标普信评

S&P Global
China Ratings

Credit Analysis of China's Construction Companies

October 13, 2020

Key Takeaways

- From our desktop analysis of 53 engineering and construction (E&C) companies, we found that apart from the centrally administered state-owned construction firms, some state-owned construction subsidiaries, locally administered state-owned construction firms and privately-owned enterprises (POEs) also stand out with better indicative credit quality among their peers due to their relatively large business scale, better operating efficiency or lower financial risk.
- We view the industry risk for the E&C industry is moderately high due to intense competition and intermediate cyclicality.
- Construction firms tend to have relatively lower profitability due to intense competition. Therefore, we view scale, scope and diversity as well as operating efficiency as important factors on the business risk profiles of firms in this industry.
- Under current market conditions, cash conversion efficiency (inventory and account receivable turnover), as well as the extent of PPP (public private partnership) and other investment programs are the main factors influencing construction company's leverage.

ANALYSTS

Yingxue Ren
Beijing
+86 10 6516 6037
Yingxue.Ren
@spgchinaratings.cn

Renyuan Zhang
Beijing
+86-10 6516 6028
renyuan.zhang
@spgchinaratings.cn

Kexin Wang
Beijing
+86 10 6516 6033
Kexin.Wang
@spgchinaratings.cn

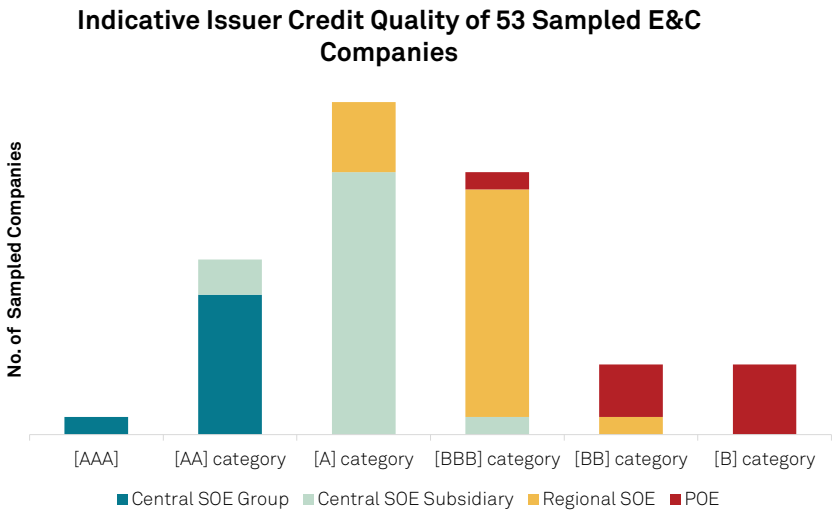
Huang Wang
Beijing
+86 10 6516 6029
Huang.Wang
@spgchinaratings.cn

Overview

Through analysis of the business and financial metrics of construction companies, this report aims to provide an overview of our general approach to the engineering and construction sector, as well as providing insight into the key factors that influence credit quality in the industry. By applying our corporate ratings methodology to public information, we have carried out a desktop analysis of 53 companies in the construction sector, arriving at an initial overview of the relative ranking of each company's credit quality, or their "indicative issuer credit quality". At the same time, to better understand where the key indicators of these companies stand relative to the whole industry, we also analyzed the key business and financial data of 161 construction companies, including the 53 in our sample.

The distribution of indicative issuer credit quality among our sample of 53 construction firms is outlined in the chart below.

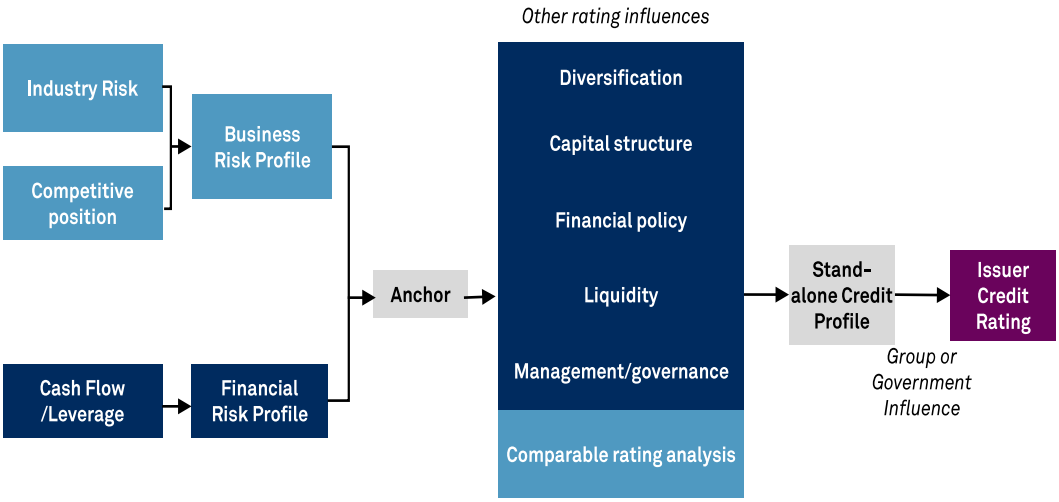
Chart 1



Source: S&P Global (China) Ratings.

This report on companies' indicative issuer credit quality uses S&P Global (China) Ratings' corporate methodology. When we analyze the credit quality of non-financials, we usually begin with analysis of the entity's business risk profile, before looking at its financial risk profile and other factors to arrive at its Stand-alone Credit Profile (SACP). We then analyze the external support that companies may obtain, including group or government support, to arrive at the Issuer Credit Rating (ICR).

Chart 2



Source: S&P Global (China) Ratings.

About This Article

S&P Ratings (China) Co., Ltd. (S&P China) has conducted a desktop analysis of a selection of entities, which we have chosen based on their asset sizes, representativeness of most regions and availability of public information. The analysis contained herein has been performed using S&P China Methodologies. S&P China Methodologies and analytical approaches are intended specifically for use in China only, and are distinct from those used by S&P Global Ratings. An S&P China opinion must not be equated with or represented as an opinion by S&P Global Ratings, or relied upon as an S&P Global Ratings opinion.

This desktop analysis has been conducted using publicly available information only, and is based on S&P China's methodologies for corporates. The analysis involves a desktop application of our methodologies to public information to arrive at a potential view of credit quality across sectors. It is important to note that the opinions expressed in this report are based on public information and are not based on any interactive rating exercise with any particular entity. The opinions expressed herein are not and should not be represented as a credit rating, and should not be taken as an indication of a final credit rating on any particular entity, but are initial insights of potential credit quality based on the analysis conducted. This desktop analysis does not involve any surveillance. The opinions expressed herein are not and should not be viewed as recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security.

We have conducted this desktop analysis on individual corporates and present the results contained herein at an aggregate group level. The different sections of this research show the statistics and performance of different groups of entities and the market more broadly against the metrics we generally consider most relevant under our methodologies.

Given the desktop nature of this analysis, and that we have not conducted an interactive review with any particular entity, we may have made certain assumptions in lieu of confirmed information and where relevant we may also have attempted to consider any possibility of parent, group, government or other forms of potential support, to inform our view of potential credit quality. S&P China is not responsible for any losses caused by reliance on the content of this desktop analysis.

Business Risk Profile

In general, we assess a company's business risk profile by combining our analysis of its industry risk and competitive position. We typically arrive at the latter by considering the company's competitive advantages, scale, scope and diversity, operating efficiency and profitability.

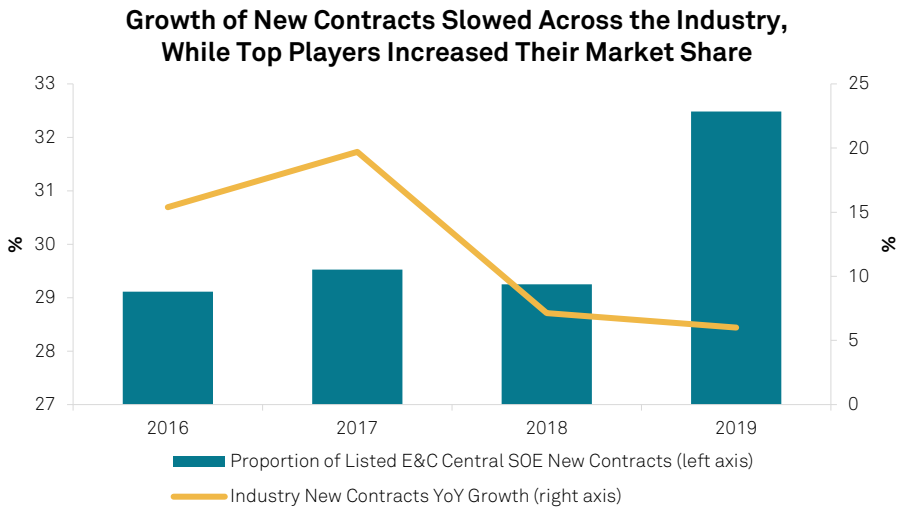
Industry Risk Ranking

In general, we gauge an industry's risk by considering competition within the industry and the sector's cyclicality. In our opinion, the construction sector's industry risk ranking is moderately-high (4), putting it at a mid-to-high level in our six-tier ranking. This is because the construction sector has, in our view, intense competition, but its cyclicality is intermediate.

China's construction industry can, in our opinion, be largely characterized by its low industry concentration and homogeneous products and services provided. The E&C sector is a highly open and competitive market. According to the National Bureau of Statistics, in 2018 there were 96,544 construction companies operating in China. In recent years, industry concentration has increased, but still remains at a relatively low level. Since 2016 there has been a drop in the

growth rate of newly signed contracts in the industry, amid a slowdown in fixed asset investment. However, the eight largest listed centrally administered SOE construction groups have increased their share of newly signed orders (by value), rising from 29% in 2016 to 33% in 2019. This has squeezed the market share of other firms in the industry, increasing competition between them.

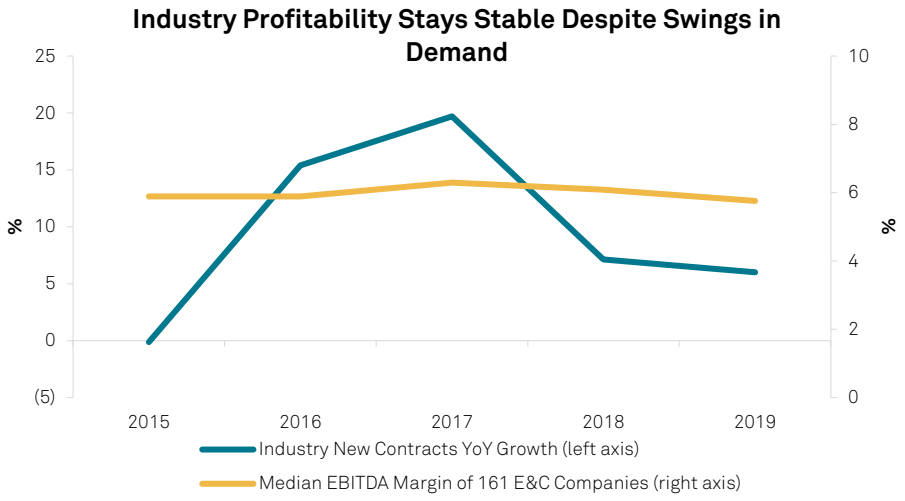
Chart 3



Note: Listed E&C Central SOE groups include CSCEC, CRCC, China Railway, CCCC, CGGC, CNCEC, and Metallurgical Corporation of China Ltd., Power Construction Corporation of China,Ltd.
Source: Listed companies' public information, National Bureau of Statistics, Wind, S&P Global (China) Ratings.

The cyclicality of the construction sector is, in our view, intermediate. The industry is made up of multiple sub-sectors, with notable domains like property construction, infrastructure construction and specialized construction driven by varying types of demand. Intense competition leads to relatively low but stable profitability across the industry, with fluctuating demand having a relatively limited effect on the profitability of firms in the sector.

Chart 4



Note: 161 companies are basis for analysis, not include companies did not disclose business and financial data over the analysis period.
Source: National Bureau of Statistics, Wind, S&P Global (China)Ratings.

Analysis of Competitive Position

We generally consider the competitive position of a company from four aspects: competitive advantage, scale, scope and diversity, operating efficiency and profitability.

Due to the homogenous products and services, construction companies tend to have lower profit margins, with no obvious difference between firms. Increasing orders and expanding revenue scale are generally the main paths companies take to increase their profits. The region in which a construction project takes place coupled with concentration of major clients are key factors affecting the amount of orders and revenue a company can take in. Therefore, we believe that scale, scope and diversity are very important to construction firms. At the same time, lower profit margins mean companies need to adopt higher standards on settling project payments and cost controls. Therefore, operating efficiency is also a factor that we attach great importance to when evaluating the business risk profiles of construction companies.

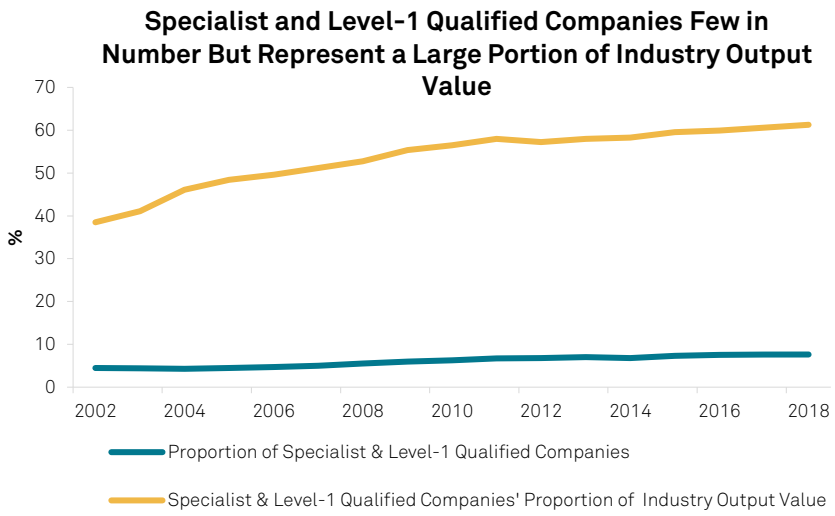
Competitive Advantage

In our view, the competitive advantages of construction companies are reflected in their technical know-how, qualifications, historic performance on previous projects, reputation and brand recognition within the industry, and share of key markets or regions. We believe that for construction firms, stronger competitive advantages generally pave the way for building strong scale, scope and diversity and better operating efficiency.

A construction firm's qualifications provide a comprehensive measure of the company's technical level and past performance within the industry. According to the "Construction Enterprise Qualification Standard" issued by the Ministry of Housing and Urban-Rural Development, qualifications of general construction contractors are split into 12 sub-categories which are further classified into four ranks (specialist and levels 1, 2 and 3). There are 36 categories for specialized contractors, which are divided into three ranks (levels 1, 2 and 3).

With many firms engaged in the construction industry, companies vary significantly in terms of technical strength and qualification level. Companies with strong technical prowess in construction account for a small proportion of the whole industry, but they contributed the majority of the output value in the industry. According to the National Bureau of Statistics, as of the end of 2018 around 7,300 companies had specialist and level-1 general construction contractor qualifications, accounting for less than 8% of the whole industry. However, they contributed more than 60% of total output value.

Chart 5

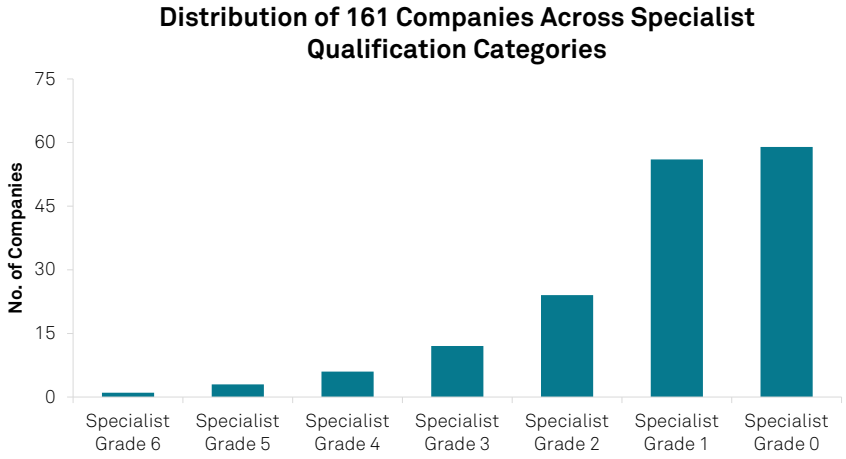


Source: National Bureau of Statistics, Wind, S&P Global (China)Ratings.

We believe that highly qualified firms with wide regional coverage usually have competitive advantages over their peers in terms of market development. These companies can typically take on more large-scale and complex projects with higher-value contracts, and they have the general conditions in place for developing their business into other domains.

When considering the construction capacity of a construction firm, we may look at how many qualifications the company has, and what types they are. Among the pool of 161 construction companies, less than 14% hold specialist general construction contractor qualifications of three or more categories. Most have none or only one category of specialist qualification, and such firms tend to focus on either one certain sub-sector, or more upstream domains along the industrial chain, such as landscaping, architectural decoration and steel structure construction.

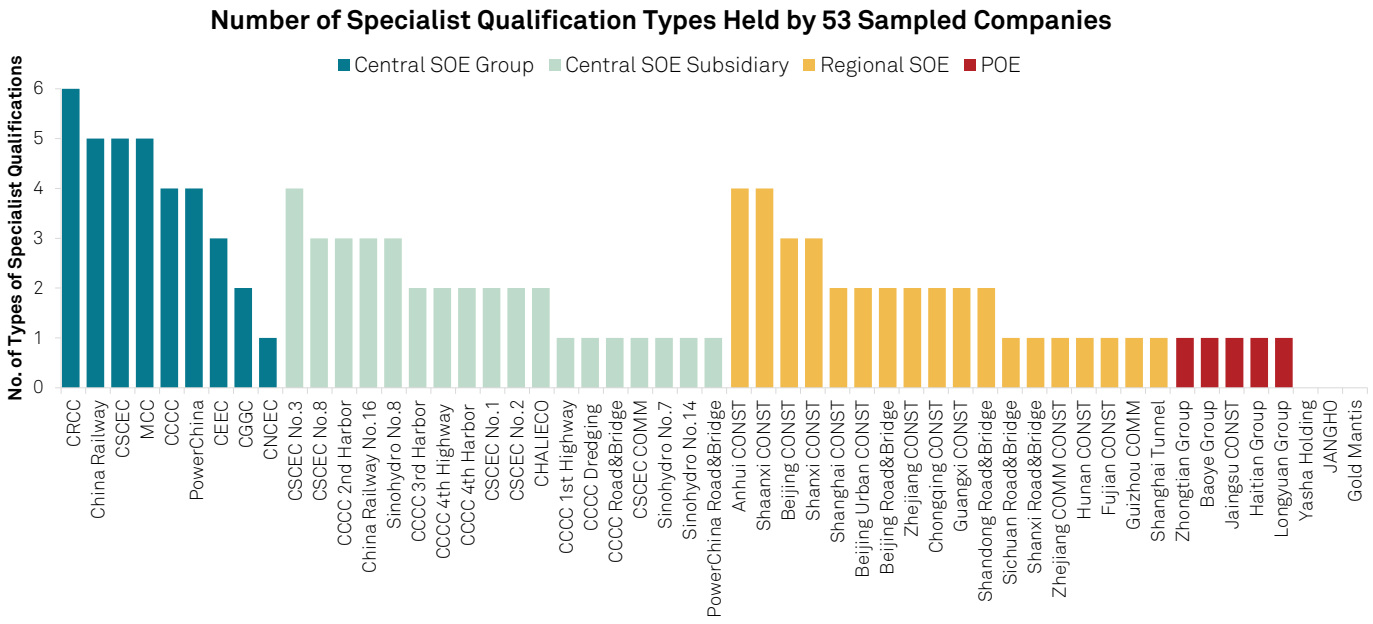
Chart 6



Source: Companies' public information, Wind, S&P Global (China) Ratings.

Among the 53 companies in our sample, centrally administered state-owned construction firms such as CRRC, China Railway and CSCEC have strong advantages in terms of their specialist qualifications. Amid ongoing business development, national state-owned construction groups have evolved from specialized engineering groups with expertise in specific fields into comprehensive construction groups that cover a full range of categories and possess many industry qualifications. The technological prowess of these groups is advanced on a domestic and even international level, allowing them to work on high-difficulty housing construction, infrastructure construction and specialized engineering construction projects, with strong capacity for large-scale and complex construction work. Subsidiaries of centrally administered SOEs have some advantages in terms of their qualifications, with their technical strengths based on the kind of construction work they engage in. Locally administered construction SOEs generally focus on housing projects and road and bridge construction. These firms generally have less advanced technical capabilities than the centrally administered state-owned construction groups. The POEs in our sample mainly work on housing construction and interior renovation projects. These companies have relatively basic construction technology and are usually at the weaker end of the industry.

Chart 7



Source: Companies' public information, National Construction Market Surpervision Public Service Center, Wind, S&P Global (China) Ratings.

We view that having a competitive advantage in terms of qualifications is a necessary basis for construction companies looking to achieve larger business scale and better operating efficiency. However, having qualifications alone is not enough to guarantee this. Most companies with larger business scale or better operating efficiency have higher level qualifications. However, that does not necessarily mean all companies with higher level qualifications can excel in terms of scale and operating efficiency. In addition to the type and quantity of high-level qualifications held, we also consider whether the company can effectively transform its technical strengths into brand recognition in the market, improve its ability to secure contracts and gain market share, and then obtain stable revenue and profit. In our analysis we usually look at qualifications in combination with success rate on bidding for contracts, scale and growth of new orders.

In addition to qualifications, construction companies with strong competitive advantages should, in our opinion, have a stable and reliable history of completed projects, experience of working on high-difficulty and complex projects, and a history of industry recognition and professional awards. These would help companies establish brand recognition, enhance their contracting ability and consolidate their market share.

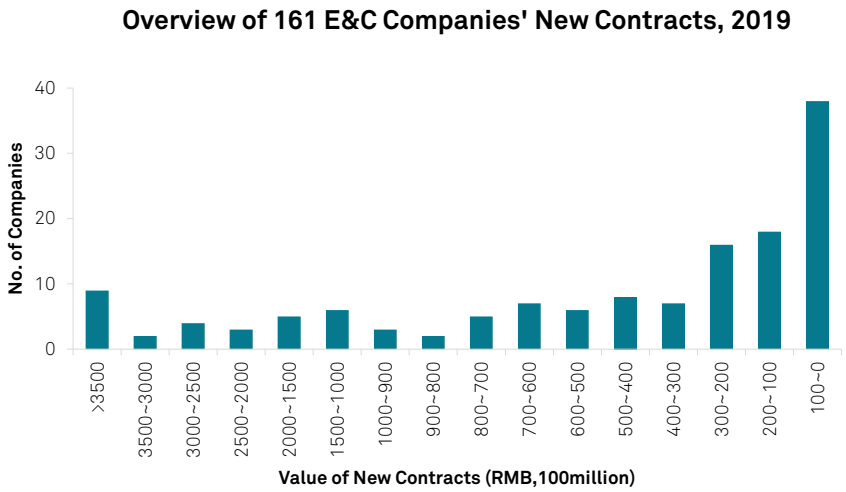
Scale, Scope and Diversity

When considering the scale, scope and diversity of construction firms, we usually focus on the scale of revenue, backlog and new orders, diversity of downstream markets, and geographic and client diversity.

A construction company's revenue and scale of new orders are, in our opinion, a reflection of its strengths and weaknesses in the market in terms of its competitive position. Firms with large and stable revenue and order sizes have better brand recognition and stronger contracting ability in the market, a status that is complemented by their competitive advantages.

By looking at new orders signed in 2019, the business scale of the pool of 161 construction companies varies significantly. This reflects the significant differences among companies in terms of their competitive strength, the large proportion of small and medium-sized market participants, and fiercely competitive market segments.

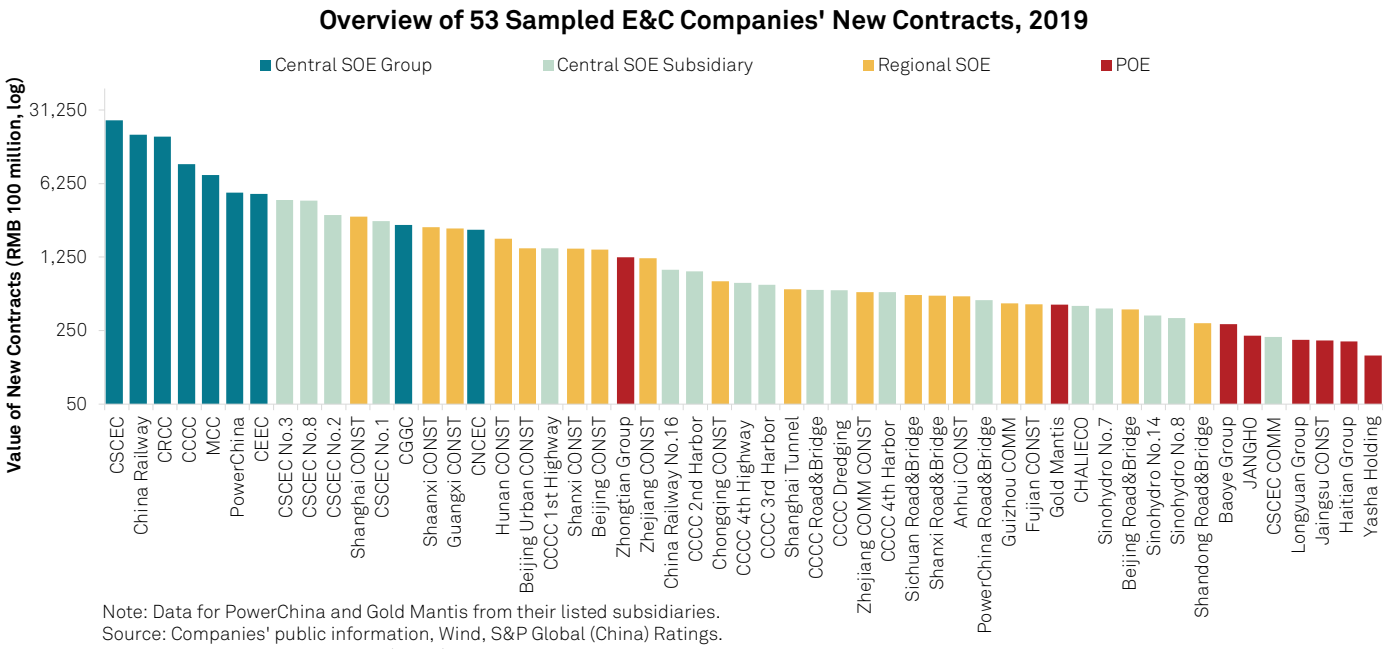
Chart 8



Note：161 companies included as a basis for analysis, data does not include companies that did not disclose business and financial data over the analysis period.
Source: Company Public Information, Wind, S&P Global (China) Ratings.

Among the 53 sampled firms, centrally administered state-owned construction groups are far ahead in terms of the scale of their newly signed orders. Among them, CSCEC, China Railway and CRCC are the three largest centrally administered SOE groups in terms of newly signed orders. Significant differences exist between construction subsidiaries of central SOEs in terms of order sizes. CSCEC No.3 and No.8 have strong advantages in terms of orders and are even on a par with some of the centrally administered SOE groups. CSCEC COMM, Sinohydro No. 8 and No. 14 have smaller order sizes. Among the locally administered SOE construction firms, housing construction companies generally have larger order sizes, while orders are usually smaller for road and bridge construction. Shanghai Const., Shaanxi Const. and Guangxi Const. are among the top firms in terms of order size and Shandong Road & Bridge and Beijing Road & Bridge have smaller order scale among locally administered SOE construction firms. Among the POEs, Zhongtian Group's order scale is at the forefront, while other companies are concentrated at the tail end.

Chart 9

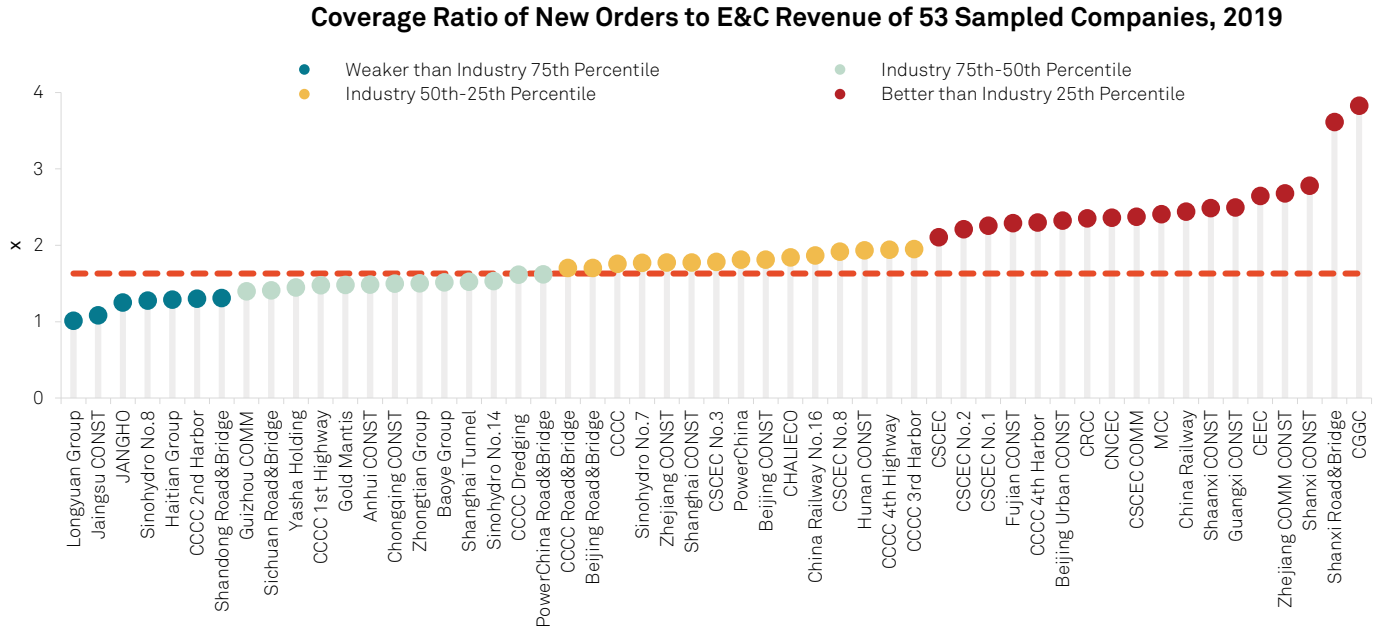


Note: Data for PowerChina and Gold Mantis from their listed subsidiaries.
Source: Companies' public information, Wind, S&P Global (China) Ratings.

In addition to the scale of orders undertaken, we also focus on the near-term outlook of a company's revenue and orders. For the construction sector, which is an order-driven industry, we usually look at the coverage ratio of newly signed orders to revenue, the coverage ratio of unfinished contracts to revenue, and the growth rate of construction revenue to consider the changing trends and stability of the company's scale.

The order coverage ratio can reflect the performance of the firm's contractor business over a certain period of time, which is related to stability of revenue and profit over the next 1-2 years. We note that there is relatively wide divergence of the order coverage ratio, which is not only related to the characteristics of specific construction sub-sectors, but also connected to the business volume and short-term contracting performance of companies. In general, companies with smaller business volume can easily be affected by the value of a single contract, and their order size and order coverage ratio can fluctuate significantly.

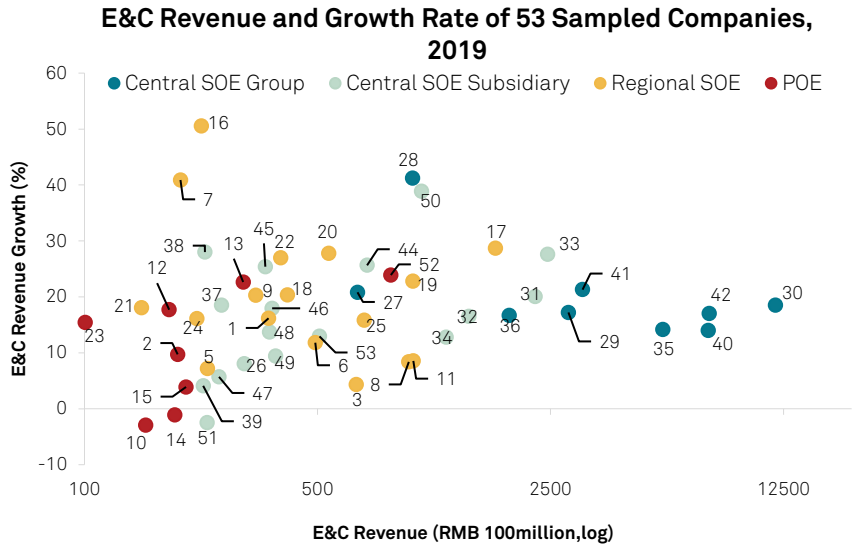
Chart 10



Note: 1. Data for PowerChina and Gold Mantis from their listed subsidiaries. 2. Percentiles represent precentile of sampled companies among 161 industry peers.
Source: Wind, S&P Global (China)Ratings.

Income growth can provide the most direct reflection of a construction company's historic performance as a contractor. As shown in the chart below, against the background of economic stability backed by infrastructure construction and ongoing strong investment in real estate development, the growth rate of centrally administered state-owned construction groups' income has maintained a good level, with those groups maintaining their scale advantages. Central SOE construction subsidiaries have generally maintained high income growth, among which the growth rate of subsidiaries of CSCEC and CCCC stands out more. The income growth of locally administered construction SOEs shows some differentiation. Among them, Shanghai Const., Shaanxi Const. and Zhejiang Const. are large-scale companies with good income growth. Among the POEs in our sample, Zhongtian Group is one of few firms to perform well in terms of scale and income growth and is significantly ahead of its POE peers.

Chart 11



Note: 1. Data for PowerChina and Gold Mantis from their listed subsidaries; 2. Due to consolidation of Beijing Road&Bridge, Beijing CONST's E&C revenue attained RMB81.3billion, representing yoy growth of 102% in 2019.
Source: Companies' public information, Wind, S&P Global (China) Ratings.

Numbers in the chart refer to:

1	Anhui CONST
2	Baoye Group
3	Beijing Urban CONST
4	Beijing CONST
5	Beijing Road&Bridge
6	Chongqing CONST
7	Fujian CONST
8	Guangxi CONST
9	Guizhou COMM
10	Haitian Group
11	Hunan CONST
12	JANGHO
13	Gold Mantis
14	Jaingsu CONST
15	Longyuan Group
16	Shandong Road&Bridge
17	Shanghai CONST
18	Shanghai Tunnel
19	Shaanxi CONST
20	Shanxi CONST
21	Shanxi Road&Bridge
22	Sichuan Road&Bridge
23	Yasha Holding
24	Zhejiang COMM CONST
25	Zhejiang CONST
26	PowerChina Road&Bridge
27	CGGC
28	CNCEC
29	PowerChina
30	CSCEC
31	CSCEC No.8
32	CSCEC No.2
33	CSCEC No.3
34	CSCEC No.1
35	CCCC
36	CEEC
37	Sinohydro No.8
38	Sinohydro No.7
39	Sinohydro No.14
40	CRCC
41	MCC
42	China Railway
43	CSCEC COMM
44	CCCC 2nd Harbor
45	CCCC 3rd Harbor
46	CCCC 4th Highway
47	CCCC 4th Harbor
48	CCCC Road&Bridge
49	CCCC Dredging
50	CCCC 1st Highway
51	CHALIECO
52	Zhongtian Group
53	China Railway No.16

In addition to revenue and order size, we also focus on the types of construction a company engages in, and geographic distribution of projects. Companies that cover a wider field of construction domains and have more expansive geographic distribution can generally better cope with downstream fluctuations.

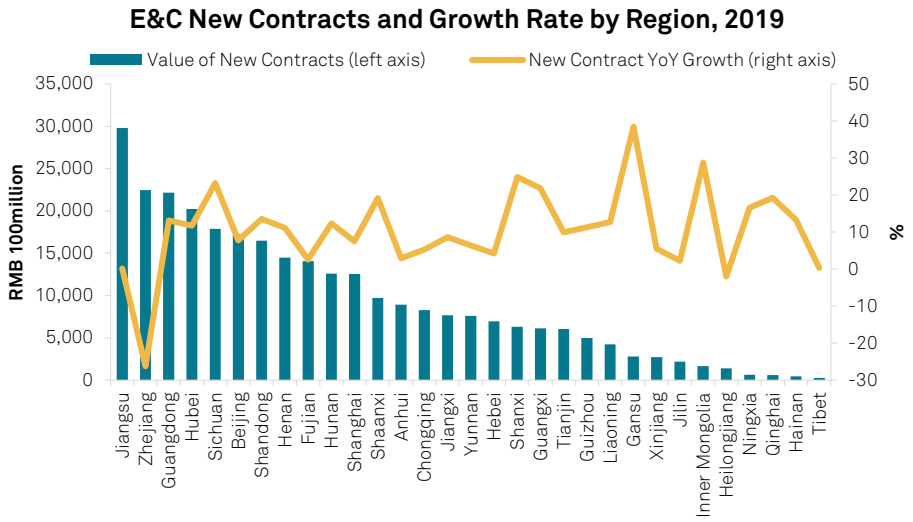
Offering a diverse range of construction services can, in our view, minimize the risk of fluctuating downstream demand. If the company can carry out construction work across different sub-sectors, it can basically maintain stability of overall revenue and profits by contracting orders from other markets when demand elsewhere reaches the bottom of the cycle. Diversity of downstream construction demand is, in our view, in line with the technological advantages analyzed above in "Competitive Advantage". For firms to effectively realize cross-domain operations and disperse their risks, they generally need solid and extensive construction technology at their disposal.

Concentration in the field of specialized construction shows that companies in this domain stand out for their technical abilities. However, too much concentration may lead to increased risk of shrinking downstream demand, putting greater pressure on revenue and order size. For example, after the Fukushima Nuclear Power Plant accident, construction work on nuclear power plants in China stagnated, and many projects were shelved. In this case, companies which derived the bulk of their revenue from nuclear power construction faced shrinking orders and falling revenue scale. Companies in landscaping, architectural design and steel structure construction are often small in scale with narrow technical coverage, business models lacking diversity and weak cross-sector business. From our perspective, changes in industry demand or policy may have a greater impact on the operations of such companies. For example, in 2017, due to the constraints of public private partnership (PPP) regulatory policies and the tightening of the market credit environment, the industry was broadly affected. Due to the narrow business scope and greater reliance on PPP, some landscaping companies were greatly impacted.

Covering a wider geographic area can better disperse the risk of encountering fluctuating demand in a single region. In this respect, centrally administered state-owned construction groups have outstanding advantages, because they can make use of their national network of engineering business resources. In addition, the business layout of most construction companies develops from the firms expanding operations into other regions after having cultivated their respective regional markets. When we evaluate regional diversity, we not only consider the

number of regions covered, but also the degree of active market demand in different regions to comprehensively evaluate the advantages and disadvantages of a company's regional strategy. Companies with good market layout are, in our view, present in the Yangtze River Delta, Guangdong-Hong Kong-Macao Greater Bay Area and Beijing-Tianjin-Hebei. They have strong growth of fixed asset investment and strong market demand for construction and may have a more secure source of new orders than other firms.

Chart 12

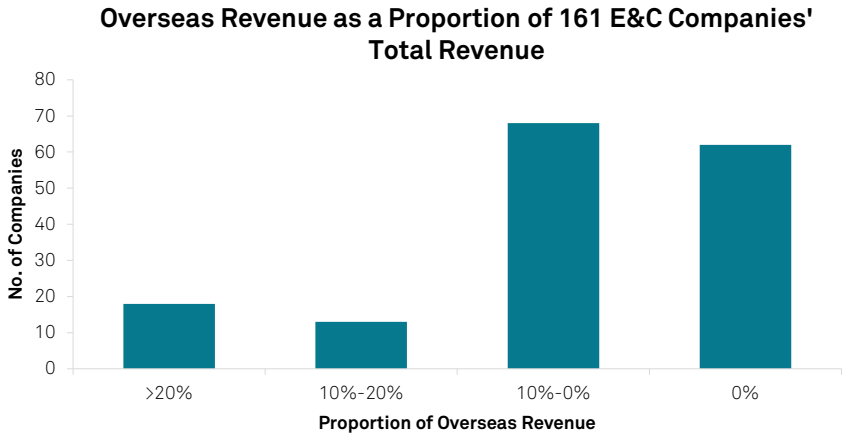


Source: National Bureau of Statistics, Wind

At the same time, we also consider the potential impact overseas business may have on the credit quality of construction firms. The Belt and Road Initiative has seen a growing number of Chinese construction companies participate in overseas projects, and some companies have incorporated such work into their growth strategies. According to the list of "The World's 250 Largest International Contractors" released by the U.S. Engineering News Record (ENR) in 2020, 74 Chinese construction firms made the rankings. This was more than any other country, with overseas business on average accounting for 11.9% of total operations. We believe that while overseas construction projects bring further market opportunities, they may also lead to additional risk factors regarding geopolitics, economic downturns, exchange rates, legal compliance and emergency situations. When evaluating how having a business overseas would impact the credit quality of construction companies, we consider the proportion of the company's revenue and profits made overseas, as well as the business model, operating experience, performance record, the risk status of that country or region, and whether or not effective risk control measures are in place.

Most companies in the pool of 161 firms derive less than 10% of their total income from overseas, or they have not yet carried out any construction projects abroad. At present, few companies can claim to have overseas income in excess of 10%, and those that do are mainly large-scale infrastructure and specialized engineering companies. There are generally not many housing construction, decoration, landscaping or steel structure construction companies with income generated overseas.

Chart 13



Note：For companies that do not disclose overseas revenue, we use proportion of overseas contracts as an estimate.
Source: Companies' public information, Wind, S&P Global (China) Ratings.

Operating Efficiency

When considering the operating efficiency of construction companies, we usually focus on the firm's turnover of working capital, ability to obtain cash and capacity to control costs.

The construction industry is in the middle reaches of the industrial chain. Fierce competition in the industry leads to weaker bargaining power with upstream and downstream companies, with relatively large portions of working capital generally required. The rate at which a company can turnover working capital directly determines the extent of their financing needs, which further affects leverage and liquidity. As companies face intense competition and increased difficulty in project acquisition, we regard operating efficiency as a key influencing factor on the credit quality of construction companies, and as one of the drivers that leads to credit differentiation in the industry.

When gauging how efficiently a company can turnover working capital, we usually refer to the number of turnover days of accounts receivable (including notes), inventory (including contracted assets), long-term accounts receivable and turnover days of intangible assets.

The turnover days of accounts receivable (including notes) reflect the time taken for the owner to payback upon the project being settled. Inventory (including contracted assets) mainly includes completed but unsettled projects. A long turnover duration for inventory (including contract assets) often indicates a delay to project settlement. These 2 indicators together reflect the project settlement and payment collection cycle of the company.

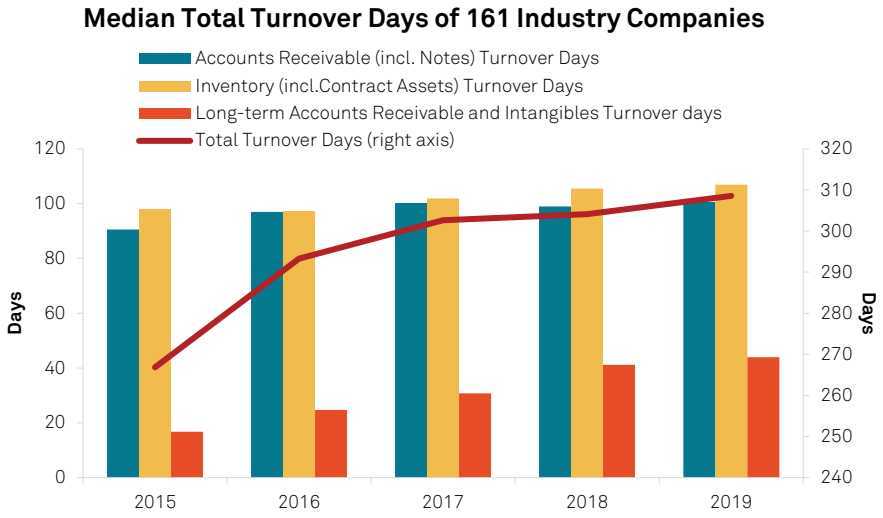
The settlement and payment collection cycle reflects the industry environment, the company's market strategy and capacity for managing working capital. In the case of tight funds in the downstream real estate and LGFV sectors, clients often prolong the payment period to construction companies by delaying the settlement cycle or defaulting on paying for the project. The company's market development strategy determines the quality of the project. Companies with a more aggressive approach to contracting and lower industry qualifications may face deteriorating operating efficiency. In recent years, some construction companies have increased the use of accounts receivable factoring and asset securitization to speed up the withdrawal of working capital and ensure the stability of operating efficiency.

In addition to the traditional project settlement and payment process, in recent years, highly sought-after investment projects have had a growing impact on the working capital of companies. Since the government gradually developed and standardized the PPP model in 2014, it has become an important business development pathway for many construction companies looking to grow their orders through bidding for these projects. PPP requires companies to invest significant capital during a project's construction phase. Although ongoing construction can drive

revenue growth and increase the amount of construction work, the original investment amount needs to be recovered gradually during the operational phase of 10-30 years. In our opinion, PPP and other financing and investment models demand higher requirements on the financing, construction and operating capacities of construction companies, and the quality of projects also needs to be monitored closely. If companies misjudge their own capacity and expand aggressively into investment and financing of projects with weaker qualities, it not only causes a rise in short-term leverage, but also brings long-term risks in terms of operations and payback of investment. We simulate the "investment turnover cycle" by calculating the turnover days of long-term accounts receivable and intangible assets, and roughly measure the strength of on-balance sheet financed investment projects.

We combine the turnover days of accounts receivable (including notes), inventory (including contracted assets), long-term receivables and intangible assets into the total turnover days of operations. We have observed that the median total turnover days of the pool of 161 companies has continued to rise in the past five years, which is mainly driven by the growth of turnover days of long-term accounts receivable and intangible assets.

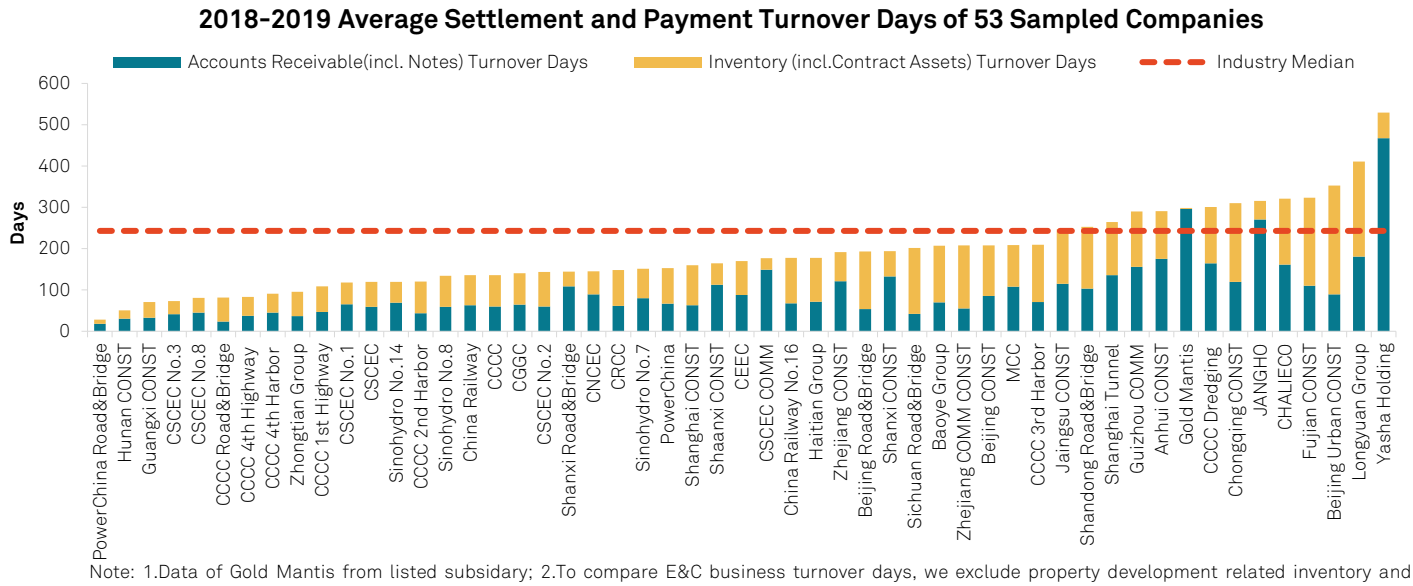
Chart 14



Note: 161 companies included as a basis for analysis, data does not include companies that did not disclose business and financial data over the analysis period.
Source: Wind, S&P Global (China) Ratings.

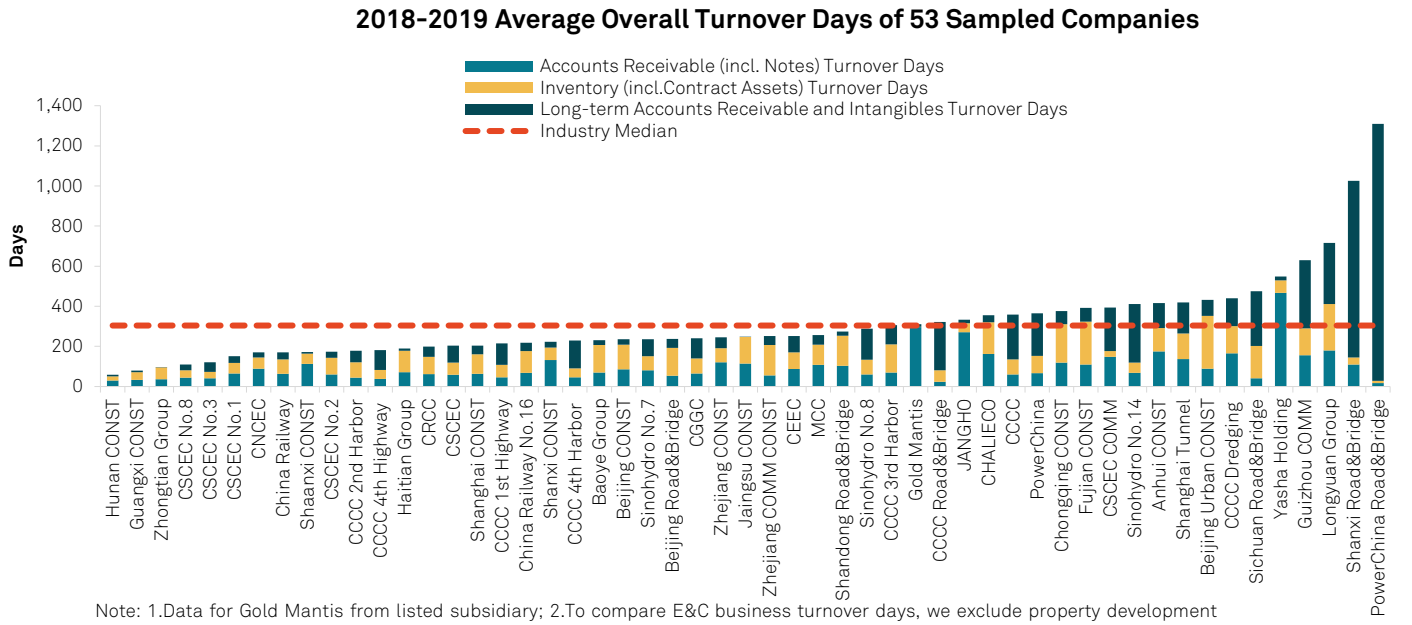
To further investigate the operating efficiency of the 53 companies in our sample we look further into their turnover days, by analyzing settlement and payment turnover days and total turnover days. We have observed that the settlement and payment turnover days and total turnover days of most sampled companies engaged in housing construction are better than the industry median level, due to relatively short investment turnover days and relatively lower participation in investment and financing projects. In contrast, the total turnover days of sampled infrastructure construction companies are relatively longer, because infrastructure projects generally take longer than housing projects, and they also engage more in investment and financing of these projects. The turnover days of accounts receivable (including notes) for sampled architectural design companies are significantly longer, because these firms have weaker bargaining power with developers or contractors and face working capital pressure. Among our sample, Hunan Const., Guangxi Const., Zhongtian Group, CSCEC No. 8 and No. 3 are ahead of other companies in terms of overall working capital turnover efficiency.

Chart 15



Note: 1.Data of Gold Mantis from listed subsidiary; 2.To compare E&C business turnover days, we exclude property development related inventory and revenue in our calculations.
Source: Wind, S&P Global (China) Ratings.

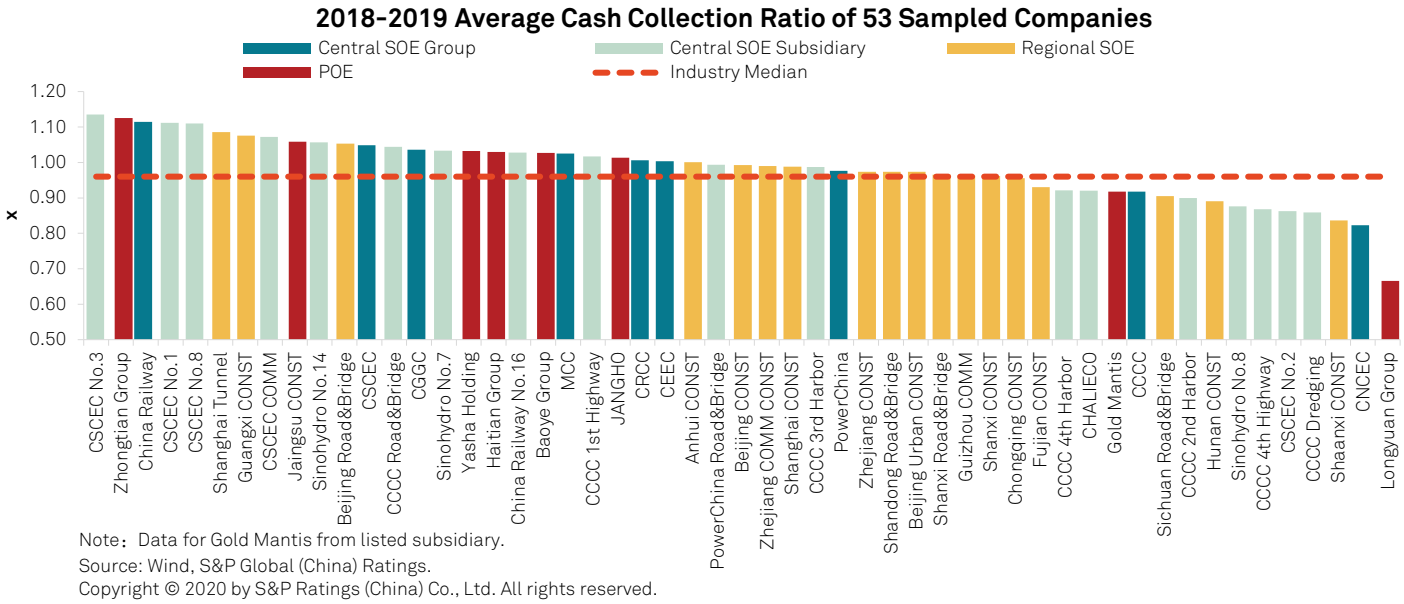
Chart 16



Note: 1.Data for Gold Mantis from listed subsidiary; 2.To compare E&C business turnover days, we exclude property development related inventory and revenue in our calculations.
Source: Wind, S&P Global (China) Ratings.

In addition to the abovementioned turnover indicators, we also consider the company's cash collection ratio (the ratio of cash received from selling goods and providing labor services compared to the main business revenue) to measure the quality of the company's revenue. Among the 53 sampled firms, most are at the average level for the industry. Among them, CSCEC No. 3, Zhongtian Group and China Railway have the best cash collection performance, while Longyuan Group has a significantly lower cash collection ratio than the industry median.

Chart 17

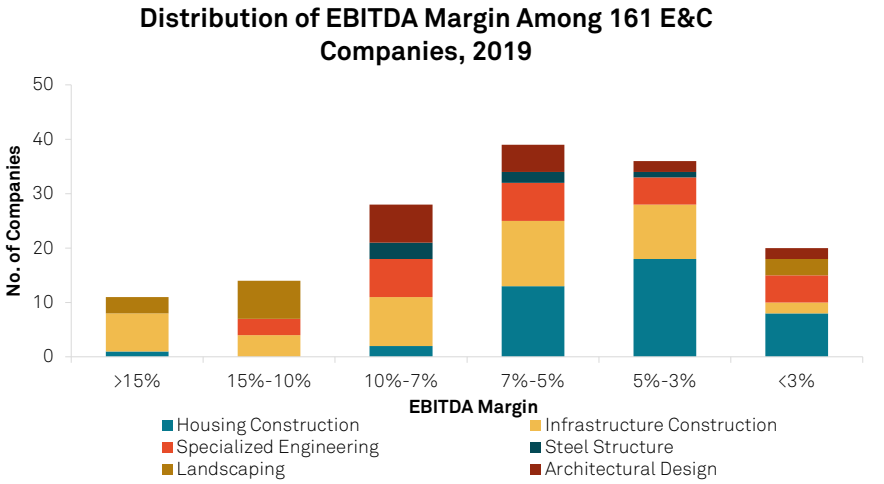


Note：Data for Gold Mantis from listed subsidiary.
Source: Wind, S&P Global (China) Ratings.

Profitability

Profitability is a comprehensive measure of a company's competitive advantage, scale, scope and diversity and operating efficiency. We usually look at indicators such as gross profit margin and EBITDA profit margin, with differences in the profit level of construction firms often coming from the different kinds of construction work they are engaged in. The profit margin of ordinary housing construction projects is generally low, and the profit level of railway engineering is constrained by the strong bargaining power of China Railway Corporation. The profit margins of infrastructure and specialized engineering projects with higher technical requirements are relatively higher, and profits are generally higher for projects overseas than domestically. In our opinion, companies with diversified construction technology and the ability to secure contracts across sectors can better optimize their business layout and improve profitability.

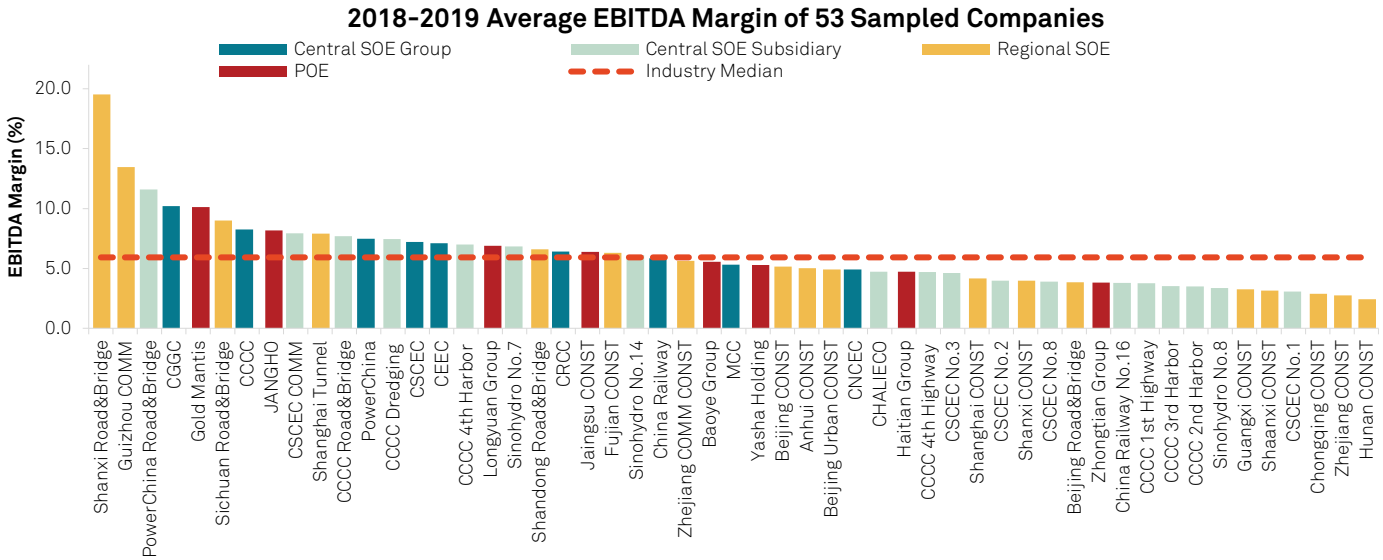
Chart 18



Note: 161 companies included as a basis for analysis, data does not include companies that did not disclose business and financial data over the analysis period.
Source: Wind, S&P Global (China) Ratings.

Among the 53 sampled companies, the EBITDA profit margin of housing construction firms is relatively weaker. We focus more on whether such companies can maintain stable and efficient operations to support rapid cash inflow. The profit levels of infrastructure construction and specialized engineering firms vary. Infrastructure construction projects are generally high value contracts, and the profit margins of SMEs are significantly affected by the performance of a large contract. We note that many construction firms concurrently engage in a small number of businesses other than construction, such as real estate development, highway toll collection, surveying and design or trade. Such business activity may have a positive or negative impact on overall profits.

Chart 19



Note：EBITDA margin of Gold Mantis is calculated by financial data of listed subsidiary.
Source: Wind, S&P Global (China) Ratings.

Financial Risk Profile

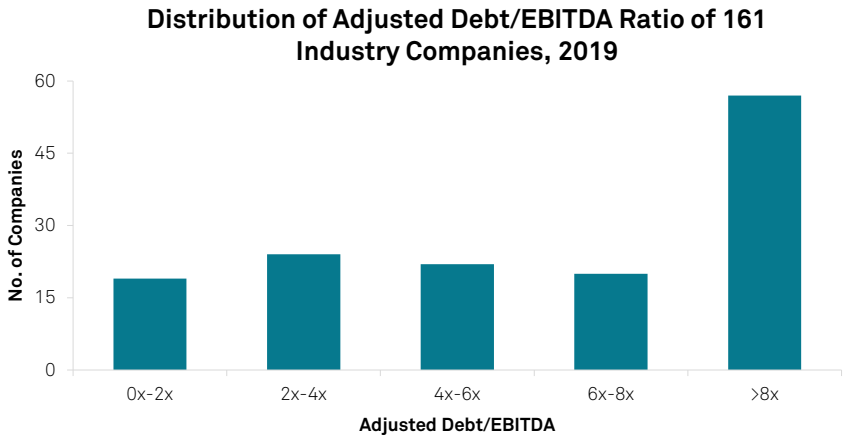
Our analysis of an entity's financial risk profile mainly considers cash flow based credit metrics. To measure the financial risk profile, we generally look at the company's adjusted debt/EBITDA ratio and funds from operations (FFO) to adjusted net debt. We may also consider the coverage of EBITDA and FFO to interest obligations.

Under current market conditions, we view that there are two main factors that may affect leverage: first, how efficiently a company can settle construction and receive payment. Firms that incur operating cash flow shortfall may have to rely on external borrowing to make up for gaps in working capital, pushing up their leverage levels. Second, is the situation regarding use of financing models such as PPP. Concentrated use of such financing initiatives may generate more sustained capital expenditure and increase the firm's financing needs, again pushing up debt levels. It is worth noting that the construction period of PPP projects is generally 3-5 years, and the operating (or payback) period is often as long as 10-30 years. Therefore, the increased debt of construction enterprises is medium- to long-term, and the impact on leverage is prolonged.

Our analysis shows that the median leverage level of the pool of 161 companies is high, and highly leveraged firms account for a large portion of the industry. In 2019, more than 40% of firms had a debt to EBITDA ratio of more than 8 times. Under the dual pressures of securing contracts and capital turnover, a considerable number of companies maintain high leverage levels. For firms with high leverage, we focus on their liquidity status and refinancing ability. For companies

with moderate or even low leverage, we focus on the potential impact of their business strategy, business development and operating efficiency on their leverage.

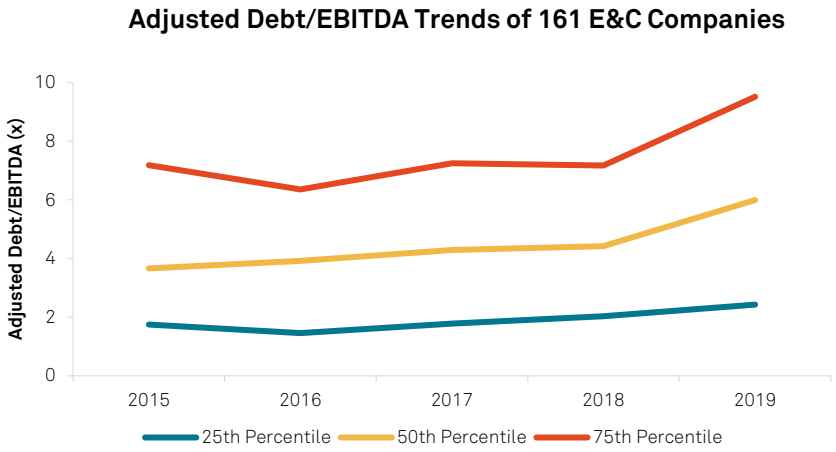
Chart 20



Note: 161 companies included as a basis for analysis, data does not include companies that did not disclose business and financial data over the analysis period.
Source: Wind, S&P Global (China) Ratings.

Since 2015, the adjusted debt/EBITDA ratio of the pool of 161 companies has consistently increased. In our view, this is mainly because of increasing pressure on working capital in the industry and a growing number of financing programs like PPP being used, which may cause companies' debt levels to increase.

Chart 21

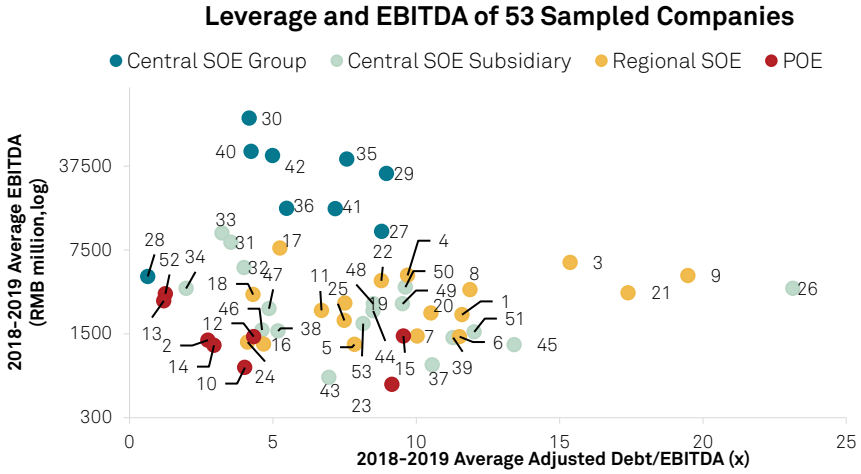


Note: 161 companies included as a basis for analysis, data does not include companies that did not disclose business and financial data over the analysis period.
Source: Wind, S&P Global (China)Ratings.

Among the central state-owned groups in our sample, China Chemical has the lowest leverage ratio, and CSCEC, China Railway and CRCC also maintain relatively low leverage levels. The leverage levels of CCCC and PowerChina are relatively high due to use of PPP financing model. Among SOE construction subsidiaries, CSCEC's bureaus have had the lowest leverage level, and that of PowerChina is higher. Among the local SOE construction firms, Shanghai Const. and Shanghai Tunnel have better leverage metrics, while Shanxi Road & Bridge and Guizhou COMM have heavier debt burdens. Zhongtian Group's leverage level is relatively light both among POEs

and compared to the entire sample. Longyuan Group and Yasha Holding both have higher leverage.

Chart 22

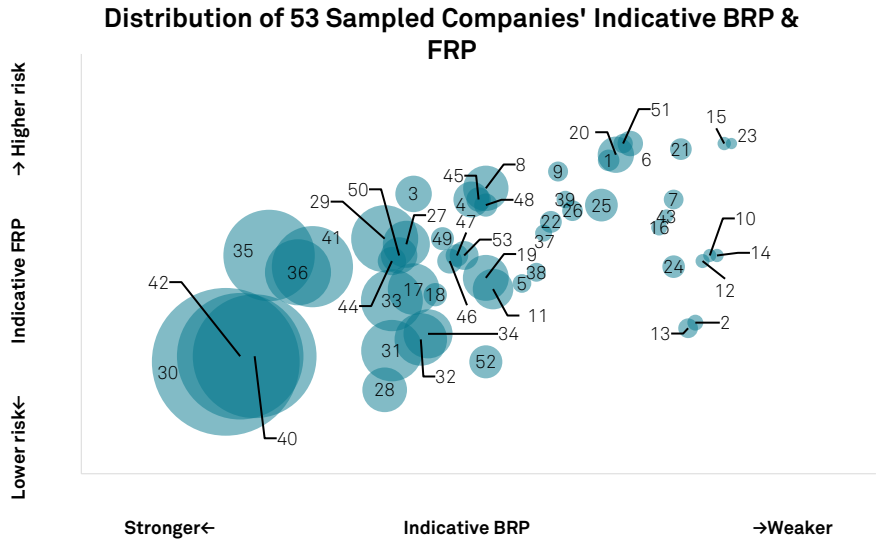


Note: Leverage and EBITDA of Gold Mantis calculated by financial data of listed subsidiary.
Source: Wind, S&P Global (China) Ratings.

Indicative Distribution of Business and Financial Risk Profiles

Based on the above analysis, we have arrived at the indicative business and financial risk profiles of the 53 companies in our sample, the distribution of which is shown in the chart below. In general, we combine the business and financial risk profiles of a company to form an anchor for our assessment of credit quality. From this starting point, we usually further consider the degree of diversification, capital structure, financial policy, management and governance, liquidity and other holistic factors to arrive at our evaluation of the company's SACP.

Chart 23



Numbers in the chart refer to:

1	Anhui CONST
2	Baoye Group
3	Beijing Urban CONST
4	Beijing CONST
5	Beijing Road&Bridge
6	Chongqing CONST
7	Fujian CONST
8	Guangxi CONST
9	Guizhou COMM
10	Haitian Group
11	Hunan CONST
12	JANGHO
13	Gold Mantis
14	Jaingsu CONST
15	Longyuan Group
16	Shandong Road&Bridge
17	Shanghai CONST
18	Shanghai Tunnel
19	Shaanxi CONST
20	Shanxi CONST
21	Shanxi Road&Bridge
22	Sichuan Road&Bridge
23	Yasha Holding
24	Zhejiang COMM CONST
25	Zhejiang CONST
26	PowerChina Road&Bridge
27	CGGC
28	CNCEC
29	PowerChina
30	CSCEC
31	CSCEC No.8
32	CSCEC No.2
33	CSCEC No.3
34	CSCEC No.1
35	CCCC
36	CEEC
37	Sinohydro No.8
38	Sinohydro No.7
39	Sinohydro No.14
40	CRCC
41	MCC
42	China Railway
43	CSCEC COMM
44	CCCC 2nd Harbor
45	CCCC 3rd Harbor
46	CCCC 4th Highway
47	CCCC 4th Harbor
48	CCCC Road&Bridge
49	CCCC Dredging
50	CCCC 1st Highway
51	CHALIECO
52	Zhongtian Group
53	China Railway No.16

Note: 1.Bubble size represents 2019 amount of new contracts; 2. New contract amount of PowerChina and Gold Mantis from their listed subsidaries.
Source: Companies' public information, Wind, S&P Global (China) Ratings.

Government and Group Support

After arriving at the companies' SACP, we also consider the influence of government or group support on credit quality.

In our view, centrally administered state-owned construction groups are typically of higher importance to the government. These groups have huge construction business volume and expansive inter-regional business scope, and not only do they play an important role in construction work amid China's push for urbanization, but they also have considerable importance in creating employment and contributing to regional economies. The considerable advanced technical prowess of these groups means they can take part in construction projects of international renown. At the same time, centrally administered state-owned construction groups play an important role in China's Belt and Road Initiative, advancing the country's diplomatic strategy and broadening its international influence.

Construction subsidiaries of SOE groups are, in our view, of relatively high importance to their parents. SOE subsidiaries are closely related to their groups in terms of ownership and management and carry out business under the group's branding. They are also important contributors to the group's revenue and profits.

In contrast, we believe that locally administered construction SOEs may only be of moderate importance to their local governments. First, these SOEs mainly carry out housing and infrastructure construction business in their respective provinces and regions. However, their business is highly market-oriented, with many firms looking to enhance their competitiveness by expanding their business beyond their home province. Second, construction companies are highly interchangeable. For local governments, regional construction SOEs can be easily replaced by other market competitors.

For construction firms under POE groups, we look in particular at the impact of the group on the credit quality of the company enterprises. The impact may be positive, negative or neutral, depending on factors such as the credit quality of the group itself, the support that the company can expect to obtain from the group, and any negative influence that the group may have on the enterprise.

Appendix

List of Sampled Companies

No.	Entity Name	Abbreviated Name	Entity Type
1	Anhui Construction Engineering Group Corporation Limited	Anhui CONST	Regional SOE
2	Baoye Group Co. Limited	Baoye Group	POE
3	Beijing Urban Construction Group Co.,Ltd.	Beijing Urban CONST	Regional SOE
4	Beijing Construction Engineering Group Co.,Ltd.	Beijing CONST	Regional SOE
5	Beijing Municipal Luqiao Limited By Share Ltd	Beijing Road&Bridge	Regional SOE
6	Chongqing Construction Engineering Group Co.,Ltd	Chongqing CONST	Regional SOE
7	Fujian Construction Engineering Group Company	Fujian CONST	Regional SOE
8	Guangxi Construction Engineering Group Co.,Ltd	Guangxi CONST	Regional SOE
9	Guizhou Communications Construction Group Co.,Ltd	Guizhou COMM	Regional SOE
10	Haitian Construction Group Co.,Ltd.	Haitian Group	POE
11	Hunan Construction Engineering Group Co.,Ltd	Hunan CONST	Regional SOE
12	Jangho Group Co.,Ltd.	JANGHO	POE
13	Suzhou Gold Mantis Construction Decoration Co.,Ltd.	Gold Mantis	POE
14	Jiangsu Constraution Engineering Group Co.,Ltd.	Jiangsu CONST	POE
15	Long Yuan Construction Group Co.,Ltd	Longyuan Group	POE
16	Shandong Hi-Speed Road&Bridge Co.,Ltd.	Shandong Road&Bridge	Regional SOE
17	Shanghai Construction Group Co., Ltd.	Shanghai CONST	Regional SOE
18	Shanghai Tunnel Engineering Co.,Ltd.	Shanghai Tunnel	Regional SOE
19	Shaanxi Construction Engineering Group Corp.Ltd.	Shaanxi CONST	Regional SOE
20	Shanxi Construction Investment Group Co.,Ltd.	Shanxi CONST	Regional SOE
21	Shanxi Road and Bridge Construct Co.LTD.	Shanxi Road&Bridge	Regional SOE
22	Sichuan Road&Bridge Co.,Ltd	Sichuan Road&Bridge	Regional SOE
23	Yasha Share Holding Company Limited Co.,Ltd	Yasha Holding	POE
24	Zhejiang Communications Construction Group Co.Ltd.	Zhejiang COMM CONST	Regional SOE
25	Zhejiang Construction Investment Group Co.,Ltd.	Zhejiang CONST	Regional SOE
26	Powerchina Road Bridge Group Co.,Ltd.	PowerChina Road&Bridge	Central SOE Subsidiary
27	China Gezhouba Group Company Limited	CGGC	Central SOE Group
28	China National Chemical Engineering Co., Ltd.	CNCEC	Central SOE Group
29	Power Construction Corporation of China	PowerChina	Central SOE Group
30	China State Construction Engineering Corporation Limited	CSCEC	Central SOE Group
31	China Construction Eighth Engineering Division. Corp.Ltd.	CSCEC No.8	Central SOE Subsidiary
32	China Construction Second Engineering Bureau Co., Ltd.	CSCEC No.2	Central SOE Subsidiary
33	China Construction Third Engineering Bureau Co.,Led	CSCEC No.3	Central SOE Subsidiary
34	China Construction First Building (Group) Corporation Limited	CSCEC No.1	Central SOE Subsidiary

35	China Communications Construction Company Limited	CCCC	Central SOE Group
36	China Energy Engineering Corporation Limited	CEEC	Central SOE Group
37	Sinohydro Bureau 8 Co.,Ltd.	Sinohydro No.8	Central SOE Subsidiary
38	Sinohydro Bureau 7 Co.,Ltd.	Sinohydro No.7	Central SOE Subsidiary
39	Sinohydro Bureau 14 Co.,Ltd	Sinohydro No.14	Central SOE Subsidiary
40	China Railway Construction Corporation Limited	CRCC	Central SOE Group
41	China Metallurgical Group Corporation	MCC	Central SOE Group
42	China Railway Group Limited	China Railway	Central SOE Group
43	China Construction Communications Engrg. Group Corp. LTD	CSCEC COMM	Central SOE Subsidiary
44	CCCC Second Harbor Engineering Company Ltd.	CCCC 2nd Harbor	Central SOE Subsidiary
45	CCCC Third Harbor Engineering Co.,Ltd	CCCC 3rd Harbor	Central SOE Subsidiary
46	CCCC Fourth Highway Engineering Co.,Ltd	CCCC 4th Highway	Central SOE Subsidiary
47	CCCC Fourth Harbor Engineering Co.,Ltd.	CCCC 4th Harbor	Central SOE Subsidiary
48	Road & Bridge International Co., Ltd.	CCCC Road&Bridge	Central SOE Subsidiary
49	CCCC Dredging (Group) Company Limited	CCCC Dredging	Central SOE Subsidiary
50	CCCC First Highway Engineering Group Co.,Ltd.	CCCC 1st Highway	Central SOE Subsidiary
51	China Aluminum International Engineering Corporation Limited	CHALIECO	Central SOE Subsidiary
52	Zhongtian Construction Group Co.,Ltd.	Zhongtian Group	POE
53	China Railway 16th Bureau Co.,Ltd	China Railway No.16	Central SOE Subsidiary

Note: 1. Companies listed in alphabetical order, based on pinyin name. 2. According to an announcement on a change to controlling shareholders in the mixed ownership reform issued by Guangxi Const., the company' shareholding was changed from being 100% held by Guangxi SASAC to 66% held by Greenland Holding Group Co., Ltd., and 34% by Guangxi SASAC. The actual controller was changed to Greenland Group. In this study, Guangxi Const. is temporarily classified as a regional SOE.

This report does not constitute a rating action.

This document is prepared in both English and Chinese. The English translation is for reference only, and the Chinese version will prevail in the event of any inconsistency between the English version and the Chinese version.