

# Special-Tax Bonds Methodology

## Methodology for Municipal Entities of the United States of America

April 2020

### Contacts

**Alfonso Sales**

Methodological Criteria Associate  
Director  
alfonso.sales@hrratings.com

**Mauricio Prieto**

Methodological Criteria Analyst  
mauricio.prieto@hrratings.com

**Roberto Soto**

Public Finance / Infrastructure Director  
roberto.soto@hrratings.com

**Felix Boni**

Chief Credit Officer  
felix.boni@hrratings.com

**Pedro Latapi**

Deputy Chief Credit Officer  
pedro.latapi@hrratings.com

**This methodology describes the process by which HR Ratings assigns a rating to Special-Tax Bonds issued by municipal entities in the United States.**

Special-Tax Bonds are bonds secured by a revenue stream of taxes, excluding those on property, that are levied on the sales of goods, services or the implementation of a fee in a specific region. For most municipal entities, the revenue stream is passive, as these entities hold limited control over the tax rate charged.

The scope of HR Ratings' methodology for Special-Tax Bonds considers bonds that comply with the following characteristics: (i) are issued by municipalities or other local entities; and (ii) the proceeds from the issuance are dedicated for developing infrastructure, or for funding the day to day operations. Specifically, the Special-Tax Bonds pledge consists on special revenues as defined by the Chapter 902 of Federal Bankruptcy Code (11 U.S. Code § 902). These pledges usually take the form of:

- a) Income taxes;
- b) Sales or excise taxes;
- c) Gas taxes and motor registration fees;
- d) Hotel / motel taxes and other tourist fees;
- e) Other revenues or receipts derived by functions of the debtor.

HR Ratings methodology excludes utility services taxes, as these pledges rely on the operation of a diverse set of utility companies and are related to the demand and/or performance of each service.

### Methodology Description

HR Ratings methodology for Special-Tax Bonds evaluates multiple factors, both quantitative and qualitative, which are grouped in four sets that are weighted for assigning the credit rating; the weights are fixed for each rated bond. The methodology admits up to a three-notch adjustment to the rating in very specific cases in which certain factors that could enhance the credit risk of a bond are identified. These refer to a lack of information; unpredictable seasonality; weaknesses in the legal framework, beyond the factor weighted in the methodology; and in some cases, HR Ratings could determine that a factor considered in the methodology holds greater risk or a greater strength than what its weight captures. In any case, the adjustments are predetermined.

The factors weighted inside the rating are the following:

- 1) Sensitivity to Market Shocks;
- 2) Tax Base Concentration;
- 3) Tax Base Demographic Indicators;
- 4) Historic Trend of the Pledged Revenues;
- 5) Historic Volatility of the Pledged Revenues;
- 6) Maximum Annual Debt Service (MADS);
- 7) Projected Minimum Annual Coverage (PMAC);
- 8) Additional Bond Test (ABT);
- 9) Debt Service Reserve Fund (DSRF).

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### Special-Tax Bonds

A Special-Tax Bond is exclusive to municipalities, such as cities, towns, villages, counties, taxing districts, municipal utilities, or school districts. These bonds are served by revenues derived from taxing a specific activity or asset. Among municipal bonds, the Special-Tax Bonds are those that are backed by revenues generated by increasing an existing tax or by implementing an excise tax.

Special-Tax Bonds offer several protections to bondholders that are not typical for every municipal bond. As these bonds are served by Special Revenues, the first protection refers to bankruptcy filings. If the municipality would file for Chapter 9, under Title 11 of the U.S. Code<sup>1</sup>, debt service payments would not be suspended during the bankruptcy court proceedings, nor would they have to be restructure under a new payment plan for the municipal debt service. It is important to clarify that each state holds its own legislation regarding which Special-Tax Bonds can be issued by its own municipalities and which Special Revenues can be levied for serving debt obligations.

The other protection held by Special-Tax Bonds is that these could be secured by the full faith and credit of the municipal issuer. In these cases, the General Obligation rating of the municipality could serve as the floor of the Special-Tax Bond rating evaluated with this methodology. However, HR Ratings will revise in the indenture and the legal framework of every bond if the municipal issuer offers its credit guarantee.

Special Revenues, as the ones use to serve Special-Tax Bonds, are defined in the “11 U.S. Code § 902 (Subchapter 1. General Provisions). Definitions for this chapter”, while the protections for Special-Tax Bonds are detailed in the “11 U.S. Code § 928 (Subchapter 2. Administration). Post-petition effect of security interest” that states that holders of Special-Tax Bonds can expect to receive debt payments during a Chapter 9 case.

HR Ratings will evaluate if the revenue source complies with the definition of Special Revenues in the 11 U.S. Code § 902; as well with each state's legislation to determine if the municipal bond is a Special-Tax Bond and in which cases this methodology is applicable.

### Methodology Description

HR Ratings' methodology has the purpose of evaluating the capacity of a Special-Tax Revenue stream to serve its debt obligations. In this analysis, HR Ratings evaluates four sets of key factors that include: a) elements that could affect the future evolution of the pledged revenue stream, considering the taxed goods or services and several characteristics of the tax base, b) the historical evolution of the pledged revenues, including its trend and volatility, c) debt service coverage ratios based on both historical and projected cash flows; and d) specific characteristics of the bond's legal framework. Table 1 shows the overall structure of the methodology and details all factors considered in each set:

<sup>1</sup> Chapter 9, under Title 11 of the United States Bankruptcy Code deals exclusively with bankruptcy cases of municipalities and delimits the assistance available to them for restructuring their debt.

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**Table 1: HR Ratings' Special-Taxes Methodology**

1st. Set of Factors		Rating	2nd. Set of Factors	
A. Taxed Goods & Services			A. Trend Analysis	
a) Sensitivity to Market Shocks	15.0%		10.0%	
b) Tax Base Concentration	15.0%		10.0%	
B. Tax Base Demographics			B. Volatility Analysis	
a) Population Growth				
b) Per Capita Income				
c) Unemployment Rate				
3rd. Set of Factors		Rating	4th. Set of Factors	
A. Maximum Annual Debt Service (MADS)			A. Additional Bond Test (ABT)	
20.0%			7.5%	
B. Projected Minimum Annual Coverage (PMAC)			B. Debt Service Reserve Fund (DSRF)	
15.0%			7.5%	

Source: HR Ratings.

The first set of factors allows HR Rating to evaluate the strength of the pledge by analyzing the economic fundamentals of both the taxed goods & services and its tax base. The first step in this section is to evaluate the sensitivity of the pledge based on the demand of the taxed goods and services to sudden market movements. The second step allows for an evaluation regarding the concentration of the tax base considering economic activity, industries and employers. The third and last step in this section uses quantitative metrics to compare specific macroeconomic indexes of the tax base against the national level.

The second set of factors studies the historical performance of the pledge, first by contrasting its trend against the national inflation, and second by analyzing the volatility of its year over year (YoY) growth rates.

With respect to the third set of factors, HR Ratings' analysis distinguishes itself by providing two coverage metrics; the first is the Maximum Annual Debt Service (MADS), while the second is HR Ratings' Projected Minimum Annual Coverage (PMAC). For the second metric, a stress scenario that incorporates the most likely risks will be projected for the pledged revenues and the corresponding Debt Service Coverage Ratios.

The fourth set of factors analyze specific strengths of the legal framework of each bond. First the strictness and definition of its Additional Bond Test (ABT) and then the specific requirements of its Debt Service Reserve Fund (DSRF), if any.

Each factor will be weighted in order to calculate the rating for each bond evaluated with this methodology. The weights are fixed in every case.

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### Key Factors for the Rating

This section describes the four sets of factors that measure the credit quality of the rated bond. The weights and the way in which each factor is applied are detailed, as well as the parameters that HR Ratings expect for each rating range.

Each evaluated factor will be assigned an integer *value* between “1” (worst) and “19” (best) in order to calculate a weighted average that will determine the rating for each bond evaluated with this methodology.

### **First set of key factors: Taxed Goods or Services and Population Demographics** ***(30.0% weight of the rating)***

The economic fundamentals of both the taxable goods or services and the tax base on which the pledge is levied are central factors to understand the strength of each issuer's ability to serve its debt obligations.

This section holds 30.0% of the rating and considers both a qualitative and a quantitative approach. The qualitative analysis allows HR Ratings to identify possible risks to the pledge that could affect the revenue stream in the short term. This includes concepts such as sudden changes in the price of a complementary or a substitute good of the taxed good, changes in the taxed base income driven by macroeconomic tendencies, or sudden bursts of unemployment related to factors such as a high concentration of employers.

The quantitative analysis is supported by historical information and it focuses on data from credible sources, both at state and federal level, of the issuer's tax base. This analysis allows HR Ratings to measure the tax base historical performance by contrasting three indicators of the tax base against national levels.

#### **1. Taxed Goods or Services (7.5% weight of the rating)**

##### **What is HR Ratings measuring?**

The risk derived from the ability of the tax base to substitute the consumption of any taxed good or service.

The analysis in this section is qualitative in nature and to each concept evaluated a label will be assigned among {Superior, Average, Limited}.

Each of the following factor hold the same weight and they allow HR Ratings to evaluate the sensitivity of the demanded quantity of the taxed goods or services that serve as the underlying asset of the pledge.

- a) ***Own price sensitivity:*** This refers to the possible changes in the consumption of a good or service when setting a new tax or changing the current tax, by a fix amount or by any rate. The consumption of goods or services in more competitive markets could be greatly affected by small changes in prices.

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**For example:** Certain taxes take advantage of the low sensitivity of consumption after price changes; i.e. tobacco and alcohol taxes can be highly profitable for entities.

- b) **Other goods price sensitivity:** This refers to the possible changes in the consumption of a taxed good or service by changes in complementary or substitute goods. If the price of a complementary good rises, the consumption of the taxed good could decrease; if the price of a substitute good rises, the consumption of the taxed good could increase.

**For example,** gasoline prices could affect different taxes levied on diverse markets of car sales and public transportation.

- c) **Income sensitivity:** This refers to the possible changes in the consumption of goods or services of the tax base because of changes in its available income.

**For example:** Some goods, historically, show no change in consumption after changes in income. These are typically known as neutral and/or necessary goods, as these need to be consumed on a fix amount regardless of price. Highly rated issuers will typically pledge revenues levied on neutral or necessary goods.

The sensitivity of the demanded quantity of the taxed goods or services to changes in income or prices requires a qualitative approach as a specific tax base not always produces the historical data needed to measure the possible impacts to these types of shocks. In most cases, the events that HR Ratings will evaluate are not common; hence, are theoretical and the analysis will only measure possible risks that need to be incorporated in any credit quality evaluation and its continuous monitoring. However, for a label to be assigned, the following concepts, in Table 2, are expected:

Table 2: Factors Analyzed for each Taxed Good or Service

Factors and Labels		"Superior"	"Average"	"Limited"
Taxed Goods or Services	Own Price Sensitivity	No risks derived from sensitivity, which implies the pledge is levied on necessary or neutral goods to income, with no other goods or services with substitutes or complements.	Goods or services levied that are not neutral or necessary to income, or that have goods or services that can substitute their consumption. However, market trends are typically and currently favorable and historical data of the pledge shows this.	Goods or services levied that are not neutral or necessary to income, or that have goods or services that can substitute their consumption. However, market trends are typically and currently unfavorable and historical data of the pledge shows this.
	Other Good's Sensitivity			
	Income Sensitivity			

Source: HR Ratings.

## 2. Tax Base Concentration (7.5% weight of the rating)

### What is HR Ratings measuring?

The risk to the demand of the taxed goods of services derived from sudden changes in the macroeconomic stability of the tax base, considering its concentration in multiple clusters.

HR Ratings will evaluate the tax base concentration by assigning the labels {Superior, Average, Limited} to the clusters described below. This analysis is important because both exogenous and endogenous shocks will, with greater probability, have a bigger effect over the pledge when concentration is larger. This implies that concentration has

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the effect of making the pledge more volatile to specific shocks, both in favorable and detrimental manner.

HR Ratings will look for concentration in the following clusters:

- 1) **Economic Activity Level:** In HR Ratings' view, macroeconomic shocks have different effects over the distinct economic activities or sectors. However, macroeconomic shocks can be anticipated, and the issuer's anti-cyclical policies to mitigate crisis will be evaluated.

**For example:** Agricultural activities rely mostly on weather patterns and cattle or crops epidemics, industrial activity is particularly susceptible to trade tariffs, and overall consumption is, among these sectors, the most sensitive to monetary policy.

- 2) **Industry Specific Level:** The performance of certain industries depends on factors that could not always correlate with economic activity, like a specific commodity price or local policy regarding incentives for any industry. In this sense, HR Ratings will evaluate how susceptible is the tax base to specific tendencies that not always have an impact in the federal level.

**For example:** While the construction industry in any given region could be soaring because of a government spending program, the mining industry could be crippled by international commodity prices. In the services sector, advances in capital productivity could have an unfavorable effect over labor productivity, stagnating salaries or even generating unemployment. Another example relates to tourist activities, as these depend on the economic activity of regions other than the issuers.

- 3) **Employer Specific Level:** If the tax base, especially for small counties, is concentrated among employers, HR Ratings will evaluate how the pledge could be affected if any employer faces financial distress or is willing to move its operation away from the county, despite macroeconomic or industry trends.

**For example:** Companies in the automotive market employ thousands of persons in a county. However, the industry is susceptible to factors that could lead a company to move its operation to another state or another country to improve profits and take better advantage of the current industry trends.

HR Ratings will evaluate how susceptible is the tax base, considering concentration, to several forms of economic and industry trends, as well as to inadequate financial performance of big employers. It is important to establish that the historic trends could be favorable; however, this section focuses in the possible risk of this concentration. Table 4 shows the concepts expected for each possible label:



Table 3: Factors Analyzed in each Tax Base

Factors and Labels		"Superior"	"Average"	"Limited"
Tax Base Concentration	Economic Activity	The tax base is well diversified among industries, different types of economic activity and with several different employers. Chains of production and distribution are well contained within its limit and this gives resilience to macroeconomic shocks.	The tax base shows a certain degree of concentration in any of the evaluated clusters. However, economic activity is favorable, with peaking industries or a set of well establish employers with proven resilience to macro economic shocks.	Tax Base highly concentrated in any of the evaluated clusters. Aggregated demand and consumption are highly sensible to macroeconomic and local shocks.
	Industry Concentration			
	Employer Concentration			

Factors and Labels

### 3. Tax Base Performance Indicators (15.0% weight of the rating)

#### What is HR Ratings measuring?

The strength or weakness of the tax base relative to the national average, based on metrics constructed with macroeconomic indicators.

The quantitative analysis in this section is based upon the performance of three demographics indicators. These, for each issuer tax base, will be contrasted against the national average. Each metric measures the difference and holds a weight of 5.0% of the rating; these are incorporated into the methodology as follows:

- 1) For the **population growth rate**, HR Ratings calculates the difference, in terms of basis points, between the issuer's four-year compound annual growth rate (CAGR) and the national own 4-year CAGR;
- 2) For the **per capita income**, HR Ratings compares and parametrizes the difference between the issuer's last year amount in USD with the national average;
- 3) For the **unemployment rate**, HR Ratings calculates and parametrizes the difference, in terms of basis points, between the issuer's last year unemployment rate and the national rate.

According to the value of each metric, an integer *value* between "1" (worst) and "19" (best) will be assigned. Each *value* will be weighted in the Rating of the bond. Table 4, shows what HR Ratings typically expects for each metric of an issue rated in a specific rating range:

Table 4: Tax Base Demographic Indicators

Factors and Weights			HR AAA	HR AA	HR A	HR BBB	HR BB	HR B	HR C
Tax Base Demographics (Quantitative Metrics)	Population Growth (4-year Compound Annual Growth Rate)	5%	The entity's growth rate is 200 basis points above the country's rate.	The entity's growth rate is 125 basis points above the country's rate.	The entity's growth rate is 35 basis points above the country's rate.	The difference between the entity's growth rate and the country's rate is between 35 and -60 basis points.	The entity's growth rate is 60 basis points below the country's rate.	The entity's growth rate is 150 basis points below the country's rate.	The entity's growth rate is 225 basis points below the country's rate.
	Per Capita Income (Last Available Twelve Months Data)	5%	The entity's per capita income is \$9,000 dollars above the country.	The entity's per capita income is \$6,750 dollars above the country.	The entity's per capita income is \$3,000 dollars above the country.	The difference between the entity's per capita income and the country's is between \$3,000 and -\$3,500 dollars.	The entity's per capita income is \$3,500 dollars below the country.	The entity's per capita income is \$11,000 dollars below the country.	The entity's per capita income is \$17,000 dollars below the country.
	Unemployment Rate (Last Available Twelve Months Data)	5%	The entity's unemployment rate is 120 basis points below the country's rate.	The entity's unemployment rate is 75 basis points below the country's rate.	The entity's unemployment rate is 30 basis points below the country's rate.	The entity's unemployment rate is between -30 and 60 basis points of the country's rate.	The entity's unemployment rate is 60 basis points above the country's rate.	The entity's unemployment rate is 165 basis points above the country's rate.	The entity's unemployment rate is 320 basis points above the country's rate.

Source: HR Ratings.

### **Second set of key factors: Trend and Volatility Analysis** ***(20.0% weight of the rating)***

The analysis for each of the two metrics described in this section begins with the evaluation of the available historical data for the pledged revenues. For each factor, a quantitative analysis measures the revenues' growth rate to obtain a metric. According to the resulting value of each metric, an integer *value* between "1" (worst) and "19" (best) will be assigned.

At least the last five years of information will be evaluated. It is important to state that more information will grant certainty to HR Rating's analysis and for a stable pledge, typically higher ratings will be assigned. For new taxes or fees, similar schemes will be evaluated; however, these will typically receive a lower *value* in this section of the evaluation.

#### **1. Trend Analysis (10.0% weight of the rating)**

##### **What is HR Ratings measuring?**

The ability of the pledged revenues to sustain growth in real or nominal terms.

In this analysis, HR Ratings will evaluate the long-term growth rate of the pledge and will contrast it against inflation trends. With the available information, HR Ratings will measure the 5-year CAGR of the last twelve months (LTM) of the pledge as well as the accumulated average inflation considering the same terms.

The purpose of this analysis is to evaluate if the pledge can sustain nominal growth, sustaining its real value or to grow in real terms. A non-decreasing pledge is what HR Ratings expects for issues rated at least at the "HR BBB" range; while a "HR AAA" issue is expected to grow at least five percent points above average inflation, and a "HR A" rated issue will commonly grow only above inflation. Table 5 shows these concepts:



Table 5: Trend of the Pledge

Factor and Weights		HR AAA	HR AA	HR A	HR BBB	HR BB	HR B	HR C
Trend (5-year CAGR)	10%	The pledged revenues' growth rate is 500 basis points above the CPI Inflation rate.	The pledged revenues' growth rate is 200 basis points above the CPI Inflation rate.	The pledged revenues' growth rate is above the CPI Inflation rate.	The pledged revenues' growth rate is below the CPI inflation.	The pledged revenues' growth rate is no more than 200 basis points below inflation.	The pledged revenues' growth rate is no more than 400 basis points below inflation.	The pledged revenues' growth rate is more than 550 basis points below inflation.

Source: HR Ratings.

In case there is no available information of a pledge for some of the last five years, HR Ratings can use information regarding the underlying asset that generates the pledge. For example, in the case of newly instituted hotel taxes, HR Ratings can assess tourist fluency to the entity as well as the economic trends of the cities and counties from where tourists come from.

## 2. Volatility Analysis (10.0% weight of the Rating)

### What is HR Ratings measuring?

The volatility of the Year over Year (YoY) growth rates of the sum of the last twelve months of the pledged revenues.

The analysis will initially comply with the periodicity of the debt service payments, considering both principal and interest. YoY growth rates will be estimated for the pledge, as established by the debt service terms and its integer value will be assigned considering the largest YoY drop in the last five years. HR Ratings parameters for this section are as shown in Table 6 below:

Table 6: Volatility of the Pledge

Factor and Weights		HR AAA	HR AA	HR A	HR BBB	HR BB	HR B	HR C
Volatility (LTM YoY Growth Rates)	10%	The pledged revenues show no declines in the last five years in a YoY basis.	The pledge revenues highest decline in the past five years is below 200 basis points.	The pledge revenues highest decline in the last five years is below 500 basis points.	The pledge revenues highest decline in the last five years is below 900 basis points.	The pledge revenues highest decline in the last five years is below 1,350 basis points.	The pledge revenues highest historic decline is below 1,800 basis points.	The pledge revenues highest historic decline is greater than 1,800 basis points.

Source: HR Ratings.

Another relevant factor that HR Ratings evaluates is the intra-annual growth rates of the pledge, for which the unpredictability of seasonal fluctuations is a concern that will usually reflect weakness. In these cases, HR Ratings will apply a qualitative adjustment to the rating of the bond, as it will be described in latter sections of the methodology. These adjustments will also reflect inadequacies of the information; for example, if the debt is to be served in a quarterly basis, but the historical information of the pledge is reported in an annual basis, as there could be concerns related to historical seasonality not reflected in the data.

### Third set of key factors: Coverage Metrics (35.0% weight of the rating)

Coverage metrics allow HR Ratings to measure the ability of the pledge to serve its debt obligations. In this section two coverage metrics are evaluated, these are applied to different analysis scenarios. The first metric is the market standard “Maximum Annual Debt Service (MADS)”, while the second is HR Ratings own “Projected Minimum Annual Coverage (PMAC)”

#### 1. Maximum Annual Debt Service (MADS) (20.0% weight of the rating)

This metric is constructed by dividing the last twelve months (LTM) pledge with the largest outstanding annual debt service, considering both principal and interest payments. This metric represents the capacity of the current pledge to face the highest upcoming debt service obligations.<sup>2</sup>

$$MADS = \frac{LTM \text{ Pledged Revenues}}{\text{Maximum Upcoming Annual Debt Service}}$$

Table 7 below shows the MADS coverage that HR Ratings typically expects to see for bonds rated in the different ranges:

Table 7: Maximum Annual Debt Service (MADS) rating ranges								
Factor and Weights		HR AAA	HR AA	HR A	HR BBB	HR BB	HR B	HR C
MADS	20%	3.00x	2.25x	1.50x	1.10x	0.70x	0.35x	Less than 0.35x

Source: HR Ratings.

As any other quantitative metric evaluated in this methodology, an integer *value* between “1” and “19” will be assigned to the MADS estimated by HR Ratings. For the coverage metrics, all bonds to be served under the same parity by the pledge will be considered when measuring the debt service. If HR Ratings identifies that a fix amount is allocated to serve the bond, or that a share of the pledge is allocated by any given formula, then HR Ratings will calculate the MADS concerning only the rated bond.

<sup>2</sup> In certain cases, the pledge could hold a clear trend and HR Ratings can choose to incorporate into its MADS calculation its projection for the next twelve months, instead of the last twelve observable months. The projection will be the one estimated in HR Ratings’ own Base Scenario, that will be described in the next section. If HR Ratings chooses this method; it will detail its process and its justification in its Analysis Report.

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### 2. Projected Minimum Annual Coverage (PMAC) (15.0% weight of the rating)

This metric measures the lowest coverage under a stress scenario; as shown in the following equation:

$$PMAC_t = \frac{LTM \text{ Pledged Revenues}_t}{Debt \text{ Service}_t}$$

The two components of the PMAC, its numerator and denominator, must be estimated for the same twelve-month period. In Table 8, HR Ratings shows the ratios expected for different rating ranges. For example, the “HR BBB” range typically show a PMAC coverage of at least a 1.0x value. Considering that this ratio is measured under a stress scenario, HR Ratings expects a PMAC coverage of 2.5x for bonds rated with “HR AAA”.

Table 8: Projected Minimum Annual Coverage (PMAC) rating ranges

Factor and Weights		HR AAA	HR AA	HR A	HR BBB	HR BB	HR B	HR C
PMAC	15%	2.50x	1.70x	1.15x	1.00x	0.65x	0.28x	Less than 0.28x

Source: HR Ratings.

To calculate the PMAC, HR Ratings will construct two scenarios. The first is the Base Scenario, that will serve as the base for projecting the Stress Scenario, that will incorporate both common risks and the volatility observed in the pledge.

#### The Base Scenario

This scenario reflects the most probable outcome, considering recent revenue trends, seasonality, demographic trends, and macroeconomic trends. For this, the analysis team will use the most disaggregated form of data of the pledge and will project future revenues.

In its rating report, HR Ratings will describe the main assumptions used when building this scenario, as well as a detailed description of the risks associated to projecting the pledge or the debt service.

#### The Stress Scenario

HR Ratings' Stress Scenario will reflect the risks already identified in processes previously described in this methodology. These refer to the sensitivity of the taxed goods and services, the tax base concentration, and the trend and volatility analysis. HR Ratings will describe the way in which these factors affect the growth trends of the pledge.

Another component of this scenario is the application of a six-year stress cycle that will replicate the strongest YoY decline observed on the pledged revenues in the last five years.

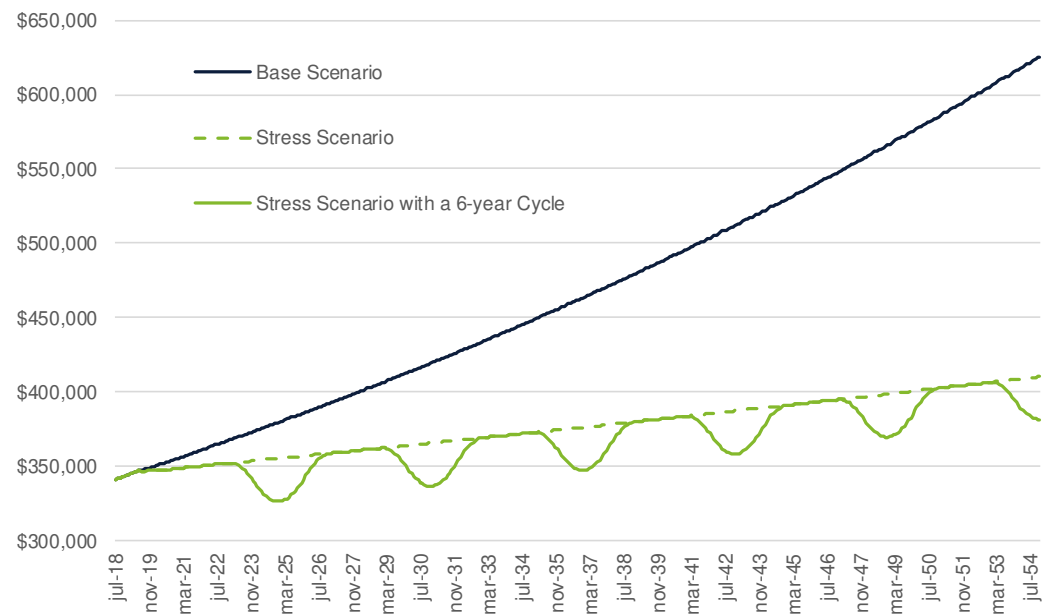
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Graph 1 shows an example in which HR Ratings elaborates a base scenario with a constant growth rate, also a stress scenario in which the YoY growth rates are 70-basis points lower; and lastly a stress cycle that applies a 7.5% YoY decline every six years.

Graph 1: HR Ratings' Scenarios



Source: HR Ratings.

The PMAC is calculated as the lowest Debt Service Coverage Ratio (DSCR) in the transaction life term. Both the revenues and the debt service must correspond to the same twelve months' time frame. It is important to state that all assumptions used for building this scenario will be detailed in HR Ratings analysis report as well.

### **Fourth set of key factors: Legal Framework Metrics** **(15.0% weight of the Rating)**

This section evaluates the strength of the legal framework and the protections it provides to the bondholders. This implies that HR Ratings will review any state or local statutes and any document used to authorize the tax and the bond issuance.

#### **1. Additional Bond Test (7.5% weight of the rating)**

This test, also known as the "parity test", serves the purpose of securing outstanding special-tax bonds by conditioning additional bond issuance to be serviced with the same pledge. These tests usually measure the capacity of historical revenues to serve outstanding issues and proposed issues.

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The Additional Bond Test (ABT), which consist in a form of a coverage metric, can be defined in different ways in the legal framework of each bond or on all bonds under the same parity. HR Ratings will evaluate if the definition of the ABT provides an adequate protection to the bond and the bondholders. As part of its constant review process, HR Ratings will conduct a test in which the ABT will be estimated for each term projected in its Scenarios. This exercise could reveal weaknesses in foreseeable terms if not all coverages comply with the ABT in the bond's life term.

Despite any definition of the ABT, higher ratios will always translate to better protections for the outstanding bonds, Table 9 shows the ratios that the ABT coverages typically for the different rating ranges for this metric.

Table 9: Values for the Additional Bond Test (ABT)

Factors and Weights		HR AAA	HR AA	HR A	HR BBB	HR BB	HR B	HR C
Additional Bond Tests (ABT) (Quantitative Analysis)	7.5%	2.25x	1.70x	1.30x	1.00x	0.80x	0.60x	Less than 0.60x

Source: HR Ratings.

As with the other quantitative factors of the methodology, a notch between “1” and “19” will be assigned according to the value of the ABT. It is important to note that if the entity is about to issue, or it issues, an additional bond, even if the ABT criteria is met, HR Ratings will review its coverage metrics through its Projection Scenarios to incorporate the credit risks associated with the increment of the debt service and will review the rating if necessary.

## 2. Debt Service Reserve Fund (7.5% weight of the rating)

HR Ratings will assess four features of any Debt Service Reserve Fund (DSRF), to each a label among {Superior, Average, Limited} will be assigned. All factor weight the same in this section and these are as follows: a) the required amount, b) sources of funding, c) initial funding and refunding mechanisms, and d) usage limitations. This analysis is qualitative as it considers several concepts that can provide strength or weakness depending on the issuance and its context.

- a) **The Required Amount:** Every reserve fund must be established with a target required amount, and the formula for determining this amount varies depending on each project. However, the industry standard is set by the “Three-Prong Test” which is based in the lesser of the following concepts:
  - i) Maximum Annual Debt Service,
  - ii) The 10% of par value of all Outstanding debt,
  - iii) A 125% of average annual debt service.
- b) **Sources of Funding:** The most common ways in which an entity funds its DSRF is through cash, a surety bond, or a combination of both. Cash funding is preferred as it is more liquid and doesn't entail a financial obligation to another entity once resources from the fund are used to serve debt.

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- c) **Funding and Refunding Mechanisms:** HR Ratings will check the time horizon established in the indenture regarding the initial funding of the reserve fund. A fund that is available for usage from initial delivery will be consider as safer than one which requires an extended period to be fully funded. Even riskier are the funds which allow for funding to start only after Debt Service coverage falls beneath an agreed floor level (springing reserves).

After the money to cover debt service is drawn from the reserve fund, the entity must reestablish the required amount while keeping up with the scheduled interest & principal payments. The time horizon the entity is given to reestablish the fund varies between indentures. HR Ratings applies the same criteria as it does with the initial funding, meaning that a faster reestablishment of the fund will be considered as better than a longer time period.

- d) **Usage Limitations:** Limitations could refer to financial burdens or covenants inside the indenture or the overall legal framework. Higher rated funds inside this methodology will reflect clear conditions for using the DSRF and that it is only useable for this purpose. Also, that in the cases in which the fund must be refinance by the pledge or that interest must be paid, the financial burden will not compromise current debt servicing.

Table 10 shows what HR Ratings expects to identify in the DSRF for bonds rated in the different ranges:

Table 10: Factors analyzed in each Debt Service Reserve Fund (DSRF)

Factors and Label		"Superior"	"Average"	"Limited"
Debt Service Reserve Fund (Qualitative Analysis)	Required Amount	A DSRF funded beyond the 3-Prong Test, by cash from the proceedings of the issuance, it is readily available for usage, and with no financial costs or with no crippling conditions for usage when the fund is not at the objective value.	A DSRF funded at the 3-Prong Test. Funded in the first years of the structure with the revenues generated by the pledge, or by a high rated surety bond; with little financial costs after usage or with no crippling conditions for usage when the fund is not at the objective value.	A DSRF funded below the 3-Prong Test, funded with mechanisms like "springing reserves" or by a low rated surety bond; with high financial costs after usage or with crippling conditions for usage when the fund is not at the objective value.
	Sources of Funding			
	Initial Funding and Refunding Mechanisms			
	Usage Limitations			

Source: HR Ratings.

Typically, HR Ratings will consider bond proceeds at the time of issuance and the accumulation of revenues as strong mechanisms, while "springing reserves" a weak mechanism; surety bonds<sup>3</sup>, letters of credit or guaranty policies will depend on each case. As for the amount considered as adequate, HR Ratings expects "HR AAA" bonds to comply above the 3-prong test.<sup>4</sup> While bonds rated in the "HR BB" range and below will typically display no DSRF, or a DSRF funded significantly below the 3-prong Test, or by a surety provided with a low credit rating.

The analysis for the DSRF is qualitative in nature and a Label, with its corresponding numerical *value*, will be assigned according to Table 2 in page 7.

<sup>3</sup> A Surety Bond provides protection against a default, these can be use instead of cash in a DSRF.

<sup>4</sup> The 3-prong test is an industry norm that requires a reserve fund to comply with the lesser of the maximum annual debt service, 1.25x of the average annual debt service or 10% of initial principal.



# Special-Tax Bonds Methodology

## Methodology for Local Entities of United States of America

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### The Rating and Other Considerations

In this methodology, each factor is assigned an integer value between “1” (worst) and “19” (best). With these values HR Ratings can estimate a rating for every factor; but most importantly, it can determine the credit rating of the bond by calculating the weighted average of said factors.

For the quantitative factors, each metric is assigned its value according to HR Ratings own parametrization, Tables 4 through 9 show the values for each metric to reach a specific rating range. For the qualitative factors in the methodology, each is assigned a label among {Superior, Average, Limited}; these have a corresponding value of {3,2,1} respectively and the average of the sub-factors is converted into an integer *value* according to the ranges shown in the following Table 11:

Table 11: Values and Ratings			
Qualitative Curve Limits		Integer Value	Rating
Upper	Lower		
3.000	2.900	19	HR AAA
2.900	2.794	18	HR AA+
2.794	2.689	17	HR AA
2.689	2.583	16	HR AA-
2.583	2.478	15	HR A+
2.478	2.372	14	HR A
2.372	2.267	13	HR A-
2.267	2.161	12	HR BBB+
2.161	2.056	11	HR BBB
2.056	1.950	10	HR BBB-
1.950	1.844	9	HR BB+
1.844	1.739	8	HR BB
1.739	1.633	7	HR BB-
1.633	1.528	6	HR B+
1.528	1.422	5	HR B
1.422	1.317	4	HR B-
1.317	1.211	3	HR C+
1.211	1.106	2	HR C
1.106	1.000	1	HR C-

Source: HR Ratings.

For example, if the qualitative labels for “Taxed Goods and Services”, that refer to the sensitivity of the pledge to changes in income and the price of complementary or substitute goods, average 2.71; the corresponding integer value is “17”. Table 11 also shows the rating for each integer value, if a bond has a rounded average of “13”, then the credit rating will be “HR A-”.

# Special-Tax Bonds Methodology

## Methodology for Local Entities of United States of America

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### Qualitative Adjustments

The qualitative adjustments are made in terms of notches to the rating and are limited by concept. These refer to very specific risks or strengths that are not common to every bond rated by this methodology but that will have an impact in the cases in which they are present. These could be applied as follows:

1. **Lack of information:** In the cases in which HR Ratings is provided with less than five year of the historical performance of the pledge it will subtract a notch to the rating; if it is provided with less than three years, it will subtract two notches. However, these adjustments won't be applied to new projects that provide studies, by external agencies with proven reputation, with projections for the revenue stream.
2. **Unpredictable Seasonality:** Only applicable when the aggregation of the pledge data has a higher periodicity than the debt service payments. In these cases, HR Ratings can subtract one notch to the rating; however, if it is identified that the revenue stream has an unpredictable seasonality, two notches can be subtracted.
3. **Weight of Factors:** If HR Ratings identifies that any of the factors detailed in the methodology contribute/mitigate the credit risk beyond the weight that has been assigned, it will add/subtract a notch to the rating.
4. **Additional Legal Framework factors:** For any of the following factors HR Ratings can subtract one notch to the rating: a) any state or local statutes that could harm the authorization or could modify the tax; b) weakness of the collecting agent or process, as well as an inadequate timing of deposits; c) an unclearly defined lien structure, no segregation between debt service accounts or an unclear flow for the funds.

The qualitative adjustments will be limited to a three-notch downgrade to the rating for any bond evaluated with this methodology.

### Special Revenue Glossary

**Special Revenues:** As defined by the 11 U.S. Code § 902 (Subchapter 1. General Provisions). Definitions for this chapter<sup>5</sup>:

- “(A) receipts derived from the ownership, operation, or disposition of projects or systems of the debtor that are primarily used or intended to be used primarily to provide transportation, utility, or other services, including the proceeds of borrowings to finance the projects or systems;
- (B) special excise taxes imposed on activities or transactions;
- (C) incremental tax receipts from the benefited area in the case of tax-increment financing;
- (D) other revenues or receipts derived from functions of the debtor, whether the debtor has other functions; or
- (E) taxes specifically levied to finance one or more projects or systems, excluding receipts from general property, sales, or income taxes (other than tax-increment financing) levied to finance the general purposes of the debtor;”

<sup>5</sup> <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title11-section902&num=0&edition=prelim>



Credit  
Rating  
Agency

# Special-Tax Bonds Methodology

## Methodology for Local Entities of United States of America

April 2020

**Mexico:** Avenida Prolongación Paseo de la Reforma #1015 torre A, piso 3, Col. Santa Fe, México, D.F., CP 01210, Tel 52 (55) 1500 3130.

**United States:** One World Trade Center, Suite 8500, New York, New York, ZIP Code 10007, Tel +1 (212) 220 5735.

***\*HR Ratings, LLC (HR Ratings), is a Credit Rating Agency registered by the Securities and Exchange Commission (SEC) as a Nationally Recognized Statistical Rating Organization (NRSRO) for the assets of public finance, corporates and financial institutions as described in section 3 (a) (62) (A) and (B) subsection (i), (iii) and (v) of the US Securities Exchange Act of 1934.***

HR Ratings ratings and/or opinions are opinions of credit quality and/or regarding the ability of management to administer assets; or opinions regarding the efficacy of activities to meet the nature or purpose of the business on the part of issuers, other entities or sectors, and are based exclusively on the characteristics of the entity, issuer or operation, independent of any activity or business that exists between HR Ratings and the entity or issuer. The ratings and/or opinions assigned are issued on behalf of HR Ratings, not of its management or technical staff, and do not constitute an investment recommendation to buy, sell, or hold any instrument nor to perform any business, investment or other operation. The assigned ratings and/or opinions issued may be subject to updates at any time, in accordance with HR Ratings' methodologies.

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Ratings and/or opinions assigned by HR Ratings are based on an analysis of the creditworthiness of an entity, issue or issuer, and do not necessarily imply a statistical likelihood of default, HR Ratings defines as the inability or unwillingness to satisfy the contractually stipulated payment terms of an obligation, such that creditors and/or bondholders are forced to take action in order to recover their investment or to restructure the debt due to a situation of stress faced by the debtor. Without disregard to the point, to validate our ratings, our methodologies consider stress scenarios as a complement to the analysis derived from a base case scenario. The rating fee that HR Ratings receives from issuers generally ranges from US\$1,000 to US\$1,000,000 (or the foreign currency equivalent) per issue. In some instances, HR Ratings will rate all or some of the issues of an issuer for an annual fee. It is estimated that the annual fees range from US\$5,000 to US\$2,000,00 (or the foreign currency equivalent).

## METHODOLOGIES

### Current versions of previously sent methodologies

	Methodology	
1	Methodology for the Evaluation of Charter School Debt ( <i>Long Term and Short Term Global Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/New%20Charter%20Schools%20Methodology%20R.pdf">https://www.hrratings.com/docs/metodologia/New%20Charter%20Schools%20Methodology%20R.pdf</a>
2	General Methodological Criteria.	<a href="https://www.hrratings.com/docs/metodologia/GMC%20March%202019.pdf">https://www.hrratings.com/docs/metodologia/GMC%20March%202019.pdf</a>
3	Methodology for Public Finances: Unsecured Debt Ratings for Mexican Municipalities Methodology Addendum ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/Adenda_Deuda_Quirografia_Municipios%20English%20Final.pdf">https://www.hrratings.com/docs/metodologia/Adenda_Deuda_Quirografia_Municipios%20English%20Final.pdf</a>
4	HR Ratings' Corporate Debt Credit Risk Evaluation ( <i>Long Term and Short Term Local Rating Scales</i> )	<a href="https://www.hrratings.com/docs/metodologia/Corporate%20Debt%20Credit%20Risk%20Evaluation%20Final.pdf">https://www.hrratings.com/docs/metodologia/Corporate%20Debt%20Credit%20Risk%20Evaluation%20Final.pdf</a>
5	Public Finance Methodology Unsecured Rating for Mexican States ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/Unsecured%20Rating%20for%20Mexican%20States.pdf">https://www.hrratings.com/docs/metodologia/Unsecured%20Rating%20for%20Mexican%20States.pdf</a>
6	U.S. State Government General Obligations Methodology Addendum ( <i>Long Term and Short Term Global Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/General%20Obligation%20States%20Methodology%20March%202014_final.pdf">https://www.hrratings.com/docs/metodologia/General%20Obligation%20States%20Methodology%20March%202014_final.pdf</a>
7	Revenue Sharing Obligations for Mexican States and Municipalities: Debt Backed by Sub-National Entities Own Revenues ( <i>Structured Finance Rating Scale</i> ).	<a href="https://www.hrratings.com/docs/metodologia/Debt%20backed%20by%20Sub-National%20Entities%20Own%20Revenues%20(Certified%20Translation).pdf">https://www.hrratings.com/docs/metodologia/Debt%20backed%20by%20Sub-National%20Entities%20Own%20Revenues%20(Certified%20Translation).pdf</a>
8	Debt backed by Federal Transfers to the States ( <i>Structured Finance Rating Scale</i> ).	<a href="https://www.hrratings.com/docs/metodologia/Debt%20backed%20by%20Federal%20Transfers%20to%20the%20States%20(Certified%20Translation).pdf">https://www.hrratings.com/docs/metodologia/Debt%20backed%20by%20Federal%20Transfers%20to%20the%20States%20(Certified%20Translation).pdf</a>
9	Debt backed by Federal Transfers to the Municipalities Addendum ( <i>Structured Finance Rating Scale</i> ).	<a href="https://www.hrratings.com/docs/metodologia/Debt%20backed%20by%20Federal%20Transfers%20to%20the%20Municipalities%20(Certified%20Translation).pdf">https://www.hrratings.com/docs/metodologia/Debt%20backed%20by%20Federal%20Transfers%20to%20the%20Municipalities%20(Certified%20Translation).pdf</a>
10	Sovereign Debt Methodology ( <i>Long Term and Short Term Global Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/0Sovereign%20Debt%20Methodology.pdf">https://www.hrratings.com/docs/metodologia/0Sovereign%20Debt%20Methodology.pdf</a>
11	U.S. Local Government General Obligations Methodology ( <i>Long Term and Short Term Global Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/General%20Obligation%20Methodology%20Nov2013_final.pdf">https://www.hrratings.com/docs/metodologia/General%20Obligation%20Methodology%20Nov2013_final.pdf</a>
12	Methodology for Infrastructure ( <i>Structured Finance Rating Scale</i> ).	<a href="https://www.hrratings.com/docs/metodologia/0Metodologia%20para%20Infraestructura%20(english)%20limpio1.pdf">https://www.hrratings.com/docs/metodologia/0Metodologia%20para%20Infraestructura%20(english)%20limpio1.pdf</a>
13	Rating Methodology for Banks ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/3.2.1.%20Banks.pdf">https://www.hrratings.com/docs/metodologia/3.2.1.%20Banks.pdf</a>
14	Addendum - Rating Methodology for Subordinated Debt ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/3.2.2.%20Rating%20Methodology%20for%20Subordinated%20Debt.pdf">https://www.hrratings.com/docs/metodologia/3.2.2.%20Rating%20Methodology%20for%20Subordinated%20Debt.pdf</a>

15	Rating Methodology for Non-Bank Financial Institutions ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/3.2.3.%20Non%20Bank.pdf">https://www.hrratings.com/docs/metodologia/3.2.3.%20Non%20Bank.pdf</a>
16	Addendum - Rating Methodology for Credit Unions ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/3.2.4.%20Rating%20Methodology%20for%20Credit%20Unions.pdf">https://www.hrratings.com/docs/metodologia/3.2.4.%20Rating%20Methodology%20for%20Credit%20Unions.pdf</a>
17	Addendum - Rating Methodology for Leasing Agents ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/3.2.5.%20Leasing%20Agents.pdf">https://www.hrratings.com/docs/metodologia/3.2.5.%20Leasing%20Agents.pdf</a>
18	Rating Methodology for Brokerage Firms ( <i>Long Term and Short Term Local Rating Scales</i> ).	<a href="https://www.hrratings.com/docs/metodologia/3.2.6.%20Brokerage%20Firms.pdf">https://www.hrratings.com/docs/metodologia/3.2.6.%20Brokerage%20Firms.pdf</a>
19	Rating Methodology for Investment Funds ( <i>Credit and Market Rating</i> ).	<a href="https://www.hrratings.com/docs/metodologia/Investment%20Funds%20Methodology%202019.pdf">https://www.hrratings.com/docs/metodologia/Investment%20Funds%20Methodology%202019.pdf</a>
20	Addendum – Rating Methodology for Bonded Warehouses ( <i>Long Term and Short Term Local Rating Scales</i> )	<a href="https://www.hrratings.com/docs/metodologia/HR290816NP%208.%20Adendum%20AGD3%200(eng).pdf">https://www.hrratings.com/docs/metodologia/HR290816NP%208.%20Adendum%20AGD3%200(eng).pdf</a>
21	Partial Guarantees for Structured and Unsecured Debt Issues	<a href="https://www.hrratings.com/docs/metodologia/Partial%20Guarantees%20Methodology.pdf">https://www.hrratings.com/docs/metodologia/Partial%20Guarantees%20Methodology.pdf</a>
22	Rating Methodology for Water Operating Agencies (Debt Evaluation Methodology for Mexican Entities).	<a href="https://www.hrratings.com/docs/metodologia/Mexican%20Water%20Operating%20Agencies%20Methodology.pdf">https://www.hrratings.com/docs/metodologia/Mexican%20Water%20Operating%20Agencies%20Methodology.pdf</a>

## New Methodology

22	Special-Tax Bonds Methodology (Methodology for Municipal Entities of the United States of America).	<a href="https://www.hrratings.com/docs/metodologia/Special-Tax%20Bonds%20Methodology%20(MP).pdf">https://www.hrratings.com/docs/metodologia/Special-Tax%20Bonds%20Methodology%20(MP).pdf</a>
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## MODELS

### Current versions of qualitative and quantitative Models

#### a) Banks / SOFIPOS / SOCAPS Model

- *Version: 2*
- *File Name: Bancos (Entidad\_Año).1.0*
- *Approved (Model): March 14, 2018.*
- *Methodology: Methodology for Rating Banks, May 2009.*
- *Approved (Methodology): March 14, 2018.*
- *Developed by: HR*

**Description:** The model identifies the principal risk indicators within each category of credit risk affecting the entity evaluated; both those that are inherent to the entity and those arising from external factors. Regarding the ability to pay, the principal sources of risk are identified that could cause delay and even default on the settlement of any liability.

#### b) IFNBs / Credit Unions / Leasing Companies Model

- *Version: 2*
- *File Names: IFNB\_(Entidad\_Año).1.0*
- *Approved (Model): March 14, 2018.*
- *Methodology: Rating Methodology for Non-Bank Financial Institutions, May 2009. Rating Methodology for Financial Leasing Agents and Pure Leasing Agents, January 2010. Rating Methodology for Bonded Warehouses, March 2010. Rating Methodology for Credit Unions, August 2011.*
- *Approved by HR: March 14, 2018.*
- *Developed by: HR*

**Description:** The model explains the principal risk factors present in these entities. Starting from the business model. Its purpose is to justify and give a different weighting to the qualitative and quantitative risk factors for the assignment of the rating by HR Ratings. Among the most important quantitative factors to consider are the historic and projected financial statements and the analysis of the operating efficiency

#### c) Brokerage Firms Model

- *Version: 2*
- *File Name: Casa de Bolsa (Entidad\_Año).1.0*
- *Approved (Model): March 14, 2018.*
- *Methodology: Rating Methodology for Brokerage Firms, June 2009.*
- *Approved (Methodology): March 14, 2018.*
- *Developed by: HR*

**Description:** The model identifies the principal risk indicators within each category of credit risk affecting the firm evaluated; both those that are inherent to the entity and those arising from external factors. Regarding the ability to pay, the principal sources of risk are identified that could cause delay and even default on the settlement of any liability.

#### d) Investment Funds Model – SIID.

- *Version: 2*
- *File Name: Calculadora de Fondos de Inversión (Fondo\_Año).2.0*
- *Approved (Model): February 2019.*
- *Methodology: Rating Methodology for Investment Funds, May 2019.*
- *Approved (Methodology): February 2019.*
- *Developed by: HR*



**Description:** This model has two principal aspects: Credit Risk and Market Risk. Credit Risk is based on the credit quality of the assets that form the portfolio of the mutual fund, while Market Risk measures movements in the valuation of the fund because of changes in market interest rates and other variables, such as the exchange rate, inflation, and market volatility. The methodology incorporates a secondary aspect, the evaluation of the Management Quality of the fund for both ratings.

## e) Pure Leasing Companies Model

- *Version: 2*
- *File Name: Arrendadoras Puras (Entidad\_Año).1.0*
- *Approved (Model): March 14, 2018.*
- *Methodology: Rating Methodology for Financial Leasing Agents and Pure Leasing Agents, January 2010.*
- *Approved (Methodology): March 14, 2018.*
- *Developed by: HR*

**Description:** The model is based upon quantitative and qualitative factors that evaluates credit risks such as the possibility that the entity will be unable to collect future rents or leasing contracts and the lessor will not be able to recover the asset in a timely manner. So, it analyses the tools and processes used to collect the financial income earned and recover the leased product.

## f) Models used for Sovereign Debt

- *Version: 2*
- *File Name: Sovereign Debt (Country\_Year).1.1*
- *Approved (Model): March 14, 2018.*
- *Methodology: Sovereign Debt Methodology, May 19, 2017.*
- *Approved (Methodology): March 14, 2018.*
- *Developed by: HR*

**Description:** The model is based upon the interaction of four analytic dimensions that represent economic growth, fiscal accounts, monetary policy and external accounts. The model also accounts for metrics that evaluate the institutional quality of the sovereign. The model uses HR Ratings forecasts for both a base and a stress model. It also incorporates data from the IMF, the World Bank and the UN.

## g) Models used for Mexican General Obligation ratings

### 1. States

- *Version: 2*
- *File Name: Estados (Entidad\_Año).1.0*
- *Approved (Model): March 14, 2018.*
- *Methodology: Rating Methodology for Unsecured Risk for Mexican States, July 31, 2014.*
- *Approved (Methodology): March 14, 2018.*
- *Developed by: HR*

**Description:** The model accounts for fiscal metrics, debt metrics and debt servicing metrics. Most of them as a percent of unrestricted revenues, that discounts transfers to the municipalities and revenue sharing obligations compromised for structured debt servicing. The methodology also accounts for qualitative factors such as contingent liabilities, credit history, liquidity and former willingness to pay.

## 2. Municipalities

- Version: 2
- File Name: *Municipios (Entidad\_Año).1.0*
- Approved (Model): March 14, 2018.
- Methodology: *Unsecured Risk Evaluation for Municipalities, July 31, 2015.*
- Approved (Methodology): March 14, 2018.
- Developed by: HR

**Description:** The model accounts for fiscal metrics, debt metrics and debt servicing metrics. Most of them as a percent of unrestricted revenues, that discounts revenue sharing obligations compromised for structured debt servicing. The methodology also accounts for qualitative factors such as contingent liabilities, credit history, liquidity and former willingness to pay.

### h) Models used for Mexican Structured Credit ratings.

#### 1. States and municipalities (Federal Income)

- Version: 2
- File Name: *Producto Estructurado (Entidad\_Banco\_Clave).1.0*
- Approved (Model): March 14, 2018.
- File Name: Programa Especial FEFOM
- Approved (Model): March 14, 2018
- Methodologies: Methodology for Revenue Sharing Obligations for Mexican States and Municipalities: Debt backed by Federal Transfers to the States, January 24, 2013; Methodology for Revenue Sharing Obligations for Mexican States and Municipalities: Debt backed by Federal Transfers to the Municipalities (Addendum to Methodology), February 14, 2013 & Methodology for Revenue Sharing Obligations for Mexican States and Municipalities: Debt backed by Sub-National Entities Own Revenues (Addendum to Methodology), March 22, 2013.
- Approved (Methodology): March 14, 2018.
- Developed by: HR

**Description:** The model is based upon the relationship of the Mexican economic growth and the revenue sharing obligations ("Ramo" 28) that the Federal Government transfers to the states and municipalities. Given an estimated income from said transfers, the minimum DSCR is determined along the debt structure. The revenues will be stressed through a TOE rate that will ultimately reduce the DSCR (always above one) in a critical period in such a way that the reserve funds can be reestablished in a previously determined post-critical period.

#### 2. Municipalities (Own income, FEFOM)

- Version: 2
- File Name: PE Programa Especial FEFOM (Entidad\_Banco\_Clave).1.0
- Approved (Model): March 14, 2018.
- Methodology: Methodology for Revenue Sharing Obligations for Mexican States and Municipalities: Debt backed by Sub-National Entities Own Revenues (Addendum to Methodology), March 22, 2013.
- Approved (Methodology): March 14, 2018.
- Developed by: HR

**Description:** The model is also based upon the TOE rate and the capacity of the revenues to reestablish the reserve funds in the post-critical period. However, in this methodology, the ability to successfully isolate the source of revenue from the entity through a trust fund is of major importance.

## i) Models used for U.S. General Obligations Ratings

### 1. Local Governments

- Version: 1
- File Name: *GOLocal\_Blank*
- Approved (Model): November 27, 2013.
- Methodology: U.S. Local Government General Obligations Methodology, November 27, 2013.
- Approved (Methodology): March 14, 2018.
- Developed by: HR

**Description:** The model is based upon the General Obligation Quantitative Risk Model which accounts for the financial balance, the primary balance, debt metrics and debt servicing metrics, all as share of total revenues or unrestricted revenues. These metrics are projected for both a base and a stress scenario. The qualitative considerations account for a liquidity analysis, a general fund analysis, pensions liabilities, state regulation and support, among others.

### 2. States

- Version: 1
- File Name: *GOStates\_Blank*
- Approved (Model): March 28, 2014.
- Methodology: U.S. State Government General Obligations Methodology (Addendum to Methodology), March 28, 2014.
- Approved (Methodology): March 14, 2018.
- Developed by: HR

**Description:** The model is based upon the General Obligation Quantitative Risk Model which accounts for the financial balance, the primary balance, debt metrics and debt servicing metrics, all as share of total revenues or unrestricted revenues. These metrics are projected for both a base and a stress scenario. The qualitative considerations account for a liquidity analysis, a general fund analysis, pensions liabilities, business type activities, among others.

## j) Models used for Corporate Debt Ratings

- Version: 2
- File Name: *Corporativos (Entidad\_Año).1.0*
- Effective Date: May 21, 2014.
- Methodology: *Corporate Debt Credit Risk Evaluation Methodology, May 21, 2014.*
- Approved by HR: March 14, 2018.
- Developed by: HR

**Description:** The model is based upon four metrics that are derived from the entity's financial statements. First the DSCR derived from the entity's period flows, then the same coefficient but adding the cash reserves to the numerator. The third measures the years required for the entity to serve its debt. And the last one measures the value of their marketable assets as a percent of the entity's total liabilities. Qualitative considerations are incorporated to account for industry risks.

## k) Models used for Charter Schools ratings

- Version: 1
- File Name: *Charters\_Blank*

- *Approved (Model): February 13, 2015.*
- *Methodology: Charter Schools Credit Risk Evaluation Methodology, February 13, 2015.*
- *Approved (Methodology): March 14, 2018.*
- *Developed by: HR*

**Description:** The Charter Schools quantitative model is based upon the corporate debt methodology. However, the qualitative analysis accounts for the specific states laws regarding the permissions to operate and the ADA (Average Daily Attendance) and the WADA (Weighted Average Daily Attendance) upon which the state transfers are condition.

**l) Models used for Rating for Debt backed by the operation of highways, toll ways and bridges.**

- Version: 2
- File Name: *Concesion\_Peaje (Proyecto\_Año).1.0*
- Approved (Model): March 14, 2018.
- Methodology: Methodology for Infrastructure, November 6, 2015.
- Approved (Methodology): March 14, 2018.
- Developed by: HR

**Description:** The model is based upon the TEA rate which accounts for the stress the revenues from users' fees can withstand without the DSCR dropping below one throughout the debt structure. The methodology also incorporates demand risks derived from economic performance of the region around the project and for diverse risks that can affect maintenance cost.

**m) Models used for Water Operating Agencies for Mexican entities**

- Version: 1
- File Name: *OOA (Entidad\_Año).1.0*
- Approved (Model): July 2019
- Methodology: Water Operating Agencies: Debt Evaluation Methodology for Mexican Entities July 2019
- Approved (Methodology): July 2019
- Developed by: HR

**Description:** This model has two principal aspects: The operating metrics of the WOA, that measure efficiency in terms of charging customers and delivering water to residences, industrial complex or local business. The second aspect measures the financial performance of the WOA based on coverage metrics, the years that would take the free cash flow to cover the debt net and the weight of non-debt liabilities.

**n) Models used for Ratings of Partial Guarantees**

**1. Infrastructure**

- Version: 1
- File Name: *Garantías Parciales\_Infraestructura (Entidad\_Año).1.0*
- Approved (Model): March 2019.
- Methodology: Partial Guarantees for Structured and Unsecured Debt Issues: Debt Methodology.
- Approved (Methodology): March 2019.
- Developed by: HR

**2. Unsecured**

- Version: 1
- File Name: *Garantías Parciales\_Quirografarias (Entidad\_Año).1.0*

- Approved (Model): March 2019.
- Methodology: Partial Guarantees for Structured and Unsecured Debt Issues: Debt Methodology.
- Approved (Methodology): March 2019.
- Developed by: HR

**Description:** For infrastructure, the partial guarantees model measures the average number of debt services that could be paid by using the guarantee, providing strength in terms of liquidity. Depending on the estimated average, certain number of notches will be awarded to the rating. For unsecured ratings, the model measures the percentage of the outstanding debt covered by the guarantee; however, the model controls for the Credit Rating of the entity providing the guarantee. According to certain values of coverage, notches will be awarded to the rating.

## NEW MODEL

### o) Model used for Rating Special-Tax Bonds of U.S.A. Local Entities

- Version: 1
- File Name: Special-Taxes Model (Entity\_Bond).1.0
- Approved (Model): April 2020
- Methodology: Special-Tax Bonds Methodology.
- Approved Methodology: April 2020.
- Developed by: HR Ratings

**Description:** The model rates Special-Tax Bonds of U.S.A. Local entities with four set of key factors. The first one consists in an economic analysis of the elasticities of the taxed goods & services, and the concentration and strength of the tax base. The second set studies the historical performance of the trend and volatility of the pledge. The third set measures two coverage metrics and the fourth the Additional Bond Test and the Debt Service Reserve Fund requirements. Lastly, the model allows qualitative adjustments based on very specific factors and limited by concepts.