LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA

MASTER

FINANCE

MASTER'S FINAL WORK

PROJECT WORK

EQUITY RESEARCH: GREE ELECTRIC

TINGTING LONG

AUGUST - 2018

MASTER

FINANCE

MASTER'S FINAL WORK

PROJECT WORK

EQUITY RESEARCH: GREE ELECTRIC

TINGTING LONG

SUPERVISOR:

CLARA PATRICIA COSTA RAPOSO

AUGUST - 2018

Acknowledgements

Since this project represents the end of one of the most important stages of my life, I would like to express my sincere gratitude, to all the persons that had a relevant role along this journey.

I would like to express my gratitude to my supervisor Professor Clara Raposo for the advisement, availability, suggestions and constant feedback provided throughout this Master's Final Work.

To my parents who supported me unconditionally at all stages of my educational and professional path.

And last but not least, to my friends and colleagues for the support during this long journey.

Index

Abstract

The Chinese household appliance manufacturing industry has made remarkable achievements in the world with its low labor cost, perfect supporting industrial cluster and scale economy, and laid the position of “big country of home appliance manufacturing industry”. With China's accession to the world trade organization, the world trade organization's principles of equality, reciprocity and openness, as well as the influence of the wave of globalization, provide a good opportunity for China's home appliance manufacturing industry to implement the global strategy and participate in the global market competition. Value assessment not only helps enterprises understand themselves, but also helps investors make investment decisions. Because the country's financial system is not sound, the investment channel is limited, a large amount of capital is backlog into the stock market, and many stock prices deviate from the actual value, so the evaluation of enterprise value becomes more and more important. This project analyzes the financial condition and company value of GREE electric appliances, and puts forward constructive suggestions accordingly.

Key words: GREE, Industry Analysis, Valuation, Forecast, Investment Risks

Resumo

A indústria de fabricação de eletrodomésticos chineses fez conquistas notáveis no mundo com o seu baixo custo de mão-de-obra, suporte de clusters industriais perfeitos e economias de escala, e estabeleceu a posição de "grande país da indústria de fabricação de eletrodomésticos". Com a adesão da China à organização mundial do comércio, os princípios de igualdade, reciprocidade e abertura ao comercio mundial, bem como a influência da onda de globalização, proporcionam uma boa oportunidade para a indústria de fabricação de eletrodomésticos da China, implementar a estratégia global e participar da competição no mercado global. A avaliação de valor, não apenas ajuda as empresas a conhecer melhor as suas capacidades, mas também ajuda os investidores a tomar decisões de investimento. Como o sistema financeiro do país não é sólido, os canais de investimento são limitados. Uma grande quantidade de capital é acumulada no mercado de ações e com muitos preços das ações se desviam do valor real, a avaliação do valor da empresa torna-se cada vez mais importante. Este projeto analisa a condição financeira e o valor da empresa de eletrodomésticos GREE, permitindo sugestões construtivas mais rigorosos.

Palavras-chave: GREE, Análise da Indústria, Avaliação, Previsão, Riscos de Investimento

Index of Figures

Index of Tables

Abbreviations

AC - air-conditioning
AG - Accumulated Growth
AN - average number

BL or (β) - Beta Levered
BU - Business Unit
BCNY - billion RMB

C - Combined Firm
Cap - Capital Expenditure
CAGR - Compounded Annual Growth Rate
CARC - compound annual rate of change
CAPM - Capital Asset Pricing Model
CF - Cash Flow
CIP - Construction-In-Progress
CL - current liabilities
CNY – Chinese RMB
COGS - Cost of Goods Sold

D - Debt
D&A - Depreciation and Amortization
D&C - Devices and Consumer
D/E - Debt to Equity Ratio
DCF - Discounted Cash Flow
DCG - durable consumer goods

E - Equity
EBIT - Earnings before Interest and Taxes
EBITDA - Earnings before Interest Taxes Depreciation and Amortization
EG - Earnings Growth
EV - Enterprise Value FCF - Free Cash Flow
ER - exchange rate
ERP - Equity Risk Premium
EV - Enterprise Value

FCFF - Free Cash Flows to the Firm
FCFE - Free Cash Flows to Equity
FCR - Financial cost rate (%)
FTE – Flow to Equity

G - Growth rate
GDP - Gross Domestic Product
GIR - Gross interest rate (%)
GMM - gross margin
GN - Nominal Growth Rate
G – Perpetual Growth Rate
GPM - Gross profit margin

IDC - International Data Corporation
IMF - International Monetary Fund

MRMB – million RMB
M&A - Mergers and Acquisitions
MFR - Management fee rate (%)
MRP - Market Risk Premium
MS-DOS - Microsoft Disk Operating System

NIR - Net interest rate (%)
NOCF - Net operating cash flow
NOWC - Net Operating Working Capital
NP - net profit
NPM - net profit margin
NPV - Net Present Value
NWC - Net Working Capital

OEM - Original Equipment Manufacturer
OI - operating income
OS - Operating System

P/BV or PBV - Price to Book Value Ratio
PC - Personal Computer
P/E or PER - Price to Earnings Ratio
P/S - Price to Sales Ratio

Rd - Cost of Debt
Re - Cost of Equity
Rf - Risk Free rate

ROA - Return on Asset
ROE - Return on Equity
R&D - Research and Development
RH - rural households

RG - revenue growth rate

S - Sales
SCR - Sales cost rate (%)
SEP - Standard Essential Patents
SR - Sales revenue
SV - Sales volume

T - Effective Tax Rate
Tc - Corporate Taxes
TV - Terminal Value

UH - urban households

WACC - Weighted Average Cost of Capital

YE - Year Ending
YoY - Year on Year

1.Research snapshot

GREE is the leading AC manufacturer in China, with a domestic market share of ~40%. Its products command a definitive price premium due to GREE's strong brand, customer loyalty, and quality. GREE is benefitting from recent strong domestic demand for air conditioning; however, its single-product single-market focus, lack of new discernible earnings drivers, and inconsistent growth strategy mean the Company will continue trading at a valuation discount to its peers.

► **Anticipating strong 2018H1 performance.** Due to hot weather, lean inventory levels, and a resilient property market, all AC manufacturers in China are seeing strong sales growth. GREE is guiding revenue of RMB 200bn in 2018 versus consensus estimates of ~RMB 177bn. We expect GREE to achieve sales of ~RMB95bn in 2018H1, or 34% YoY growth.Trade war concerns overblown. We estimate that 20% of GREE's exports, or ~RMB3bn in 2017, were exported to the United States. This is equivalent to ~2% of GREE's total sales in 2017.

► **USD holdings to result in currency gains.** As of Dec. 2017, GREE held ~US$6.5bn in cash, against ~US$1.5bn in debt. We estimate that 5% RMB depreciation since Dec. 2017 will result in a translation gain of ~RMB1.8bn before tax, or a 6% increase in GREE's 2018E PBT. However, this is a one-off gain which should not result in a re-rating of the stock.

► **GREE's exports will benefit from USD strength.** While the 2018H1 results should have been negatively affected by the relatively strong RMB in most of 2018H1, recent RMB exchange rate fluctuations should have an impact in 2018H2. We estimate that 5% RMB depreciation will increase GREE's 2018H2 PBT by ~RMB200m, or ~0.7% of 2018E's PBT. The impact should be greater in 2019.

► **Fair Valuation.** GREE is on track for solid revenue growth in 2018H1, and its low valuation, coupled with an interim dividend announcement, may result in near-term outperformance. Although the Company may benefit from RMB weakness, the impact is not sufficiently large to justify a re-rating. In spite of a strong 2018H1 top line, we remain cautious about 2018H2 in light of low visibility on AC sales, the lack of new discernible long-term growth drivers, and an inconsistent corporate strategy. We believe GREE warrants a discount relative to its peers Haier and MIDEA and value the Company at 9.5x 2019 earnings, implying a 12-month target price of RMB 52, or ~20% upside.

	2016	2017	2018E	2019E	202
Revenue (RMB Mn)	**110,113**	**150,020**	**178,252**	**203,787**	**223,3**
Growth (%)	9%	36%	19%	14%	1
Net Profit (RMB Mn)	**15,464**	**22,402**	**26,212**	**30,409**	**33,6**
Growth (%)	23%	45%	17%	16%	1
EPS (RMB)	**2.57**	**3.72**	**4.36**	**5.05**	**5.**
PER (x)	16.8	11.6	9.9	8.5	
PBR (x)	4.8	4.0	3.2	2.7	2

Sources: Company Annual Report, CGIS Research

Home Appliances Sector

HOLD

Close: RMB 43.18 (July 4, 2018)

Target Price: RMB 52 (+20%)

Share Price Performance

Market Cap	US$39,171m
Shares Outstanding	6,016m
Free Float	56%
52W High	RMB 58.7
52W Low	RMB 36.4
3M Avg Daily T/O:	US$ 417m
Major Shareholders:	Gree Group (18.2%)

Sources: Company, Bloomberg

Analyst's Risk Assessment

Low	Medium	high

Our risk assessment reflects intense competition in company's domestic market as well as the high dependence of international growth. GREE's weight in ' CSI 300 Index's portfolio is also an upset.

2.Business Description

With a price target of RMB48 for YE18F and an upside potential of 11% from current RMB43.8, our recommendation for GREE stands for **HOLD**. GREE's stock growth is expected to be upside or high for two main reasons. Firstly, GREE currently trades not close to its intrinsic value. Secondly, GREE's is undervalued comparing to its peers with respect to enterprise value multiples. GREE has a strong position in the domestic market of the AC sector and presents a growing internationally activity.

The current market share of the AC industry is still low, and there will be double the amount of possession by 2030. With market observations in Japan, South Korea and Taiwan, the demand for replacement after stabilization will bring about 70 M units of sales per year. Under the resonance of new demand and replacement demand, the growth of the AC industry in the next 10 years is highly certain.

I. Short term volatility, long term certainty and excellent competition.

Excellent companies can enjoy long-term value growth through short-term fluctuations. Although short-term industry terminals are more difficult to predict, there may be some volatility, and a good company can better cross the volatile AC industry market and achieve long-term value. GREE's unique sales model has become GREE's core competitiveness. Whether it is a good situation or a bad situation, GREE with good robustness is an excellent choice in the industry.

II. Recent stock performance

The stock traded between a 52-week low of RMB36.4 and a high of RMB58.7. The standard deviation of weekly log-normal price returns over the past year, annualized with a factor of 52 for the 52 trading weeks in a year was of 25.1, at 23rd October 15. Additionally, at May15A NVQ joined the newly created Enternext Tech 40 index, which brings together European companies that stand out for innovation.

III. Valuation methods

The target price is derived recurring to absolute valuation methods, specifically to the Discounted Cash Flow (DCF) Approach. Additionally, we perform a valuation through relative valuation methods, recurring to multiple comparables with equal weight. Peer group was chosen according to a set of objective criteria. The method of comparables aims to support conclusions drawn from the DCF approach, given that the latter is a more robust approach to value GREE's equity.

IV. AC faucet has a solid position

GREE Electric Appliance is a leading enterprise in the domestic AC industry. Many rankings are ranked first in the industry. The company's performance is mainly from AC. Compared with developed countries in Europe and America, there is still room for improvement in the domestic AC market. The growth rate of domestic air conditioners mainly comes from: 1. New demand brought by factors such as rapid development of real estate and home appliances to the countryside, 2. Replacement demand driven by factors such as consumption upgrade and old machine elimination, 3. Domestic brand air conditioner technology continues to improve The product structure brought up is on the rise, and the market share of domestic brands brought about by the replacement of foreign brands is gradually improved. The domestic AC industry has a clear competitive landscape. GREE has a long-term leading position and has significant advantages in terms of scale, technology, sales channels and R&D. The leading position in the industry is stable.

V. Risks to price target

Besides the already mentioned risk arising from Raw material price fluctuation risk, investors should be aware of other possible vulnerabilities to which the business can be associated with. Among them, (i) real estate market change risk (ii) trade barriers and the risk of RMB appreciation. (iii) short-term factors such as weather and real estate affect terminal fluctuation risk.(iv) Management changes and low ROE risk diversification. (v)potential entrant risk.

3. Fundamental analysis

I. Company Profile: Leading enterprise in air conditioning industry

Deep-growing industry for nearly 30 years, leading domestic air-conditioning industry

Zhuhai GREE Electric Appliance Co., Ltd. is a diversified global industrial group, mainly engaged in household air conditioners, HVAC equipment, intelligent equipment, living appliances, air energy water heaters, industrial products and other products. GREE Electric has 11 airspaces in Zhuhai, Chongqing, Hefei, Zhengzhou, Wuhan, Shijiazhuang, Wuhu, Changsha, Hangzhou, Brazil and Pakistan. The production base and five major renewable resource bases such as Changsha, Zhengzhou, Shijiazhuang, Wuhu and Tianjin are under the jurisdiction of Lingda Compressor, GREE Electric, Kaibang Motor, XinRMB Electronics, Life Appliances, Intelligent Equipment, Precision Mould, etc. Covers the entire industry chain from upstream parts production to downstream waste product recycling.

Figure2: Changes in the shareholding ratio of GREE

Source: Company Annual Report, Lianxun Securities

The company was established in Zhuhai, Guangdong Province in 1991. Its predecessor was Guanxiong Plastic Factory and Haili Air Conditioning Factory. The first chairman of Zhu Jiang flood. The company started from a simple production line with an annual output of 20,000 window air conditioners. After four years of high-speed development, the production and sales volume reached the first place in China after four years, becoming the leading enterprise in the domestic air- conditioning industry.

The company is deeply involved in the field of refrigeration and air conditioning. The products cover 20 major categories, 400 series and more than 12,700 varieties and are exported to more than 160 countries and regions with more than 300 M users. According to the industry online data, GREE home AC production and sales, since 1995, it has been ranked first in China's AC industry for 23 consecutive years. Since 2005, it has led the world for 13 consecutive years. In addition, according to the data of HVAC Information, the domestic market share of GREE commercial air conditioners has remained at the top for six consecutive years.

The controlling shareholder of the company is Zhuhai GREE Group, and the major shareholder is the Zhuhai SASAC. The shareholding of the company is continuously dispersed through share reform, equity transfer and reduction, from 70% at the beginning of the listing to 18% in 2018. It is still the largest shareholder. The company's second largest shareholder, Beijing Beihai Guarantee Investment Co., Ltd. holds 8.91%, and the actual controller of the shareholder is GREE dealer (figure 2 and table 5).

Table 5: The top ten shareholders of the company

Shareholder name	Number of shares hold (10,000 shares)	Proportions(%)
Zhuhai GREE Group Co., Ltd.	109625.56	18.22
River Beijing Hai Guarantee Investment Co., Ltd.	53602.22	8.91
Hong Kong Securities Clearing Company Limited (Lugutong)	46814.37	7.78
China Securities Finance Corporation	23140.07	3.85
Qianhai Life Insurance Co., Ltd. - Haili Years	11558.53	1.92
Central Huijin Asset Management Co., Ltd.	8448.3	1.4
China Life Insurance Co., Ltd. - Dividend - Personal Dividend - 005L-FH002 Deep	6800.03	1.13
National Social Security Fund One Zero One	4823.27	0.8
National Social Security Fund 108 combination	4796.11	0.8
Gaochun Capital Management Co., Ltd.-HCM China Fund	4541.14	0.75
Combined meter	274149.6	45.56

Sources: Company Annual Report

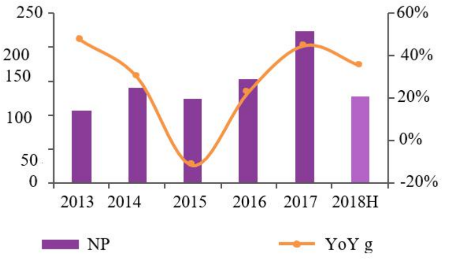
The financial indicators continued to be prosperous and the company was in good operating condition.

In recent years, the company's sales scale has continued to expand, its operating conditions are good, and its market share continues to increase. In 2017, the company's OI was 15.02 billion RMB, a YoY increase of 36.2%; the NP of the mother was 22.40 billion RMB , an increase of 44.9%.In the first half of 2018, the company's OI was 92.01 billion RMB , a YoY increase of 31.4%; the NP of returning to the mother was 12.81 billion RMB, YoY increase of 35.5%.From 2013 to 2017, the CAGR of the company's OI was 5.7%, and the CAGR of NP of the mother was 19.8%. The development momentum was strong (figure 3 and figure 4).

The company's main products are air conditioners, which account for a large proportion of the company's revenue. In the first half of 2018, the company achieved revenue of 92.01 billion RMB, a YoY of 31.4%, accounting for 82.4% of the main business income. Small household appliances accounted for 1.7%, accounting for other businesses15.9%. In the first half of 2018, the company's revenues in various regions increased, with the mainland accounting for 70.6% and the mainland outside accounting for 29.4% (figure 5 and figure 6).

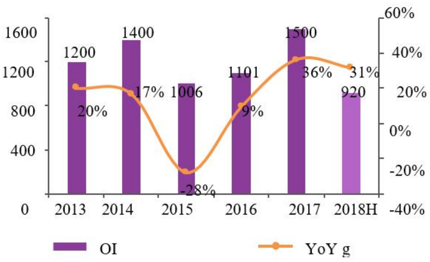
In 2017, the company's GP margin was 33.6% and the NP margin was 14.9%. In the first half of 2018, the GP margin was 30.0%, and the NP margin was 13.9%. The GP margin of the company in 2013-2017 was relatively stable, mainly because the GP margin of air conditioners of the company's main products was relatively high, accounting for a relatively large proportion and a high market share. In recent years, the company's financial, sales, and management expense ratios have generally declined. The company's cost control ability is strong, and profitability can be improved (figure 7 and figure 8).

Figure 3: 2013-2018H OI and g (100 MRMB)



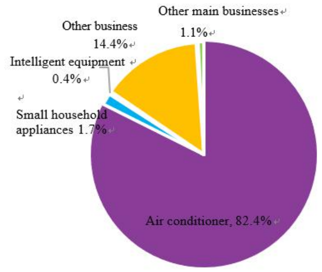
Source: Company Annual Report, Lianxun Securities

Figure 4: 2013-2018H Company's NP and g



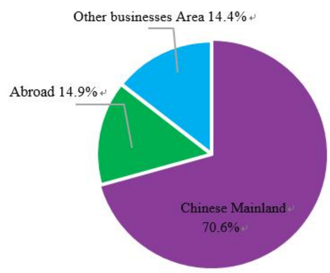
Source: Company Annual Report, Lianxun Securities

Figure 5: 2018H company product share



Source: Wind, Lianxun Securities

Figure 6: 2018H proportion of business income in mainland China and beyond



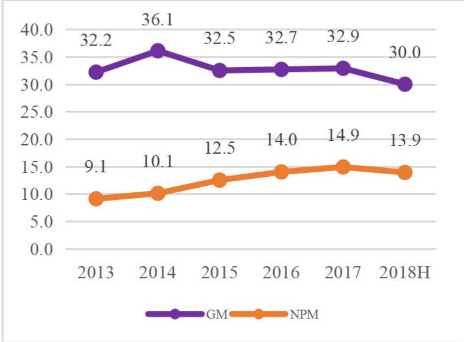
Source: Wind, Lianxun Securities

Focus on AC business, and invest heavily in R&D.

The company's main business is more specific, customers are all over the world. The company's current main products are various types of air conditioners, including household air conditioners and central air conditioners, covering different grades.

The company has a strong technical level in the field of air conditioning, high level of automation of production equipment, and strong product reliability. It is the first in domestic air conditioners. The company has always attached great importance to the development and innovation of new products and new technologies. In 2017, the company's R&D investment amounted to 5.767 billion RMB, accounting for 3.89% of OI. In recent years, the proportion of R&D investment in OI has remained above 3%. The number of R&D personnel is 9155, accounting for 10.74% of the company's total employees.

Figure 7: 2013-2018H Company GM and NPM



Source: Wind, Lianxun Securities

II.Technology, production capacity and core competitiveness

Leading in technology and advanced technology

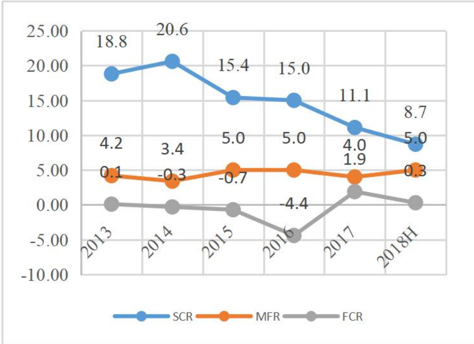
The company adheres to the strategy of independent technological innovation. At present, it has one national key laboratory and one national energy conservation and environmental protection refrigeration equipment engineering technology research center; it has a national industrial design center, a nationally recognized enterprise technology center, and a national notification. There are 1 research and evaluation base and one robot engineering technology research and development center; there are 12 research institutes, 74 research institutes and 929 advanced laboratories, and the research and development direction covers refrigeration, electromechanical, communication, Internet of Things, intelligent equipment and other fields.

GREE Electric is based on the needs of consumers, and pursues the ultimate in research and development. The company has applied for more than 35,000 technical patents, including more than 15,000 invention patents. In 2017, it completed 4182 invention patent applications, authorized 1273 invention patents, and the number of invention patents was ranked seventh in the country.

The company has won 17 national awards, provincial awards and industry awards. 2017, “Air source heat pump air conditioner "Key Technology and Application" won the "Guangdong Province Science and Technology Progress Award First Prize" etc.

The company is based on the long-term, into the field of AC chip design. In recent years, with the strictening of energy conservation and environmental protection policies, as well as the trend of consumption upgrading and product intelligence, the proportion of inverter air conditioners in the company's product structure has increased significantly, resulting in a significant increase in the demand for air conditioner chips. several billion RMB. With the development of the company, the demand for chips will further increase. In order to further improve the company's comprehensive competitiveness, voice in the AC industry and cost control capabilities, the company has independently developed AC chip design technology in recent years. There has been a certain amount of technical accumulation (figure 9)

Figure 8: 2013-2018H Three rate



Source: Wind, Lianxun Securities

Figure 9: Main air conditioning types of the company

Source: Company's official website, Lianxun Securities

The complete industrial chain brings manufacturing advantages to the company

The company has the world's largest AC production scale and a complete industrial chain GREE Electric has 11 production bases in Zhuhai, Chongqing, Hefei, Zhengzhou, Wuhan, Shijiazhuang, Wuhu, Changsha, Hangzhou, Brazil, Pakistan, etc., with a global production scale. The first, at the same time, has a complete supporting capacity and the industry's most complete industrial chain, effectively ensuring the independent production and supply of key components of air conditioning. GREE Electric has developed 20 categories, 400 series and more than 12,700 varieties of products including household air conditioners and commercial air conditioners. The complete and complete product line can meet the various needs of customers at different levels.

With the world's largest production scale and all-round production line, the company further opened up the upstream and downstream industry supply chain including compressors, motors, capacitors, enameled wire and other products, greatly enhancing the company's control ability for upstream and downstream supply chains, and ensuring production. Efficiently and timely meet user needs.

The sales volume of GREE AC business is leading year by year. The industry's leading position is stable. Compared with other domestic enterprises, it has certain scale advantages. The integrated integration of integrated industrial chain and leading technology promotes the company's cost advantage in the industry and ensures the company's profitability is relatively stable (figure10).

figure 10: GREE AC output (10,000 units)

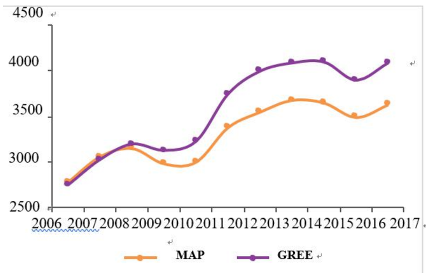
Source: Industry Online, Lianxun Securities

The brand premium is high and the market recognition is leading

From the comparison of the average retail price of air conditioners in GREE's history relative to the average market price, GREE gradually established a brand premium advantage.

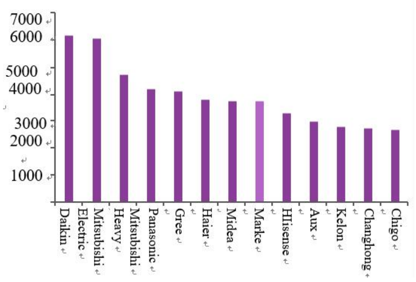
In 2012, GREE's brand premium showed a significant increase. The company has an excellent brand impression and the highest customer satisfaction in the industry. In the CNPP 2018 home appliance industry and the top ten brands in each sub-sector, GREE ranked first in the AC industry (figure 11 and figure 12).

Figure 11: Average retail price of GREE AC brand



Source: Industry Online, Lianxun Securities

Figure 12: Average retail price of AC brands in the Chinese market



Source: Industry Online, Lianxun Securities

GREE's competitive position

figure 13: SWOT analysis

Strengths:

- One of the leading AC companies in china, with good customer resources and reputation.;
- Master core technology, pay attention to innovation, and guide the market.
- Well-defined growth strategy;
- Suitable accounting policies;
- Financially sound;
- Good corporate culture

Weaknesses:

- Uncertain dividend policy;
- International pressure, Sino US trade war
- Historical net debt position upward trend
- There is a gap compared with foreign refrigeration technology.
- High R & D expenses

Opportunities:

- Increasing demand given the current environment;
- Government's support policy for household appliances industry;
- The development of GREE economy and low carbon economy and the change of consumer habits

Threats:

- International pressure, Sino US trade war;
- Overcapacity, oversupply, profit decline
- Industry upgrading pressure;
- Upgrading of competition pressure in the same industry.

Sources: Author

Porter’s five forces of competitive position analysis:

Porter's Five Forces of Competitive Position Analysis were developed in 1979 by Michael E Porter of Harvard Business School as a simple framework for assessing and evaluating the competitive strength and position of a business organization.

This theory is based on the concept that there are five forces that determine the competitive intensity and attractiveness of a market. Porter’s five forces help to identify where power lies in a business situation. This is useful both in understanding the strength of an organization’s current competitive position, and the strength of a position that an organization may look to move into (figure 14).

► Industry rivalry (High)

Nowadays, the appliances industries’ rivalry is fierce. Other companies, Haier, MIDEA, Hisense and so on, also occupy some of sales of the market. Industry competition pressure is huge. Consumers' choices are diverse and tend to be more than three stores. The increasing globalization and developing markets limited growth are leading the industries to increase their focus on international investments. But China's international environment is tense. Although these are gradually getting saturated. In order to overcome these hurdles, GREE electric appliance seeks for differentiated solutions capable of providing a competitive advantage over its competitors.

► Threat of substitutes (High)

There is a high threat of substitutes. Despite GREE electric appliance considerably invests in the development of innovative and differentiated products, there are a large number of competitors able to offer solutions that also meet most of GREE’s customer needs. In Household electrical appliance industry, consumers' choices are diverse.

► Threat of new entrants (LOW)

We consider that the new entrants’ risk in markets where GREE operates is LOW. Despite the entry of new players for the appliance industry be not likely given the necessary upfront high costs (with research, development and implementation of products), and the threat from other industries. China's household electrical appliance industry is a monopolistic competition industry. It takes time for new brands to enter and form and the image of the existing brand has been deeply rooted in the hearts of the people, and it is trustworthy.

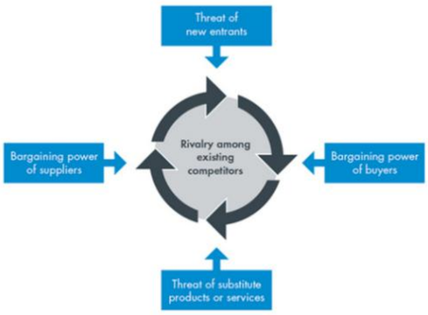
► Bargaining power of buyers (High)

The wide range of solutions available in the appliance market results in a relatively low price elasticity demand. Indeed, customers often choose the consultant firm having as one of the main criteria the lowest price offered. Although recently the government’s policies have already bringed a lot of concessions, for some multiple appliance, the spride of the price of different brand still much. Given the earlier described and to domestic market saturation, appliance firms trying to steal market share (or not to lose) from (for) others have been significantly reducing their services’ prices. This scenario leads inevitably to a reduction of operating margins.

► Bargaining power of suppliers (Moderate)

The suppliers’ power on GREE's business is moderate. On the on hand, With the prosperity and development of the real estate market, more and more people want to buy a house, and decorate their houses, so it is inevitable to buy household appliances, which making the bargaining power of suppliers increased. On the other hand, as mentioned above, In the fierce competition of the same industry, the bargaining power of suppliers will be weakened.

Figure 14: Porter’s five forces



Source: Author

4. Macroeconomic Overview

I. PEST analysis

The PEST analysis focuses on the macro aspect, including both political and economic factors, as well as social and technical elements (figure 15).

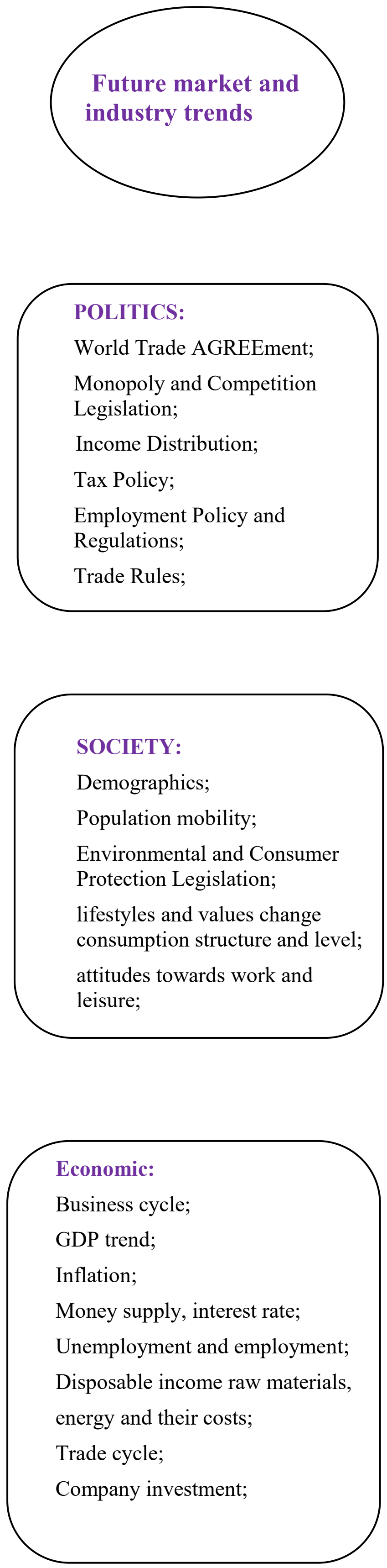
► From the perspective of political factors, China has joined the WTO, which has created a broader world market for China's export trade. So far, the policy of " the Belt and Road " has achieved remarkable results and promoted the integration and development of the world. China's exports increased significantly. But, recently, some European and American countries have not recognized China's market economy status, and often use this as an excuse to launch anti-dumping and countervailing investigations on Chinese exports, and from time to time create trouble for Chinese home appliance exporters.

► From the perspective of social factors, the total population of China in 2018 is about 1 390.8 billion, with a birth rate of 12.43 and a death rate of 7.11. The natural population growth rate is 5.32 and the average life span of the Chinese population is 76.34. The working-age population aged between 16 and 59 was 90.19 M, accounting for 4.9% of the total population; the population aged 60 and over was 24.9 M, accounting for 17.3% of the total population, of which 15.83 M were 65 years old and over, accounting for 11.4% of the total population. Percentage points. From the above data, the growth of China's labor population may gradually decline in the future, and the number and proportion of the elderly population will continue to increase. At the same time, people's attitudes toward work and leisure are also changing quietly. The number of workers who are willing to work all the time yearly is decreasing, and the number of workers who want a good balance between work and leisure is gradually increasing. The distribution of home appliance companies has formed a certain impact. In addition, from the point of view of people's consumption, the tendency to focus on product prices has also changed, and domestic consumers' demand for product quality is growing. Therefore, whether it is from the perspective of production or consumption, the technological upgrading of home appliance companies is imminent.

► From the perspective of economic factors, the trend of economic growth from quantitative change to qualitative change has become increasingly obvious. It is foreseeable that China's GDP growth will inevitably slowdown in the future, but the quality of economic growth is expected to gradually increase. As of the end of June 2018, China's currency and quasi money (M2) significantly exceeded the total GDP, and the M2 supply data at that time was 177.02 trillion RMB. Despite the current, there is disaGREEment about whether so many currencies will trigger inflation in the short term, and there seems to be a striking aGREEment between the parties about their concerns about inflation in the long run. Under the situation that economic growth may slow down and long- term inflationary pressures may rise, home appliance companies must seek a way out, but they can only turn to product technology upgrades.

► In terms of technical elements, the number and quality of intellectual property have risen. The number of patent applications for invention reached 1.382 M, an increase of 14.2%, ranking first in the world for seven consecutive years, and PCT's international patent applications accepted 51,000, an increase of 12.5%, ranking second in the world. Judging from the above data,

Figure 15: PEST analysis



in recent years, China's patent technology application has gained a good momentum, and its growth rate has already led the major economies in the world. This may have something to do with China's continued promotion of higher education over the years. The proportion of university graduates in China's total population is rising, and it is expected to lay a certain foundation for the technological upgrading of Chinese industries. Specific to the home appliance industry, the patent technology that continues to emerge is expected to gain a certain competitive advantage for Chinese home appliance companies in global competition. In addition, China's tax incentives for technology research and development will also help promote technology research and even technological progress. In the domestic accounting practice, when the company declares the income, it can deduct the research and development expenses that meet the pre-tax deduction requirements, which is beneficial to alleviate the tax burden of domestic enterprises to a certain extent. For specific accounting treatment 15, if the R&D expenses of domestic enterprises are precipitated as intangible assets, they will be allowed to be amortized at 150% of the cost of assets. If the research and development expenses of domestic enterprises are not precipitated as intangible assets and are represented as expenses, they are allowed to add 50% of the deduction based on actual deductions for accounting deduction.

Technology:

Government expenditure on research;

Government and industry technology concerns;

New product development;

Technology transfer speed;

Labor productivity change;

Quality rate;

Technology development level assessment;

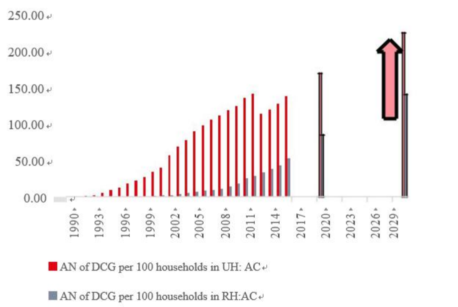
Source: Author

II. long-term certainty of air conditioning industry in China

Long-term certainty: the amount of possession has doubled, and the demand for replacement has gradually increased.

The new demand has been the main driving force in the past five years. Considering that the current market holdings are still low, there will be double the amount of ownership in 2030, corresponding to an average annual sales of 30-40 M units. At the same time, the proportion of replacement demand has gradually increased. With market observations in Japan, South Korea and Taiwan, the demand for replacement after stabilization will bring about 70 million units of sales per year. Despite the fluctuations in short-term industry demand due to weather and real estate factors, in the long run, under the resonance of new demand and replacement demand, the annual growth of the AC industry is highly certain. (figure 16)

Figure 16: Expected to be double by 2030



Source: Wind, National Bureau of Statistics, Western Securities R&D Center

Permeability increase is still the main driving force, and the quantity is expected to double in 2030.

China's AC industry started in the late 1980s and early 1990s. With the improvement of people's living standards and the further liberation of power supply, after the penetration rate of washing machines, color TVs and refrigerators gradually increased, air conditioners gradually changed from "enjoyable products". Essential necessities for ordinary people. With 30 years of development, the AC possession of our families has increased significantly.

As a result, new demand has been the main driving force in the past five years, accounting for 60% of the total demand (measured). Although in the next 10-15 years, the proportion of new demand will gradually drop to 40% (measured), 18-30 years of new demand will still bring more than 400 million units of sales, an average of 30-40 million units per year.

The demand for replacement will gradually pick up. After stabilization, the neutrality is expected to contribute 70 million units/year.

While the penetration rate is gradually increasing, the update demand has gradually become one of the important driving forces. New replacement resonance, peak or over 100 million units. In the next 10-15 years, 1) new demand will slowly drop from 40-500 million units per year to 30 million units per year; 2) replacement demand will increase from 3-4 million units per year to 70-80 million units. Each year, the annual sales volume of the overall AC market is expected to be between 70 million and 100 million units per year. Short-term fluctuations are affected by factors such as weather and real estate. In some extreme cases, the peak value exceeds 100 million units(table 6).

Table 6: expected replacement demand will contribute 70 million units/year

Parameters	Unit	Predict
AC in 2030	AC/100 households	182
Total number of households in 2030	Million households	486.8
Mature AC market proportion		
neutral	%	14%
optimism	%	17%
replacement demand forecast		
neutral	**Million AC/year**	**68**
optimism	**Million AC/year**	**83**
Corresponding change cycle		
neutral	year	13
optimism	year	11

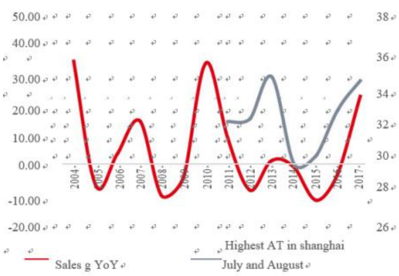
Source: Wind, National Bureau of Statistics, Western Securities R&D Center

III. Short term uncertainty of air conditioning industry in China

Short-term uncertainty: AC sales are not immune to weather, real estate and other factors

In the short term, the post-period property of the real estate coexists with the weather factor. The sales of household air conditioners are highly correlated with the summer temperature. If there is more extreme hot weather in summer, the air conditioners will be greatly improved. If the summer temperature is moderate, the number of days in extreme weather will be less. The demand for air conditioners will decline. On the other hand, the short-term situation of household air-conditioners and the more obvious post-period nature of the real estate, the lag time is about 12-15 months (figure 17 and figure 18).

Figure 17: Household AC sales are related to summer temperatures



Source: Wind, Western Securities R&D Center

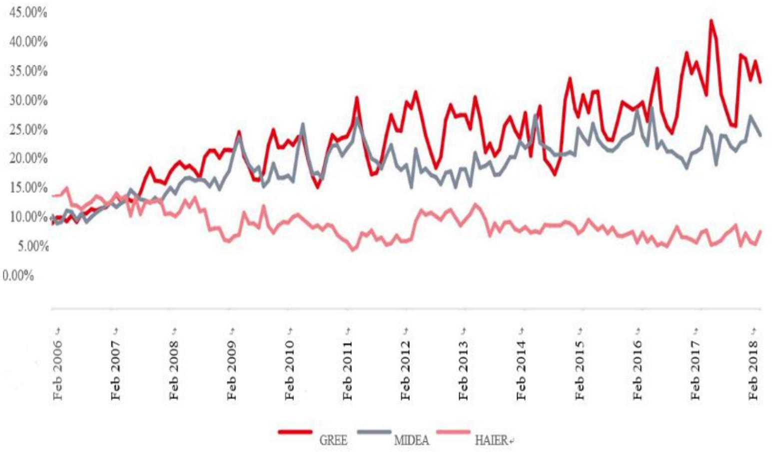
Factors affecting profit: competition pattern, raw material price, RMB exchange rate

Compared with other white goods, the competition pattern of the AC industry is better. After several brutal price wars, the duopoly has been basically established, with sales CR3 close to 70% and CR5 close to 80%. The price segments of the top three brands have a certain distinction. GREE is about 350-400 RMB ahead of the US and 200-250 RMB ahead of Haier. Under the current competitive landscape, the price war needs to be led by the leader, and after the price war with little effect in 2014, a new round of price wars led by the leader is less likely. Therefore, a better competitive landscape guarantees the basic profit of the industry (figure 19).

Figure 18: Household AC sales have a real estate cycle lag

Source: Wind, Western Securities R&D Center

Figure 19: Top3 AC brand sales market share – GREE, MIDEA duopoly structure



Source: Wind, Western Securities R&D Center

The core components and main raw materials of household AC products are compressors, motors, steel, copper, aluminum, plastics, etc. The basic raw materials have a significant impact on the gross profit of the AC manufacturing industry. Since the beginning of 2017, the rise in the prices of major raw materials has put some pressure on the company's gross profit.

The RMB exchange rate has a large impact on the gross profit of foreign sales. Since 2017, the RMB has continued to appreciate, which has brought great pressure on the company's gross profit. Since February 18, the appreciation of the renminbi has slowed down, and the pressure on gross profit for export has gradually eased (figure 20 and figure 21).

IV. Excellent company: good situation, bad situation, GREE is a good choice

we believe that a good company can better cross the volatile AC industry market and achieve long-term value. Whether it is a good situation or a bad situation, GREE with good robustness is a better choice in the industry.

Good situation: hot summer and winter, the industry leader enjoys the increase in GP.

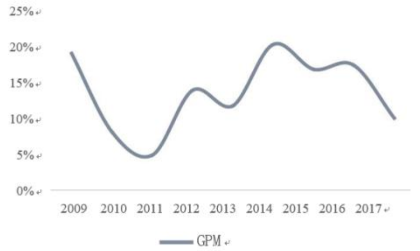
In better years, such as 2009-2010, 2013-2014, and 2017, summer temperatures are higher, extreme high temperature days are higher, and AC terminals are in good condition. As the hot sales year is mainly driven by demand, the premium of leading brands is highlighted in a better year, and the volume and price are rising, driving the GP.

Bad situation: cool summer, e-commerce shock, industry price war, industry integration acceleration, Concentration improvement

Figure 20: US and RMB trend chart

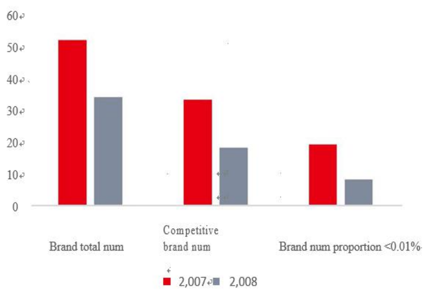
Source: Wind, http://forex.cnfol.com

Figure 21: Affected by the ER, GREE GPM down



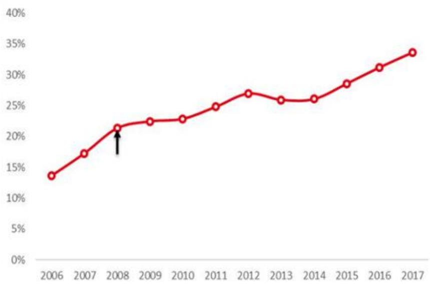
Source: Wind, Company report, Author

Figure 22: Weak market forces small brands to withdraw



Source: Wind, ZhongYikang, Western Securities R&D Center

Figure 23: GREE's market share increased significantly



Source: Wind, ZhongYikang, Western Securities R&D Center

In 2008, financial crisis, appreciation of the renminbi, weather in the sky, real estate adjustment, rising raw materials (figure 22 and figure 23);

In 2008, the weather in most parts of China was milder than in previous years. The domestic real estate market was deeply adjusted and the domestic market was cold. At the same time, the macroeconomic environment deteriorated in the second half of the year. The US subprime mortgage crisis triggered a global financial turmoil, the appreciation of the renminbi and the export frustration. The cost of raw materials has increased, and the pressure on AC production enterprises in China has increased. According to industry online data, in 2008, China's AC industry sales decreased by 6.52% year-on-year, of which domestic sales fell by 7.15% and exports fell by 5.83%.

Under the influence of weak market demand and rising cost pressure, some small brands that are not competitive are forced to withdraw, and the concentration of the industry has increased greatly. According to the monitoring data of key cities of the National Information Center, as of July 2008, the number of overall AC brands participating in the domestic AC market competition has dropped from 52 in the cold year of 2007 to 34 in the cold years of 2008; among them, competitive brands from 33 to 18; there are 8 brands on the edge of elimination (market share is less than 0.01%).

In 2012, domestic economic slowdown, weak real estate market, subsidy policy withdrawal, European debt crisis, RMB appreciation (figure 24, 25, 26 and 27); In the case of a slowdown in the industry, GREE Electric Appliances expanded against the trend and increased production at the beginning of the year. In the weak market, GREE made a profit by increasing channels, allowing dealers to deepen their ties with dealers. In 2012, the sales of other current liabilities in the company's balance sheet increased significantly, and the sales rate increased from 10%. Up to 15%. This measure has accelerated the concentration improvement in the weak market. According to Zhongyikang's household air- conditioning data, the proportion of GREE City in the same year has increased significantly. Relying on deep cooperation with dealers, the company maintained a 20% growth in the face of a slowdown in the market. At the same time, through a deeper binding process with dealers, the company's operating cash flow has increased significantly.

In 2015, World economic slowdown, weather and weather, domestic economic shifts, real estate return to rationality; price wars accelerate integration (figure 28 and figure 29);

In 2015, the world economic growth rate was the lowest in 6 years, the growth rate of international trade slowed down, and the international financial market fluctuated. At the same time, China's economy entered a new stage, GDP fell 7 to 6.9 for the first time; the weather was mild, and the Yangtze River Basin and the southern region after summer Precipitation increases, and extreme hot weather occurs less frequently.

Under external pressure, the opening of the cold year in 2015 began. GREE, as the industry leader, took the initiative to significantly reduce prices, with the aim of activating the market and digesting inventories. Other brands were forced to follow the price war, according to Zhongyikang home AC data, in addition to Oaks and Daikin, the average price of the 16 major AC brands has declined in 15 years. The fierce price war has accelerated the speed of industry integration, and the concentration of air conditioners has

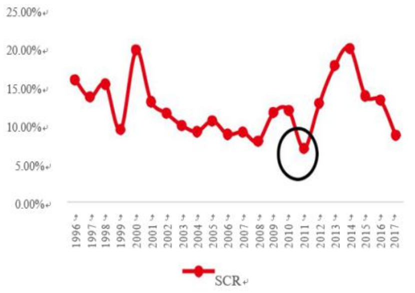


Figure 24: The company began to increase sales rates in 2012

Figure 25: Increase in other liquidity liabilities (sales rebate) of the company since 2012

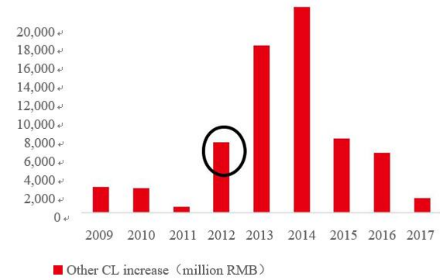


Figure 26: GREE AC RG in 2012 is higher than industry

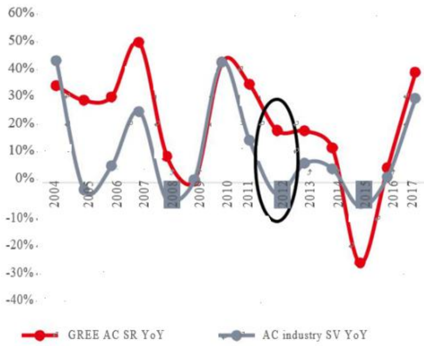
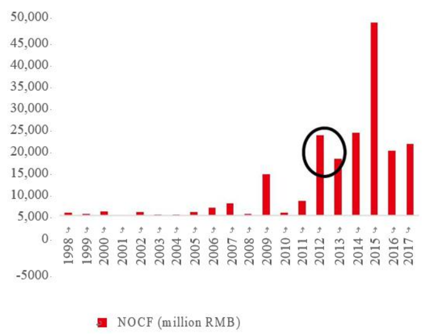


Figure 27: GREE NOCF increased significantly in 2012



Source: Wind, Company Report, Western Securities R&D Center once again increased significantly. The market share of GREE has further increased. On the other hand, the price war is the first time since the listing of the company, the negative growth of revenue and net profit. It also shows that the demand pattern of consumers in the AC industry is changing, the price elasticity of demand is gradually decreasing, and the mode of price war is in the AC industry. The demand stimulus effect is gradually reduced.

Summary: Excellent companies can achieve gains through adjustment strategies in the face of positive or negative market conditions.

Through the analysis of the size of the AC industry in the past 10 years, we found that as an excellent enterprise, GREE Electric focuses on the AC industry, assessing the situation, adapting to the market and leading the market change, and has good robustness. In a good external market, GREE enjoys higher than industry profit growth by increasing profit levels. In the weak external market, GREE accelerates industry integration by adjusting channel strategies and provides a certain buffer for itself. We believe that a company with strong channel capabilities can better cross the volatile air- conditioning industry market and achieve long-term value.

Figure 28: All major brand AC manufacturers' price down in 2015

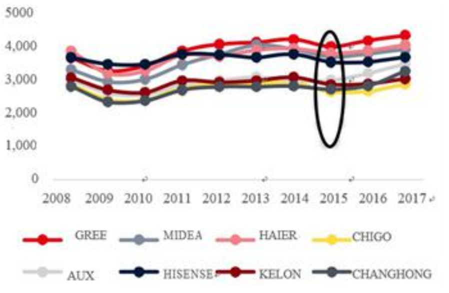
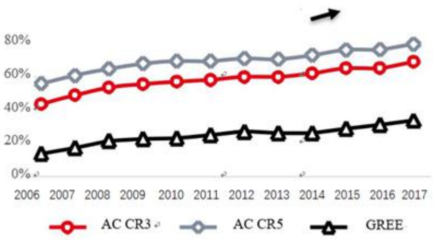


Figure 29: The concentration of AC industry increased significantly



Source: Wind, Company Report, Western Securities R&D Center

5. Financing Overview

I. Overview: air conditioning to drive earnings

Air Conditioning (83% sales)

GREE's focus on air conditioning differentiates it from chief competitors GREE and Haier. Air conditioning accounts for 83% of revenue and 94% of gross profit. GREE has long tried to diversify into other market segments, but still relies on AC as its main profit driver. (figure 30).

GREE has been the leading producer of air conditioners in China since 1995 and in the world since 2005. GREE's domestic market share is consistently above 40% by volume. GREE also enjoys extremely high brand recognition and a premium price position in the market. The company has a capacity of over 60 million residential AC sets, and over 5.5 million central AC sets. Most of these are sold in China. (figure 31).

China's AC Market Overview

The air conditioning segment is GREE's most important product category, representing over 90% of gross profit. Domestically, the AC market is dominated by three players GREE, MIDEA, and Haier, which control roughly ~70% of the market. GREE is the leading player in China's domestic AC market.

Figure 30: Revenue Mix (2017)

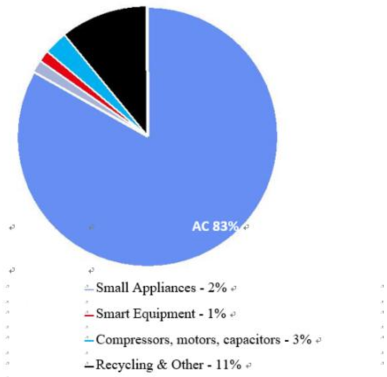
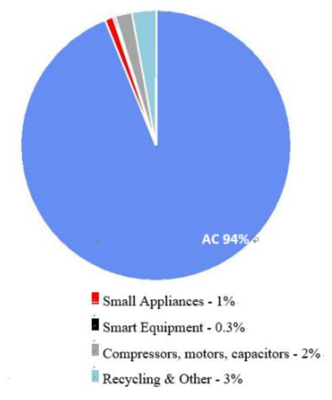


Figure 31: Gross Profit Mix (2017)



Sources: Company Annual Report, CGIS Research

GREE's Industry Leading AC Margins

As a result of its high ASPs and product mix, GREE's gross margins lead its peers in the AC segment. In our checks with GOME, Suning, and multi-brand department stores, we learned that GREE typically charges a premium of RMB ~200-300 over MIDEA and Haier for similarly configured AC units. GREE has a reputation in the market place for excellence in manufacturing durable compressors, which remain quiet and energy efficient over their lifespan (figure 32).

In addition to higher ASPs among units with similar specifications, our online checks show that GREE's product mix is skewed toward higher ASP models. For example, GREE's top selling units online are priced RMB 1,000-1,500 higher than the top sellers for MIDEA and Haier on TMall, GOME, and Suning's online stores (table 7).

Table 7: Top Selling Online AC Models by Brand (as of May, 2018)

Tmall			Gome		Suning	
Make	Model (Power)	Price	Model (Power)	Price	Model (Power)	Price
GREE	Fengcai 35GW (inverter)	*3,449	Comfort Style 26GW (inverter)	4199.00	Trait Ideal 35GW	3399.00
MIDEA	iQingchun 26GW	*2,099	Zhihu 35GW	2349.00	Zhihu 35GW	2399.00
Haier	Le+ 32GW	*2,199	Zhi+ 35GW	2399.00	Zhi+ 35GW	*2,799

Note: * Under promotion

Source：TMall, Gome, Suning, CGIS Research

AC: Encroaching Competition

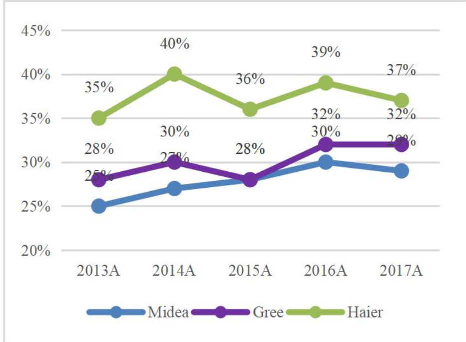
In the past, GREE has focused more on high-end models, which have helped the company earn leading margins. Other manufacturers, however, are introducing more high-end models, which may weaken GREE's current position.

Haier, for example, has been enjoying success with new high end AC models. In 2017, Haier introduced new air purification series Casarte Yunding and Tianxi. According to CMM data, Haier increased its market share in the RMB 4,100+ price segment by 6.8 percentage points, reaching 10.5% in 2017. For residential AC units priced above RMB 8,000, Haier increased its market share from 12.4% to 22.9%.

Furthermore, according to Euromonitor data, Haier leads globally in smart air conditioning systems with a 30.5% market share.

While MIDEA is best known for its mid-tier ASP products, the company is taking steps to move up market. MIDEA is introducing a new premium brand, which should roll out in August/September 2018. The products will be priced at or above Haier's existing high-end products, Casarte. In general, MIDEA is specifically attempting to narrow its pricing gap with GREE in the air conditioning segment. While historically, MIDEA has lagged GREE in pricing by 700-800 in ASP for a comparable model, MIDEA has narrowing this gap by introducing new models which typically sell at a discount to GREE by 300-400 RMB. This will put pricing pressure on GREE's product offering, in our opinion.

Figure 32: AC Gross Margin by Manufacturer



Sources: Company Annual Report, CGIS Research

II. Limited success in diversification

GREE is still singularly reliant on air conditioners. Despite the Company's efforts to diversify its product range, the other products account for only 17% of revenues and 6% of gross profit. The Company's international sales were only RMB 18.5Bn (or 12% of revenue), which is small compared to MIDEA's RMB 104Bn.

Other Product Offering

GREE controls two brands including GREE and TOSOT for its products. The GREE brand is reserved for the company's air conditioning, other large appliance (i.e. water heater, washing machine), smartphone, and industrial products. TOSOT is reserved for GREE's small appliances business.

GREE's existing businesses outside of the company's AC segment have yet to make a meaningful contribution to company earnings.

► **Other (11% Sales, 3% of Gross Profit):** GREE's second largest source of revenue comes from "Other," which includes appliances recycling. Since 2011, GREE has established recycling centres in Shijiazhuang, Zhengzhou, Tianjin, Wuhu, and Changsha. According to a 2013 White Pape– including televisions, refrigerators, washing machines, and air conditioners. Gross margins in this business segment are low, averaging 7% from 2016-17.

► **Compressors, motors, capacitors (3% Sales, 2% of Gross Profit):** GREE is vertically integrated in compressors, motors, and capacitors, and sells a limited amount of production to external customers.

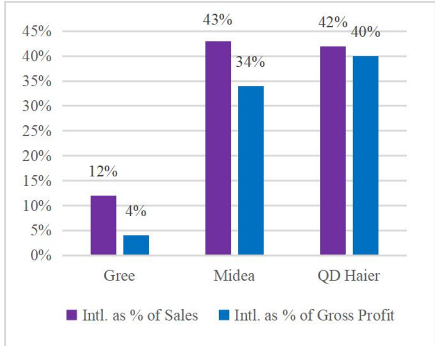
► **Small Appliances (2% Sales, 1% of Gross Profit):** GREE has attempted to gain traction in the small appliances market with its TOSOT brand, which manufactures fans, pressure cookers, water purifiers, air purifiers, induction cookers, dehumidifiers, and other kitchen appliances. Although GREE's small appliance business is growing, it has yet to make a significant impact on the company's financial accounts, comprising ~2% of sales. In 2010, GREE's small appliance sales were RMB 787Mn, versus 2.3Bn in 2017. Over the same period, GREE's air conditioning business grew from RMB 55Bn to 123Bn.

► **Smart Equipment (1% sales, <1% of Gross Profit):** In 2017, GREE introduced a new reporting segment called smart equipment (~1% sales). GREE's first smart equipment product, however, an AGV, was introduced in 2013. To date, smart equipment is still a small portion of GREE's overall sales mix. The segment currently manufactures industrial robots, CNC machines, and AGVs. GREE's aim is to transition its own manufacturing process toward smart precision manufacturing.

Revenue Dependency on China

GREE derives only 12% of its revenue and 4% of its gross profit internationally, lower than that of MIDEA and Haier. While China has recently been experiencing strong demand for AC this year, GREE's reliance on a single market makes the company's earnings inherently more volatile than its peers (figure 33)

Figure 33: International Sales Contribution by Manufacturer



Source: Annual Reports, CGIS Research

Table 8: GREE's Appliance Gross Margins by Region

Gross Margin (%)	2013	2014	2015	2016	2017
Mainland China	38%	42%	38%	41%	40%
International	12%	20%	17%	17%	11%

Source: Annual Reports, CGIS Research

GREE's key international markets include the Middle East, as well as Brazil and Pakistan where GREE has manufacturing plants. Around 60% of GREE's international appliance sales are from low margin OEM and ODM products. Hence, GREE's gross margins are significantly higher in Mainland China, where all sales are under its own brands, than in the international market (table 8).

Past efforts at Diversification

Under the leadership of Dong Mingzhu, GREE has made several attempts at diversifying into new business segments to drive growth. GREE appears to be targeting high growth businesses which appear to have only limited synergies with its core AC business.

► **Failed Yinlong Acquisition:** On March 5, 2016, GREE proposed to acquire 100% of Yinlong New Energy by issuing 1.5Bn shares at 15.57 per share (worth RMB 13Bn), and planned to raise not more than RMB 9.7Bn by issuing non-public supporting funds. However, based on GREE's balance sheet at the time, GREE had ~80Bn in net cash,

to the market in second half 2018. In our view, the smartphone manufacturing business shares few synergies with GREE's core AC business. We suspect it will be difficult for GREE to compete with large scale competitors in the smartphone market such as Vivo, Oppo, and Xiaomi.

III. No apparent upside in corporate strategy

Wavering Dividend Policy

GREE has been considered a dividend play by the market on account of its lower PER and high payout ratio, leading to an indicative dividend yield of 5%+. In April 2018, GREE declared zero dividend for 2017 results, on grounds that it would preserve the cash for potential capacity expansion, as well as M&A in areas including smart manufacturing, integrated circuits, and others. This was a negative surprise to investors, given the Company's cash balance and past practices. The resulting sell-off erased RMB 30Bn from the company's market cap that day. The Shenzhen Stock Exchange sent a letter of concern to GREE over the sudden change in policy.

GREE had historically paid out ~70% of its net income in dividends to investors in the preceding two years. Since GREE's initial announcement, the company has remedied its position on the dividend cut, and is now indicating that an interim payment will be made following interim results.

Lack of Clear Growth Direction

Following GREE's June 25 2018 AGM, the company has not yet provided specifics to investors regarding the company's longer term growth strategy and where it plans to invest cash. GREE has discussed potential investment in semiconductor design, smart manufacturing equipment, communications equipment, and smart factories all as potential uses of cash. Most recently, we have seen news reports that GREE plans to invest ~RMB 4Bn per year in semiconductor design, but details remain scarce. Reportedly, a portion of GREE's air conditioners already use chips based on GREE's in-house design, and GREE will continue to expand its design capability long term.

No Catalysts for Change

Chairwoman Dong Mingzhu has been serving as Chairwoman of GREE Electric since 2012. As of May 31, 2018, her 3rd consecutive term was up for re-election. The May 31st deadline passed with no news, until GREE announced on June 6, 2018 that Dong Mingzhu's re-election would be postponed to the annual shareholders meeting on June 25, 2018. With Dong Mingzhu likely to remain at the helm at GREE, it is probable that erratic strategic moves by the Company will continue to frustrate investors. In the past 24 months, GREE has:

► Broken its 11 year track record of paying continuous dividends, while failing to inform shareholders where funds will be spent;

► Entered the highly competitive smartphone business and failed to achieve critical scale;

► Attempted to acquire Yinlong, an electric bus company by diluting shareholders, in spite of GREE holding ample cash on the balance sheet. The Yinlong acquisition resulted in GREE's shares being suspended for approximately seven months.

IV. Defensive cash position

One factor which is positive of GREE is its huge cash balance of RMB 105Bn and relative low debt level of RMB 20Bn at the end of 2018Q1. This implies the Company has net cash of RMB 85Bn, which is equivalent to 32% of its market cap. Although most home appliance manufacturers enjoy a strong financial position, GREE's cash position is significantly higher than that of its peers. We believe this has sustained GREE's recent share price performance, by enabling the Company to: (i) make acquisitions at current low valuation to sustain earnings growth, (ii) maintain a high dividend payout ratio, (iii) purchase some of the outstanding shares to bolster EPS and share price, and (iv) book forex translation gains (table 9).

Strong Cash Position

GREE enjoys the strongest net cash position among peers, which makes the company a defensive stock and provides GREE with ample dry powder to grow earnings via acquisition (table 10).

Bumper Dividends

Although GREE suspended its dividend in 2018Q1, we anticipate the company will resume paying dividends after 2018 interim results. Management has communicated to the market that the interim dividend is a delayed payment on 2017 earnings. Hence we estimate the 2018 interim payout will be approximately RMB 1.86 per share, or ~50% of 2017 earnings, and further assume that GREE will continue to maintain a 50% payout ratio for 2018 and beyond. On this basis, we anticipate strong dividends over the next ~18 months. While this interim dividend is a one-off exception, this still represents a nice 10% payoff to investors (table 11).

Table 9: GREE's Recent Share Performance

Name	WTD	MTD	YTD
GREE	-5.00%	-9.10%	-4.40%
MIDEA	-10.60%	-14.70%	-20.00%
QD Haier	-3.90%	-9.60%	-4.30%

Sources: Annual Reports, CGIS Research

Table 10: GREE's Net Cash Position Relative to Peers (Q1 2018)

RMB Bn	GREE	MIDEA	QD Haier
Cash & Equivalents	105.2	55.4	34.1
Short-term debt	20.2	1.5	13.4
Long-term debt	0	37.1	19.6
Net Cash	**85**	**16.8**	**1**
Mkt Cap	**268**	**316**	**112**
Net Cash / Mkt Cap	**31.70%**	**5.30%**	**0.90%**

Table 11: GREE's Dividend History

	2013	2014	2015	2016
Interim DPS	0	0	0	0
Annual DPS	0.75	1.5	1.5	1.8
Total DPS	**0.75**	**1.5**	**1.5**	**1.8**
EPS	1.81	2.35	2.08	2.57
Payout Ratio	**42%**	**64%**	**72%**	**70%**

Sources: Annual Reports, CGIS Research

2017	2018E	2019E	2020E
0	1.86	0	0
0	2.18	2.53	2.79
0	**4.04**	**2.53**	**2.79**
3.72	4.36	5.05	5.59
0%	**93%**	**50%**	**50%**

USD Holdings to Result in Forex Gains

As of 2017 year end, GREE held USD ~6.9Bn in cash & equivalents against USD ~1.5Bn in debt, giving the company ~USD 5.5Bn net exposure. Recent RMB depreciation may result in a forex gain in 2018. When the RMB last depreciated from 6.4936 to 6.937 in 2016, or 6.4%, GREE booked an exchange gain of RMB 3.7Bn. Year to date, the RMB has depreciated approximately 2.4% (table 12).

Table 12: GREE's Dividend History

in USD Mn	**2013**	**2014**	**2015**	**2016**	**2017**
USD Cash & Equivalents (USD Mn)	2,972	2,629	2,659	6,033	6,964
USD Denominated Debt (USD Mn)	174	922	967	1,518	1,551
in RMB Mn					
USD Cash & Equivalents (RMB Mn)	18,121	16,086	17,267	41,852	45,507
GREE Total Cash & Equivalents (RMB Mn)	38,542	54,546	88,820	95,754	99,610
% Cash & Equivalents held in USD	47%	29%	19%	44%	46%

Sources: Annual Reports, CGIS Research

6. forecast and valuation

I. valuation methodologies

Common stock is a certificate of shareholder ownership of a company. Voting rights, dividend distribution rights and the final compensation after the bankruptcy of the company are important features of common stock. In general, the discount method and the PE method are two basic methods for investors to evaluate common stock. It is worth noting that these two methods correspond to the absolute and relative valuation methods studied by the theoretical community.

Specifically, the discount method is based on properly predicting the future cash flow of common stock, and discounting the future cash flow by selecting an appropriate discount rate to calculate the current value of the stock. Based on the profit of the enterprise, the ratio of the amount of money that the investor is willing to pay for the purchase of the company's equity relative to the profit of the enterprise is the price-to-profit ratio.

Absolute valuation method

From the perspective of free cash flow, it is a fairer choice to evaluate the value of GREE Electric Appliance based on the FCFF valuation model in the DCF model. In order to be close to the development of the enterprise, this paper intends to use the two-stage growth model to evaluate the value of GREE Electric. Among them, the first stage is a high-speed development period, and the forecast duration is 5 years; the second stage is a stable and sustainable growth period after 5 years

The specific evaluation steps of the FCFF valuation model are as follows:

► GREE Electric Per Share Price = company's equity value / total number of shares outstanding by the company;

► company's equity value = the company's overall value - interest-bearing liabilities;

► the company's overall value = operating asset value + Value of excess assets + value of non- operating assets;

► value of operating assets = present value of cash flow in the first stage+ present value of cash flow in the second stage.

The formula for calculating the value of operating assets is as follows:

$$V = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{P_{n+1}}{(1+WACC)^{n+1}}$$

► company's free cash flow (CFCF) in the t-year is expressed by $FCFF_t$, $FCFF_t$=EBIT(1-T)+ depreciation and amortization -Capital expenditure – Increase in working capital;

► P_{n+1} is the value after the end of the year, g_{n+1} is the stable growth rate of the second stage, and P_{n+1} can be calculated using the perpetual growth model：

To simplify the calculation, the value of non-operating assets is ignored here. GREE has a large amount of cash and may have more value of excess assets, so it cannot be ignored.

Free cash flow forecasting

In the DCF model evaluation, the discounted object is all the free cash flow of GREE Electric in the future. In terms of specific operations, GREE Electric's interest-free after-tax net profit is used as the starting point for relevant addition and subtraction. Since depreciation and amortization are non-cash items, they need to be added back. At the same time, working capital is added and capital is added. Expenditure is a loss-free item of free cash flow and should therefore be excluded from the net profit after tax.

Discount rate

In operation, the discount rate is obtained by calculating the weighted average cost of capital, that is, calculating the WACC. The WACC calculation formula is as follows:

$$WACC = Ke * \frac{E}{E+D} + Kd * (1-T) * \frac{D}{E+D}$$

► WACC represents the weighted average cost of capital
► Ke is the cost of equity capital
► Kd is the cost of debt capital
► T is the income tax rate
► E represents the market value of equity capital
► D is the market value of debt capital.

Cost of equity capital

Due to the capital asset pricing model (CAPM), the difficulty in calculating the cost of equity get over. In this paper, when using DCF model to evaluate the company value of GREE Electric Appliances, it also tends to use CAPM to measure the cost of equity capital. With the aim of estimating the opportunity cost of equity (Ke), a multi-factor model was used. The CAPM postulates that the opportunity cost of equity is equal to the return on risk-free securities plus an individual risk premium. The risk premium is the company's systematic risk (ß) multiplied by the market risk premium (Rm-Rf). The calculation formula for the CAPM model is as follows:

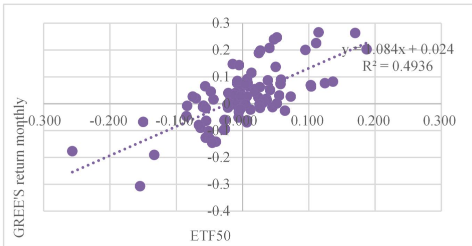
$$Ke = R_f + \beta * [E(R_m) - R_f]$$

► Rf (Risk free rate): According to the Moody's rating (January 2018), Chinese sovereign credit rating is A1, which presents adjusted default spread of 0.72%. We added this rate to the yield to maturity of a 10–year Chinese government bond to get the risk-free rate, 3.63%. The value obtained was 4.35%.This paper selects this interest rate as the risk-free interest rate R_f to further calculate the cost of equity capital.

► ß (beta): In assessing the systemic risk of securities, the beta coefficient plays a huge role because it reflects the volatility of an investment object relative to the market average. As a relative indicator, the beta coefficient is a specific quantification of the relative proportional relationship between a certain security and the market average. The larger the absolute value of the beta coefficient, the greater the rate of return of a particular security relative to the index.

In general, the beta coefficient is a positive number, which indicates that the change in the yield of most securities is consistent with the change in the market index. However, it is not excluded that the beta coefficient of some securities is negative, which indicates that the yield and market index of the securities exhibit reverse volatility. Generally, the larger the beta coefficient, the stronger the speculative nature of the security. In the A-share market, the Shanghai Composite Index is an index generally referred to by investors. The above-mentioned comprehensive index is representative of the market average and is relatively reasonable. This can more fairly reflect the relative trend between GREE Electric and A shares. The past data of GREE Electric Appliance and Shanghai Composite Index were analyzed (GREE electric stock was suspended from February 22, 2016 and resumed in September 2016, we remove data during the period). Through regression analysis, the coefficient of β of GREE Electric Appliance was 1.08 (see Appendix B). (figure 34)

Figure 34： Regression



Sources: Author

► Market risk premium (MRP): The market risk premium should be the general risk premium for a mature equity market, according to Damodaran's database. Because the market expects a rate of return, it helps to calculate the market excess risk return [E(Rm)-Rf] of equity. This assessment approximates the annual average rate of return of the Shanghai Composite Index over the past 8 years as the expected rate of return of the market. From the 30th of the June 2010 to the 30th of June 2018, the annual average yield of the SSE composite Index was Rm= 10.59% (see Appendix). Therefore, it can be considered that the market expectation return rate E(Rm)=10.59%, and the market excess risk return rate of equity MRP=6.27%.

► Equity Risk Premium (ERP): We consider as the market risk premium (MRP) of China the value of 6.27%, based on Damodaran's Database (2018). Then, we add the Country Risk Premium of China, 0.81%. In total, the ERP equals 7.08%. Combining the specific values of the above parameters, using the formula $Ke = Rf + \beta * ERP,$ we can know that the equity capital cost of GREE Electric Appliances is 12.00%.

Both the equity capital cost Ke and the debt capital cost Kd are essential elements for calculating the weighted average cost of capital (WACC).

► Cost of Debt (Rd): We compute the average of historical interest coverage ratio of last three years, 521.17. Base on the Damodaran's Ratings, Spreads and Interest Coverage Ratios tables, the rating of company is AAA and the spread is 0.54%. We reach to the cost of debt of 5.70%, using the following equation:

$$Kd = Rf + Country\ Risk\ Premuim + Company\ Risk\ Premuim$$

GREE Electric's tax rate T is 15%. The company's interest-bearing debt at the end of June,2018(sum short-term and long-term debt) is ~139423.14 MRMB, and shareholders' equity is ~ 79643.61 MRMB. Based on the above data, the weighted average cost of capital WACC can be calculated using the following formula:

$$WACC = Ke * \frac{E}{E+D} + Kd * (1-T) * \frac{D}{E+D}$$

Through the above formula, it can be known that GREE Electric's weighted average cost of capital WACC is 7.44%, which is used as the average discount rate of the company's free cash flow.

► **Income period:** In the DCF model assessment, the future earnings period is a perpetual year. According to the practice habits, a two-stage model is often used. It is assumed that the first phase of GREE's revenue period is 5 years, and the second phase is 5 years later to the sustainable operation period. In the second phase, the company's free cash flow will remain stable.

► **Forecast of sales revenue:** The arithmetic average of EPS growth rate in the last 10 years (see Appendix) is 15.68%, and it is forecasted to decline in the last five years. It is predicted that the income growth rate after 2022 will remain at 1%, and the rate of change in income will be random work each year.

► **Forecast of sales cost:** The forecasting cost of sales involves many projects. The operating cost of the company is the main item. The purchase cost, depreciation and amortization are all important sub-segments of operating costs. Assume that the cost of sales and the sales revenue change in equal proportion.

► **Forecast of business taxes and surcharges:** They generally include business tax, urban construction tax and education fee.

► **Forecasts for period expenses:** They include sales expenses, management fees, financial expenses, etc.

► **Income tax:** According to the current income tax level of GREE Electric Appliances, the company's future income tax rate is still 15%.

► **Depreciation and amortization and capital expenditures are depreciated:** It is assumed that the company will depreciate existing fixed assets in accordance with consistent corporate accounting policies in the future. At the same time, it is assumed that the company will amortize intangible assets and long- term deferred expenses in accordance with consistent accounting policies in the future. For the company's newly added fixed assets in the future, it is assumed that depreciation will be made from the date of transfer of fixed assets, and the annual depreciation amount will be calculated by multiplying the annual depreciation rate by fixed assets. Assume that future capital expenditures are mainly used for asset renewal and replenishment, and for the sake of simplicity, they are treated annually.

► **Excess assets and non-operating assets:** The overall value of the company includes the value of the surplus assets and the value of the non-operating assets. For the sake of simplicity, the value of non- operating assets is ignored in the valuation of GREE Electric. Excess assets include related assets or liabilities that are not directly related to the income forecast and do not generate income. GREE has a large amount of cash and may have more value of excess assets. Since the company occupies a large amount of money from upstream suppliers and downstream distributors, a considerable part of its cash holdings comes from the occupation amount. This factor should be taken into account when calculating the value of the surplus assets. Generally speaking, cash accounts for 5%-10% of the total assets of the company. It is assumed that the normal cash ratio of GREE Electric Appliances is 20% of the total assets. Excessive parts is excess assets. on the financial data of GREE Electric semiannual report in 2018, it can be seen from the calculation that the value of GREE Electric's surplus assets is ~ 78113.63 MRMB.

► **Forecast of the capital structure:** For the sake of simplicity, it is assumed that GREE's future capital structure is the same as at the end of 2017.

GREE electric company value and equity value:

► According to the above, this evaluation ignores the value of non-operating assets for simplicity. However, the excess of the value of the assets can' be ignored, through the calculation of GREE electric surplus assets of ~80 trillion RMB. In the above formula, g_{n+1} for the second stage of the steady growth of income rate, assuming it is 1%.

► According to appendix A, GREE free cash flow forecast. DCF model is used to solve the income by two stage growth model, using WACC value of 7.44% obtained above. According to the formula calculation above, it shows that the company's operating assets value =374141 MRMB.

► Based on the data above, further calculation shows that GREE company's overall value Ve=operating assets+ overflow value of =374141+78114=452255 MRMB. The overall value of equity value Ve =452255-139423 =312832 MRMB.

► As of December 31, 2017, the number of GREE's ordinary shares for a total of 6016 MRMB. therefore, GREE electric appliances fair value per share = corporate equity value / the total number of outstanding shares =312832/6016=52 RMB.

relative valuation method

In addition to the absolute valuation method mentioned above, the relative valuation method is also very popular in the theoretical world. Specifically, the relative valuation method includes various methods such as price-to-earnings ratio, price-to-book ratio, market- to-sales ratio, and PEG ratio method.

Figure 35: GREE PE Band

Sources: Bloomberg, CGIS Research

We have a target price of RMB 47.98, based on a 9.5x multiple of our 2019 earnings forecast. This valuation is supported by GREE's 14%+ earnings CAGR during 2017-2019 and its 30%+ ROE.

MIDEA and Qingdao Haier, two of the three large appliance manufacturers, both trade for ~12x 2019E consensus earnings. MIDEA and Haier both have diverse product portfolios. GREE is a pure play on air conditioning, and currently trades at a discount to MIDEA and Haier at 8.5x our forecasted 2019 earnings (table 13).

Figure 36: MIDEA PE Band

Sources: Bloomberg, CGIS Research

While GREE's earnings growth can remain strong in 2018 due to hot weather and strong AC demand, this period of above trend earnings growth may not sustain beyond 2018. We prefer manufacturers with a more reliable and diversified earnings stream whose EPS growth is higher than GREE.

We value GREE at a discount to Haier and MIDEA on account of the volatile nature of its core air conditioning business, its recent dividend cut, and current overhang on the stock due to potential change in leadership. At 9x 2019E PER, GREE's valuation would be lower than domestic peers but in line with the international appliance manufacturers such as Electrolux and Whirlpool. GREE has historically traded at a discount to its domestic peers MIDEA and Qingdao Haier (figure 35, figure 36 and figure 37).

Figure 37: Qingdao Haier PE Band

Sources: Bloomberg, CGIS Research

Table 13: Peer Comparison

	Ticker	Mkt Cap USD Bn	Price	PE Ratio			EPS Growth		PEG	PB	EV/EBITDA			Yield	ROE
A share			(LC)	2017	2018E	2019E	2018E	2019E	2018E	2017	2017	2018E	2019E	2017	2017
GREE*	000651	39.	43.18	11.	9.9	8.5	17.00	16.00	0.6	4	6.3	5.	4.	0.00	34.20%

	CH	**2**		**6**			**%**	**%**				**5**	**8**	**%**	
MIDEA *	000333 CH	45.1	45.11	17.1	13.7	10.8	24.80%	26.90%	0.6	4	11.7	9.7	8	2.70%	23.40%
Qingdao Haier	600690 CH	16.7	18.18	16	13.9	12	15.20%	15.80%	0.9	3.4	11.8	9.7	8.4	1.90%	21.50%
Robam	002508 CH	4	28.3	17.8	15.2	12.3	17.60%	23.00%	0.9	5	14.3	12	10	1.90%	27.80%
Supor	002032 CH	6.2	50.14	31.3	25.6	21.3	22.20%	20.50%	1.2	7.9	23.8	20	16.8	1.40%	25.30%
Little Swan	000418 CH	5.1	60.24	25.3	20.4	16.8	23.80%	22.00%	0.9	5.4	22.5	15.8	13	1.70%	21.40%
Median				**17.4**	**14.5**	**12.2**	**20.10%**	**20.20%**	**0.9**	**4.5**	**13.8**	**11.3**	**9.6**	**1.80%**	**24.40%**
H share															
Haier Electronics	1169 HK	8.7	24.35	17.3	14.3	12.1	21.10%	17.70%	0.7	2.8	9.9	8.1	6.9	0.80%	16.10%
Whi Internationl rpool	WHR US	10.3	146.15	30.6	9.4	8.3	226.9%	13.1%	0	2.5	7.7	7.2	6.9	2.90%	8.10%
Electrolux	ELUXB SS	6.8	193.4	9.7	10.9	9.5	-11.00%	14.80%	-1	2.7	5.4	5.6	5	3.90%	27.90%
Rinnai	5947 JP	4.5	9,580	22.3	21.8	21.4	2.30%	2.00%	9.4	1.8	8.3	8.3	7.8	0.90%	8.20%
SEB	SK FP	8.6	148.1	19.6	17.1	15.2	14.50%	12.60%	1.2	4.2	11.8	10.9	10	1.40%	21.20%
De'Longhi	DLG IM	4.2	24.06	20.2	19.4	17.7	4.50%	9.70%	4.3	3.5	10.9	10.2	9.5	4.20%	17.40%
Daikin Industries	6367 JT	34.1	12,855	24.4	20.9	19.8	16.70%	5.40%	1.2	3.4	13.1	12	11.2	1.00%	13.80%
Median				**21.3**	**18.2**	**16.4**	**9.50%**	**11.10%**	**1.2**	**3**	**9.6**	**9.2**	**8.7**	**0.021**	**15.60%**

Sources: Bloomberg, CGIS Research
Note: * GREE figures based on CGIS forecast

Sources: Bloomberg, CGIS Research

Of the three major A-Share listed appliance manufacturers, GREE appears less favored by investors utilizing the northbound stock connect than MIDEA. Northbound connect owners own 7.8% of GREE, versus 11.6% of MIDEA and 7.9% of Qingdao Haier. However, since MSCI inclusion on June 1, 2018, investors utilizing the Hong Kong stock connect have invested a net RMB 2Bn in GREE, closely following the net RMB 3.6Bn invested in MIDEA (table 14).

Table 14: Foreign Investment in GREE

% Ownership by Northbound Stock Connect				Northbound Net Buying from June 1, 2018			
Ownership(%)	12-Jun-17	30-Dec-17	4-Jul-18	Shares (Mn)	31-May-17	4-Jul-18	Net Buying (RMB Mn)
GREE	5.10%	8.40%	7.70%	GREE	426.4	465	1,833
MIDEA	5.00%	9.60%	11.60%	MIDEA	701.6	767.6	3,515
QD Haier	7.30%	8.80%	7.90%	QD Haier	499.8	484.5	-304

Sources: Bloomberg, CGIS Research

7.Risk factors

Earnings Volatility

The air conditioning business in China is highly volatile due to its dependency on weather, the real estate market, and channel inventory swings. In particular, the investment community has limited insight into distributor inventory levels. GREE’s AC segment comprises over 90% of gross profit.

Limited Diversification in Distribution

Relative to Haier and MIDEA, GREE is reliant on traditional distributor channel for sales. GREE sells ~70% of its air conditioners and small appliances through 27 Tier 1 distributors, which typically divide their geographic coverage by province. These distributors move GREE’s appliances to a network of city and county level distributors, and ultimately to a network of 30,000 GREE branded specialty stores. Relative to competitors, GREE is more reliant on this opaque channel for sales (table 15).

Table 15: China Distribution Model by Manufacturer

	GREE	MIDEA	Haier
Branded Stores	~70% sales: ~30,000 GREE stores, owned by distributors	~ 30% sales	~ 50% sales: Over 35,000 Haier stores, owned by distributors. Distributor inventory, monitered by "Yilihuo" APP
Online Sales	~10% sales	~ 30% sales	~ 18% sales
Key Account (Gome, Suning, Etc)	~10% sales	~ 30% sales	~ 20% sales
Multibrand stores	~10% sales	~ 10% sales	~ 12% sales

Sources: CGIS Research

Tier 1 & 2 City Exposure

GREE’s store network is relatively more concentrated in Tier 1 & 2 cities. As such, GREE’s sales are influenced by fluctuations in these respective property markets. Local governments in these cities have been implementing tightening measures since 2017H2, and sales transactions are expected to cool throughout 2018.

Dilution and Share Suspension

GREE has made attempts in recent years to diversify outside of its core air conditioning business. On March 5, 2016, GREE proposed an issuance of ~1.5Bln shares to acquire Yinlong. The deal was ultimately vetoed by shareholders, but GREE's shares were suspended for a period of ~7 months (Feb 22 to September 2, 2016) while negotiations dragged on.

Management Transition

Dong Mingzhu has served as Chairwoman since May 2012, but her term is currently up for renewal. GREE has postponed the decision twice since May 31, 2018 without resolution.

Commodity Prices

Raw material prices comprise ~85% of COGS. In years when important commodity prices such as copper and steel rise, management has traditionally implemented ASP hikes. However, management may not always have the ability to completely offset increases in raw material costs.

RMB Appreciation

GREE's balance sheet has substantial USD exposure. As 2017 YE, GREE held USD ~6.9Bn in cash & equivalents against USD ~1.5Bn in debt, giving the company heavy USD exposure. RMB appreciation would likely result in forex los

8. Risks to price target analysis

I. Sensitivity analysis

We have performed a sensitivity analysis with the purpose of quantifying possible changes in YE16 price target due to changes on some key variables. These variables were defined recurring to the MATLAB and analyzing which model's variables could most impact the price target if base assumptions were not observed. For the sensitivity analysis the simulation of 1000 possible scenarios was conducted.

We concluded that the variables which should be primary targets of a more comprehensive analysis, as shown in Figure 48, correspond to Market Risk

Premium (MRP) and the industries' specific Terminal growth rate (g).

The industries' specific terminal growth rates impact directly the terminal value.

We then conduct bivariate sensitivity analysis. Recently the price of GREE is 43.18, but my analysis is 52. According to the table, we should hold the share (table 16 and table 17).

Table 16: Sensitivity analysis of GREE's price (Univariate)

Market Risk Premium (MRP)									
g		4.30%	5.30%	6.30%	7.30%	8.30%	9.30%	13.50%	15%
	0.20%	62	52	45	41	36	32	36	32
	0.60%	67	57	48	43	39	34	37	34
	1.00%	74	62	52	46	41	36	39	35
	1.40%	82	68	57	49	44	38	41	37
	1.80%	89	75	62	54	48	41	44	39

Sources: Author

Table 17: Sensitivity analysis of GREE's return (Bivariate)

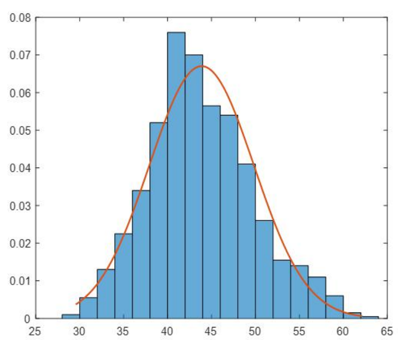
Market Risk Premium (MRP)									
g		4.50%	6%	7.50%	9%	10.50%	12%	13.50%	15%
	0.20%	44.19%	20.93%	4.65%	-4.65%	-16.28%	-25.58%	-31.82%	-38.64%
	0.60%	55.81%	32.56%	11.63%	0.00%	-9.30%	-20.93%	-29.55%	-34.09%
	1.00%	72.09%	44.19%	20.93%	6.98%	-4.65%	-16.28%	-25.00%	-31.82%
	1.40%	90.70%	58.14%	32.56%	13.95%	2.33%	-11.63%	-20.45%	-29.55%
	1.80%	106.98%	74.42%	44.19%	25.58%	11.63%	-4.65%	-13.64%	-25.00%

Note: GREEn stands for buy; Grey stands for neutral; Orange stands for reduce; and Red stands for sell

Sources: Author

II. Monte Carlo simulation

Figure 38: Monte Carlo simulation



Sources: Author

Additionally, the sensitivity analysis, using to the EXCEL, produce a Monte Carlo simulation (covering 1000 simulations) to test YE18 price target's sensitivity to the previously identified key variables, rm-rf and the terminal growth rates g. With a confidence level of 95.0%, the Monte Carlo simulation mean price target was 44.22, a median of 43.62, and a associated standard deviation 6.13. According to the results obtained, there is 95% probability of YE18 GREE's price be between CNY 36.20 and CNY 56.23, which means that there is more than 5.0% chance of one of the identified variables trigger a change in the recommendation to BUY (figure 38).

10. References

I. Books

Damodaran, A. (2012). Investment Valuation: Tools and Techniques for determining the value of any asset.

3ª Ed. Hoboken, New Jersey: John Wiley and Sons.

Feng Gu and Baruch Lev. (2017). Time to Change Your Investment Model, Financial Analysts Journal.

John C. Hull, Yong Wang. (2016). Options, Futures and other derivatives. (9th Edition). China Machine Press.

John C. Hull, Yong Wang. (2010). Risk Management and Financial Institutions (2nd Edition). China Machine Press.

Scott Richardson, Richard Sloan, Haifeng You. (2012). What Makes Stock Prices Move? Fundamentals vs. Investor Recognition. CFA Institute: Financial Analysts Journal.

Stephen A. Ross, Randolph W.Westerfield, Bradford D.Jordan. (2013). Fundamentals of corporate finance (10th Edition). China Machine Press.

Stephen Foerster, John Tsagarelis, Grant Wang. (2017). Are Cash Flows Better Stock Return Predictors Than Profits. CFA Institute: Financial Analysts Journal.

II. Investor Relations – Company Consolidated Reports

GREE’s annual report from 2012 to 2017

III. Databases and Websites

industry analysis - http://www.moutaichina.com/xinwen/2018/3680.html;

Wind Database;

Bloomberg Database;

Chinese Cereal Center - http://www.cereal.com.cn/

IMF (2017) World Economic Outlook;

IMF (2018) World Economic Outlook National; Bureau of Statistics

Yahoo Finance - https://finance.yahoo.com/

http://forex.cnfol.com

APPENDIX

I. COMPANY BACKGROUND

History of the Group

GREE Electric Appliances Inc. of Zhuhai is an international air conditioning enterprise which has integrated R&D, manufacturing, marketing and service. Established by Zhu Hongbo in Zhuhai, Guangdong in 1991, GREE started as a nameless factory with 200 employees and annual production of less than 20,000 units. Withstanding the test of time and market, GREE became the domestic home appliance leader in the 2000s under Zhu Hongbo leadership. Started as a regional sales woman at age 36, Dong Mingzhu spent 22 years in GREE through peaks and troughs before becoming Zhu Hongbo's successor in 2012, and has transformed GREE into one of the largest air conditioner manufacturers internationally, recording ~RMB 150Bn revenue in 2017. GREE Electric Appliances went public on the Shenzhen Stock Exchange in 1996.

GREE Electric has developed two core brands, namely GREE and Tosot. The two brands cover a wide product range including air conditioners, central air conditioning systems, refrigerators, rice cookers, washing machines and other home appliances. Currently, GREE's products are exported to more than 200 countries and regions, and its own brand - GREE products, to more than 160 countries and regions.

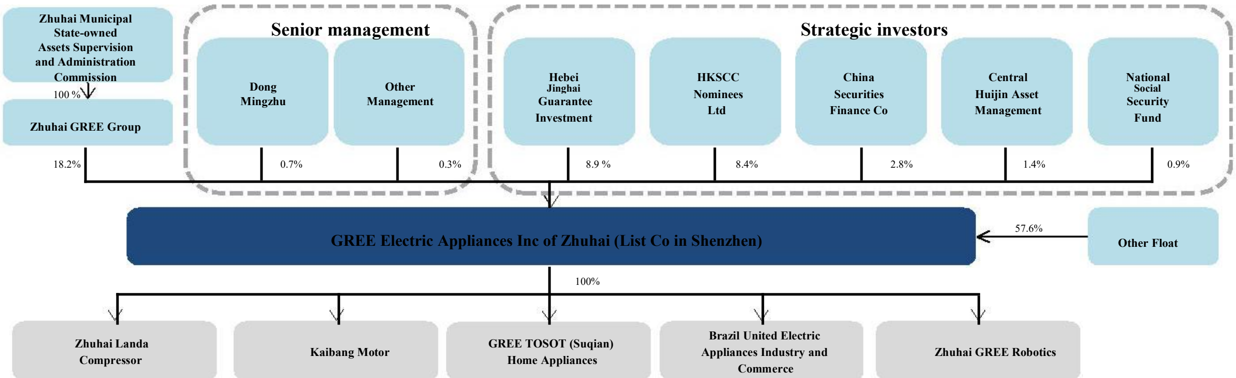
Shareholding Structure

Zhuhai GREE Group, a fully owned entity of Zhuhai Municipal State-owned Assets Supervision and Administration Commission, holds the majority ownership of GREE Electric Appliances with 18.2% of total shares outstanding. Dong Mingzhu, the current Chairwoman of GREE Electric Appliances. Dong Mingzhu holds 0.7% of the Company, with the rest of the board owning 0.3%.

In May 2007, GREE Electric Appliances transferred 10% of equity to Hebei Jinghai Guarantee Investment (later reduced to 8.9% due to new shares issuance and placement), aiming to better incentivize distributors. Hebei Jinghai has since become the second largest shareholder of GREE Electric. Hebei Jinghai is a joint venture of 10 sales companies in Chongqing, Henan, Hebei, Shandong and other regions. In 2007, these 10 sales companies comprised an estimated 65% of GREE Electric's total sales.

Chairwoman Dong Mingzhu has been serving as Chairwoman of GREE Electric since 2012. As of May 31, 2018, her third consecutive term was up for re-election. On June 6, 2018, GREE announced that Dong Mingzhu's re- election would be postponed to the annual shareholders meeting on June 25, 2018. However, following the shareholder meeting, a decision has not still been communicated to the market (figure 8).

Figure 13: Shareholding Structure



Sources: Company Annual Report, Bloomberg, CGIS Research

II. FINANCIAL MODEL

P&L Observations

► GREE provisions for distributor rebates in selling expenses. These rebates provisions accumulate in "Other current liabilities" on the balance sheet, which reached over RMB 60Bn in Q1 2018. We highlight that selling expenses ranged from 15-20% of sales from 2013- 2016 before declining to 11% of sales in 2017. As such, an increase in selling expenses via rebates remains a key risk to our forecast estimates.

► GREE has historically booked RMB 2-3Bn of interest income in the revenue line, which can distort the gross margins of the company in any given year. Ex-interest income, gross margins have ranged between 32- 36% in 2013-2017. Raw material costs comprise 85% of COGS. We do not expect aggressive ASP or mix changes in 2018, and have forecasted gross margins at the low end of the company's historical range (table 18)

Table 18: Simplified Consolidated Statement of Profit and Loss

Dec. Year End (RMB Mln)	**2016**	**2017**	**2018E**	**2019E**	**2020E**
Sales Revenue	**110,113**	**150,020**	**178,252**	**203,787**	**223,364**
COGS	-72,886	-99,563	-119,521	-136,428	-149,592
Gross profit	**37,227**	**50,457**	**58,731**	**67,359**	**73,772**
Sale tax	-1,430	-1,513	-1,798	-2,055	-2,253
Selling and distribution costs	-16,477	-16,660	-19,796	-22,631	-24,805
General and administrative expenses	-5,486	-6,071	-7,214	-8,247	-9,039
Others	-94	-196	-196	-197	-197
Total EBIT	**13,740**	**26,016**	**29,727**	**34,229**	**37,478**
Depreciation & Amortisation	1,764	2,296	2,362	2,754	3,146
EBITDA	**15,504**	**28,312**	**32,089**	**36,982**	**40,623**
Interest expense	-311	-819	-1,026	-751	-476
Interest income	1,484	2,205	2,291	2,478	2,727
Exchange gains/ losses	3,702	-1,603	0	0	0
Others	-43	819	0	0	0
Pre-Tax Profit	**18,573**	**26,617**	**30,993**	**35,956**	**39,729**
Tax Expense	-3,007	-4,109	-4,649	-5,393	-5,959
Net Profit After Tax	**15,566**	**22,509**	**26,344**	**30,562**	**33,770**
Minority Interest	103	107	132	153	169
Earnings to Equity Owners	**15,464**	**22,402**	**26,212**	**30,409**	**33,601**
EPS (Basic)	2.57	3.72	4.36	5.05	5.59
EPS (Diluted)	**2.57**	**3.72**	**4.36**	**5.05**	**5.59**
DPS	**1.8**	**0**	**4.04**	**2.53**	**2.79**
% YoY growth					
Revenue	9.50%	36.20%	18.80%	14.30%	9.60%
Gross profit	7.80%	35.50%	16.40%	14.70%	9.50%
EBIT	9.20%	89.30%	14.30%	15.10%	9.50%
Net profit	23.40%	44.90%	17.00%	16.00%	10.50%
Margins and ratios					
Gross profit margin	33.80%	33.60%	32.90%	33.10%	33.00%
EBITDA Margin	14.10%	18.90%	18.00%	18.10%	18.20%
EBIT Margin	12.50%	17.30%	16.70%	16.80%	16.80%
Net Profit Margin	14.00%	14.90%	14.70%	14.90%	15.00%

Sources: Company Annual Report, CGIS Research

Balance Sheet Observations

► Inventory increased steeply in 2017, but the amount remained below three months' worth of sales. This could be the result of year-end effect. From our conversations with management, we understand that GREE's AC factories are currently running at full capacity and are short on inventory
► Other current liabilities are comprised mostly of accrued sales rebates
► Other current assets, which increased by RMB 8Bn in 2017, are mostly wealth management and structured products. Without additional information, we assume this to remain stable going forward (table 19).

Table 19: Simplified Consolidated Statement of Profit and Loss

Dec. Year End (RMB Mln)	**2016**	**2017**	**2018E**	**2019E**	**2020E**
Cash & Equivalents	96,005	100,694	108,804	119,645	130,500
Trade and other receivables	34,078	40,213	44,725	50,258	54,881
Inventories	9,025	16,568	16,600	17,432	19,115
Prepayments	1,815	3,718	3,718	3,718	3,718
Other current assets	1,993	10,342	10,342	10,342	10,342
Total current assets	**142,915**	**171,535**	**184,188**	**201,396**	**218,555**
Loans and advances	4,737	6,673	6,673	6,673	6,673
PPE, net	18,263	18,488	20,709	22,548	24,004
Intangible assets	3,355	3,604	4,022	4,429	4,827
Deferred tax assets	9,668	10,838	10,838	10,838	10,838
Other non-current assets	3,436	3,829	3,829	3,829	3,829
Total non-current assets	**39,459**	**43,433**	**46,072**	**48,318**	**50,172**
Total assets	**182,374**	**214,968**	**230,260**	**249,713**	**268,727**
Short-term borrowings	10,701	18,646	13,646	8,646	3,646
Prepayments	10,022	14,143	14,143	14,143	14,143
Notes payable	9,127	9,767	11,288	12,885	14,128
Accounts payable	29,541	34,553	38,180	43,581	47,786
Tax payable	3,126	3,909	3,909	3,909	3,909
Other payables	4,601	5,561	5,561	5,561	5,561
Other current liabilities	59,733	60,912	60,912	60,912	60,912
Total current liabilities	**126,852**	**147,491**	**147,639**	**149,637**	**150,085**
Long-term borrowings	0	0	0	0	0
Other long term liabilities	570	642	642	642	642
Total non-current liabilities	**570**	**642**	**642**	**642**	**642**
Total liabilities	**127,422**	**148,133**	**148,282**	**150,279**	**150,728**
Shareholders Fund	53,972	65,595	80,606	97,910	116,306
Minority Interest	980	1,240	1,372	1,524	1,693
Total S/H Equity	**54,952**	**66,835**	**81,978**	**99,434**	**117,999**
Total Liab & S/H Fund	**182,374**	**214,968**	**230,260**	**249,713**	**268,727**

Sources: Company Annual Report, CGIS Research

Cash Flow Observations

► From 2013 to 2017, GREE paid 42-70% of its net income out as dividends. Although GREE announced it was suspending dividend payment in its 2017 annual results, we expect GREE will resume paying dividend. We assume GREE will pay 50% of net income out as dividends over the next three years, down from GREE's 70% payout ratio for 2016 on account of higher capex spend.
► In 2017, GREE invested ~RMB 51Bn in fixed term deposits and wealth management products with a maturity of greater than 3 months and it has disclosed these investments in the cash flow statement. We regard these deposits as cash equivalents in our balance sheet, and do not assume any increases in our forecast.
► In 2017, GREE spent ~RMB 12Bn of cash on investment products. We believe most of this spend went into "Other Current Assets" which is mostly comprised of WMPs and other structured products.
► GREE has three new appliance factories under construction in Hangzhou, Nanjing, and Luoyang, and is also contemplating acquisitions, both internationally and domestically. We have increased capex figures for 2018 and 2019 for the completion of these factories, but have not built in investment assumptions for any acquisitions.
► We assume GREE repays some of its short - term debt (table 20 and table 21).

Table20: Simplified Consolidated Statement of Cash Flows

Dec. Year End (RMB Mln)	**2016**	**2017**	**2018E**	**2019E**	**2020E**
Net Income	15,566	22,509	26,344	30,562	33,770
Depreciation & Amortization	1,764	2,296	2,362	2,754	3,146
Change in Working Capital	-906	-6,883	605	631	-856
Other Non Cash Adjustments	-1,565	-1,564	0	0	0
Operating Cash Flow	**14,860**	**16,359**	**29,311**	**33,947**	**36,059**
Cash recovered from investment	3,441	4,003	0	0	0
Capex	-3,277	-2,425	-5,000	-5,000	-5,000
Cash spent on investment *	-1,496	-12,420	0	0	0
Investments in Fixed Deposits**	-17,914	-51,412	0	0	0
Investing Cashflow	**-19,247**	**-62,253**	**-5,000**	**-5,000**	**-5,000**
Dividend (ordinary)	-9,180	-11,121	-11,201	-13,106	-15,205
Debt Movements	1,328	8,601	-5,000	-5,000	-5,000
Others	2,100	251	0	0	0
Financing Cashflow	**-5,752**	**-2,269**	**-16,201**	**-18,106**	**-20,205**
Total Cash Flow	**-10,138**	**-48,164**	**8,110**	**10,841**	**10,855**
Cash Flow Ex. Fixed Deposit Investment	7,776	3,247	8,110	10,841	10,855

Note: * Cash investment in WMPs, primarily booked in "Other Current Assets"
** Cash investment into fixed term deposits, which we regard as cash equivalents
Sources: Company Annual Report, CGIS Research

Table21: Summary of Operating Metrics

Dec. Year End (RMB Mln)	2016	2017	2018E	2019E	2020E
Revenue growth					
AC	5%	40%	21%	15%	10%
Small Appliances	13%	34%	20%	15%	15%
Smart Equipment	NA	1220%	20%	15%	15%
Compressors, motors, Capacitors	20%	35%	20%	20%	20%
Recycling & Other	54%	6%	5%	5%	5%
Gross Margin					
AC	38.50%	37.10%	36.00%	36.00%	36.00%
Small Appliances	22.10%	20.70%	21.00%	21.00%	21.00%
Smart Equipment	NA	5.90%	8.00%	8.00%	8.00%
Compressors, motors, Capacitors	0.10%	22.40%	20.00%	20.00%	20.00%
Recycling & Other	6.10%	8.70%	9.00%	9.00%	9.00%
OPEX (as % Revenue)					
Selling Expense	15.00%	11.10%	11.10%	11.10%	11.10%
G&A	5.00%	4.00%	4.00%	4.00%	4.00%
EBIT margin	**12%**	**17%**	**17%**	**17%**	**17%**
Tax Rate	16%	15%	15%	15%	15%
Net profit margin	**14.00%**	**14.90%**	**14.70%**	**14.90%**	**15.00%**
Days receivables (including bills)	83	85	86	85	85
Days payables (including bills)	175	150	149	149	149
Days inventories	46	46	50	46	46
Current ratio((x)	1.1	1.2	1.2	1.3	1.5
Quick ratio(x)	1.1	1.1	1.1	1.2	1.3
Asset/equity(x)	3.4	3.3	2.9	2.6	2.3
Net debt/equity	-155%	-123%	-116%	-112%	-108%
EBITDA interest coverage(x)	49.9	34.6	31.3	49.3	85.4
ROE	29%	34%	33%	31%	29%

Sources: Company Annual Report, CGIS Research