## Structural shortage of equipment in China

At present, China's oilfield equipment manufacturing enterprises are still in the stage of "structural overcapacity".

On one hand, there is excess capacity for the drilling rigs.

- **Excessive stock of drilling rigs:** At present, there are more than 5,000 land rigs in the world and about 2,000 domestic rigs, of which less than 670 are Sinopec rigs and more than 900 are PetroChina. The proportion of rigs is 40% globally, but the output is only 10%. In 2017, the utilization rate of Sinopec drilling rig equipment was only 67%-73%, and there is still room for improvement.

- **Overcapacity of drilling rigs:** No more than 100 drilling rigs will be renewed every year, while we have the annual production of 200 drilling rigs in China. China's actual annual production capacity is much bigger than the domestic demand.

On the other hand, the market stock for fracturing equipment and other related special operation equipment is not enough.

- **During the drilling and completion process,** drilling costs (including cementing) accounts for 40% of capital expenditures, while the completion process is 53%. Among the completion, the proportion of fracturing equipment is the largest, reaching 24%, and the fracturing fluid is 15%, that is, the cost associated with fracturing is close to 40% of the completion cost, accounting for 20% of the total capital expenditure. The drilling rig and fracturing equipment are two important inputs in the development of oil and gas fields.

- The fracturing truck used for unconventional oil and gas (including shale gas) development need to be Type 2300-2500 or above, while there are about 2000 fracturing trucks in the Chinese market, most of which are small and medium-sized (see Figure 6). With the steady increase of the contribution of unconventional oil and gas resources, the demand for fracturing equipment in China will be increasing

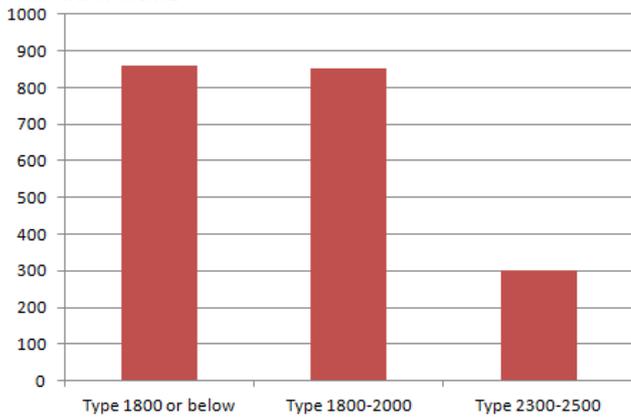


Figure 6: Stock structure of fracturing trucks in China

**In conclusion,** drilling rig and fracturing equipment are two important inputs in the whole oil and gas field development. For China, which will vigorously develop unconventional natural gas in the future, the capital expenditure will incline to the necessary fracturing equipment rather than the drilling rigs with excess capacity.

### Booming demand for fracturing equipment

In China, drilling a vertical well costs CNY 3 mill and a horizontal well costs CNY 10 million. In 2018, all vertical and inclined wells in Changqing Oilfield were changed to horizontal well drilling and staged fracturing. As horizontal wells are relatively cost-effective and widely used in shale oil and gas and tight oil and gas. New wells have no vertical wells. The necessary process for horizontal wells is fracturing, and **the fracturing technology is mainly used for unconventional oil and gas exploitation, as well as for conventional oil and gas production.**

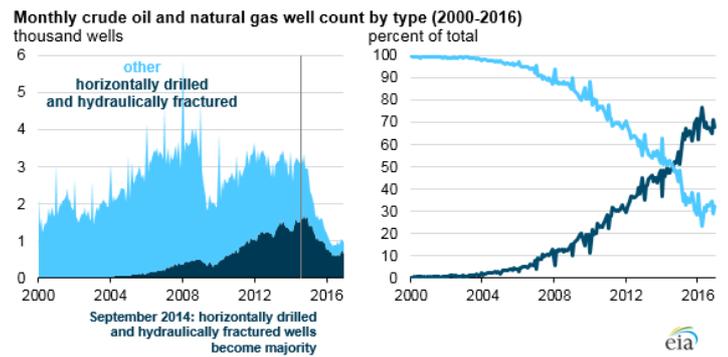


Figure 7: monthly crude oil and natural gas well count by type (2000-2016) thousand wells Source: U.S. Energy Information Administration

### Fracturing truck

The equipment used in the fracturing technology is a fracturing truck. The four core components of a fracturing truck are the chassis, the engine, the gearbox and the fracturing pump.

Cost share of each part of the fracturing truck

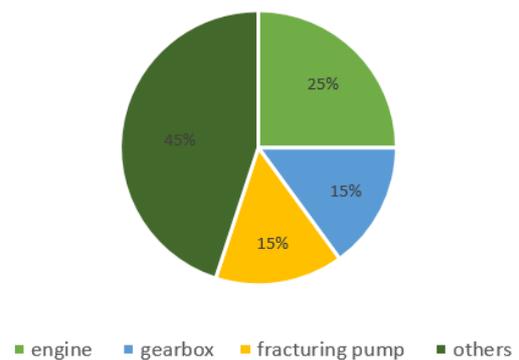


Figure 8: cost share of each part of the truck

The need for fracturing trucks depends on the amount of fracturing work in the new wells, which eventually depends on the production target. If the shale gas production in 2020 is to reach 30 billion cubic meters, the compound growth rate for the two years from 2019 to 2020 needs to reach 55%. The Type-2500 fracturing truck required for shale gas development faces a 4 billion market. The number of new wells to be developed in 2018, 2019 and 2020 are 211, 340 and 573 respectively. If we calculate the type-2000 or type-2500 fracturing trucks and conventional fracturing trucks required for tight oil and gas, the overall market space will exceed CNY 5 billion.

## Supply analysis of fracturing equipment

- Localization of production of fracturing equipment in China

With the continuous development of domestic technology, the technical advantages of imported fracturing equipment provided by foreign companies such as Halliburton, S&S have been wiped out, and the price is higher than that of domestic fracturing equipment. In addition, the domestic operation environment is worse, such as poor road conditions and high pressure (2500-type and above), so the applicability of overseas imported equipment is not strong. In recent years, it has gradually withdrawn from the Chinese market, and the market share of imported products is less than 10%.

- Opportunities in the USA market

According to IHS Markit data, the storage capability of the fracturing equipment in the United States is 24 million horsepower, 1 / 3 of which has reached the replacement cycle, i.e. 8 million horsepower fracturing equipment needs to be updated, corresponding to 3200 sets of Type-2500 horsepower fracturing trucks. One 2500 horsepower fracturing truck of Jereh Group is about CNY 16 mill, corresponding to the market space of CNY 5.2 billion for fracturing equipment update in the United States. Considering that the price of domestic fracturing equipment in the United States is 40% higher than that of Jereh, there is still a certain premium space for Jereh's equipment sales in the United States.

## Competition analysis of key technologies

- Conventional fracturing pump

As the “heart” of a fracturing truck and the real threshold for the productivity of fracturing trucks. At present, the main domestic manufacturers include Jiangnan No.4 Machinery Plant of SINOPEC, Jereh Group, CNPC Baoji Oilfield Machinery Co., LTD, and SANY HEAVY INDUSTRY CO., LTD and so on, while the first three companies own the main market, especially the first two players have strong competitive advantages because of long-term technical precipitation as well as the rich well site operation experience.

- Electric driven fracturing pump

Compared with conventional fracturing technology, the electric driven fracturing technology has the characteristics of environmental protection and energy saving and reduced operating costs. Although this technology is first proposed by the United States, the electric driven fracturing pump with input power of 7000 HP was unveiled at CIPPE in March 2019 by Jereh. In May 2019, it released the electric driven fracturing semi-trailer of 10000 HP at the OTC exhibition in the United States. These provide Jereh the internationally leading role in this technology.

## Core competitiveness analysis of Jereh

- Excellent working capital management and capability of control

In the face of the industry crisis of 2015 to 2016, Jereh cuts almost 20% of staff, from 4,700 in 2014 to 3,800 in 2016, but the sales staff increased slightly, from 617 to 640, reflecting Jereh's determination to expand.

At the same time, Jereh merged and integrated the industrial chain company, and actively played a synergistic effect. Starting from the acquisition of Texas in 2011 and the acquisition of Hunan Xianrui in 2017 (after the negotiation was lifted), Jereh was always on the road to diversification.

- Active and successful overseas expansion strategy

From the customer side:

With years of deep cultivation and investment in the global market, its total revenue contribution from Russia, North America and the Middle East for the drilling and completion equipment is 30%, and the contribution from Russia for the oilfield technical service is 60-70%. The overseas market has become an important thrust for the company's development.

From the supplier side:

Compared with its domestic competitors, Jereh has the advantages of purchasing other core components (like engine, gearbox), for it is the exclusive agents for many of these brands such as MTU、Allison、OFM、PACCAR.

- Technology barrier

Superb large fracturing pump technology and new generation of electric driven technology. Jereh's fracturing pump technology fully absorbed that of Halliburton, FMC and OFM, and completed curve overtaking, maintaining a leading position in the field of

electric driven technology. Jerry's products are not only recognized by the high-end markets in North America and the Middle East, but also executing the most difficult task in high-pressure operation of Yanchang Oilfield in China.

### ● Effective integration of equipment and service

By taking advantage of manufacturing and providing the equipment, Jereh is building an integrated platform to maximize the profit. In 2018, the company's total revenue of oilfield engineering and technical services reached CNY 1.20 billion with year-on-year growth of 21.70% and the gross profit margin was 17.54% with year-on-year growth of 3.74%.

At the same time, the company's revenue from equipment maintenance, transformation and spare parts replacement increased from CNY 163 million in 2006 to CNY 1.34 billion in 2018, with a compound annual growth rate of 19.16%, while the gross profit margin increased from 22.84% in 2006 to 31.10% in 2018. As we can get a glimpse from the chart below:

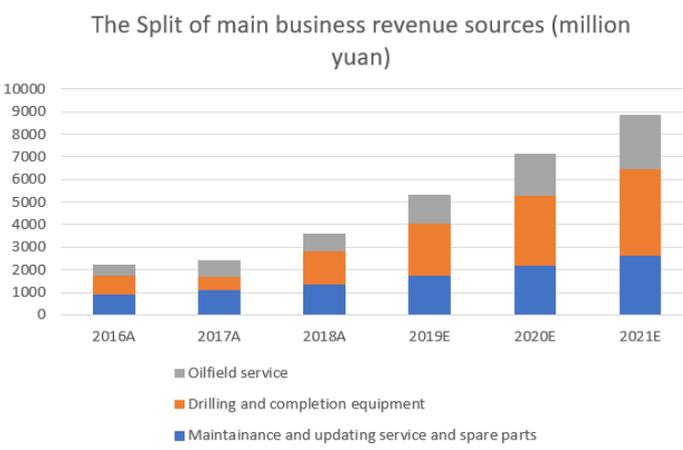


Figure 9: the split of main revenue sources of Jereh

## Conclusion

As most of Jereh's present businesses are in the field of natural gas, which is the direction of the country's vigorous development. The domestic shale gas production technology continues to break through (the cost continues to decline), the shale gas market is expected to further erupt, and the fracturing equipment will enter a high-speed growth period in China.

As a leading domestic fracturing equipment enterprise, Jerry will benefit from the national energy security strategy.

Internally, the company shows excellent working capital management and capability of control.

Externally, the company not only realizes the global layout and relies on the leading fracturing pump technology and the advantage of invisible barrier of core component agent right. It is a high-quality company with growth in the periodic fluctuation of the industry, which is highly recommendable.

## Profitability ratio

The performance of the Jereh Group continued to rise between 2010 and 2014, and the stock price climbed all the way. In the following years, the performance indicators all fell sharply. The reason for the decline was not the Jereh Group's own reasons. However, due to the slowdown in global economic growth in 2014, the price of oil and natural gas continued to fall. The international crude oil futures price continued to fall below 60 US dollars. It fell below the low point of the 2008 financial crisis and hit a 12-year low. The exploration and development investment of global oil companies has been shrinking again and again, the oilfield service and equipment market has been dying, and the oil service industry has slipped into a severe winter. Affected by this, Jereh Group's performance in 2015 fell sharply, which was reflected in the decline in revenue, gross profit and net profit, and this downturn continued to improve until about 2018. The reaction of the capital market was that the stock price fell simultaneously, from 52.25 yuan at the end of 2013 to 14.88 yuan in 2018, a drop of 72%.

Year	2013A	2014A	2015A	2016A	2017A	2018A	2019-9A	2019E	2020E	2021E
Revenue	37.00	44.61	28.27	28.34	31.87	45.97	42.41	65.17	85.86	106.2
Net profit	2.82	4.24	6.43	9.85	12.00	1.45	1.21	0.68	6.15	9.05

Figure 10: revenue and net profit forecast

Faced with the persistent freezing point of oil prices, Jereh Group took the initiative to choose self-criticism, innovation and innovation in the face of adversity. Jereh Group changed its corporate culture, changed its strategic planning, changed its organizational structure, changed its global marketing system, and vigorously recruited high-end talents and actively stored technology to consolidate the foundation of secondary entrepreneurship and innovation. Jereh Group's investment in product technology and other aspects has strengthened its leading position in the oil and gas field equipment and technical engineering service industry. The products continue to innovate and benefit from the global oil service industry's upswing, and the performance continues to recover rapidly.



Figure 11: share price forecast

In 2018, Jereh Group's revenue increased by 44% compared with 2017. After three years of industry winter, the company's net profit once again entered the rising channel. The latest 2019 quarterly report shows that the Jereh Group's revenue for the first three quarters was 4.24billion, an increase of 46% year-on-year.

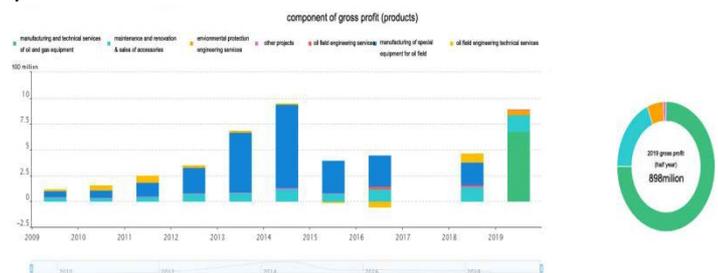


Figure 12: Component of gross profit(products)

What's more, according to the component of gross profit (products), manufacturing and technical services of oil and gas equipment contributes the most, while the maintenance and renovation & sales of accessories ranks the second. According to the development trend of oil services industry, Oil and gas equipment will gradually replace the traditional oil equipment, that's a typical earning point for the future of Jereh Group. We reasonably predict that Jereh Group's revenue will reach 6.52billion in 2019, which is higher than the historical peak of 2014. 46%; we also predict that by 2021 Jereh Group's revenue is 10.6billion, net profit is 1.9billion, which will far exceed the company's historical performance, and its share price is believed to achieve a rebound and growth that matches its performance.

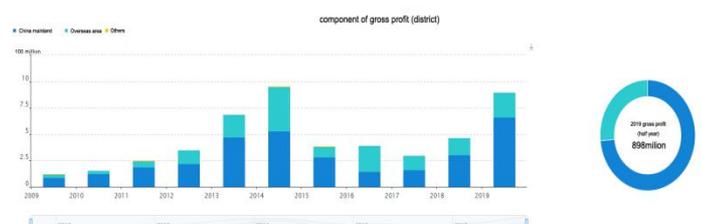


Figure 13: Component of gross profit(district)

As far as China is concerned, energy production will increase by 45% and energy consumption will increase by 41% by 2040. At the same time, the energy structure will continue to evolve, with coal accounting falling from 62% in 2016 to 36% in 2040, natural gas proportions nearly doubling to 13%, oil demand (+28%) and natural gas demand (+194%) expansion. It is estimated that by 2040, China will become the second largest shale gas producer after the United States, with production increasing to 22 billion cubic feet per day. The consumption of natural gas is expected to grow rapidly. The long-term development of natural gas production and consumption in China has already started, and the oilfield service market related to oil and gas growth will continue to grow. Meanwhile, in light of the component of gross profit (district), we can discern that the weight of China mainland is significant booming, which means more and more opportunities and this prosperous market is highly advantage for Jereh Group.

increased slightly, sales and management expense ratios decreased, and the refined management of Jereh Group was effective.

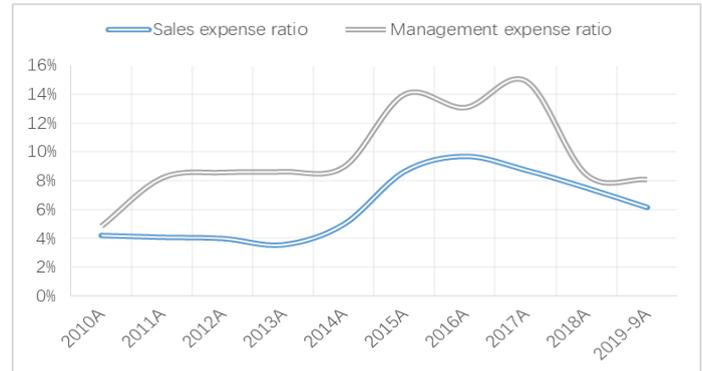


Figure 15: sales expense ratio

It is also important to emphasize that Jereh Group has not reduced its investment in product development while implementing refined management. In the past three years of data disclosure, the Jereh Group's R&D expenses increased from 71.67million in the first three quarters of 2017 to 157million in the first three quarters of 2019, an increase of 119%. Jereh Group adheres to innovation-driven development, providing customers with the most competitive energy equipment and engineering technology solutions, and continues to create maximum value for customers. At the same time, innovation does not stop at the product business. Jereh Group also pays attention to the transformation of business models and industry development, and through the special industrialization and knowledge dissemination, these concepts are transformed into more efficient and influential. Jereh Group focuses on the research and development and investment of new products and new technologies, and applies these products and technologies to consolidate the company's product advantages, enhance the company's technological innovation and core competitiveness, and lay the foundation for the company's sustainable development. Created more profitable space for the foreseeable future two years. From all the profitability ratio of last five years, we can predict a continuation of healthy profits in the current financial year ever since the year of 2016. The gross profit margin has maintained a high level which traditional normal manufacturing companies could not achieve.



Figure 14: gross profit margin etc

In 2015, international oil prices continued to fall to a new low in 12 years. Major domestic and international oil companies continued to reduce upstream exploration and development investment, and domestic oilfield equipment, services and engineering markets were weak throughout the year. All of the impact of the industry downturn is on the performance, resulting in a decline in the gross margin of Jereh Group, a rapid decline in net interest rates and an increase in the expense ratio. In 2018, the oilfield service market boomed, domestic shale gas development was in the ascendant, the market demand for drilling and completion equipment, oilfield technical services increased rapidly, Jereh Group increased sales, most of the company's product line sales increased significantly, gross margin Upgrade. In the third quarter of 2019, sales expenses and management expenses

## Activity ratio

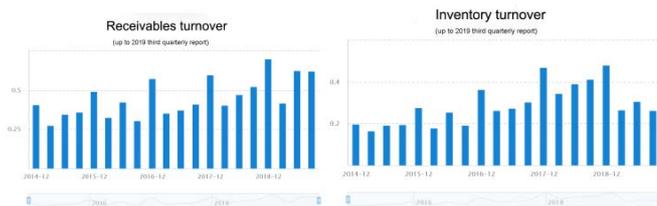


Figure 16: Receivable turnover&amp; inventory turnover

Since the turnover rate of Jereh Group is declining, we compare these rates with its competitors such as China International Marine Containers (Group) Ltd. (CIMC), China First Heavy Industries (known as CFHI), Inner Mongolia First Machinery Group Co.Ltd (norincogroup) and city heavy industries CO.Ltd (citichmc) based on the third quarterly report of 2019. There's no denying that Jereh Group is above the average level among the industry so we can conclude that Jereh Group is well performing.

Activity ratio	Jereh Group	CIMC	CFHI	norincogroup	citichmc
Inventory turnover	0.85	1.81	2.07	2.37	0.68
Receivables turnover	1.64	3.39	0.94	4.11	1.55
Payable turnover	2.21	4.45	1.41	2.58	1.19

Figure 17: Activity ratio comparison with competitors

Compared to last year, the cash conversion cycle is decreasing, maybe owing to increasing negotiating ability to upstream and downstream companies of Jereh Group.

## Liquidity ratio

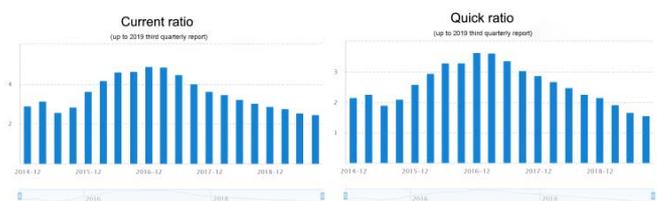


Figure 18: Current ratio&amp; quick ratio

Year	2010A	2011A	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019-9A
Revenue	9.44	14.60	23.84	37.00	44.61	28.27	28.34	31.87	45.97	42.41
Sales cash inflow	8.68	13.19	21.66	39.28	39.93	31.94	28.35	29.82	43.58	40.92
Operating cost	5.51	8.33	13.65	20.83	24.34	19.20	20.82	23.33	31.42	26.96
Purchase payment outflow	7.58	12.32	16.70	27.30	25.99	23.10	16.51	16.97	31.50	39.85
Sales payback ratio	0.92	0.90	0.91	1.06	0.90	1.13	1.00	0.94	0.95	0.96
Purchase payment ratio	1.38	1.48	1.22	1.31	1.07	1.20	0.79	0.73	1.00	1.48

Sales payback ratio= Sales cash inflow/ Revenue

Purchase payment ratio= Purchase payment outflow/ Operating cost

Figure 19: Sales payback ratio&amp; purchase payment ratio

Jereh Group's Sales payback ratio is around 1 in the past year, that is, the annual sales revenue can be recovered in a period of about one year, and the data of the accounts receivable turnover rate is not low in 2015, which is the lowest in the company's performance. This is also evidenced by the fact that the ageing of 1 and accounts receivable is basically within 12 months. This shows that Jereh Group's cash collection ability is very good, and the credit risk of bad debts is relatively low. In the management of credit risk, the notes receivable by Jereh Group have strong liquidity. The company has formulated corresponding bill management and control procedures and implemented them effectively, ensuring the safety of bill storage and use to a great extent. There is a low credit risk; Jereh Group regularly monitors customer credit records for notes receivable, accounts receivable, and other receivables. For customers with poor credit history, Jereh Group will use written dunning and shorten credit. Period or cancellation of credit terms to ensure that the company's overall credit risk is within the controllable range.

Jereh Group's Purchase payment ratio was greater than 1 before 2015, and fell to 0.79 and 0.73 in 2016 and 2017 respectively, and rose to 1 or more after 2017, and even reached 1.48 in the first three quarters of 2019, compared to 2015. According to the analysis of market conditions, the global oil service industry has been booming since 2018. The company's orders have increased substantially, and the purchase volume has increased. As a result, the amount of cash paid for purchasing goods and receiving labor services has increased substantially, and the cash paid for operating activities has increased substantially. As a result, this view can also be verified by analyzing the inventory turnover rate. The company's inventory turnover rate reached its lowest value in nearly 10 years in 2015, due to the company's large-scale procurement and poor sales in the early stage, resulting in a backlog of inventory, so that the company is in stock elimination and control in 2016 and 2017. The situation of procurement, the situation will not be alleviated until 2018. The inventory turnover in the first three quarters of 2019 showed a sharp decline compared with the previous period. Combined with the increase in operating income and operating cost during this period, it further verified that Jereh Group purchased and prepared goods in advance to increase inventory in order to meet the demand of increasing orders in future years.

At the same time, compared with the analysis of the stock price of Jereh Group, the stock price of Jereh

Group is in a rapid upward trend after 2011. After the disclosure of the annual report in 2012, the stock price has a straight upward trend until the first quarterly report on April 30, 2013 and 2013. After the release, the stock price reached 40.90 yuan, an increase of 83% compared with 22.37 yuan six months ago, and the performance in 2019 is even worse than that. We believe the capital market will respond reasonably to the stock price of Jereh Group.

We can easily find that sales expenses account for just 8.83% of the total cost, which means the competitive power of Jereh still has plenty of room for further growth. The amount of goodwill is 90.23million, generating a minority in the non-current asset and seems acceptable.

## Solvency ratio

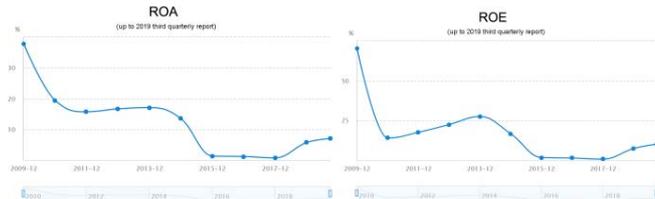


Figure 20: ROE & ROA

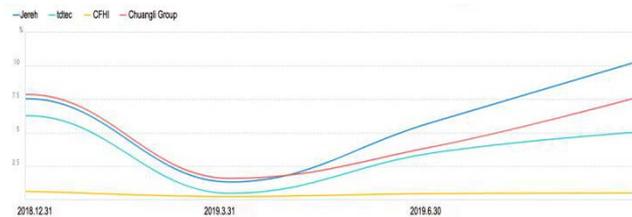


Figure 21: ROE comparison with competitors

Graphically illustrated in the ROA and ROE chart is that the profitability of Jereh Group is not only incremental but also superior. Among its competitors, Jereh has achieved an excellent result and seems to take the lead in the future.

## Dupont analysis

To further analyze the cost and revenue structure of Jereh, we use Dupont analysis to split the ROE based on the 2018 annual report. The percentage of receivables on current assets is 27.7% but we can see the receivable within 6 months constitutes the majority for more than half. The principal defaulter declares 13.04%, with the bad debt ratio of 1.85%, which means the situation is not severe.

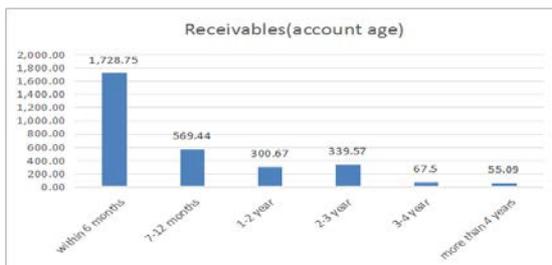


Figure 22: Receivables account age distribution

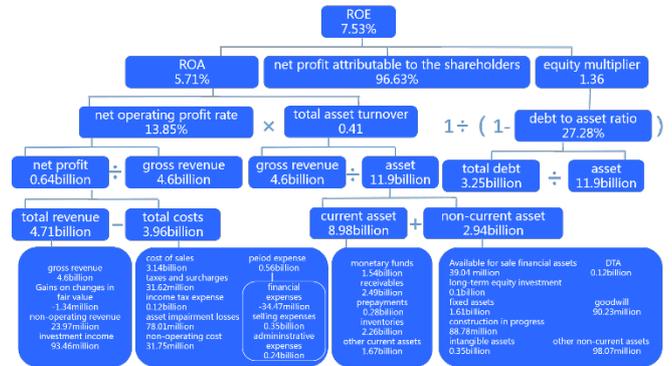


Figure 23: Dupont analysis (2018 annual report)

## Conclusion

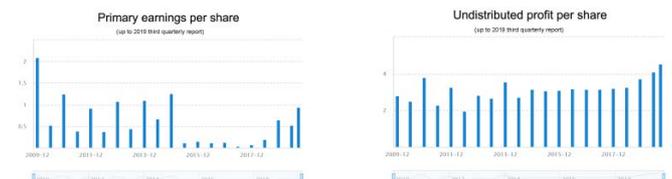


Figure 24: Earnings & undistributed profit per share

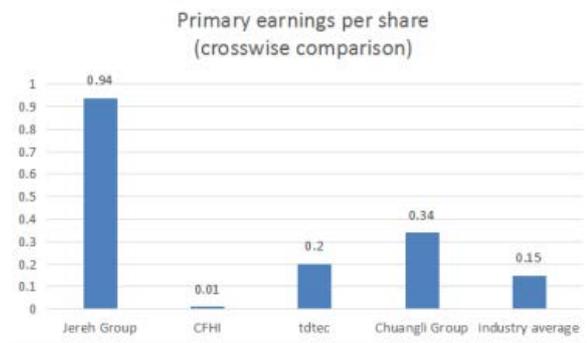


Figure 25: Earnings per share comparison with competitors

The primary earnings per share has kept a steady development these three years, and far beyond the industry average level which means the performance of Jereh Group is very nice. Undistributed profit per share is almost rising every year, which means Jereh Group is doing well and has the ability to share out bonus and indeed it does every year.

From all these ratios and indicators, we could conclude that Jereh is doing better than the industry average level, and even going beyond itself these years, aiming to pay back its shareholders as well as the society.

## FCFE model valuation

We use the FCFE valuation model to predict cash flow to determine the intrinsic value of Jereh Group. The specific expression for predicting FCFE is:

$$FCFE = NI - (1 - DR)(FCInv - Dep) - (1 - DR)(WCInv)$$

DR is the Debt Ratio, which is the company's target debt ratio. FCInv is fixed capital investment, and WCInv is working capital investment.

We set Jereh's target ratio and important financial data forecasts to predict the future FCFE of Jereh shares and evaluate it.

### Important assumptions:

Based on previous analysis and speculation, we established a three-stage FCFE model to evaluate Jereh shares.

### From Revenue to NI

1. According to the content of the report (as mentioned that the income will increase significantly to 10.6bln by 2021), we set 2019-2021 as the first stage. At this stage, Jereh shares benefit from oil and gas. The industry's prosperity value has rapidly recovered and its performance has grown rapidly. At this stage, the compound growth rate of revenue has reached 32.1%;

2. From 2022 to 2027, it is the second stage. At this stage, Jereh shares will be driven by the long-term high-speed growth of the shale gas market, which has maintained rapid growth. According to the above (China's shale gas production can reach 22 billion cubic feet per day by 2040, equivalent to an annual output of 2278.3 cubic meters; the annual production of 2018 is 108 cubic meters), we use the compound growth rate of the long-term shale gas market, which is 14.4%. In the first stage, the drilling equipment which is mainly benefit from the shale gas market, accounted for 32.2% of Jereh's main revenue component. Considering the contribution of the burst of shale gas to Jereh's profit will present a level from high to low, thus in the second stage, the growth rate of drilling equipment will gradually decrease but still could obtain a growth rate of 14.4% till 2040. We use this data as a hypothesis basis, and the compound growth rate for the other business year is conservatively estimated at 6%. Thus we calculate the hypothetical growth rate table for the second-stage net income growth rate.

3. Since 2028, we assume the market is in saturation or other energy substitution, as well as that the market enters a low growth rate of 6.52% per year.

## Depreciation

Considering that the depreciation and amortization of Jereh shares has entered a higher level since 2016, we have selected a compound growth rate of 7.5% in 2016-2018 as a reasonable speculation of the future depreciation and amortization compound growth rate.

### FCInv/WCInv

Considering that fixed asset investment and working capital investment are cyclical since the listing of Jereh shares, with no significant trend, we choose the mean value of 2014-2018 as the assumed value of FCInv/WCInv.

## DR

At present, the debt to asset ratio of Jereh shares is only about 30%. We believe that it has not fully utilized the fund-raising resources and the capital structure needs to be further optimized. We assume that the DR of Jereh shares would be 35% at the end of 2019, 40% in 2020, 45% in 2021, and maintained a target ratio of 50% after 2022.

## Discount rate

We use the CAPM model to estimate the discount rate of our FCFE valuation model. The current Beta of Jereh shares in the past 100 week is 1.2. We select the annualized return rate of the Shanghai Composite Index since inception as the market rate of return. The current 10-year bond yield is 3.27% at the risk-free rate, and the discount rate is obtained, which is 14.32%.

Based on all the above assumptions and calculations, we calculated the FCFE of 3-stage from the beginning of 2019 and also the discount rate using the above discount rate. Based on the above reasonable speculation, it is concluded that the target price of Jereh shares is 37.11, which is still about 22% upside from the current share price.

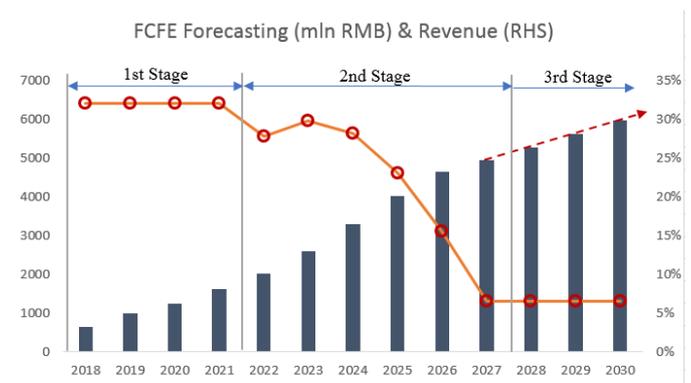


Figure 26:3 stage FCFE model illustration

	The First Stage					The Second Stage					The Third Stage
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TV of FCFE since 2028
FCFE	295,042,316.28	979,252,400.79	1,252,760,285.14	1,611,432,309.79	2,019,644,783.23	2,592,147,442.46	3,291,725,427.19	4,027,255,723.45	4,640,153,454.01	4,948,794,828.24	67,581,807,497.17
total revenue	4,596,771,206.86	6,071,587,145.98	8,019,579,137.68	10,592,559,737.55	13,534,787,954.86	17,560,953,757.04	22,496,518,520.63	27,682,972,186.74	31,974,688,840.04	34,059,653,943.09	
total cost	3,842,579,632.38	5,075,422,737.71	6,703,807,970.41	8,854,640,022.44	11,314,137,289.74	14,679,730,662.09	18,805,518,042.28	23,141,031,019.72	26,728,606,354.19	28,471,491,540.04	
income tax expense	117,513,674.48	155,216,451.58	205,015,688.15	270,792,380.32	346,008,664.41	448,935,156.98	575,109,883.74	707,698,433.49	817,413,572.89	870,714,444.17	
net profit	636,677,900.00	840,947,956.69	1,110,755,479.12	1,467,127,334.78	1,874,642,000.71	2,432,287,937.96	3,115,890,594.61	3,834,247,733.53	4,428,668,912.96	4,717,447,958.87	
Dprecciation&Amortazation	295,183,200.00	317,408,407.85	341,307,016.71	367,005,021.83	394,637,905.04	424,351,348.98	456,302,005.16	490,658,319.84	527,601,422.09	567,326,078.74	
Cash paid for the purchase and construction of fixed intangible long-term assets	200,789,300.00	309,927,560.00	309,927,560.00	309,927,560.00	309,927,560.00	309,927,560.00	309,927,560.00	309,927,560.00	309,927,560.00	309,927,560.00	
incremental working capital	562,010,300.00	205,295,220.00	205,295,220.00	205,295,220.00	205,295,220.00	205,295,220.00	205,295,220.00	205,295,220.00	205,295,220.00	205,295,220.00	
debt to asset ratio	27.28%	35%	40%	45%	50%	50%	50%	50%	50%	50%	
revenue growth rate		32%	32%	32%	28%	30%	28%	23%	16%	7%	7%
D&A growth rate		7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	
discount factor		0.97794051	0.85543507	0.74827574	0.65454013	0.57254667	0.50082443	0.43808676	0.38320815	0.33520412	
PV of FCFE		957,650,590.38	1,071,655,081.06	1,205,795,704.13	1,321,938,563.25	1,484,125,391.00	1,648,576,524.94	1,764,287,394.64	1,778,144,626.94	24,312,557,019.59	
total PV of FCFE		35,544,730,895.94									
total shares		957853992									
target price		37.11									

	2018-12-31	2017-12-31	2016-12-31	2015-12-31
<b>Income Statement</b>				
total revenue	459,677.12	318,707.65	283,383.00	282,657.20
YOY(%)	44.23	12.47	0.26	-36.63
total costs	395,117.76	325,057.61	279,027.08	273,572.68
total profit	75,419.16	7,251.49	15,704.07	18,893.54
YOY(%)	940.05	-53.82	-16.88	-86.95
net profit	63,667.79	7,572.31	11,989.74	14,461.74
EBIT	66,516.77	15,094.58	-3,125.91	10,763.00
EBITDA	96,035.10	43,128.58	22,403.34	28,469.88
<b>Balance Sheet</b>				
current assets	897,968.81	739,623.27	734,848.25	755,701.61
total assets	1,191,694.85	1,037,770.01	1,005,869.72	1,039,285.63
YOY(%)	15.73	3.17	-3.22	-7.06
current liabilities	313,368.73	211,224.22	150,693.12	207,404.60
total liabilities	325,087.59	219,114.72	199,379.11	236,787.93
YOY(%)	48.36	9.90	-15.80	-22.08
owner's equity	866,607.26	818,655.28	806,490.61	802,497.70
capital reserve	369,959.07	370,117.68	370,060.65	369,801.00
surplus reserve	31,526.74	31,059.76	30,840.94	27,562.16
undistributed profit	355,274.93	305,712.01	302,025.43	296,110.35
<b>Cash Flow Statement</b>				
cash received from sales of goods end service	435,774.06	298,156.33	283,526.35	319,422.93
CFO	4,471.21	44,396.82	34,640.52	6,896.76
CFI	15,737.65	-27,719.56	-75,960.94	-49,654.52
CFF	-19,968.85	-27,897.06	-3,322.02	-19,218.78
Depreciation & Amortization	29,518.32	28,034.00	25,529.25	17,706.89
<b>Ratios</b>				
ROE(equal weighted)(%)	7.53	0.86	1.54	1.85
ROA(%)	5.71	0.74	1.17	1.34
ROIC(%)	7.02	0.87	1.46	1.35
gross profit margin(%)	31.65	26.80	26.54	32.09
net profit margin(%)	13.85	2.38	4.23	5.12
EBIT Margin	16.35	2.39	5.89	5.54
EBITDA Margin(%)	22.78	11.19	14.90	11.81
debt to asset ratio(%)	27.28	21.11	19.82	22.78
total asset turnover	0.41	0.31	0.28	0.26
<b>index per share</b>				
EPS(basic)	0.64	0.07	0.13	0.15
EPS(diluted)	0.64	0.07	0.13	0.15
net asset value per share	8.78	8.30	8.20	8.14
sales per share	4.80	3.33	2.96	2.95
operating cash flow per share	0.05	0.46	0.36	0.07
cash flow per share	0.03	-0.15	-0.41	-0.65
P/E(TTM)	37.64	194.59	155.60	84.84
P/E(LYR)	211.95	104.14	134.31	20.25
P/B(MRQ)	1.71	1.58	2.48	3.12
P/S(TTM)	3.55	4.16	6.99	8.84
<b>others</b>				
faculty	4,431	3,856	3,858	4,180
income tax rate	0.155814119	-0.044241942	0.236520214	0.234566947
FCFF	383,621,561.88	515,615,600.75	-500,259,950.80	-490,994,736.73
FCFE	295,042,316.28	557,572,784.75	-517,238,073.92	-462,300,918.61

Figure 27&28: valuation and detail

Relative valuation



Figure29: P/E in 4 years

The price earnings ratio is below average and the price to book ratio is beginning to grow above the average but still has its potential, we can conclude that the stock price of Jereh Group is under valuation.

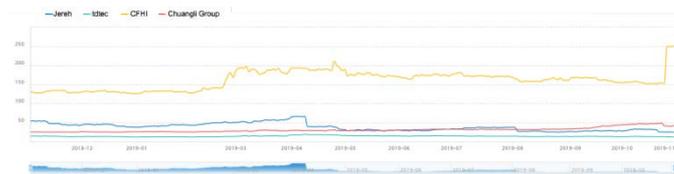


Figure31: P/E comparison with competitors

multiples	PEG	P/E (TTM)	PB (MRQ)	PS (TTM)	EV/EBITDA
Jereh Group	0.51	25.12	3.13	4.90	28.66
Industry Average	1.41	48.98	1.87	2.20	16.02

Figure32: P/E and PEG comparison with industry average

Just like the longitudinal result, we can also observe that the P/E and PEG of Jereh is blow industry average in the horizontal level with its competitors, indicating that Jereh is under valuation.

PE Bands



Figure33: P/E bands

Based on the closing price of November 4<sup>th</sup> and EPS, we multiple the earnings per share and make a graph presented as P/E bands, indicating there's considerable room for Jereh to grow and achieve higher stock price.

multiples	P/E			EPS		
	18A	19E	20E	18A	19E	20E
Jereh Group	47.25	22.2	16.7	0.64	1.36	1.82
Industry Average	60.54	50.69	41.05	0.10	0.15	0.22

Figure34: P/E estimate

We estimate the net profit of Jereh in 2019 to 2021 is 1.07 billion, 1.48 billion and 1.90 billion respectively, and the corresponding EPS is 1.36, 1.82 and 2.33. Based on the closing price on November 4<sup>th</sup> which is 30.35 yuan, then the corresponding P/E is 22X, 17X, and 13X. So we still give Jereh a BUY recommendation.

Conclusion

According to the FCFE valuation model and relative valuation model analysis, the stock price of Jereh is undervalued and may go up to 37.11. It's devalued and outperformed the industry average, that's why we highly recommend it. There are some risk potentials and we listed them below.

## Risk analysis

### 1.A sharp fall of oil price

Generally, traditional oil production period lasts for 3 to 5 years and the exploitation rate attenuates naturally by 6% every year. This could be one reason for oil price fluctuation. The other is that the supply of oil highly relies on petroleum oligopolies. Considering the separation of supply and demand, although we believe that oil price will continue to rise, possibility of declination still exists.

### 2.Uncertainty of exchange rate fluctuation

From the beginning of year 2019, RMB yuan has been depreciated to US dollar as well as euro and other main currency. The exchange rate of RMB versus US has even broken the gate of 7 in August, indicating the revolution of interest rate liberalization is in progress. However, it seems that RMB yuan starts to take a turn from the depreciation recently, which may treat the export of Jereh Group.

### 3.Under expectation of overseas market business

The US-China trade war has great impact on China's economy. The United States, Europe and India have already set up trade protective barriers to China's manufacturing industry so as to restrict the export of China's oil services industry. This makes Jereh Group's 30-billion-dollar investment to a Canada gas and oil exploitation project an uncertainty risk in the future.

### 4.Unexpectable Recovery of oil services industry

As a leading manufacturer company in oil and gas equipment industry, Jereh builds its strengths by providing customers with integrated solutions of oil and gas extraction, including cutting-edge products derived from the development and utilization of unconventional energy. If other unconventional energy, such as shale gas and oil gas, is exploited improperly, the profitability will highly decrease.

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