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A Financial Analysis of Valuation Forecast of Chongqing Chuanyi Automation

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Abstract: As a basic and strategic high-tech industry of the national economy, the instrumentation industry plays a very important role in promoting industrial transformation and upgrading, developing strategic emerging industries, and ensuring and improving people's living standards. Instrumentation is also an important part of major equipment and an important device for realizing industrial informatization and intelligent manufacturing. The industrial structure of China's instrumentation industry is in a stage of gradual upgrading. This article focuses on the recent operating conditions and future development prospects of Chongqing Chuanyi Automation Co,. Ltd (Hereinafter referred to as CQCY), a leading enterprise in the industry. Combining external conditions such as the macroeconomic environment and national policy adjustments with the company's endogenous factors, this article predicts key indicators such as its future operating income, gross profit margin, interest rate, and capital turnover. This article further analyzes the sustainable operating capacity of CQCY and finds that the company is in good condition in terms of liquidity, debt repayment ability and profitability, which confirms that CQCY still has strong market competitiveness and development potential in the industry. This article provides a reference case for enterprises in the instrumentation field, especially in the industrial automatic control system device manufacturing industry, to assess whether their financial status is healthy and good, which has certain reference significance.

Keywords: Instrumentation Industry, Industrial Transformation, Financial Performance Analysis.

1. Introduction

Instruments and meters are tools or equipment used to detect, measure, observe, and measure various physical quantities, material components, physical parameters, etc. In 2023, the operating income of the instrument and meter manufacturing industry was 1,011.22 billion yuan, a year-on-year increase of 4%, and the total profit was 104.99 billion yuan, a year-on-year increase of 2.3%. The industrial structure of China's instrument and meter industry is in a stage of gradual upgrading. The low-end and medium-end products basically meet the domestic market demand, and some high-end products have reached or are close to the international technical level. A number of large-scale high-end special measuring instruments and industrial control systems have made breakthroughs. But compared with foreign metering equipment, China's equipment is the most lacking is the reliability and stability of measuring instruments, a lot of instrumentation after a long period of time becomes not very stable,

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the accuracy of the error, resulting in Enterprise product quality underground, reducing the competitiveness of enterprises, affecting the corporate image [1].

CQCY is in the industrial automatic control system manufacturing industry under the instrumentation category. Industrial automatic control system devices refer to industrial control computer systems, automated instruments and devices used to continuously and automatically measure and control variables such as temperature, pressure, flow, and level of materials or products during the manufacturing or processing of industrial products. With the advancement and implementation of the industrial concept, the integration and automated control of industrial instruments are no longer limited to the operation of a single device, but have expanded to the intelligent coordination and data-driven decision-making of the entire production system. Automated control technology particularly emphasizes the programmability, precise computing capabilities, troubleshooting and analysis, and memory advantages of its system, making the production process more flexible, faster in response, and more adaptable to complex and changing production requirements [2]. The company's main business is relatively concentrated. According to the company's 2023 annual report (see Figure 1), in terms of products, 89% are industrial automatic control system devices and engineering complete sets of business, 8% are composite materials business, 2% are electronic devices business, and the remaining 1% are import and export and other businesses.

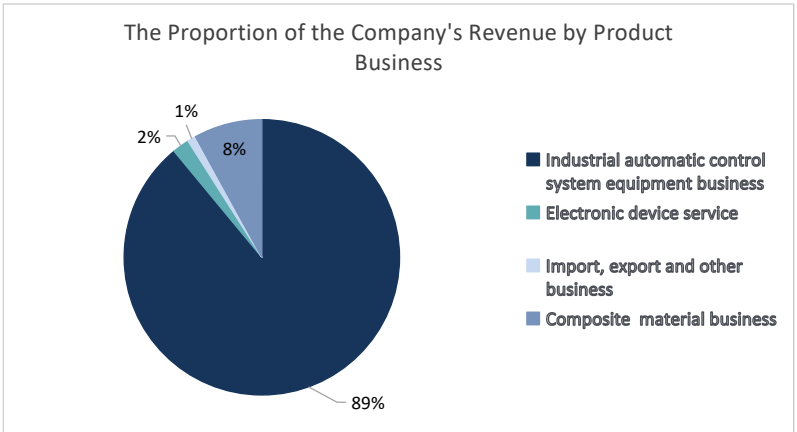


Figure 1: The proportion of Revenue by Segments.

During rapid economic growth in China, an impressive fact is that large- and medium-size enterprises (LMEs) have played an essential role in both economic and technological development of Chinese industries. In addition, in shifting from imitation to innovation, LMEs (especially state-owned LMEs) have greatly facilitated the absorption and adaptation of advanced foreign technologies [3]. As the leader of the instrumentation industry, CQCY has gradually developed a complete product matrix. It has a complete range of product varieties and series, and can provide complete sets of products and quickly meet special needs according to different market demands.

In the control strategy of electrical automation instruments and meters in industrial sites, the combination of intelligent control and advanced control represents the forefront of automation technology development. This strategy aims to achieve high optimization and fine management of industrial production processes by integrating intelligent technologies such as artificial intelligence, machine learning, and big data analysis with traditional advanced control technologies such as model predictive control (MPC), adaptive control, and fuzzy control [4]. In recent years, CQCY has continued to focus on innovation-driven development, increasing R&D investment at an average annual growth rate of 20%, deepening technological innovation, and has developed and mastered a number of core technologies and core production processes (see Figure 2). The technical level of field

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measurement instruments and control valves is leading in China, and some have reached the international advanced level. At the same time, the company closely follows the development trend of the digital age and takes the lead in promoting intelligent manufacturing and the integration of industrialization in the industry. The level of intelligent manufacturing has a demonstration effect in the industry.

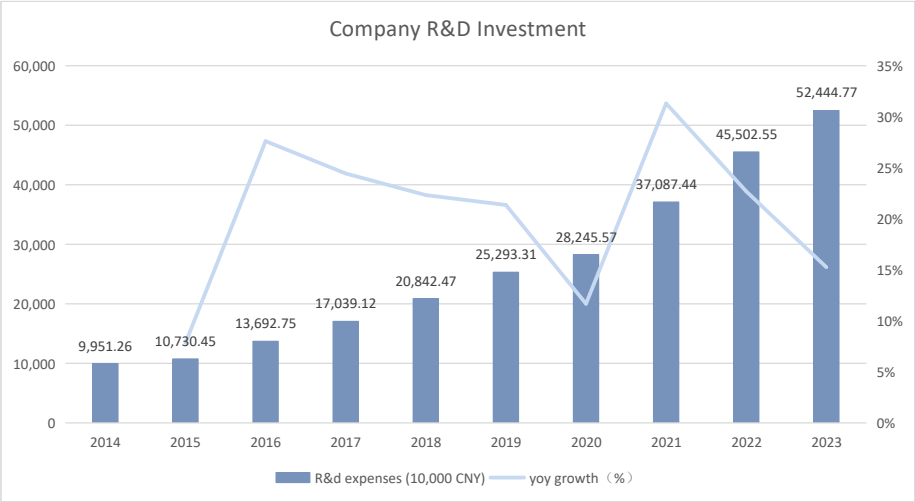


Figure 2: R&D Expenditure from 2014 to 2023.

Finally, CQCY attaches great importance to talent cultivation. After long-term accumulation and precipitation, it has cultivated a professional, efficient, pioneering, innovative, united and enterprising business backbone team, as well as a core management team with rich industry experience, keen insight and efficient execution. According to the company's 2023 annual report, 90% of the company's researchers have a bachelor's degree or above during the reporting period, and about 80% of the researchers are under 40 years old, further providing talent support for the company's sustainable development (see Table 1).

Table1: The Educational Background of R&D Personnel.

The number of R&D personnel	1141
As a percentage of the total number of employees	21.6%
Educational structure of R&D personnel	
Category	Number
Doctoral candidate	11
postgraduate	393
undergraduate	604
Junior college	84
Other	49
Age structure of R&D personnel	
Category	Number
Under 30	495
30 to 40	381
40 to 50	159
50 to 60	105
Over 60	1

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2. Forecast Assumptions

2.1. Operating Income

The development strategy adopted in the first three decades of reforms (especially following China's admission to the WTO), appeared then excessively dependent on export and investment and convinced the government to promote the (relatively weak) internal demand [5]. In the past two years, due to the influence of external situations, exports and investment have been relatively weak in driving the economy. If China can only rely on relatively weak domestic demand, it will face huge downward economic pressure, and the sluggish development of the manufacturing industry will also be the general trend. Over the past year, China's manufacturing PMI index has been below 50% for a long time (see Figure 3). Therefore, CQCY may face the risk of reduced orders and lower operating income.

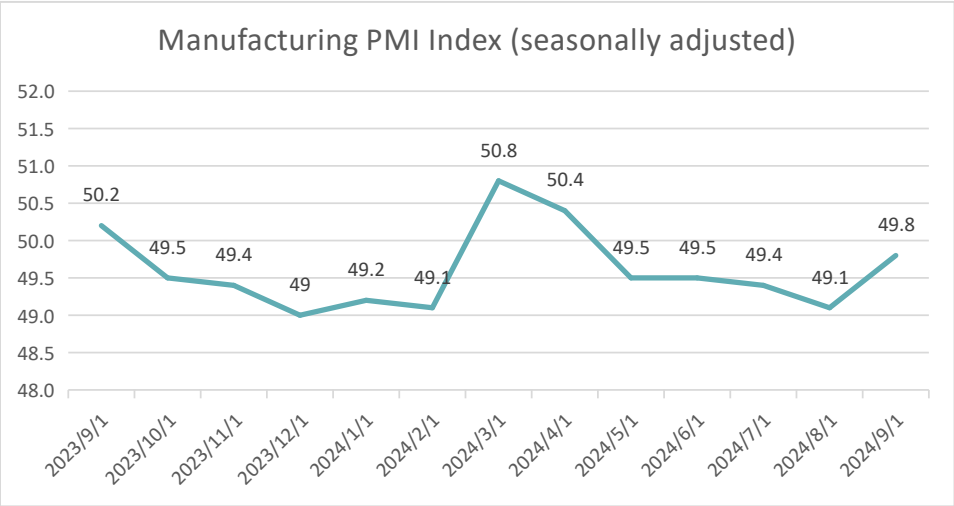


Figure 3: manufacturing PMI Index (Seasonally Adjusted).

However, what is good for the company is that China's traditional industries are large in scale, accounting for more than 80% of the manufacturing industry, maintaining its position as the world's largest manufacturing country. In order to further give full play to the role of industry in promoting economic growth, the transformation and upgrading of traditional industries has been placed in a more important position. The Chinese government has therefore established relevant policy guidelines and work tones, and will take the acceleration of upgrading and digital transformation of the manufacturing industry as the central task. The application of digital technology in manufacturing is a pivotal driver of industrial change. The continuous integration of emerging information technology with manufacturing has accelerated the evolution of modern manufacturing systems and fostered comprehensive growth in both the manufacturing and digital economy sectors [6]. Large-scale technological transformation and equipment upgrades have brought broad business opportunities to the company, and CQCY has seen potential untapped markets.

The instrumentation system optimizes and controls the operating parameters of the equipment, which can effectively control the costs of the entire production process, and optimize and adjust the production process while ensuring production efficiency, so that the economic benefits of the enterprise can be truly improved [7]. CQCY's operating income remained stable before 2018. Since 2018, due to the increasing demand for safety, consumption reduction, quality improvement and efficiency increase in the fields of petrochemicals, coal, metallurgy, new energy, etc., and the increase

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in demand for industrial instruments, CQCY's operating income has achieved a rapid increase of 10% per year (see Figure 4).

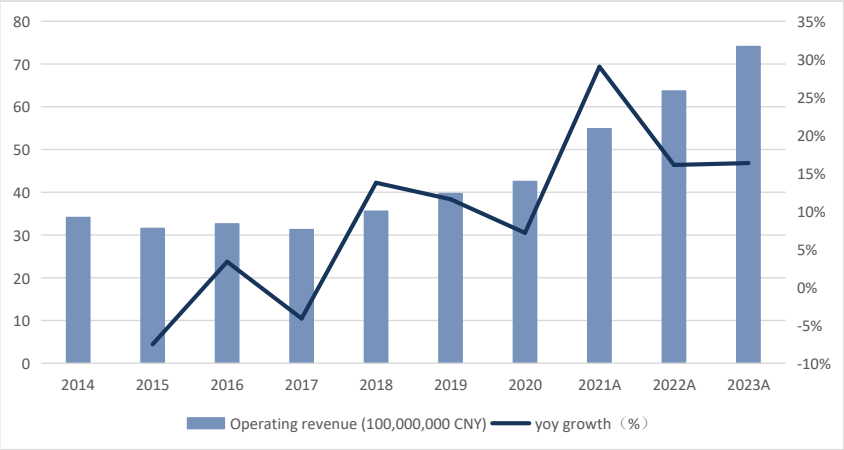


Figure 4: Operating Revenue and growth.

Taking into account the instability of the macro-environment and the rapid development of CQCY in the past few years, the company's operating income will enter a stage of steady growth in the short term in the future, and a decline in the growth rate is inevitable. Therefore, it is expected that from 2024 to 2026, CQCY's operating income growth rate will remain at 10%, reaching 8.152 billion, 8.967 billion, and 9.863 billion respectively.

2.2. Gross Margin

As a manufacturing enterprise, CQCY has a material cost that constitutes the majority of the company's operating costs from 2014 to 2023, which is stable at around 90%. The second largest component is direct labor costs and manufacturing overhead costs, each accounting for about 5%, and fuel and power costs are often less than 1% (see Figure 5). Since the company's raw materials are mainly sourced from outside and account for a large proportion of the cost, the company's operating costs are easily affected by fluctuations in raw material prices, thereby affecting the company's gross profit margin.

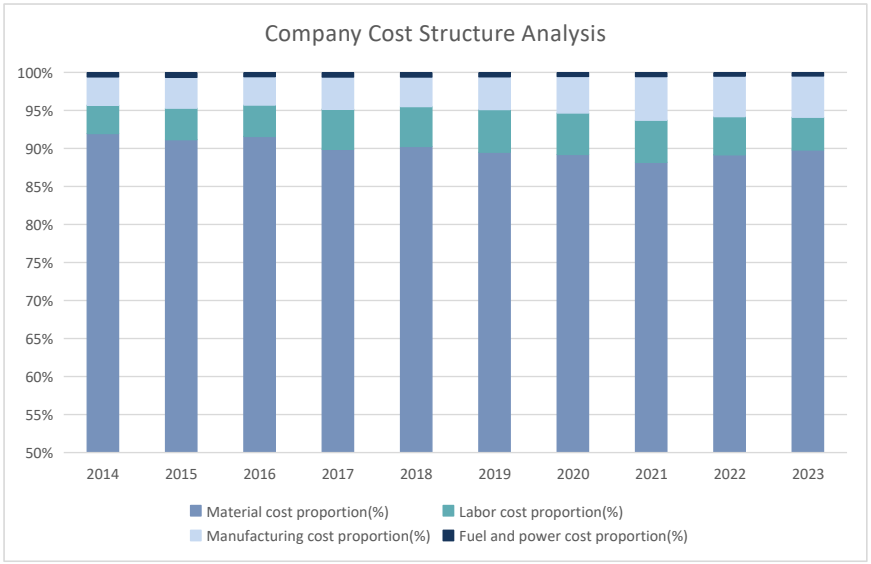


Figure 5: Cost Structure from 2014 to 2023.

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During the 10 years from 2014 to 2023, the gross profit margin of CQCY increased from 25.73% to 34.20% (see Figure 6). The increase in gross profit margin was mainly due to: focusing on cost optimization in the production process, improving operational management efficiency, and accumulating strength to form economies of scale; continuously expanding multi-party supply channels for raw materials and accelerating the implementation of alternative solutions; products continued to upgrade in the direction of high parameters and high complexity, and the number of high-gross-profit products increased.

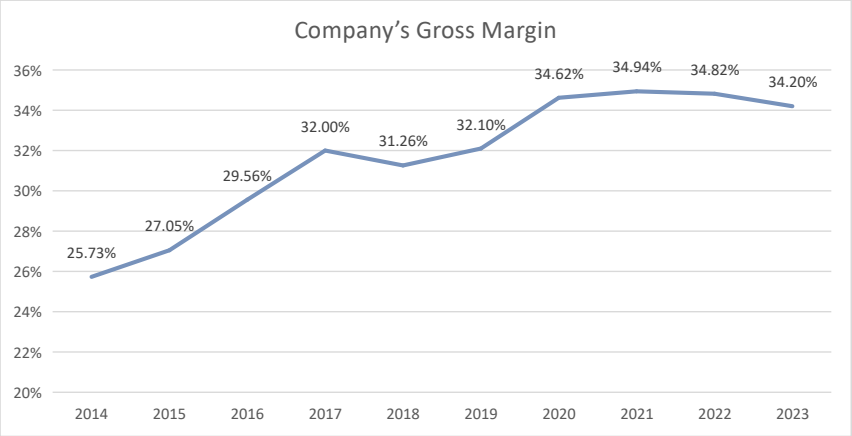


Figure 6: gross margin from 2014 to 2023.

On the one hand, the rising cost of raw materials is inevitable, which puts pressure on the company's cost control. On the other hand, the company insists on accelerating digital transformation and continuously building automated production lines, digital workshops, and smart factories. In terms of impact mechanisms, digital innovation drives firm performance improvement through three paths: improving labor efficiency, reducing operating costs and enhancing corporate competitive advantage [8]. At the same time, the company's products are upgraded to mid-to-high-end, the proportion of high-gross-profit products is increasing, and the gross profit margin has room for improvement. Therefore, it is estimated that from 2024 to 2026, the gross profit margin of CQCY will be 34%, 34.65%, and 35% respectively.

2.3. Interest Rate

In 2019, the People's Bank of China decided to reform and improve the formation mechanism of the loan prime rate (LPR) in order to deepen interest rate marketization reform, improve interest rate transmission efficiency, and promote the reduction of financing costs for the real economy. The loan market interest rate quotation system is conducive to strengthening the information transmission effect of interest rates, relieving information asymmetry between fund demanders and providers. On the other hand, the transparent interest rate quotation system strengthens the competition among banks around their loan products and increases the company's bargaining power over bank loan credit limits [9].

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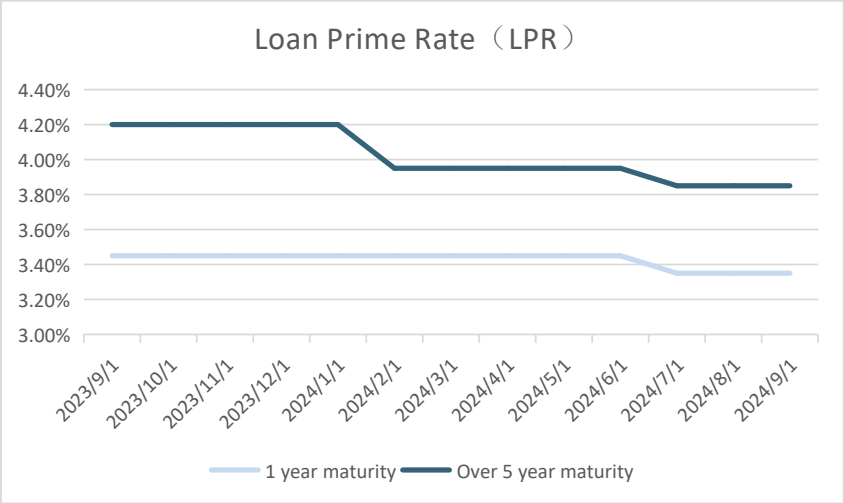


Figure 7: Loan Prime Rate.

As a large state-owned enterprise, CQCY has a very low risk of default, its performance has maintained steady growth, and its scale has continued to expand. It is in a leading position in China's industrial automatic control system device manufacturing industry, has a high brand awareness in the instrumentation industry, has a good credit rating, and is a high-quality customer of commercial banks. Therefore, when predicting the company's interest rate, LPR is referenced. LPR has shown a downward trend in the past year, with interest rates for more than 5 years changing from 4.2% to 3.8%, and 1-year interest rates changing from 3.45% to 3.35% (see Figure 7). The main purpose is to boost consumption and encourage investment through this measure, thereby stimulating domestic demand and alleviating the pessimistic external economic environment to a certain extent.

The downward economic pressure and unfavorable international situation faced by China will not change in the short term, and the monetary policy of the People's Bank of China will continue to be implemented, and the interest rate of CQCY may be further reduced. Therefore, it is expected that from 2024 to 2026, the short-term interest rates of CQCY will be 3.35%, 3.25%, and 3.25%, respectively, and the long-term interest rates will be 3.85%, 3.75%, and 3.75%, respectively.

2.4. Turnover Period

The company's inventory turnover period has generally increased in the past 10 years. The construction of major new projects in various downstream fields of the company's industry, as well as the "old for new" capacity replacement upgrades, process transformation, overhaul and maintenance, spare parts, etc., all have a continuous and stable demand for industrial automation instruments and devices. Electricity is the most widely used energy in life, and its stable supply is also inseparable from the monitoring guarantee of instruments. Based on the operating state of smart meters, timely maintenance or replacement of related components, so as to ensure the safe and reliable operation of the power system [10]. The continuous adjustment of the structure in the downstream field and the maintenance of stable and positive development will bring corresponding incremental market space to the company. In general, the downstream market of CQCY is developing steadily and positively, the market demand is generally good, and the possibility of unsalable inventory is small. It is expected that the turnover period will be shortened in the future.

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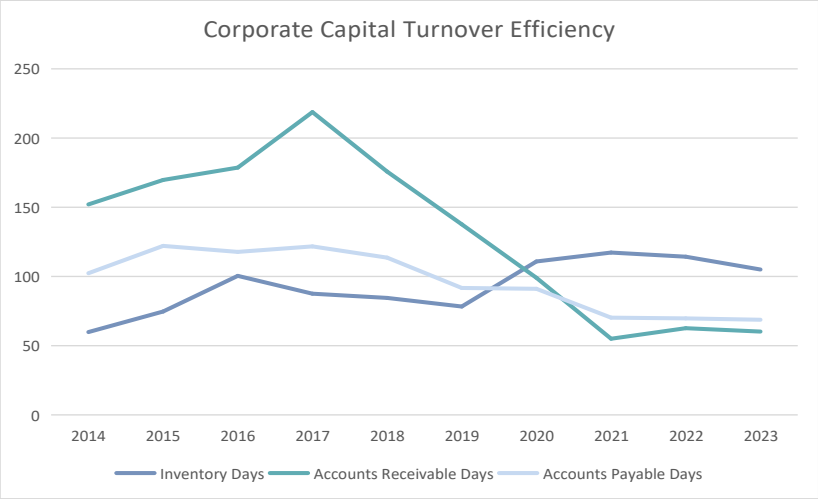


Figure 8: Capital Turnover Efficiency.

The company's accounts receivable turnover period has been greatly shortened after a short rise in the past 10 years (see Figure 8). In recent years, CQCY's customers are mainly large enterprises in the petroleum, chemical, thermal power, nuclear power, metallurgy, new energy and other industries. Although it will reduce the turnover rate of accounts receivable to a certain extent, taking the petroleum field as an example, these companies currently have stable profitability and abundant cash flow, and there is no pressure on the payment of accounts receivable of CQCY. So the company's accounts receivable turnover period is expected to be slightly extended in the future.

The company's accounts payable turnover period has been shortened overall in the past 10 years. CQCY's suppliers are mostly small and micro enterprises and emerging enterprises, leaving the company with a large room for adjustment of capital operation. With the company's credit level, it is expected that the payment cycle of accounts payable will be appropriately extended in the future.

Therefore, it is estimated that from 2024 to 2026, CQCY's inventory turnover period will be 104.29 days, 101.39 days, and 101.39 days respectively, the accounts receivable turnover period will be 60.83 days, 61.34 days, and 61.86 days respectively, and the accounts payable turnover period will be 69.13 days, 69.52 days, and 69.92 days respectively.

2.5. Other Data

For data that have not changed much in the past few years and will not change significantly in the future, or data that is not very important, such as tax rates, fixed asset construction, etc., this article uniformly uses historical averages for forecasting and estimation.

3. Forecast Results

Based on the forecast data above, we can obtain the financial statements of CQCY for the next three years through calculation. This article will further conduct sustainable operation analysis of the company from three perspectives: liquidity, debt repayment ability and profitability.

3.1. Liquidity Analysis

CQCY's current ratio and quick ratio have a significant upward trend from 2021 to 2026 (see Figure 9). Especially after 2023, the current ratio grows rapidly, and is expected to be close to 300% by 2026. The company is likely to have more current assets to cover short-term liabilities in the coming years, demonstrating stronger liquidity. The quick ratio is slightly lower than the current ratio, but it is also

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continuing to improve. The company is reducing its reliance on inventories for its short-term solvency and increasing the proportion of quick assets (such as cash and accounts receivable).

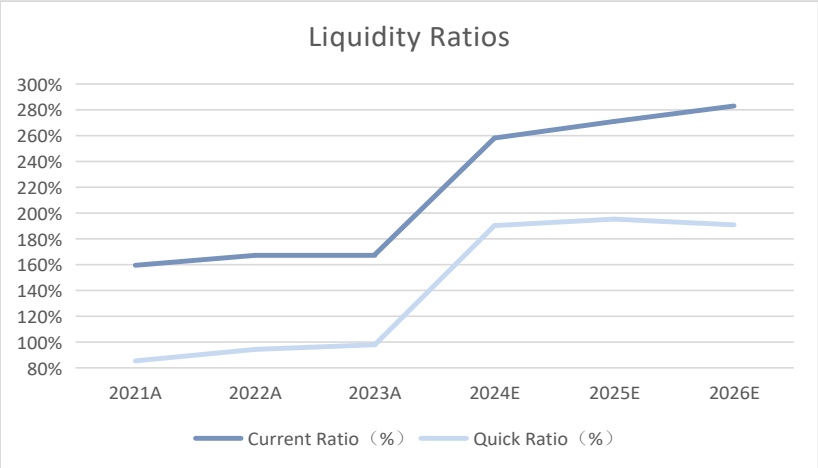


Figure 9: Liquidity ratios.

CQCY's cash cycle will be longer in 2022, exceeding 105 days, but starting from 2023, the cycle will gradually shorten and is expected to drop to close to 85 days by 2026 (see Figure 10). The company is working hard to improve the efficiency of its capital use, reduce the occupation of inventory and accounts receivable, and improve working capital management. However, the results will not be obvious in the next three years. The amount of operating funds required by the company is still large, and management operations have certain difficulties. It will be beneficial to further improve the company's future benefits.

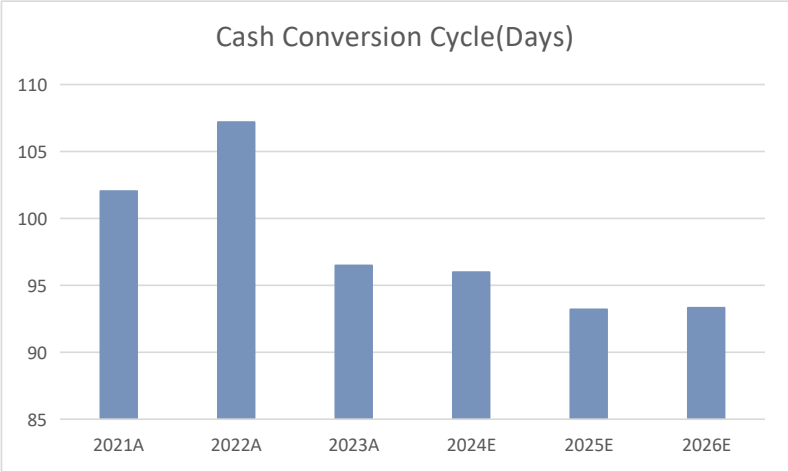


Figure 10: cash conversion cycle (in days).

From a comprehensive liquidity perspective, CQCY is significantly improving its short-term solvency and operating efficiency. The increase in current ratio and quick ratio indicates that the company is gradually increasing its ability to pay short-term liabilities and reducing financial pressure. At the same time, the shortening of the cash cycle means that the company has accelerated the speed of cash collection, reduced the occupation of funds, and is expected to further improve its future financing stability.

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3.2. Solvency Analysis

CQCY's debt-to-asset ratio and debt-to-equity ratio have both been significantly reduced, from over 50% to below 40%, and from more than 1 to about 60% (see Figure 11 and Figure 12). The company faces reduced pressure on interest payments and reduced risk of default, and can maintain stable cash flow even when the economy fluctuates or interest rates rise, which is conducive to the improvement of CQCY's future asset quality and a healthier capital structure.

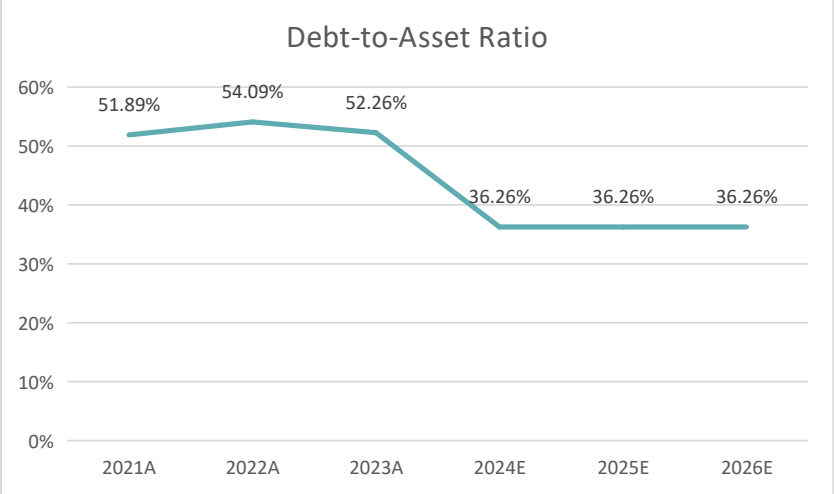


Figure 11: Debt-to-Asset ratio.

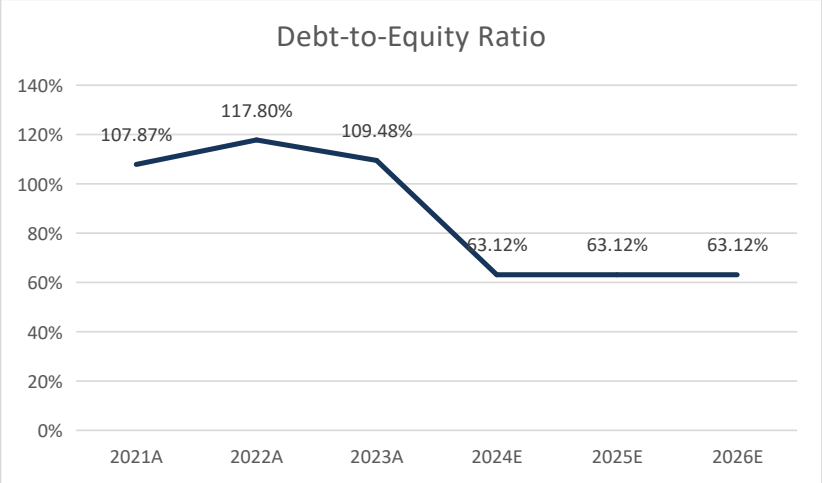


Figure 12: Debt-to-Equity ratio.

3.3. Profitability Analysis

CQCY’s return on equity increased from 17% and stabilized at 21% (see Figure 13). The company’s increased profitability and increased ROE will help attract more investors' attention, which may push up the market price of the company’s stock and increase the company's attractiveness in the capital market.

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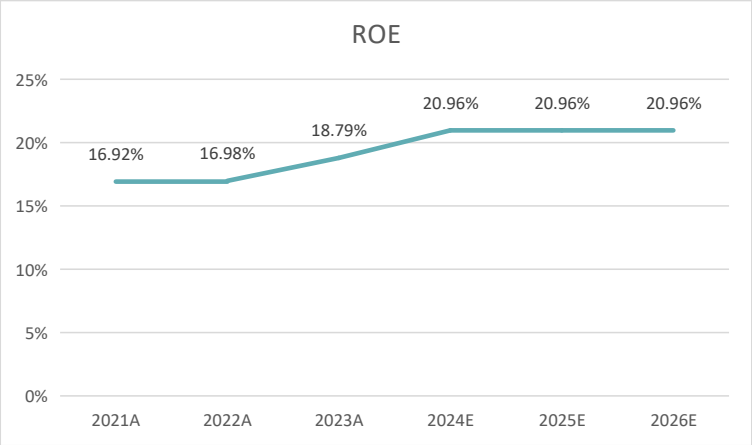


Figure 13: Return on Equity.

Companies with high ROE are generally considered to have lower financial risks, so CQCY will be able to obtain funds at a lower cost when it needs external financing in the future. This will help the company continue to expand and improve its business.

The increase in CQCY's ROE will also be reflected in the valuation. If the company continues to maintain a high ROE, the company's intrinsic value will increase, and future cash flow will be more abundant, thereby improving the overall valuation.

4. Risks

CQCY has high liquidity, its debt repayment ability is constantly improving, and its profitability is stable and improving, which is in line with the ideal expectations of a stable operating enterprise, but the company is still facing certain risks and challenges.

4.1. Risk of Intensified Market Competition

The industry in which CQCY is located is a fully open and fully competitive industry. Foreign brands entered the Chinese market earlier, with mature technology and rich experience, and occupy a large share in the mid-to-high-end market. In addition, with the development of the industry, some advantageous enterprises have expanded and extended their business areas by strengthening research and development, increasing production capacity, investing in mergers and acquisitions, etc., and their competitive advantages and strengths have been further highlighted. At the same time, the good development prospects of the industry have also attracted more new competitors to join, and the market competition faced by the company will become more intense.

4.2. Risks of Product Research and Development

At present, a new round of scientific and technological revolution and industrial transformation is booming, and the downstream application industry is accelerating towards digitalization, intelligence, and greening. The industrial automatic control system device manufacturing industry is also developing rapidly, and the product iteration and technology upgrade cycle are further shortened, which puts higher requirements on the innovation ability of CQCY. After decades of unremitting efforts and long-term accumulation, the company has formed a first-mover advantage in some product areas. If the company cannot accurately grasp the trend of technological development in the future and fails to seize the opportunity in cutting-edge technologies and key technologies, it may weaken the company's technological competitive advantage. In addition, the layout of new products and new

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technologies requires a lot of resources, but the industrialization and marketization of new products and new technologies have many uncertain factors, and may face the risk that the output of R&D investment is lower than expected, thus affecting the company's profitability and growth.

4.3. Risk of Production Capacity Falling Short of Expectations

In recent years, CQCY has significantly increased the production capacity of its main products through measures such as fundraising and investment project construction and improving the level of intelligent manufacturing. However, the degree of customization of some of the company's products is relatively high. With the increasing market demand, production capacity still needs to be further improved. At present, the company is accelerating the promotion of key projects such as instrumentation bases, optimization of intelligent production lines for main products, and intelligent factories to expand production capacity. However, affected by the procurement cycle of engineering construction, equipment procurement, especially some major and imported equipment, the project may be delayed, thereby increasing the company's operating costs and difficulties in production organization, quality control, personnel management, and on-time delivery. In addition, after the completion and commissioning of the above-mentioned projects, the depreciation of fixed assets will increase. If there are major changes in demand in the downstream major markets in the future or the company's market development is not as expected, it will have a significant impact on the company's capacity digestion.

4.4. Risk of Supply and Price Fluctuations of Some Raw Materials

The main raw materials of CQCY include electronic components, non-ferrous rare metal materials, etc. The prices of the above-mentioned raw materials and the supply of some special application materials and chips are affected by various factors such as the international environment, commodity prices, environmental protection, and changes in market supply and demand. If the prices of the above-mentioned raw materials fluctuate greatly or the supply cycle of some imported components is greatly extended or cannot be stably supplied, it will have a significant impact on the company's procurement costs, production delivery, etc.

5. Conclusion

As a leading company in China's instrumentation industry, CQCY has significant market competitiveness by virtue of its technology accumulation and innovation capabilities in the field of industrial automatic control systems. In recent years, the company has successfully achieved steady growth in operating income and improvement in gross profit margin by continuing to increase investment in research and development and promoting intelligent manufacturing. This article forecasts CQCY’s financial performance over the next three years, showing its continued improvement in liquidity, solvency and profitability.

First of all, from the perspective of liquidity, the company's current ratio and quick ratio are both showing an upward trend, indicating that its short-term solvency and capital use efficiency are improving. Although cash cycle cycles have shortened, companies will still need to cope with higher working capital needs in the coming years. Secondly, in terms of solvency, the company's debt-to-asset ratio and debt-to-equity ratio have gradually declined, and the capital structure has become more robust, further reducing default risks. Finally, the company's profitability has been significantly enhanced and ROE has steadily increased, which not only attracted the attention of more investors, but also provided sufficient capital support for the company's future expansion.

Despite this, CQCY still faces risks in intensifying market competition, product research and development, and production capacity expansion. Especially with the rapid iteration of industry

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technology, the company must continuously strengthen its innovation capabilities to ensure that its product technology is always at the forefront of the industry. Taken together, CQCY has laid a solid foundation for future development by continuously optimizing its business model and technological innovation, but it still needs to be cautious in dealing with the uncertainties caused by the external environment and industry changes.

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