

General Corporate Criteria

Rating Criteria

Purpose

Lianhe Ratings Global Limited's ("Lianhe Global") general corporate criteria were originally published on 16 July 2018. The current criteria primarily elaborate on the details of the factors and sub-factors that we consider when assigning ratings to general corporates.

No changes to our existing ratings are expected as a result of the publication of the criteria, as it primarily relates to further elaboration of the original criteria published on 16 July 2018.

Scope of the Criteria

Lianhe Global applies the criteria to corporate entities that are not in the industry of banking, non-bank finance, regulated monopolies (i.e. utilities), not-for-profit, providing public and government services.

The criteria do not represent a comprehensive coverage but only address key rating factors to form our credit opinions and will be reviewed periodically. Credit opinions tend to be forward-looking and include our views of issuers' future performance and development.

General Approach

Lianhe Global uses a top-down approach to analyze corporate entities. We examine macro factors like operating environment and recent market demand first before we drill down to analyze corporate entities. We strive to make a balance between applying qualitative and quantitative approaches when analyzing corporate entities. We also use a combination of weighted average, matrix, and notching approaches to capture rating factors. In addition, our analysis encompasses forward-looking estimates and forecasts. First, we apply a scorecard using a weighted average approach to approximate a corporate entity's credit profile by assigning grades in lowercase letters to each key credit factor ranging from the strongest 'aaa' to the weakest 'ccc and below'. Second, the weighted average result is then combined with an industry risk analysis using a matrix to derive a Base Score (or grade). Third, the resultant Base Score (or grade) is further modified by a notching approach concerning critical adjustment factors such as liquidity, corporate governance, etc. (Appendix I). We believe each approach has its advantages and disadvantages. By combining all three approaches, we hope to capture most of the rating factors to paint a true credit picture of a rated corporate entity.

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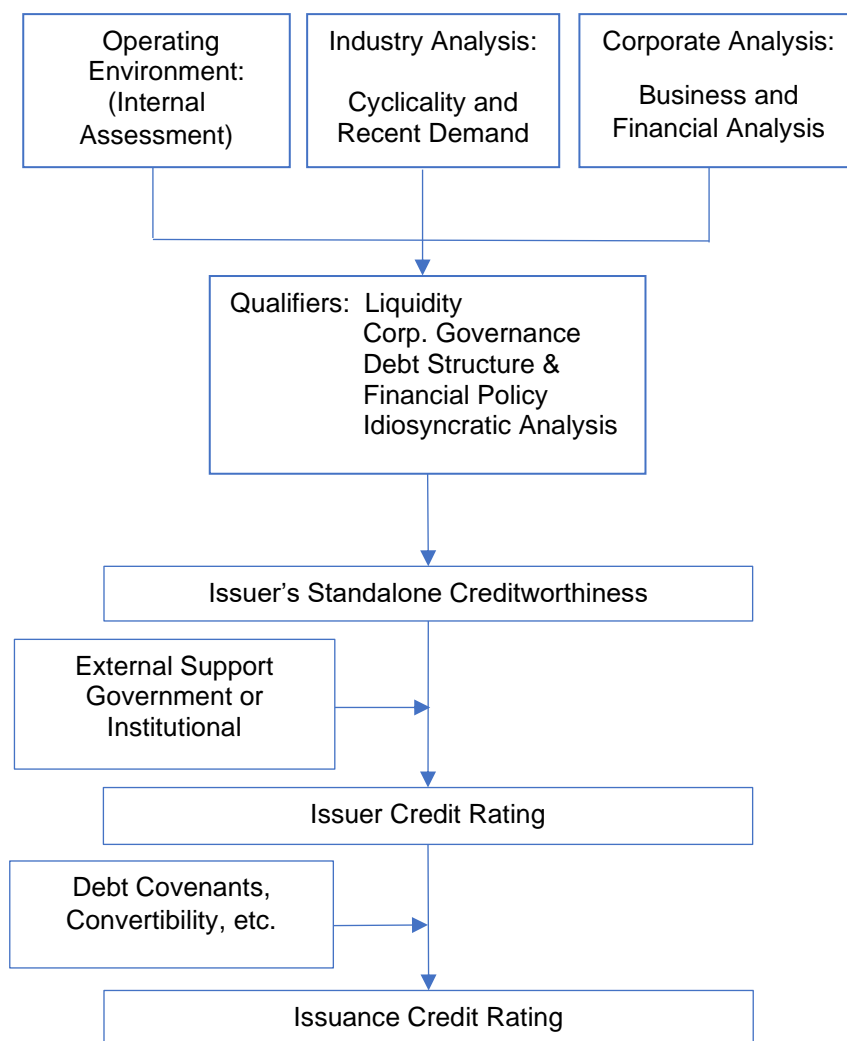
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Overview

The criteria report comprises three segments: (1) operating environment of the country in which a corporate entity is domiciled, (2) industry analysis in which the corporate entity conducts its business, and (3) corporate entity analysis which comprises (a) qualitative business and (b) quantitative financial analysis. We take a holistic view on a corporate entity balancing all-around political, economic, industrial, operational, and financial factors. Furthermore, the criteria do not represent a comprehensive coverage but only addresses key rating factors.

The diagram below illustrates the topology of the criteria:



Operating Environment

Lianhe Global uses an internal assessment to gauge the operating environment.

Internal Assessment Ceiling

For any country with an internal assessment at or above A-, we do not apply any adjustment to a rated entity's credit rating in which it is domiciled. However, for any country with an internal assessment below A-, we do apply an adjustment factor to the rated entity. In this case, we limit the rated corporate entity's credit rating to the same as the internal assessment of the country. Nevertheless, there could be instances in which a rated corporate entity could receive a rating above the internal assessment of the country. The credit committee reviews these instances on a case-by-case basis.

When a corporate entity conducts cross-border businesses, we use a weighted average approach by weighing its EBITDA by country if there is no dominant country. Otherwise, if there is a dominant country, then we use the dominant country's internal assessment as the determinant. If such EBITDA by country is not available, we then use revenue by country as weights.

Industry Analysis

Lianhe Global believes by applying each industry's historical cyclicalities over a long period and blending them with macro and industry demands of recent decades are a balanced approach to address the industry risk.

If a corporate entity operates in more than one industry, we then apply a weighted average approach by weighing its EBITDA by industry if available. If such EBITDA by industry is not available, then we use revenue by the industry as weights.

The table below summarizes the factors and their weights:

Key Factors	Description of Key Factors	Method / Weight
(a) Cyclicalities	Historical / Industry-specific Cyclicalities	Average
Market Demand Analysis		Weighted Average
(b) Macro Demand	Aggregate Demand of Recent	5.0%
(c) Industry Demand	Industry-specific Demand of Recent	10.0%

Cyclicalities Analysis

Our cyclicalities analysis comprises (a) historical industry cyclicalities and (b) industry-specific study on (1) barriers to entry, (2) industrywide profit, (3) growth potential, and (4) substitution risk.

We then apply a matrix approach by combining our weighted average grade (see detailed discussion below) with our industry risk grade to formulate our score (or grade).

Market Demand Analysis

We use a top-down approach to analyze corporate entities. We start our market demand analysis by studying the aggregate demand of the country in which a corporate entity conducts its businesses. We use the expected GDP growth rate of the country as a benchmark. Furthermore, we measure the recent industry demand by comparing it to the expected GDP growth rate on a relative basis.

The table below illustrates the benchmarks for aggregate demand (i.e. expected GDP growth rate) and industry demand (i.e. expected industry growth rate relative to that of the GDP). We believe only monopolistic entities would fall into the most outstanding category while only countries in disarray would fall into the worst category. In the latter case, we believe the internal assessment would most likely to have an overwhelming adverse impact on the targeted corporate entities.

Market Demand	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Macro Demand	N/A	GDP Growth% Btw 6% & 10%	GDP Growth% Btw 3% & 6%	GDP Growth% Btw 1% & 3%	GDP Growth% Btw 0% & 1%	GDP Growth% Less than 0%	N/A
Industry Demand	N/A	Substantially Faster than GDP Growth%	Moderately Faster than GDP Growth%	In-line with GDP Growth%	Moderately Slower than GDP Growth%	Substantially Slower than GDP Growth%	N/A

Business Analysis

Lianhe Global uses a combination of qualitative business and quantitative financial factors to conduct our analysis, respectively. We use a weighted average approach to capture and balance business and financial risks, as well as dominating factors that drive the credit rating of a corporate entity.

Business Analysis

This is the qualitative part of the analysis to gauge the viability of a corporate entity's business performance on a relative basis against that of its peer groups around the globe. While it is qualitative in nature, Lianhe Global uses various benchmarks to guide analysts.

Carousel of Qualitative Factors

Lianhe Global believes each industry has its unique set of drivers. While these are unique sets, they can be identified and grouped into various categories or primary factors. We list each factor in the table below:

Key Primary Factors:	Primary Factors with Weights:
(1) Market Position	15.0%
(2) Competitiveness	10.0%
(3) Diversity	8.0%
(4) Operating Efficiency	6.0%
(5) Profitability	6.0%
Sub-total	45.0%

We believe no single factor (or a couple of factors) shall be the determining drivers across all industries while the importance of these factors in aggregate, whatever they may be, are critical. These contributing factors play different levels of importance in various industries. Some are more relevant to one industry than the others. Within an industry, we rank their contributing importance and assign the predetermined weights to them accordingly. As a result, we take advantages of both parts by setting the weights of the factors as static while the factors themselves as dynamic. In other words, given the importance of these predetermined factors in an industry, they would be given the same static weights while the factors themselves would rotate according to their respective industry (and sub-industry) categories.

For the sake of discussion, steel and aluminium producers, as basic material producers, have different drivers, in our view. Steel producers often differentiate themselves with the scale of operating and quality of their steel products, while aluminium producers always compete on costs (saving a few speciality high-grade aluminium producers). As a result, the drivers are different for steel and aluminium producers.

Additionally, we may use a different set of rank ordered factors within the same industry (except for the same sub-industry category). Take the pharmaceutical industry as an example. A well-established multi-national pharmaceutical company has (a) market position which comprises brand recognition and deep-seated distribution network, (b) competitive edge which comprises a full spectrum of drug products, patents, R&D, and possibly a promising drug pipeline, and (c) diversity which comprises revenue, product, and geographic diversification. While for a small pharmaceutical company, these factors may not be relevant at all, with the exception of a promising drug pipeline. A pharmaceutical company that focuses on generic drugs may have higher operating efficiency and lower costs from savings on R&D as its drivers. The point is that we would rank these factors according to their inherent importance. Nevertheless, the predetermined factors (and weights) are identical in each sub-industry such as generic drug manufacturers in this example. Any significant idiosyncratic factor not captured under Business Analysis would be reflected under Qualifiers.

(1) Market Position: Lianhe Global analyzes the market position of a corporate entity by considering three key secondary factors: (1) revenue size, (2) market share, and (3) market reach, on a global scale. The former is the dominant factor which is modified by the latter two. We also consider production capacity when a corporate entity's products and/or services exhibit high price gyrations. We consider market share in terms of numbers of competitors, as well as market reach, on a secondary basis. When we

consider a subject's market position, we take into consideration the subject nation's GDP size relative to the global leaders such as the United States, China, European Union and Japan. We treat equals equal and un-equals un-equal. We strive to make an apple-to-apple comparison. Additionally, Lianhe Global also takes historical revenue volatility and expected forecasts into consideration when we assign benchmark scores. As mentioned previously, we may use our analytical judgements and instead of assigning the pre-set benchmark scores, we could assign benchmark scores as appropriate.

Market Position	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Revenue (in USD)	500-114 billion	114-30 billion	30-19.5 billion	19,500-2,000 million	2,000-500 million	500-100 million	<100 million
Market Share	Dominant with few competitors	Dominant with many competitors	Leading with few competitors	Leading with many competitors	Mid-sized with many similar competitors	Mid-sized with several larger competitors	Small size with many larger competitors
Market Position/Reach	Global	Multi-nationals	Regional/Cross-Continental	Nationwide	Multi-states/Provinces	One or two States/Provinces	Local

- (2) **Competitiveness:** Lianhe Global analyzes the competitiveness of a corporate entity by considering two key secondary factors: (1) products & services and (2) technological advantages, on a global scale. The former is the dominant factor which is modified by the latter one. However, products & services, especially services often face transferrable issues across jurisdictions which we also take into consideration. We believe pricing power relates closely to the products and services a corporate entity offers. We measure the pricing power of the products & services to determine the competitiveness of a subject corporate entity. The more unique or advanced the products & services are, the stronger the pricing power a corporate entity could command. Conversely, if the products & services are more commodity types like, then the weaker the pricing power a corporate entity could bargain as there are many perfect substitutes in a given market.

In terms of technological advantages, we consider pending patents, patents in force, drug pipelines in clinical trials, proven technologies in production, patented processes, etc. We use this ancillary factor to modify the former one where applicable. We believe technological advantages are an important factor. Technological advantages are the impetus for present and future growth, and they prevent products and services offered from becoming obsolete which in turn drives down pricing power. Additionally, we consider the ability of a corporate entity to venture into new markets, products, and business segments which we regard it as a testimony of competitiveness. We use this ancillary factor to modify the dominant factor.

Competitiveness	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Products & Services (Pricing Power)	Unique products & services without peers; with near monopolistic pricing power	Dominant products & services with few peers; with strong pricing power	Differentiated products & services with many peers; with strong pricing power	Differentiated products & services with many peers; competitive pricing power	Commodity like products & services with marginal pricing power	Commodity like products & services with minimal pricing power	Price takers without any pricing power
Technological Advantages	Highly advanced without peers	Highly advanced	Advanced	Competitive	Laggard	Becoming obsolete	Non-existence

- (3) **Diversification:** Lianhe Global analyzes the diversification of a corporate entity by considering two key secondary factors: (1) revenue and (2) geographic concentration. The former is the dominant factor which is modified by the latter one. We consider

revenue concentration in terms of products & services. The more diverse the products & services are, the less the concentration risk is in an event of any plausible market downturn or threats from competing products & services. A corporate entity with an uncorrelated portfolio of products & services is more likely to weather an economic downturn better than a corporate entity with correlated ones. We also take customers, suppliers, and production concentrations into consideration on a secondary basis. We believe any over-reliance on any of the aforementioned three factors would be a cause for concern.

For instance, a large and well-diversified nationwide pharmaceutical distributor should have received a score of 9, but as it relies on a single wholesaler for its products, and thus we would rightfully adjust its benchmark score to 15. We argue that any business interruption from the single wholesaler would be detrimental to the distributor, even though it has a nationwide client base. However, if the same pharmaceutical distributor were to diversify and reduce its supplier concentration, then it could receive a score of 9. For the avoidance of doubt, this should not be considered as a minor adjustment from the pre-set benchmark score, but instead it is a full category adjustment.

Diversity	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Revenue/Product Concentration	≤ 10%	10% - 15%	15% - 25%	25% - 40%	40% - 60%	60% - 80%	> 80%
Geographic Diversification	Global	Multi-national	Regional/Continental	Nationwide	Multi-states/Provinces	One or two States/Provinces	Local

- (4) Operating Efficiency:** Lianhe Global analyzes the operating efficiency of a corporate entity by considering two key secondary factors: (1) utilization rate and (2) cost control. These are two mutually exclusive factors. A corporate entity with high fixed operating costs must achieve high utilization rate to break even, otherwise it would likely suffer losses. Conversely, the same corporate entity must also keep its operating costs low to stay competitive. We measure operating efficiency on a relative basis depending on the industry. Given the wide range of metrics fall under this category, we may use other yardsticks to gauge operating efficiency such as the lowest cost producers for the aluminium producing industry, a high load factor for airlines, a high turnover rate and low inventory for retailers, a high occupancy rate for hotels (and REITs), etc.

Operating Efficiency	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Utilization Rate	Highest within industry	Leaders within industry	Above Average	Industry Average	Below Average	Laggers within industry	Lowest within industry
Cost Control	Lowest cost producers within industry	Leaders in cost control within industry	Above Average	Industry average	Below Average	Laggers in cost control within industry	Highest cost producers within industry

- (5) Profitability:** Lianhe Global analyzes the profitability of a corporate entity by considering two key secondary factors: (1) EBITDA margin or (2) gross margin. These two factors effectively measure the same profitability just at a different line on the income statement. However, different industries may use different yardsticks to measure profitability. We use the commonly recognized or industry preferred metrics, either EBITDA margin or gross margin. In general, we believe these two yardsticks are closely related. In any event, if an EBITDA margin differs substantially from its corresponding gross margin, then we would likely adjust the score. Another noteworthy scenario is that we consider the quality of profitability in the context of revenue recognition. We cross-check recognized revenue against the cash flow statement to ensure they had indeed been received. In any event, if such recognized revenue had

been posted under account receivables with long-dated ageing accounts, we would likely adjust this factor as we deem appropriate.

Profitability	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
EBITDA Margin	≥ 40%	40% - 30%	30% - 20%	20% - 10%	10% - 5%	5% - 0%	< 0%
Gross Margin	≥ 50%	50% - 40%	40% - 30%	30% - 20%	20% - 10%	10% - 5%	0% - 5%

Financial Analysis

This is the quantitative part of the analysis to gauge primarily the future financial metrics of a corporate entity. While it is quantitative in nature, Lianhe Global allows marginal adjustments to account for forward-looking nature of forecasts, as well as the expected quality of the balance sheet of a corporate entity.

We analyze over a period of 5 fiscal years, and we put more emphasis on the current fiscal year and the two succeeding years' forecasts but less on the two preceding fiscal years. We believe risks lie in the future but not in the past, and history is only a guide. Thus, we distribute the weights in favor of the two succeeding years which account for 50%. We assign a 35% to the current fiscal year while the two preceding fiscal years account for only 15% altogether.

The table below illustrates the weight distribution of the financial metrics over a period of 5 fiscal years:

Fiscal Year	Current Fiscal Year minus 2	Current Fiscal Year minus 1	Current Fiscal Year	Current Fiscal Year plus 1	Current Fiscal Year plus 2	Total
Weight	5.0%	10.0%	35.0%	30.0%	20.0%	100.0%

Static Quantitative Factors

Lianhe Global uses a set of static metrics with Lianhe Global's adjustment to measure the financial strength of a corporate entity. We list the key financial factors in the table below:

Key Financial Factors:	Description of Key Financial Factors	Static Weight
(1) Debt over EBITDA	Gross Debt over EBITDA	15.0%
(2) EBITDA over Interest	EBITDA over Interest	12.0%
(3) Debt over Capitalization	Gross Debt over (Gross Debt + Equity)	8.0%
(4) Liquidity Ratios	Quick Ratio, Current Ratio, and Cash Ratio	5.0%
Sub-total		40.0%

Lianhe Global uses a set of generally accepted financial metrics and definitions. We believe (a) gross debt over EBITDA and (b) EBITDA over interest are the two most important determinants of financial strength of a corporate entity. For any lowly rated corporate entity, we switch the weight between (a) gross debt over EBITDA and (b) EBITDA over interest as we believe the latter is more critical than the former in this instance. In general, we take a conservative approach by only accounting for interest expense (including capitalized interest) but not interest income, unless a corporate entity is able to demonstrate the recurrence nature of its interest income associated with its normal course of business. We may use net debt (i.e. gross debt minus cash & cash equivalent) if we deem a corporate entity has demonstrated a strict cash policy with proven track records.

We believe debt over EBITDA is a good yardstick to measure debt coverage across the industry. This ratio excludes implications from (1) interest costs due to different level of capital structure, (2) tax rates due to both capital structure (i.e. tax savings on debt if applicable) and income tax brackets, and (3) various assumptions on depreciation,

depletion, and amortization schedules, across various industries. This ratio measures the number of years it will take a corporate entity to repay its debt given its current and expected earning power (EBITDA). The lower the number is, the higher the coverage is. While we believe EBITDA is a good indicator given its compatibility, there are a few shortcomings. Thus, we employ cash flow metrics to supplement the shortcomings associated with EBITDA. We use cash flow from operating activities before working capital changes and free cash flow as supplementary metrics as well as serve as checks and balances.

Meanwhile, the EBITDA over interest ratio measures the margin of safety of a corporate entity to cover its interest obligation given its current and expected earning power (EBITDA). The higher the number is, the stronger the coverage for EBITDA over interest is. We believe these are the two most important financial ratios and thus we assign a weight of 15% and 12% to each, respectively.

The debt over capitalization ratio measures the capital structure, in terms of debt leverage, of a corporate entity. The higher the leverage is, the higher the return favors equity investors over bondholders. Different industries have different capital structures, and often time it is challenging to compare and contrast. We apply this metrics as a cross-industry check. Thus, we assign a lesser weight (i.e. 8.0%) to this factor.

Last but not least, we measure the internally generated liquidity of a corporate entity by examining its quick ratio. We also take into account of cash ratio and current ratio as supplementary, but we do not have a predetermined absolute scale for these two ratios as they vary from industry to industry. For instance, Walmart, a giant global retailer, uses its market position to take advantages of its suppliers. Often time, it has a current ratio of less than 1 time. It is not an indication of poor liquidity, but rather shows Walmart's bargaining power. The table below illustrates the key financial metrics and their respective benchmarks that Lianhe Global uses.

As aforementioned, analysts could use their analytical judgments to assign scores based on the predictability of forecasts and industry outlooks. For instance, if a ratio falls closer to the upper bound of the benchmark, then an analyst could assign a score as appropriate.

Financial Metrics	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Debt/EBITDA	≤ 1.5	$1.5 < x \leq 2.5$	$2.5 < x \leq 3.5$	$3.5 < x \leq 4.5$	$4.5 < x \leq 5.5$	$5.5 < x \leq 6.5$	> 6.5
EBITDA/Interest	≥ 20	$12 \leq x < 20$	$8 \leq x < 12$	$5 \leq x < 8$	$3 \leq x < 5$	$1 \leq x < 3$	< 1
Debt/Capital	$\leq 20\%$	$20\% < x \leq 30\%$	$30\% < x \leq 40\%$	$40\% < x \leq 50\%$	$50\% < x \leq 60\%$	$60\% < x \leq 70\%$	$> 70\%$
Liquidity Ratios:							
Quick Ratio	≥ 2	$1.5 \leq x < 2$	$1.2 \leq x < 1.5$	$1 \leq x < 1.2$	$0.8 \leq x < 1$	$0.5 \leq x < 0.8$	< 0.5

*Note: Adjusted by Lianhe Global

We may make adjustments to financial ratios if we have concerns over their quality and stability. Taking shareholders' equity as an example, we may adjust "Debt over Capitalization" if there is a high percentage of goodwill and/or valuation reserves on the balance sheet. Additionally, we may make adjustments to these financial ratios if we deem they have demonstrated volatility in the past or we expect them to deteriorate in the future.

Weighted Average Score

The weighted average score is the summation of benchmark scores in (1) Market Demand, (2) Business Analysis, and (3) Financial Analysis. We then translate the numeric value of the weighted average score into a letter grade according to the table below. If a weighted average score falls in between the two minimum and maximum thresholds, the credit committee has the final say to decide on the weighted average score.



Credit Rating Scale (Base Score)	Wtd. Avg. Score Min. Thresholds	Wtd. Avg. Score Max. Thresholds
aaa	0.5	1.5
aa+	1.5	2.5
aa	2.5	3.5
aa-	3.5	4.5
a+	4.5	5.5
a	5.5	6.5
a-	6.5	7.5
bbb+	7.5	8.5
bbb	8.5	9.5
bbb-	9.5	10.5
bb+	10.5	11.5
bb	11.5	12.5
bb-	12.5	13.5
b+	13.5	14.5
b	14.5	15.5
b-	15.5	16.5
ccc+	16.5	17.5
ccc	17.5	18.5
ccc-	18.5	19.5

I. Industry Risk and Base Score

We apply a matrix approach by combining the weighted average score (or grade) with the industry risk to derive a Base Score.

II. Qualifiers

Lianhe Global also believes there are prevalent factors that are so important that they deserve a category of their own and are worthy of applying notching rather than a weighted average approach.

The Base Score (or grade) is further adjusted by 4 additional qualifiers, namely (1) Liquidity Test, (2) Corporate Governance, (3) Debt Maturity Profile and Financial Policy, and (4) Idiosyncratic Analysis, by a way of notching.

(1) Liquidity Test

We modify our Base Score (or grade) by examining the liquidity position of a rated corporate entity. Liquidity is the first and foremost important driver for any corporate entity. Usually, any sign of distress starts with a liquidity crunch. We measure liquidity by examining a corporate entity's (but not limited to) cash position, short-term liquid assets, available bank credit lines, forecasted earnings, and projected proceeds from capital market financing activities against its maturing debt obligations, capital expenditures, and committed payments over the next 12 months. This is different from the liquidity ratios we examined under financial metrics which focus on internally generated liquidity. Under the liquidity test (Appendix II), we also take external liquidity such as bank credit facilities and qualitative factors such as access to the capital market and relationship with banks into consideration. We test the liquidity strength of a corporate entity and determine if it can withstand the corresponding thresholds associated with the Base Score (or grade). If it does pass or surpass the corresponding thresholds, then no notching will be applied. Otherwise, we apply notching by subtracting the necessary notches until it passes the corresponding thresholds. For instance, if a corporate entity has a Base Score of 'bbb', then it must pass or surpass the liquidity test thresholds for 'bbb'. If it fails to pass, then we would lower the thresholds until it passes. The difference between the Base Score (or grade) and the liquidity test thresholds it passes is the number of notch(es) we would subtract. However, our credit committee has the final say on the outcome of the liquidity test. Based on our analysis, on average we take one or two notches deduction for most lowly rated entities to

address their poor liquidity while there is no notch deduction for most highly rated corporate entities.

We also survey a corporate entity's past and currently available quota to issue public debt on both the onshore and offshore capital markets. Additionally, we assess the availability of cash and cash equivalent at the holding or parent company rather than on a consolidated basis. Often time, a corporate entity does periodically sweep cash from its wholly-owned subsidiaries. To the extent, we observe any material gyrations of a corporate entity's stock or equity (for publicly traded ones) and bond price which may result in a significant handicapping of its refinancing capacity, we may consider taking rating actions under this liquidity test.

(2) Corporate Governance

Corporate Governance plays the second fiddle in this case. We believe any corporate governance related issue would likely be first reflected in the liquidity of a corporate entity. We take a holistic view on corporate governance. Family-owned businesses are not necessarily cause for concern, in our view. In general, we examine features (including but not limited to) such as the ownership and organizational structure, reporting hierarchy, independent non-executive directors on the board of directors, board committees, related-party transactions, material litigations, prior regulatory sanctions, etc. In general, we believe listed companies have timely disclosure and a higher level of transparency, as well as efficient corporate board management as dictated by various listing disclosure and rules. We focus primarily on a few key areas such as related-party transactions, key man risk, the tenure of senior management, relationship with the external auditor, and regulatory compliance. Based on our analysis, we are unlikely to consider notching for listed companies unless they have exhibited blatant disregard for rules. We would deduct at a maximum of 2 notches under this qualifier. A summary of the key factors is provided in Appendix III.

(3) Debt Maturity Profile and Financial Policy

Debt Structure and Financial Policy refer to debt maturity profile and structure and management's attitude towards financing. We also examine the composition of total borrowings in terms of onshore/offshore, secured/unsecured, financial institutions, non-traditional loans etc. In general, we favor long-term over short-term debt in which the former allows a corporate entity more time to generate and accumulate profit to repay its debt. Meanwhile, short-term debt obligations put pressure on a corporate entity to either refinance or repay its debt over a short period of time. We measure the debt maturity profile of a corporate entity by examining the percentage of debt due in the coming year over the aggregate debt. We provide a summary of the key factors in Appendix IV.

Other considerations:

If a corporate entity's revenue streams are from one currency while its debts are in another currency, we would take foreign exchange rate risk into consideration. Likewise, we also take interest rate term structure into consideration. Additionally, we take any hedge position into our analysis. While we do not include any off-balance sheet securitization transactions as debt, we do include any non-cancellable operating lease where applicable and third-party guarantees as debt.

(4) Idiosyncratic Analysis

While we believe our analysis has captured most of the risk factors of a corporate entity, there are special circumstances in which our analysis may not have considered given

the complexity of today's business world. Take airliners as an example. In China, most airliners fly short-haul routes and face competitions from expanding high-speed railway and highway systems. But airliners in provinces with treacherous terrains do not face these challenges due to higher railway and highway construction costs associated with these terrains. Hence, we may use this factor to account for the competitive advantage afforded to the few selected ones.

III. Standalone Credit

The resultant outcome from the qualifier notching adjustment analysis leads to the Standalone Credit, which reflects the creditworthiness of the subject corporate entity on a standalone basis.

IV. External Support

As a part of our analysis, we also examine if a corporate entity receives any external support from its parent or affiliated companies or government entities.

For a corporate entity to receive support either from its parent and/or affiliated companies, the supporting entity must demonstrate (a) the ability and willingness to support, (b) the resulting support would not adversely affect either the supporting entity or the combined entities. In general, we categorize two forms of support: (1) Top-down and (2) Bottom-up. To qualify for Top-down support, the subject corporate entity must demonstrate it is an integral part of a larger corporate family and without its survival would cause irreversible damage to the larger corporate family in terms of earnings, distribution network, products & services, market position and/or reputation. We expect this scenario to be few and far between. On the contrary, we expect many supports would be in the form of Bottom-up.

V. Final Credit Rating

The resultant outcome from the external support analysis leads to the Final Credit Rating of the subject corporate entity. It is also commonly known as an issuer credit rating.

Appendix I: Credit Rating Scale, Scores and Benchmarks

Rating Scale and Benchmarks

We apply a 7-category benchmark as a guide for each of the qualitative business and quantitative financial factor in our scorecard. Each of the 7-category benchmark corresponds to its respective score on a scale of 1 to 19, with 1 being the highest score and 19 being the lowest score. The lower-case letters (i.e. 'aaa' to 'ccc') and the benchmark descriptions provide a reference for analysts when assigning benchmark scores on a global scale.

Scorecard and Benchmarks

Lianhe Global uses a scorecard system to assist analysts to perform their analytical work. Scorecards are used to guide analysts and they also act as checks and balances to safeguard the analytical integrity and consistency throughout the rating process. But by no means, these scorecards are substitutes for sound, independent and comprehensive analytical judgments. The table below illustrates an overview of Lianhe Global's general corporate scorecard.

Primary Factors	Weight/ Notching	Secondary Factors	Sub-weight	Benchmark Scale
Operating Environment (Internal Assessment)		Wtd. Average Approach		Numeric
Recent Market Demand Analysis	15.0%	Wtd. Average Approach		
Corporate Analysis				
I. Business Analysis	45.0%	Wtd. Average Approach	Dynamic Weight	
		Market Position	15.0%	1 - 19
		Competitiveness	10.0%	1 - 19
		Diversity	8.0%	1 - 19
		Operating Efficiency	6.0%	1 - 19
		Profitability	6.0%	1 - 19
		Sub-total	45.0%	
II. Financial Analysis	40.0%	Wtd. Average Approach	Static Weight	
		Debt over EBITDA	15.0%	1 - 19
		EBITDA over Interest	12.0%	1 - 19
		Debt over Capitalization	8.0%	1 - 19
		Liquidity Ratios	5.0%	1 - 19
		Sub-total	40.0%	
Total Weight	100.0%	Total	100.0%	
III. Wtd. Average Score	aaa>ccc	Convert numeric to letters		Letters
IV. Industry Analysis	bbb	Matrix Approach		Letters
Base Score (grade)	aaa>ccc			Letters
V. Qualifiers:	notching varies	Notching Approach		
(1) Liquidity Test	varies			
(2) Corporate Governance	varies (no notching up)			
(3) Debt Maturity Profile & Financial Policy	varies			
(4) Idiosyncratic Analysis	varies			
VI. Standalone Credit	aaa>ccc			Letters
VII. External Support	notching	Notching Approach		Letters
VIII. Final Credit Rating	AAA>CCC			Letters

The table below illustrates the 7-category benchmark and the corresponding pre-set benchmark scores and their descriptions.

7-Category Benchmark	aaa	aa	a	bbb	bb	b	ccc
Pre-set Benchmark Score	1	3	6	9	12	15	18
Score Description	Highest	High	Moderately High	Median	Moderately Low	Low	Lowest
Benchmark Description	Very Strong	Strong	Moderately Strong	Average	Moderately Weak	Weak	Very Weak

Our approach equalizes and matches the benchmark scores to the full 19-notch credit rating scale. It avoids the shortcoming of converting either a 7-scale or 5-scale into the full 19-notch credit rating scale by a way of a weighted average or matrix approach. In general, in the absence of sound arguments and reasoning, analysts are required to assign pre-set benchmark scores like 1, 3, 6, 9, 12, 15, or 18 on a 7-category scale according to the prescribed corresponding qualitative business and quantitative financial factors. In other instances, analysts could use their analytical judgments to either adjust the benchmark scores upward or downgrade to best reflect the nature of that particular rating factor. But under no circumstance, analysts shall adjust any benchmark score more than one full category from the pre-set benchmark score. The table below illustrates the full 19-notch credit rating scale to the corresponding benchmark scores applied to each of the rating factor.

Credit Rating Scale (Base Score)	Wtd. Avg. Score Min. Thresholds	Wtd. Avg. Score Max. Thresholds	7-Category Benchmark	Pre-set Benchmark Score
AAA	0.5	1.5	aaa	1
AA+	1.5	2.5		
AA	2.5	3.5		
AA-	3.5	4.5	aa	3
A+	4.5	5.5		
A	5.5	6.5		
A-	6.5	7.5	a	6
BBB+	7.5	8.5		
BBB	8.5	9.5		
BBB-	9.5	10.5	bbb	9
BB+	10.5	11.5		
BB	11.5	12.5		
BB-	12.5	13.5	bb	12
B+	13.5	14.5		
B	14.5	15.5		
B-	15.5	16.5	b	15
CCC+	16.5	17.5		
CCC	17.5	18.5		
CCC-	18.5	19.5	ccc	18

If a weighted average score falls in between the two credit rating score thresholds, the credit committee has the final say to decide on the weighted average score (or grade) after taking into consideration of all credit aspects and the industrial nature of a rated entity.

Appendix II: Liquidity Test

In summary, Lianhe Global analyzes (1) source of liquidity against (2) use of liquidity over a 12-month period following the date of the latest available liquidity position provided by the subject corporate entity. The table below lists the key items for source and use of liquidity:

Source of Liquidity:	Use of Liquidity:
Cash and short-term liquid investments	Maturing debt within a year
Cash flow from operating activities before changes in working capital	Planned dividend pay-out
Working capital inflows	Working capital outflows
Planned capital market financing activities	Planned capital expenditures
Planned asset sales	Planned acquisitions
External capital injections	Planned shares buyback
Unused bank credit facilities	Early redemption of debt

In addition, we also consider and examine some qualitative factors in the liquidity test as appropriate. For example, the suspension of trading of shares and debt instruments reduced access to capital market for fundings.

Appendix III: Corporate Governance Details

Factors:	Ownership Structure	Convolut ownership
		Single or a group of large shareholders
		Reverse merger to circumvent listing rule
		Registered at tax haven with poor disclosure requirements
		Multiple layers of shell companies and/or many non-operating subsidiaries
	Organizational Structure	Large minority interests
		Reporting line of internal auditor
		Reporting lines
	Board of Directors	Separation of duties
		Number of INED on the board
		Separation of CEO and chairman role
		Various board level committees to oversee management
		Protection of bondholders' interest
	Management	Protection of shareholders' interest
		Delay filings of financial statements or major transactions
		Industry expertise of senior managers
		Resignation of senior managers
		Frequent rotation of senior managers
	Related-Party Transactions	Major transactions unrelated to its core business
		Sanctions and suspensions imposed by regulators
		Confidentiality policy on pending mergers and acquisitions
		Policy on avoidance of conflict of interests
		Policy on related-party transactions
	External Audit	Inter-company loans and guarantees
		Personal loans and guarantees
		Reputation of external auditors
		External auditor's fee on non-audit and tax preparation work
		Delay filings of financial statements or major transactions
		Qualified audit opinions
		Frequency change of external auditors

Appendix IV: Debt Maturity Profile and Financial Policy

We favor conservative over aggressive financial policy as measured by (1) debt to revenue growth rate, (2) funding for capital expenditure, and (3) balancing stakeholders' interest. In addition, we examine the composition and diversity of borrowings in terms of secured verse unsecured, capital market products verse private loans, bank loans verse non-traditional borrowings, onshore verse offshore borrowings etc. A corporate entity relies on net income generated from revenue growth, which often time represents only a friction, for repayment of debt. If debt growth is not complemented by revenue growth, this may be a cause for concern. If a corporate entity relies heavily on external funding for its growth would also be a cause for concern. We also favor a conservative financial policy tilt towards bondholders with ample liquidity and low financial leverage. Additionally, we consider a subject corporate entity's ability to access capital markets and diversity of its financing sources such as bank loans, raising debt and equity, as well as commercial paper programs or securitized products etc. The table below illustrates the benchmark description of various financial policies.

Financial Policy Benchmark	Very Conservative	Conservative	Neutral	Aggressive	Very Aggressive
Revenue Growth vs. Debt Growth	Revenue growth substantially outstrips debt growth	Revenue growth outstrips debt growth	Revenue growth in tandem with debt growth	Debt growth outstrips revenue growth	Debt growth substantially outstrips revenue growth
Capital Expenditure	Use only internal funding for capex	Rely primarily on internal funding for capex and use external funding conservatively	Balance between internal and external funding for capex	Rely on external funding for expansionary capex as internal funding depletes	Rely primarily on external funding for maintenance capex
Balance between Stakeholders	Conservative financial policy with high level of liquidity and very low leverage	Financial policy favors bondholders with moderately low leverage	Balance stakeholders' interest (i.e. bond and equity investors) equally	Financial policy favors equity investors with moderately high leverage	Financial policy tilts to equity investors at the expense of bondholders

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