Chinese Property Developer Criteria

Rating Criteria

Purpose

Lianhe Ratings Global Limited's ("Lianhe Global") Chinese property developer criteria are meant to supplement our general corporate criteria which published on 31 December 2021. The framework of the criteria is similar to the general corporate criteria. The current criteria primarily elaborate on the details of the factors and sub-factors that we consider when assigning ratings to Chinese property developers.

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

Scope of the Criteria

Lianhe Global applies the criteria to Chinese property developers that are primarily in the business of developing properties for sale. We apply the criteria to Chinese property developers due to their unique operating environment and exposure to factors that are indigenous to China.

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 operational estimates and financial forecasts. First, we apply a scorecard using a weighted average approach to approximate a Chinese property developer'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 Chinese property developer.

Overview

The criteria report comprises three segments: (1) operating environment of China, (2) industry analysis, and (3) corporate analysis which comprises (a) qualitative business and (b) quantitative financial analysis. We take a holistic view on a Chinese property developer balancing all-around political, economic, industrial, operational, and financial factors.

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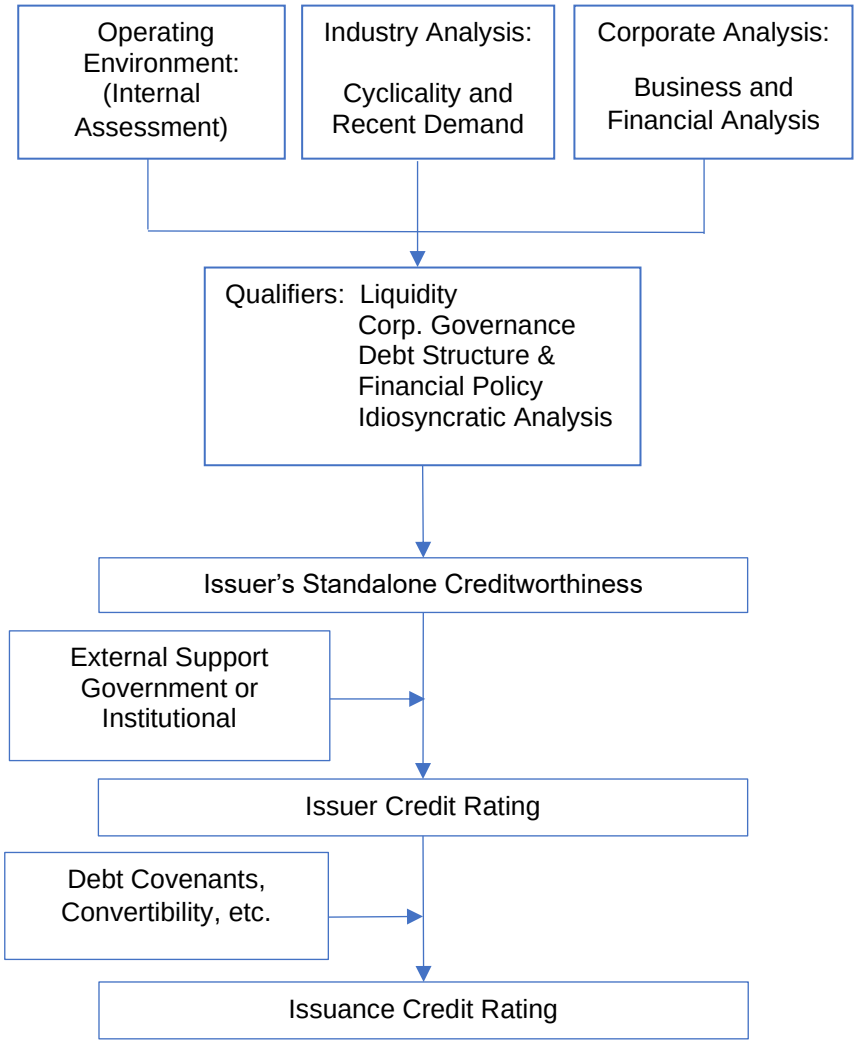
Furthermore, the criteria do not represent a comprehensive coverage but only address key rating factors.

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 Chinese property developer's credit rating to the same as the internal assessment of the country. Nevertheless, there could be instances in which a rated Chinese property developer 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 Chinese property developer 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 cyclicality over a long period and blending them with macro and industry demands of recent decades are a balanced approach to address the industry risk.

The table below summarizes the factors we consider:

Key Factors	Description of Key Factors	Method / Weight
(a) Cyclicality	Historical / Industry-specific Cyclicality	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%

China's property development market has been growing rapidly due to its rising urbanization rate of 63.9% at end-2020. The ongoing urbanization process has been the impetus to drive the China's property development market since the late 1990s, at the macroeconomic level. Furthermore, China is at a development cycle in which infrastructures, fixed investments and capital goods still play an important role in economic growth. China's investments in real estate were at 13.9% of its GDP at end-2020. In addition, proceeds from land sales comprise approximately 20% of local governments' fiscal budgets on average. In general, local governments' fiscal budgets comprise (1) fiscal revenue, (2) transfer payments, and (3) government-managed funds of which approximately 80% is from land sales proceeds on average. While the land sales proceed is relatively smaller in percentage, it provides a high degree of flexibility to local governments in which the first two segments cannot offer. Thus, property development is inevitably tied to the Chinese local governments' coffers. However, the ongoing policy controls and slowdown on developers' contracted sales growth post threat to the industry growth. Developers are also striving to deleverage in order to comply with the "3 Red Lines" rules, so the industry consolidation is likely to continue. Overall, we have a cautiously optimistic view on the Chinese property developer industry.

Cyclicality Analysis

Our cyclicality analysis comprises (i) historical industry cyclicality and (ii) China specific industry 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 Base Score (or grade).

We stipulate that the historical property developer industry cyclicality is 'bb'. Furthermore, we conduct an industry-specific study on the Chinese property developer industry given the difference in its development cycle.

The paragraphs below illustrate our analysis on the Chinese property developer industry:

(1) Barriers to entry: Low
In China, there are over thousands of property developers given the apparently low barriers to entry and a large population with a steady growth of urbanization rate. However, as the Chinese property market cools, we expect the number of property developers to shrink. Polarization within the Chinese property developer industry

is to become more pronounced. Nevertheless, it is an industry with low barriers to entry.

(2) Industrywide profit: High
The Chinese property developer industry has been exhibiting relatively high gross margin persistently among major industries since 2008. Despite the volatility in profit margin in recent years due to rising land cost and house price caps, the Chinese property developer industry has been delivering a relatively high profitability of c. 20% on average compared with other major industries.

(3) Growth potential: Moderately High
The Chinese property developer industry has been exhibiting moderately high growth rate (i.e. higher than China's GDP growth rate, except in 2015, since 2001). China's moderate urbanization rate provides the impetus along with rising disposable income for future growth. However, given the policies aiming to cool down the industry, we expect the Chinese property developer industry to grow in a measured and controlled manner.

(4) Substitution risk: Very Low
We deem the Chinese property developer industry to have a very low substitution risk due to the nature of real estate development business in which land cannot either be imported or replaced. Real estate is a local business not subject to obsolete or externalities like foreign imports. As a result, it has a very low substitution risk.

Market Demand Analysis

On the aggregate demand side, China's property development market has been growing consistently above its GDP growth rate since 2008 (except in 2015).

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. 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 Chinese property developer.

Business Analysis

This is the qualitative part of the analysis to gauge the viability of a Chinese property developer's business performance on a relative basis against that of its peers in China. While it is qualitative in nature, Lianhe Global uses various benchmarks to guide analysts.

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%

(1) Market Position: Lianhe Global analyzes the market position of a Chinese property developer by considering three key secondary factors: (1) contracted sales amount, (2) revenue, and (3) market position. The former is the dominant factor which is supplemented by the latter two. We use China Real Estate Information Corporation ("CRIC")'s periodic publication of performance figures including but not limited to (attributable) contracted sales, revenue, and land bank to gauge market position. We consider the market position in terms of regions of operating such as the Greater Bay Area, Pearl River Delta, Yangtze River Delta, Greater Fujian Area, Beijing-Tianjin-Hebei region, Chengdu-Chongqing cluster, etc. Additionally, Lianhe Global takes revenue and contracted sales volatility into consideration when we assign benchmark scores. As mentioned previously, we may use our analytical judgements 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
CRIC Ranking	N/A	N/A	N/A	Upper Percentile	Median Percentile	Lower Percentile	Ranked Below 100
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 Position	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 Chinese property developer by considering three secondary factors: (1) the quality of the overall attributable land bank in terms of city tiers, (2) the quality of contracted sales by city tier as compared to that of properties under development and held-for-future development, and (3) land acquisition channels. The former two are the dominant factors which are supplemented by the latter one.

(i) Land Bank Quality by City Tier: Lianhe Global considers Beijing, Shanghai, Guangzhou, and Shenzhen as tier 1 cities. We consider nearly all provincial capitals, direct-administered municipalities (not in the tier 1 city category), and municipalities with independent planning status as tier 2 cities. The rest of the Chinese cities are considered as tier 3 (or lower) cities. The two key metrics to determine a city tier are GDP per capita and average home prices. We review these key metrics of cities in a Chinese property developer's land bank portfolio (as well as other factors such as net migration) and compare them to the national average to ensure consistency and comparability with our designated city tier.

(ii) Comparative Analysis of Attributable Land Bank over Contracted Sales: Lianhe Global compares the land bank quality of a Chinese property developer's contracted revenue over its portfolio of attributable lank bank in terms of gross floor area ("GFA"). The purpose is to ensure a Chinese property developer's attributable land bank is of

sufficient size and quality to support its future development, contracted sales, revenue, and credit metrics. Land bank is the most valuable assets of a Chinese property developer and serves as a strong indicator for future profitability. If a Chinese property developer has strong revenue but an inferior land bank in terms of quality and size to support future development, the Chinese property developer is likely not able to sustain its current revenue or it would have to allocate more capital expenditures for land purchases. We believe a minimum of 2 to 3 years of attributable land bank over the current pace of attributable contracted sales in terms of GFA is a reasonable metric. In general, Chinese property developers have been reporting a year-over-year contracted sales growth in the past decade but the pace of growth has been declining. Hence, we favor Chinese property developers with sizeable attributable land bank to sustain their future growth. While we do not penalize a Chinese property developer for having more attributable land bank (i.e. above 3 years), we do penalize a Chinese property developer for having not sufficient (attributable) land bank.

(iii) Land Acquisition Channel: Lianhe Global believes a diversified land acquisition strategy is conducive for a Chinese property developer to maintain a low-cost land bank, which we view favorably. Any over-reliance on a particular land acquisition channel may expose a Chinese property developer to market risks which may inadvertently increase its cost of land. In addition, we pay close attention to any redevelopment projects that may take somewhere between 5 to 8 years to develop. While the gross margins of these redevelopment projects may be higher, their returns (i.e. IRR) may not be attractive when taking time value of money and cost of capital into the equation.

Competitiveness	**aaa**	**aa**	**a**	**bbb**	**bb**	**b**	**ccc**
Benchmark Score	1	3	6	9	12	15	18
Land Bank Quality	N/A	N/A	Primarily tier 1 or 2 cities (>75%)	Mostly tier 1 or 2 cities (>50%)	Primarily tier 2&3 cities	Primarily tier 3 or lower cities	N/A
Land Bank GFA over Contracted Sales GFA	N/A	N/A	At least 2 to 3 years of land bank of better quality than the current contracted sales	At least 2 to 3 years of land bank of matching quality with the current contracted sales	At least 2 to 3 years of land bank of inferior quality to the current contracted sales	At least 1 to 2 years of land bank	Less than 1 year of land bank
Land Acquisition Channel	N/A	N/A	N/A	Evenly distributed among auctions, M&A, and JVs	Rely primarily on 2 of the 3 channels	Rely primarily on 1 of the 3 channels	N/A

(3) Diversification: Lianhe Global analyzes the diversification of a Chinese property developer by considering two key secondary factors: (1) relative geographic concentration and (2) exposure to commercial property sales. The former is the dominant factor which is supplemented by the latter one. We consider a relative geographic concentration in terms of economic diversity, as well as the number of property development projects. Given China's policy-driven economy and the presence of moratoriums on home (a) purchases, (b) sales, (c) prices, and (d) mortgage applications, we must take policy risk into consideration. We believe the larger the operating scale and the number of property projects, the lesser the exposure to policy risks targeting a region or a few cities. At the time of this publication, there are a number of cities that have been put under the spell of moratoriums of various forms. This is also one of the reasons Lianhe Global has published property developer criteria specifically for the Chinese property market.

On a secondary basis, we measure a Chinese property developer's exposure to sales of commercial properties in terms of revenue contribution. Commercial properties are more susceptible to economic gyration than residential properties. Hence, we view any exposure to sales of commercial properties less favorably. The larger the exposure to sales of commercial properties is, the higher the risk in terms of revenue and profitability volatility will be.

Diversity	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Geographic Diversification	Global	Multi-national	Regional/ Cross-continental	Nationwide	Multi-Provinces	1 or 2 Provinces	Local
Commercial Exposure	N/A	N/A	N/A	Commercial property sales account for <20%	Commercial property sales account for 20%-50%	Commercial property sales account for >50%	Substantial exposure to commercial property sales

(4) Operating Efficiency: Lianhe Global analyzes the operating efficiency of a Chinese property developer by means of cash flow proficiency on projects at an aggregated level given the various presale rules set by different city governments making granular project-level analysis infeasible. In general, we measure how quickly (i.e. in terms of number of months) will a Chinese property developer (i) commence construction after the land purchase, (ii) start presale, (iii) meet presale target and (iv) turn cash flow positive on projects. We also examine a Chinese property developer's prior project management and execution track records such as sell-through rate, cash collection rate, and inventory management (i.e. completed but unsold units) to gauge future performance. We measure the latter three metrics on a secondary level basis due to the uncertainty of moratorium policies on purchases, sales, home prices and mortgages through administrative measures which may have a profound impact on cash collection rate and cash flow proficiency. As a result, we have purposely left a gap between the 'bbb' and 'bb' category in terms of cash flow proficiency of '12-to-18 months' and 'after-24-months', respectively, allowing some degrees of flexibility to counter any adverse impact from unexpected moratorium policy. We reckon it will take some time for a Chinese property developer to take measures to counter any moratorium policy. We also notice that many large Chinese property developers tend to deploy a quick asset turnover strategy to maintain cash flow proficiency while other small-to-medium sized niche Chinese property developers in regions of high or rising property values use a slow-turnover strategy to maximize profits. Furthermore, we also examine the cash collection rate to gauge the Chinese property developer's execution capability. We make analytical adjustments to strike a balance between the two while taking into consideration other factors such as gross margin, cash collection rate, etc.

Operating Efficiency	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Project Management & Execution and Inventory Management	N/A	N/A	Projects turn cash flow positive in less than 12 months with <5% unsold units	Projects turn cash flow positive in 12 to 18 months with 5% to 10% unsold units	Projects turn cash flow positive after 24 months with 10% to 20% unsold units	Projects turn cash flow positive after 36 months with 20% to 30% unsold units	Projects generate cash flow after price reduction with >30% unsold units

(5) Profitability: Lianhe Global analyzes the profitability of a Chinese property developer by considering its gross margins and their variability. In addition, we compare a Chinese property developer's gross margin on its financial statements against its most recent reported contracted sales gross margin. We apply gross margins instead of EBITDA margins to measure profitability given their readily availability and a closer indication of the profit margin of property sales. Due to the variability of projects in different cities, gross margins may vary. However, an established Chinese property developer with a defined strategy and strong execution capability such as targeting first-time home buyers, first-time upgraders, premium-upgraders or investors etc., along with pre-construction/execution cost analysis, is able to maintain its gross margin within a reasonable range which we view favorably. As gross margins are subject to revenue recognition rule under the accounting principle and variability of construction pace and delivery rate, we cross-check with contracted sales gross margins which are cash flow based. We also apply EBITDA margins to supplement our analysis.

Profitability	aaa	aa	a	bbb	bb	b	ccc
Benchmark Score	1	3	6	9	12	15	18
Gross Margin	≥ 60%	45% ≤ x < 60%	35% ≤ x < 45%	25% ≤ x < 35%	15% ≤ x < 25%	8% ≤ x < 15%	< 8%

Financial Analysis

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

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%

Financial Forecasts

Lianhe Global analyzes from a Chinese property developer's forecast, comparable Chinese property developers' projections and market trend to formulate forecasts. In general, we examine a basket of factors such as sell-through rate, contracted sales figures, delivery rate, average selling price, contracted sales to land bank ratio, past capital expenditures. In general, we will revisit our forecasts and make adjustments at least on an annual basis when a Chinese property developer has made its annual or semi-annual results available.

Static Quantitative Factors

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

Key Financial Factors:	Description of Key Financial Factors	Static Weight
(1) Debt over Land Bank	Gross Debt over Land Bank	12.0%
(2) EBITDA over Interest	EBITDA over Interest	15.0%
(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 (see Appendix I). We believe (a) gross debt over land bank and (b) EBITDA over interest are the two most predictive factors of financial strength on a Chinese property developer. In general, we take a conservative approach by only accounting for interest expense (including capitalized interest) but not interest income, unless a Chinese property developer is able to demonstrate the recurrence nature of its interest income associated with its normal course of business.

For Chinese property developers, we switch the associated weight between (a) "Gross Debt over Land Bank" and (b) "EBITDA over Interest" compared with corporate entities, as we believe the latter is more critical than the former in this instance. We may use net debt (i.e. gross debt minus cash & cash equivalent) if we deem a Chinese property developer has demonstrated a strict cash policy with proven track records. We believe debt over land bank is a good yardstick to measure leverage as land bank is the most valuable asset of a Chinese property developer. The lower the number is, the lower the leverage is. While we believe debt over land bank is a good indicator, there are a few shortcomings. Thus, we employ cash flow metrics to supplement the shortcomings associated with this indicator. 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. We also use debt over EBITDA ratio to supplement our financial leverage analysis to stay relevant to other industries on a global scale.

We measure land bank by including (1) properties under development, (2) land bank held for future development and (3) completed but unsold properties. We measure lank bank at cost and we also exclude investment properties as they often carry market value rather than at-cost-value. We recognize the imperfection of using an at-cost-value land bank which may over-state a Chinese property developer's financial leverage in regions of elevated home price/land value and at the same time under-state in regions of depressed home price/land value. Therefore, we make analytical adjustments to strike a balance between the two scenarios.

Meanwhile, EBITDA over interest measures the margin of safety of a Chinese property developer 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 12% and 15% to each, respectively.

Debt over capitalization measures the capital structure of a Chinese property developer. 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 less weight (i.e. 8.0%) to this factor.

Last but not least, we measure the internally generated liquidity of a Chinese property developer by examining its quick ratio. We also take into account of cash ratio and current ratio as supplementary. We do not have a predetermined absolute scale for these two ratios given their variability. 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 or lower 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/Land Bank	≤ 5%	5% < x ≤ 15%	15% < x ≤ 25%	25% < x ≤ 35%	35% < x ≤ 50%	50% < x ≤ 70%	> 70%
*EBITDA/Interest	≥ 20	12 ≤ x < 20	8 ≤ x < 12	5 ≤ x < 8	3 ≤ x < 5	1 ≤ x < 3	< 1
*Debt/Capital	≤ 20%	20% < x ≤ 30%	30% < x ≤ 40%	40% < x ≤ 50%	50% < x ≤ 60%	60% < x ≤ 70%	> 70%
Liquidity Ratios:							
Quick Ratio	≥ 2	1.5 ≤ x < 2	1.2 ≤ x < 1.5	1 ≤ x < 1.2	0.8 ≤ x < 1	0.5 ≤ 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 believe 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 (or grade).

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 weight average score (or grade) with the industry cyclicality risk to derive a Base Score. As aforementioned, we have a 'BBB' industry cyclicality for the Chinese property developer industry which has neutral/no impact after the application of the matrix to reach a Base Score the same as the weighted average score (or grade).

II. Qualifiers

Lianhe Global also believes there are prevalent factors that are so critical 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 modified 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 Chinese property developer. Liquidity is the first and foremost important driver for any Chinese property developer. Usually, any sign of distress starts with a liquidity crunch. We measure liquidity by examining a Chinese property developer'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 Chinese property developer 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 Chinese property developer 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 the 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 notch 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 Chinese property developer'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 Chinese property developer does periodically sweep cash from its wholly-owned subsidiaries. To the extent, we observe any material gyration of a Chinese property developer'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 Chinese property developer. We take a holistic view of corporate governance. Family-owned businesses are not necessarily a cause for concern, in our view. In general, we examine items (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 rules and disclosure. 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 refers 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 Chinese property developer more time to generate and accumulate profit to repay its debt. Meanwhile, short-term debt obligations put pressure on a Chinese property developer to either refinance or repay its debt over a short period of time. We measure the debt maturity profile of a Chinese property developer by

examining the percentage of debt due in the coming 3 years over the aggregate debt. We provide a summary of the key factors in Appendix IV.

Other considerations:
If a Chinese property developer'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 and third-party guarantees as debt.

(4) Idiosyncratic Analysis
While we believe our analysis has captured most of the risk factors of a Chinese property developer, there are special circumstances in which our analysis may not have considered given the complexity of today's business world.

III. Standalone Credit

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

IV. External Support

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

For a Chinese property developer 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 property developer 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, 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 if any.

V. Final Credit Rating

The resultant outcome from the external support analysis leads to the Final Credit Rating of the subject property developer. 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 which serves as a backbone for our Chinese property developer scorecard.

Primary Factors	Weight/ Notching	Secondary Factors	Sub-weight	Benchmark Scale
Operating Environment		***Wtd. Average Approach***		**Numeric**
(Internal Assessment)				
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 Land Bank	**12.0%**	**1 - 19**
		EBITDA over Interest	**15.0%**	**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**	Notching Approach		
(1) Liquidity Test	**varies**			
(2) Corporate Governance	**varies (no notching up)**			
(3) Debt & 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 factors.

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**
AA-	3.5	4.5		
A+	4.5	5.5		
A	5.5	6.5	**a**	**6**
A-	6.5	7.5		
BBB+	7.5	8.5		
BBB	8.5	9.5	**bbb**	**9**
BBB-	9.5	10.5		
BB+	10.5	11.5		
BB	11.5	12.5	**bb**	**12**
BB-	12.5	13.5		
B+	13.5	14.5		
B	14.5	15.5	**b**	**15**
B-	15.5	16.5		
CCC+	16.5	17.5		
CCC	17.5	18.5	**ccc**	**18**
CCC-	18.5	19.5		

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 property developer. 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.

Appendix III: Corporate Governance Details

Factors:	Ownership Structure	Convoluted ownership
		Single or a group of large shareholders
		Reverse merger to circumvent listing rule
		Registered at tax haven
		Multiple layers of shell companies and/or many non-operating subsidiaries
		Large minority interests
	Organizational Structure	Reporting line of internal auditor
		Reporting lines
		Separation of duties
	Board of Directors	Number of INED on the board
		Separation of CEO and chairman role
		Various board level committees to oversee the management
		Protection of bondholders' interest
		Protection of shareholders' interest
		Delay filings of financial statements or major transactions
	Management	Industry expertise of senior managers
		Resignation of senior managers
		Frequent rotation of senior managers
		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
	Related-Party Transactions	Policy on related-party transactions
		Inter-company loans and guarantees
		Personal loans and guarantees
	External Audit	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 loan products verse private loans, bank loans verse non-traditional borrowings, onshore verse offshore borrowings etc. If debt growth is not complemented by revenue growth, this may be a cause for concern. If a Chinese property developer relies heavily on external funding to expand which 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 property developer'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 btw 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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