



Local Government

Credit Rating Methods and Models

(PJFM-DFZF-2024-V1.0)



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Rating Methodology

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I. Overview

Anrong (Hong Kong) Credit Rating Company Limited (ARHK) has developed the "Credit Rating Methods and Models for Local Government (PJFM-DFZF-2024-V1.0)" (referred to as "this methodology and model") to enhance the consistency, accuracy, and stability of rating methodologies, models, and rating results, in accordance with relevant laws, regulations, and the provisions of ARHK's rating business-related management systems.

This methodology and model determines the rating benchmarks for the rated entities by incorporating sovereign risk adjustment factors, which, along with inherent adjustment factors, lead to the BCA rating for the rated entity. The BCA rating, combined with external support, produced the final credit rating of the rated entity. Specifically, ARHK first constructs a "Local Government Administrative Capacity" dimension by fully considering the mobilization ability and governance capacity of local governments. Then, it constructs a "Local Government Strength" dimension by fully considering the economic strength, fiscal strength, and debt sustainability of local governments. The Pre-SRAF rating level of the rated entity is derived from a two-dimensional matrix mapping of "Local Government Administrative Capacity" and "Local Government Strength." The rating benchmark for the rated entity is determined by combining sovereign risk adjustment factors, followed by deriving the BCA rating through inherent adjustment factors. Finally, the rated entity's credit rating (Model Result Grade) is obtained by considering external support.

In terms of grade symbols, the BCA grades are represented by a sequence of symbols ranging from "aaa" to "c." Except for "aaa" and grades below "cc" (inclusive), each credit grade can be fine-tuned with "+" or "-" symbols to indicate a slightly higher or lower credit level than the base grade. The final credit grade symbols correspond to a sequence from "AAA" to "C". Similarly, except for "AAA" and grades below "CC" (inclusive), each credit grade can be fine-tuned with "+" or "-" symbols.

This methodology and model becomes effective from the date of announcement.

II. Scope of Application

This methodology and model applies to local governments worldwide. Local governments refer to administrative organizations that manage public affairs within a specific geographic area

according to law, such as town governments, city governments, county governments, and state governments (in federal countries like the United States), undertaking important administrative, economic, cultural, and social management functions at their respective levels.

III. Basic Assumptions

1. Assumption of Stability in Debt Repayment Environment

ARHK assumes that the macroeconomic environment, regulatory environment, legal environment, and financial market environment will not undergo unexpected changes, or face irresistible factors such as natural disasters or wars.

2. Assumption of Information Authenticity

ARHK assumes that the information disclosed by local governments is true, accurate, and complete. The rating model relies on information provided by other professional institutions recognized by regulators, and we assume that such information is true, legal, complete, and without any major misleading statements.

IV. Characteristics of Credit Risk

ARHK considers that the credit risks of local governments mainly include the following five aspects:

1. Fiscal Health and Debt Servicing Capacity

The fiscal revenue and expenditure status of local governments directly affect their debt repayment ability. If fiscal revenue is insufficient or expenditures are excessive, leading to an increase in fiscal deficit, the credit risk of local governments will rise. The scale and structure of debt, particularly an excessive debt burden or an unreasonable debt structure, such as a high proportion of short-term debt or mismatched debt maturities, can heighten repayment pressure on local governments, thereby triggering credit risk.

2. Macroeconomic and Financial Environment

Changes in the global economic environment, as well as a slowdown or recession in domestic economic growth, can affect local government's fiscal revenue and expenditure, thereby increasing their credit risk. Volatility in financial markets can also impact local government's

financing channels and financing costs, especially when relying on external financing. The instability of financial markets will directly threaten the credit status of local governments.

3. Policy and Regulatory Environment

Adjustments in government policies may affect local government's debt management, fiscal revenue, and expenditures, with unfavorable policy changes potentially increasing their credit risk. Changes in the regulatory environment and stricter enforcement may restrict local government's financing channels and debt scales, thereby impacting their creditworthiness.

4. Governance Ability and Transparency

The governance capacity of local governments directly affects the effectiveness of their fiscal and debt management. Local governments with weak governance ability may be unable to effectively respond to fiscal challenges and debt risks, thereby increasing credit risk. Low information transparency may make it difficult for investors to accurately assess the credit status of local governments, thereby increasing investment risks. A lack of transparency may also lead to corruption and misconduct, further damaging the credit reputation of local governments.

5. Natural Disasters and Emergencies

Natural disasters, such as earthquakes and floods, can have a significant impact on local government's fiscal revenues and expenditures, particularly when these disasters cause infrastructure damage or disruption of economic activities. Similarly, emergencies, such as public health crises or political turmoil, may adversely affect the credit status of local governments. These events can lead to reduced fiscal revenue, increased expenditures, or limited financing channels.

V. Rating Methodology and Model Framework

"Local Government Administrative Capacity" reflects the ability of local governments to achieve management goals through policy formulation, organization mobilization, and implementation of their own will while performing their statutory duties and powers. "Local Government Strength" reflects the capability and performance of local governments across multiple key areas, which together constitute the comprehensive strength of local governments in promoting regional economic, social, and cultural development.

The rating methodology and model development path for local government by ARHK are as follows:

Step 1: Establish an evaluation indicator system, defining the names, meanings, scoring, and weighting of evaluation indicators.

Step 2: Determine the grades for "Local Government Administrative Capacity" and "Local Government Strength."

Step 3: Based on the grades from the two dimensions, determine the Pre-SRAF rating grade for the rated entity using a two-dimensional matrix.

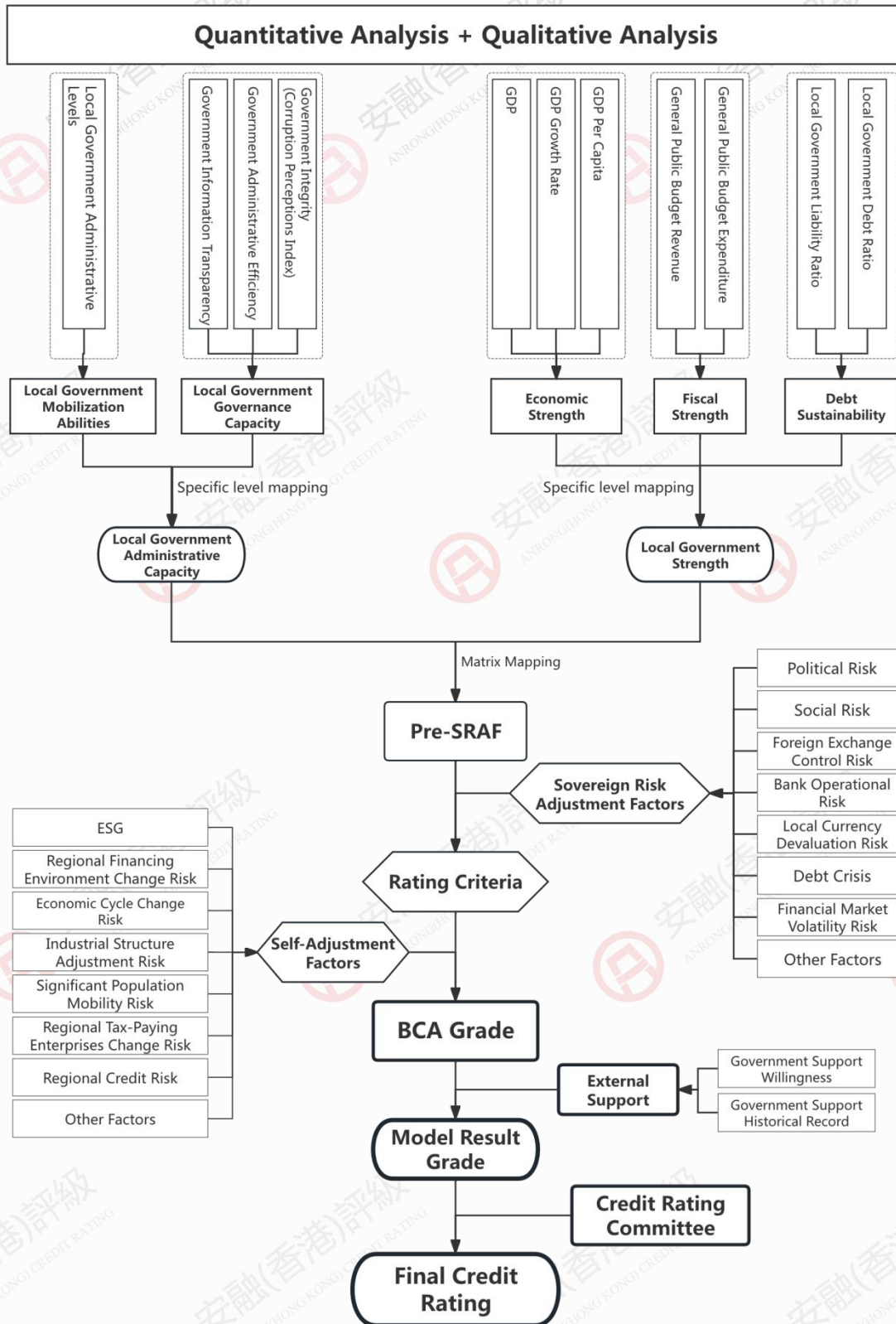
Step 4: Determine the rating benchmark for the rated entity by incorporating sovereign risk adjustment factors.

Step 5: Derive the BCA grade for the rated entity by considering its specific adjustment factors.

Step 6: Consider external support to obtain the rated entity's credit rating (Model Result Grade).

Considering that the "three-tier, nine-grade system" is widely used in the rating industry both domestically and internationally, where "three-tier" refers to "A", "B", and "C", and "nine-grade" refers to "AAA", "AA", "A", "BBB", "BB", "B", "CCC", "CC", "C", and considering that the difference in default probabilities among "CCC", "CC", and "C" is not significant, mainly reflected in differences in loss given default (LGD) which is not the focus of ARHK' assessments and forecasts, ARHK combines "CCC", "CC", and "C" into one grade when setting evaluation indicators and grades. Except for external support indicators and dimensions, which are set to three grades, all other indicators and dimensions are set to seven grades. Additionally, the symbol "D" (determined by the Credit Rating Committee) is used to indicate that the rated entity is unable to fulfill its obligations, and default is confirmed.

Grade Meanings: Grades range from the lowest (Grade 1) to the highest (Grade 7, or Grade 3 if only three grades are used). Higher grades indicate a more positive assessment and forecast of the rated entity's debt repayment ability and willingness.



1. Pre-SRAF Rating Levels

ARHK analyzes the "Local Government Administrative Capacity" primarily through two factors: "Local Government Mobilization Abilities" and "Local Government Governance Capacity". For "Local Government Strength", the analysis focuses on three factors: local government economic strength, fiscal strength, and debt sustainability. A total of eleven indicators are set, each given a corresponding weight, and each indicator is divided into seven levels. Through level mapping, the final Pre-SRAF rating level for the rated entity is determined using a two-dimensional matrix mapping table.

ARHK evaluates "Local Government Administrative Capacity" primarily through "Local Government Mobilization Abilities" and "Local Government Governance Capacity". Local government mobilization ability usually refers to the ability of local governments to quickly mobilize resources, organize forces, and effectively execute actions in response to emergencies, major projects, or policy implementation. This includes financial resources, human resources, material resources, and support and cooperation from all sectors of society. A local government with strong mobilization ability can respond quickly in critical situations, effectively address challenges, and ensure the stability and development of the local economy and society. Local government governance capacity is a broader concept that encompasses a local government's ability to utilize and optimize its administrative framework to meet governance demands, adapt to the evolving "government-market-society" relationship, and foster positive interactions. It involves policy formulation and execution, public service delivery, social management and supervision, and other aspects. A local government with robust governance capacity can effectively manage local affairs, promote local economic and social development, and enhance residents' quality of life.

(1) Local Government Administrative Capacity

ARHK primarily assesses a local government's local government administrative capacity through two dimensions: local government mobilization ability and local government governance capacity.

Local government administrative capacity indicators are as follows:

Primary Indicators	Secondary Indicators	Tertiary Indicators
Local Government Administrative Capacity	Local Government Mobilization Ability	Local Government Administrative Levels
	Local Government Governance Ability	Government Information Transparency
		Government Administrative Efficiency
		Government Integrity (Global Integrity Index)

A. Local Government Mobilization Ability

Local government mobilization ability is mainly considered from the administrative levels of local governments. Different levels of local governments have differences in resource acquisition, policy execution, decision-making authority, etc. Generally, higher-level local governments (such as municipalities under the direct jurisdiction of provincial or national governments in China, provincial capital cities, etc.) often have more resources and greater decision-making power, so they can mobilize resources, formulate policies, and effectively execute actions more rapidly in emergencies, thus demonstrating stronger mobilization ability. In contrast, lower-level local governments (such as townships, streets, etc.) may have advantages in directly connecting with the public but may be relatively limited in resources and decision-making authority, and their mobilization ability may be restricted to some extent.

The global local government administrative level division uses the federal government (central government) as the benchmark, with the next level of government immediately below the federal government (central government) set as Grade 7, the next grade as Grade 6, and so on, down to Grade 1. Using Chinese local governments as an example, the administrative level division and grade of other countries' local governments are referenced from the administrative level division and grade of Chinese local governments. Generally, higher-level local governments often have more resources and greater decision-making power, so they can mobilize resources, formulate policies, and effectively execute actions more rapidly in emergencies, thus demonstrating stronger mobilization ability. Therefore, ARHK assigns higher ratings to higher local government administrative levels.

The administrative level division and grades of local governments in China are as follows:

Indicator	7	6	5	4	3	2	1
Local Government Administrative Levels	Direct-controlled municipality	Provincial level	City with Independent Planning Status	Sub-provincial level	Prefecture-level city	District and county level	Township level

B. Local Government Governance Capacity

ARHK measures local government governance capacity primarily through government information transparency, government administrative efficiency, and government integrity (Global Integrity Index).

Government information transparency mainly considers the completeness, timeliness, and accuracy of local government disclosures of social, economic, fiscal, and debt information. Fiscal transparency focuses on the following four pillars: 1. Fiscal reporting, whether comprehensive, timely, and reliable information related to the government's financial status and performance is provided. 2. Fiscal forecasting and budget preparation, whether the government's budget goals and policy intentions are clearly stated, and comprehensive, timely, and credible forecasts of public finances are made. 3. Fiscal risk analysis and management, whether public fiscal risks are disclosed, analyzed, and managed, and whether public sector fiscal decisions are effectively coordinated. 4. Resource revenue management, whether a transparent framework is provided for the ownership, contracting process, tax collection, and exploitation of natural resources.

ARHK divides government information transparency into grades 1-7 based on the high and low degree of completeness, timeliness, and accuracy of local government disclosures of social, economic, fiscal, and debt information. The higher the completeness, timeliness, and accuracy of information disclosure in social, economic, fiscal, and debt aspects, the more conducive it is to maintaining market transparency, safeguarding the public's right to know, promoting healthy economic development, and preventing financial risks. Therefore, ARHK assigns higher ratings to local governments with higher government information transparency.

ARHK's specific mapping standards for "Government Information Transparency" are as follows:

Indicator	7	6	5	4	3	2	1
Government	Very High	High	Relatively	Average	Relatively	Low	Very Low

Information Transparency			High		Low		
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Government administrative efficiency is assessed from six aspects: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption.

I . Voice and Accountability

It measures whether the government has the ability for citizen participation and government accountability, including the degree of citizen participation in government elections and freedoms of speech, association, and press.

II .Political Stability and Absence of Violence

It assesses the stability of the national political situation and the ability to prevent conflicts, including the degree of political stability, political violence, and terrorism.

III.Government Effectiveness

It measures the effectiveness and service quality of government institutions, including the quality of public services, policy formulation and implementation capabilities, and the credibility of fulfilling policy commitments.

IV.Regulatory Quality

It assesses the government's ability to formulate and implement policies and regulations that promote the development of the private sector and the impact of these policies on the market environment.

V.Rule of Law

It measures the legal and rule of law environment of a country, including the effectiveness of law enforcement, judicial independence, and the confidence and adherence of actors to social rules, such as property rights protection, judiciary, and crime violence.

VI.Control of Corruption

It assesses the country's ability to prevent and govern corrupt behavior, including the degree of public power for personal gain and various forms of corruption.

ARHK divides government administrative efficiency into grades 1-7 based on the degree of government administrative efficiency. The higher the administrative efficiency of local government, the more significant the positive impact on regional economic and social development. High administrative efficiency means that local governments can quickly and accurately respond to social needs and problems in decision-making, execution, and supervision, effectively utilizing public resources to provide better and more efficient services to the public. Therefore, ARHK assigns higher ratings to local governments with higher government administrative efficiency.

ARHK's specific mapping standards for "Government Administrative Efficiency" are as follows:

Indicator	7	6	5	4	3	2	1
Government Administrative Efficiency	Very High	High	Relatively High	Average	Relatively Low	Low	Very Low

Government integrity is analyzed based on the Global Corruption Perceptions Index. The Corruption Perceptions Index (CPI) is an annual assessment report released by Transparency International (TI) since 1995, used to measure the subjective perception of corruption in various countries by the public. This index reflects the integrity and bribery situation of government officials in a country and is therefore also known as the "Corruption Perceptions Index". The integrity index scores the corruption situation in various countries and regions by collecting perception data from entrepreneurs, risk analysts, the general public, etc. The index uses a percentage system, with higher scores indicating lower corruption levels, meaning more integrity. Conversely, lower scores indicate higher corruption levels. Therefore, ARHK assigns higher ratings to local governments with higher government integrity (Global Corruption Perceptions Index).

ARHK's specific mapping standards for "Regional Strength and Risk" are as follows:

Indicator	7	6	5	4	3	2	1
Local Government Administrative Level	Direct-controlled municipality	Provincial level	City with Independent Planning Status	Sub-provincial level	Prefecture-level city	District and county level	Township level
Government	Very High	High	Relatively	Average	Relatively	Low	Very Low

Information Transparency			High		Low		
Government Administrative Efficiency	Very High	High	Relatively High	Average	Relatively Low	Low	Very Low
Government Integrity (Global Corruption Perceptions Index) (Score)	[95,100]	[90,95)	[80,90)	[50,80)	[25,50)	[5,25)	[0,5)

(2) Local Government Strength

ARHK mainly primarily assesses local government strength through three dimensions: economic strength, fiscal strength, and debt sustainability.

Local government strength indicators are as follows:

Primary Indicator	Secondary Indicator	Tertiary Indicator
Local Government Strength	Economic Strength	GDP
		GDP Growth Rate
		GDP Per Capita
	Fiscal Strength	General Public Budget Revenue
		General Public Budget Expenditure
	Debt Sustainability	Local Government Debt Ratio
		Local Government Liability Ratio

A. Economic Strength

ARHK measures local government economic strength mainly through GDP, GDP growth rate, and GDP per capita.

Local government GDP is an important indicator to measure a region's economic scale, development level, and comprehensive strength. The larger the local government's GDP, the larger the economic scale of the region, the stronger the economic strength, and it shows stronger competitiveness and influence in multiple aspects. Therefore, ARHK assigns higher ratings to local governments with higher GDP.

Local government GDP growth rate is an important indicator to measure the speed and vitality of a region's economic development. It reflects the changes in the total economy of the region over a certain period and is an important basis for evaluating the effectiveness of local government economic work and formulating economic policies. The higher the growth rate, the faster the economic growth of the region and the stronger the economic vitality. Therefore, ARHK assigns higher ratings to local governments with higher GDP growth rates.

Local government GDP per capita is an important indicator to measure a region's economic development level and residents' average economic well-being. GDP per capita is calculated by dividing the total regional GDP by the permanent population, directly reflecting the average economic value created by residents in the region. The higher the GDP per capita, the higher the region's economic development level and the higher the average economic activity level of residents. Therefore, ARHK assigns higher ratings to local governments with higher GDP per capita.

B. Fiscal Strength

ARHK measures local government fiscal strength mainly through general public budget revenue and general public budget expenditure.

Local government general public budget revenue is an important indicator to measure the fiscal status, public service capacity, and economic development level of local governments. The scale of local government general public budget revenue directly reflects the fiscal strength of local governments. The higher the general public budget revenue, the stronger the financial resources available to the local government, enabling it to better meet local public needs. Therefore, ARHK assigns higher ratings to local governments with higher general public budget revenue.

Local government general public budget expenditure is an important indicator to measure the funding expenditure planned and allocated by local governments to meet public needs and provide public services within a certain period. This indicator not only reflects the priorities and policy orientations of local governments in the allocation of fiscal resources but also directly relates to the quality and sustainability of local economic and social development. The higher the general public budget expenditure indicator value, the stronger the local government's

continuous payment capacity, and the lower the local government credit risk. Therefore, ARHK assigns higher ratings to local governments with higher general public budget expenditures.

C. Debt Sustainability

ARKH measures local government debt sustainability mainly through local government debt ratio and local government liability ratio.

Local Government Debt Ratio is the percentage of local government debt balance to the regional GDP, which is an important indicator to measure the debt situation of local governments. This indicator reflects the level of debt incurred by local governments. The higher the indicator value, the greater the local government's debt burden pressure, and the greater the debt repayment pressure, leading to an increase in local government credit risk. Therefore, ARHK assigns higher ratings to local governments with lower local government debt ratios.

Local Government Liability Ratio is the percentage of local government debt balance to general public budget revenue, which is an important indicator to measure the debt repayment capacity, fiscal health, and debt risk level of local governments. Specifically, it reflects the local government's ability to bear debt within its fiscal resources and the sustainability of the debt burden. The local government liability ratio indicates the coverage of its debt by local finances. The higher the indicator value, the greater the local government's debt burden pressure, leading to an increase in local government credit risk. Therefore, ARHK assigns higher ratings to local governments with lower local government liability ratios.

ARKH's specific mapping standards for "Local Government Strength" are as follows:

Indicator	7	6	5	4	3	2	1
GDP (100 million)	≥6000	[3000,6000)	[1000,3000)	[300,1000)	[100,300)	[50,100)	<50
GDP Growth Rate (%)	≥7	[5,7)	[3,5)	[1,3)	[0,1)	[-1,0)	<-1
Per Capita GDP (dollar)	≥150000	[120000,150000)	[100000,120000)	[50000,100000)	[25000,50000)	[15000,25000)	<15000
General Public Budget Revenue (100 million)	≥500	[150,500)	[50,150)	[20,50)	[10,20)	[5,10)	<5

General Public Budget Expenditure (100 million)	≥1500	[500,1500)	[150,500)	[50,150)	[30,50)	[15,30)	<15
Local Government Debt Ratio (%)	<5	[5,15)	[15,30)	[30,45)	[45,60)	[60,75)	≥75
Local Government Liability Ratio (%)	<150	[150,250)	[250,400)	[400,600)	[600,800)	[800,1000)	≥1000

Note: In the table above, the units for GDP per capita (dollar), GDP (100 million), general public budget revenue (100 million), and general public budget expenditure (100 million) are converted from RMB to USD (100 million USD) by dividing the relevant RMB data by the foreign exchange conversion rate (USD/RMB=7.0827) on December 29, 2023. This rate is authorized by the People's Bank of China (Central Bank) and published by the China Foreign Exchange Trading Center, which is the foreign exchange conversion rate designated by the State Administration of Foreign Exchange.

(3) Pre-SRAF Rating Level Mapping

Based on the aforementioned indicators and weights for local government mobilization ability and local government governance capacity, a mapping tier for “local government administrative capacity” can be obtained. Based on the aforementioned indicators and weights for local government’s economic strength, fiscal strength, and debt sustainability, a mapping tier for "local government strength" can be obtained.

By combining the mapping tiers of the above two dimensions, through the Pre-SRAF rating level two-dimensional matrix, ARHK can obtain the two-dimensional matrix Pre-SRAF rating level mapping for local governments.

The Pre-SRAF rating level mapping is as follows:

Pre-SRAF Rating Level		Local Government Administrative Capacity						
		7	6	5	4	3	2	1
Local Government	7	aaa	aaa/aa+	aa+/aa	aa/aa-	aa-/a+	a+/a	a-/bbb+
	6	aaa/aa+	aa+/aa	aa/aa-	aa-/a+	a+/a	a-/bbb+	bbb/bbb-

Strength	5	aa+/aa	aa/aa-	aa-/a+	a+/a	a/a-	bbb+/bbb	bbb-/bb+
	4	aa/aa-	aa-/a+	a+/a	a/a-	a-/bbb+	bbb/bbb-	bb+/bb
	3	aa-/a+	a+/a	a/a-	a-/bbb+	bbb/bbb-	bb+/bb	bb-/b+
	2	a/a-	a-/bbb+	bbb+/bbb	bbb/bbb-	bb+/bb	bb-/b+	b/b-
	1	a-/bbb+	bbb+/bbb	bbb/bbb-	bb+/bb	bb-/b+	b/b-	below ccc

2. Sovereign Risk Adjustment Factors

Sovereign risk adjustment factors are crucial considerations for entities undergoing international credit ratings. ARHK uses sovereign risk adjustment factors such as “political risk”, “social risk”, “foreign exchange control risk”, “bank operation risk”, “local currency devaluation risk”, “debt crisis”, “financial market volatility risk”, and "other factors" to conduct international credit adjustment for urban investment enterprises, resulting in the international rating benchmark for the rated entity. Since the factors affecting sovereign credit risk are numerous and dynamically change with international relations, economic, and industry developments, the sovereign credit risk adjustment items listed in this method may not cover all adjustment elements, and continuous accumulation, summarization, and optimization in practical rating work are needed.

(1) Political Risk

If the rated entity has significant domestic political risk and geopolitical risk, its credit rating may be downgraded.

(2) Social Risk

If the rated entity has significant social conflicts, ethnic conflicts, or cultural or religious conflicts, its credit rating may be downgraded.

(3) Foreign Exchange Control Risk

If the rated entity has significant risks of restricted capital flow, its credit rating may be downgraded.

(4) Bank Operation Risk

If the rated entity has a significant risk of funds not being exchanged in time, its credit rating may be downgraded.

(5) Local Currency Devaluation Risk

If the rated entity has significant local currency devaluation risk, its credit rating may be downgraded.

(6) Debt Crisis

If the rated entity has a significant international external debt crisis, its credit rating may be downgraded.

(7) Financial Market Volatility Risk

If the rated entity has significant financial market volatility risk, its credit rating may be downgraded.

(8) Other Factors

Other factors refer to all other sovereign factors that may potentially affect the debt repayment ability and willingness of urban investment enterprises. ARHK will appropriately adjust its credit rating based on specific circumstances.

Specific sovereign risk adjustment factors are as follows:

Primary Factor	Secondary Factor
Political Risk	Domestic Political Risk
	Geopolitical Risk
Social Risk	Social Conflict
	Ethnic Conflict
	Cultural or Religious Conflict
Foreign Exchange Control Risk	Restricted Capital Flow
Bank Operation Risk	Operation Risk
Local Currency Devaluation Risk	Local Currency Devaluation Risk
Debt Crisis	Debt Crisis
Financial Market Volatility Risk	Financial Market Volatility Risk
Other Factors	Other Factors

3. Rating Criteria

ARKH derives the rating criteria of the rated entity by combining sovereign risk adjustment factors with the Pre-SRAF rating level.

4. Self-Adjustment Factors

Self-adjustment is a supplementary analysis conducted on the basis of evaluating common characteristics of local governments, focusing on the individual characteristic elements of the evaluated local government. The evaluation result after individual characteristic adjustments is the basic credit rating that can fully reflect the credit level of the local government. It is noteworthy that only factors that affect the credit risk of local governments and occur only in individual local governments will be examined in the adjustment items. ARHK uses self-adjustment factors such as “ESG”, “regional financing environment change risk”, “economic cycle change risk”, “industrial structure adjustment risk”, “significant population movement risk”, “regional taxpayer enterprise change risk”, “regional credit risk”, and "other factors" to adjust local governments. Due to the numerous factors affecting credit risk and their dynamic changes with economic development, the adjustment items listed in this method may not cover all adjustment elements and require continuous accumulation, summarization, and optimization in rating practice.

(1) ESG

ESG stands for Environment, Social Responsibility, and Corporate Governance, which are important factors affecting the development potential of the rated entity. If the rated entity performs poorly in ESG, it may affect the stability of the rated entity, thereby increasing its credit risk. ARHK focuses on the negative impact of each ESG factor, and if the rated entity has related risk factors, its credit rating may be adjusted.

(2) Regional Financing Environment Change Risk

If the rated entity faces significant financing risks due to changes in the regional financing environment, its credit rating may be downgraded.

(3) Economic Cycle Change Risk

If the rated entity faces significant fiscal revenue fluctuation risk or infrastructure investment risk due to economic cycle changes, its credit rating may be downgraded.

(4) Industrial Structure Adjustment Risk

If the rated entity faces significant market demand fluctuation risk, technological innovation risk, capital chain risk, or policy execution risk due to industrial structure adjustments, its credit rating may be downgraded.

(5) Significant Population Movement Risk

If the rated entity faces significant domestic population movement risk or cross-border population movement risk due to significant population movements, its credit rating may be downgraded.

(6) Regional Taxpayer Enterprise Change Risk

If the rated entity faces significant taxpayer enterprise change risk due to changes in regional taxpayer enterprises, its credit rating may be downgraded.

(7) Regional Credit Risk

If the rated entity faces significant credit risks such as debt default or fiscal crisis, its credit rating may be downgraded.

(8) Other Factors

Other factors refer to all factors beyond those mentioned above that may affect the debt repayment ability and willingness of local governments. ARHK will appropriately adjust its credit rating based on specific circumstances.

Specific self-adjustment factors are as follows:

Primary Factor	Secondary Factor
ESG	E
	S
	G
Business Risk	Business Transformation Risk
	Business Cyclical Fluctuation Risk
Regional Financing Environment Change Risk	Financing Risk
Economic Cycle Change Risk	Fiscal Revenue Fluctuation Risk
	Infrastructure Investment Risk
Industrial Structure Adjustment Risk	Market Demand Fluctuation Risk
	Technological Innovation Risk
	Capital Chain Risk

Primary Factor	Secondary Factor
	Policy Execution Risk
Significant Population Movement Risk	Domestic Population Movement Risk
	Cross-Border Population Movement Risk
Regional Taxpayer Enterprise Change Risk	Taxpayer Enterprise Change Risk
Regional Credit Risk	Debt Default
	Fiscal Crisis
Other Factors	Other Factors

5. BCA Grade

ARHK derives the BCA grade of the rated entity by combining self-adjustment factors with the rating criteria.

6. External Support

External support adjustment factors are as follows:

Primary Factor	Secondary Factor
Government Support Willingness	Supporter Strength
	Supporter Motivation
Government Support Historical Record	Policy Support
	Funding and Resource Support

If the rated entity can still obtain stable external support when facing a liquidity crisis and difficulty in fulfilling debt commitments, it will help stabilize the expectations of relevant parties, thereby reducing the likelihood of the rated entity experiencing an actual liquidity crisis. At the same time, specific rescue measures taken by external supporters when the rated entity encounters operational or liquidity crises will help enhance the possibility of debt repayment upon maturity or reduce the default loss rate.

The external support obtained by local governments usually comes from superior government. ARHK mainly considers the external support received by local governments from two aspects: government support willingness and government support historical record.

(1) Government Support Willingness

The willingness of superior governments to support local governments is mainly reflected in multiple aspects, including but not limited to financial support, policy support, technical guidance, resource allocation, and coordinated assistance. The willingness of superior

governments to support local governments is mainly assessed based on two dimensions: supporter strength and supporter motivation. Based on a comprehensive assessment of these two dimensions, the level of support received by the rated entity from the superior government is determined.

Supporter strength mainly considers the grade of strength of the supporter.

In terms of supporter motivation, ARHK mainly considers the relationship between the rated entity and the supporter, political importance, economic importance, and the adverse impact of debt default.

The mapping of government support willingness is as follows:

Government Support Willingness		Supporter Strength		
		3	2	1
Supporter	3	3/2	2/1	1/0
Motivation	2	2/1	1/0	0
	1	1/0	0	0

(2) Government Support Historical Record

The support history of superior government for local governments mainly considers two dimensions: policy support and funding and resource support. Based on a comprehensive assessment of these two dimensions, the support history received by the rated local government from the superior government is determined.

Policy support mainly considers the level of policy support (such as financial subsidies, tax incentives, loan concessions, project approval priorities, etc.) provided by the supporter to the rated entity.

Funding and resource support mainly consider the level of support in terms of funding and resources (such as fiscal allocations, special funds, etc.) provided by the supporter to the rated entity.

The mapping of government support historical record is as follows:

Government Support Historical Record		Policy Support		
		3	2	1
Funding and	3	3/2	2/1	1/0

Resource Support	2	2/1	1/0	0
	1	1/0	0	0

7. Final Credit Rating

ARHK comprehensively considers external support to obtain the credit rating of the rated entity (Model Result Grade).

The credit rating obtained through this methodology and model is the reference credit rating of the rated entity and is only used as a reference for the analyst's recommended credit rating and the credit rating committee's determination of the credit rating. The final credit rating is determined by the credit rating committee, and there may be differences between the final credit rating and the model rating.

VI. Limitations of This Methodology and Model

1.The judgment of various rating elements of local governments by ARHK is based on their historical situation, but the impact of relevant elements and their future development on debt repayment ability may vary due to changes in the external environment. Therefore, this methodology and model cannot guarantee an accurate prediction of the actual default risk of local governments in the future.

2.This methodology and model only list the key rating elements that need to be considered when evaluating local government ratings and do not cover all elements that need to be considered when evaluating local government credit risks, such as non-systematic risks and major unexpected events in the future of local governments.

3.The selection of indicators in this model involves human factors. The factor weights in the rating model represent the relative importance of artificially assessed rating factors. The model includes critical qualitative assessment factors, which may result in this rating method not fully and accurately reflecting credit risk. Additionally, each member of the credit rating committee may consider additional factors beyond the model's scope when making their determinations, meaning the final credit rating assessment always carries a subjective element. ARHK will review this model regularly or irregularly and make timely revisions as needed.

Appendix:

Indicator Calculation Formulas

1. Local Government Debt Ratio = Local Government Debt Balance / GDP × 100%
2. Local Government Liability Ratio = Local Government Debt Balance / General Public Budget Revenue × 100%

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