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This methodology belongs exclusively
to HR Ratings.

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Addendum on Unsecured Risk Evaluation for Municipalities

This methodology addendum outlines the process utilized in evaluating the ability and willingness of Mexican Municipalities to fulfil their unsecured debt payment obligations on time and in accordance with contractual agreements, including any future obligations they may contract.

The measurement of the ability and willingness to service debt whose payment sources are revenues prioritized for the payment of “structured” debt is the subject of a different methodology. However, those products are incorporated into several of the metrics involved in this analysis. This methodology assumes that such structured debt limits the ability and willingness of a municipality to service its unsecured obligations in a timely and fully compliant manner.

The methodology describes the entire ratings process, beginning with the elaboration of a Preliminary Analysis (PA). This Preliminary Analysis is quantitative and includes the most relevant financial metrics, calculated for a set number of periods, both historical and projected, the latter in both a base and stressed scenario. The Preliminary Analysis is then complemented with qualitative considerations, which allow the results of the PA to be adjusted in any direction, to arrive to the Final Rating.

The risk evaluation model described in this addendum follows the structure set forth in the base methodology document, *Public Finance Methodology, Unsecured Debt Ratings for Mexican States*.

- The Preliminary Analysis uses the same six metrics set forth in the base methodology, although not necessarily with the same relative weights as used in the evaluation of states. It is important to add that this addendum calls for the use of an Adjusted Primary Balance that is slightly different than that used in the base methodology. This measure divided by Total Revenues will return the metric used in the evaluation.
- Metrics will be obtained for different historical and forecast periods, which may also have different relative weights with respect to each other and which may also differ from those used for the states. However, as with all the types of assets evaluated by HR Ratings, the forecast for the year in progress will be assigned a greater relative weighting than the others. Likewise, the number of past and future years taken into consideration may vary with regard to the base methodology. This is largely as a result of the differences between the terms of office of municipal administrations and those of the states.
- Metrics calculated for each of the periods taken into account will be evaluated in a base scenario, which represents the most likely performance of the municipality, given the observed context, and in a stress scenario, which, for its part, measures the impact of adverse financial and economic conditions on the metrics. These metrics maintain the same relative weights in both scenarios.
- The scenarios, like the metrics and the periods, are evaluated with a specific weighting, and the result given by each is placed in context in ratings ranges. The result of the Preliminary Analysis is obtained from the sum of the values. The relative weights assigned to the metrics, periods and scenarios will be constant across all the municipalities rated and remain valid until the Methodology Committee updates and/or revises its values, according to our policies and manuals.
- When a result has been generated for each scenario, the rating derived from the Preliminary Analysis is obtained; this may be modified in net terms by up to three levels, either upwards or downwards, on a qualitative basis characteristics. These qualitative attributes are, by definition, aspects that are not modelled on the base and stress scenarios due to their nature, and are therefore included as adjustment considerations. If necessary, the Analysis Committee may make adjustments of more than three levels, taking into account Extraordinary Adjustment Considerations, which represent exceptional events or conditions.

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General Structure of the Ratings Process

This methodology addendum describes the process utilized to evaluate the ability and willingness of Mexican municipalities to satisfy their unsecured debt payment obligations on time and in accordance with contractual obligations,¹ including any future obligations they may contract.

The measurement of the ability and willingness to service debt whose payment sources are revenues prioritized for the payment of “structured” debt is the subject of a different methodology. However, those products are incorporated into several of the metrics involved in this analysis. This methodology assumes that such structured debt limits the ability and willingness of a municipality to service its unsecured obligations in a timely and fully compliant manner.

The rating process has the same characteristics and stages as the process for states. It begins with the projection of a base scenario and a stress scenario, in which the most relevant metrics are calculated for different periods, in order to determine the Preliminary Analysis (PA). We include six metrics to evaluate municipalities in terms of their three principal dimensions, which are Primary Balance, Debt and Debt Servicing. The interaction of these metrics according to their relative values is evaluated in an Unsecured Risk Model (URM), which determines the PA.

In the URM, and within each of the two scenarios that comprise it, the values corresponding to the metrics mentioned above will undergo a normalization process. This means they will receive a value according to the range they fall within on a standardized curve, in order to express them comparatively and allow them to be appropriately measured with regard to the credit quality they represent. Later, each of the normalized metrics will be weighted according to its relative importance and according to the relative relevance of the year in which it is observed or forecast. As with all the different types of assets evaluated by HR Ratings, the projection for the year in progress, called for these purposes T_0 , will be the year assigned a greater relative weighting than the others.

The possible difference between the PA and the Final Rating (FR) will be determined by applying Adjustment Considerations and, as the case may be, Extraordinary Adjustment Considerations (EAC). We expect EAC to be applied only under very specific and unusual conditions. The variables included in this process will be qualitative, or rather, evaluated qualitatively. Their effect will be reflected in upward or downward “notches.”

Sensitivity to the management of resources that the municipality obtains or could obtain; unbudgeted risks to which it may be exposed; the quality, timeliness and transparency of the information it provides; its credit history; the political situation in which it finds itself and any other qualitative risk that may be detected are all aspects we evaluate to modify the PA and determine the FR.

The PA can be adjusted up to three levels or *notches* in either direction when the adjustment considerations based on quantitative variables and qualitative aspects are incorporated qualitatively. These considerations must be presented and specified by the “responsible” analyst and his Director to the respective analysis committee. Furthermore, it is possible to include additional qualitative factors in exceptional situations, such as, for example, non-payment. Such extraordinary adjustments will be applied when the impact

¹ For all HR Ratings methodologies, failure to pay, or “default,” refers only to mandatory payments (interest and principal amortisations), and does not include “covenants”. Additionally, it does include “forced” debt restructurings resulting from stress events suffered by indebted entities.

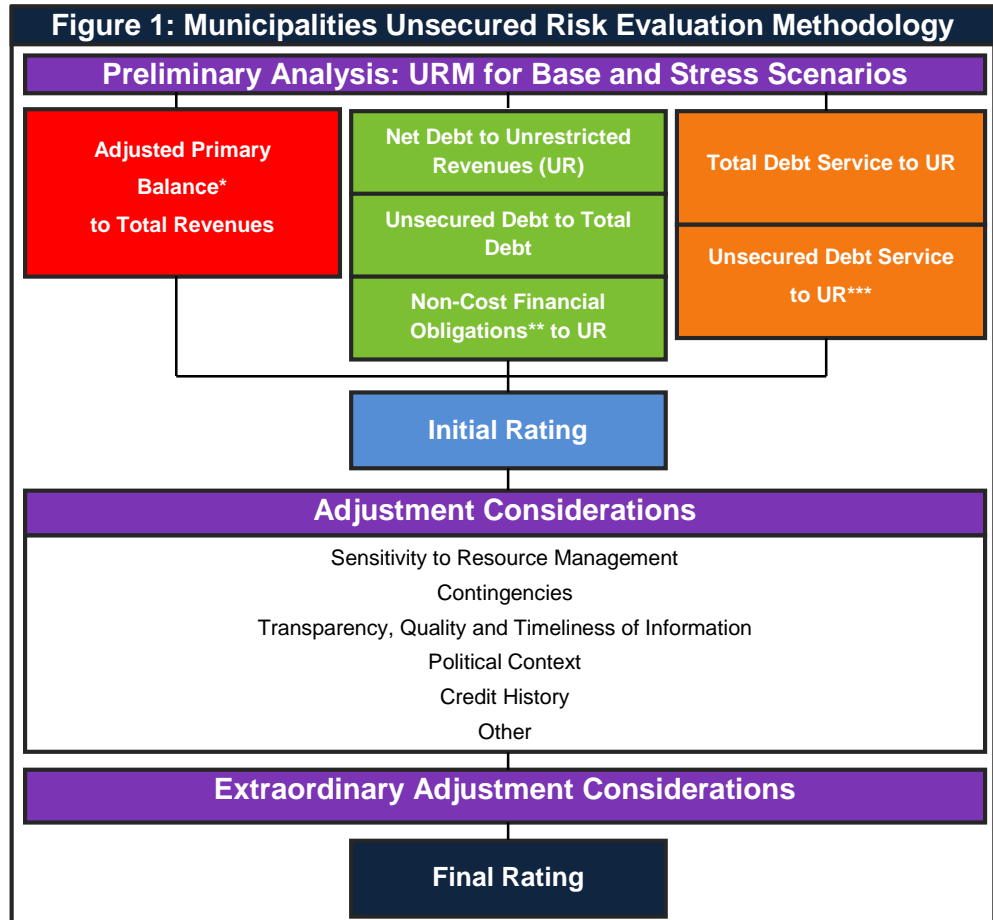
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of a consideration, because of its nature, exceeds the limit of three notches. The Final Rating will be obtained by adjusting the PA on the basis of such criteria.

The following conceptual map (Figure 1) summarizes the ratings process at each stage of its development, as well as their respective components. First is the quantitative stage, which involves an analysis using the unsecured risk model, and then there is the qualitative stage, which involves adjustment considerations.



*AOB: This metric subtracts the change in restricted expenditures from the Primary Balance.

**Advance payments are subtracted from non-Cost Financial Obligations (NCFOs).

***In this metric, the amount of Structured Debt Service is subtracted from UR.

Source: HR Ratings

Analytical Assumptions

The quantitative analysis process, which includes a series of projections, implies that first, the financial statements are prepared paying special attention to revenues and expenditures. Later, a balance sheet is prepared, showing the municipality's assets and liabilities, and lastly, the cash flow statement, which is indispensable because it shows the relationship between the first two financial statements, is drawn up.

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The most important reference for the projections is the historical performance of the revenues and expenditures statement, which also allows us to assess transparency in the municipality's financial accounting. In cases where there are expenditures that are not registered in the years in which they are spent, it is important to have a trustworthy record of those payments, in order to adequately measure the observed metrics and to be able to project the possible future trajectory. If such records do not exist, the rating can be lowered due to lack of transparency, and the projections may be altered by the lack of adequate information. As a result, the assumptions used to prepare them would be unfavorable for the rating.

Comparing historical information from different municipalities is complicated, due to the fact that some of them prepare their revenue and expenditure statements based on cash flows and others on an accrual basis. Furthermore, the same municipality may alternate between the two accounting methods from one period to the next.

This risk of a lack of accounting uniformity is mitigated by the importance this addendum gives to projections and by the standardized adjustments made to official information. As such, the projections we make are based on assumptions and principles that are equally applicable to all municipalities, which ensures that adequate levels of comparability are maintained across all the municipalities and in each municipality over the different periods examined.

The calculation of Non-Cost Financial Obligations (NCFOs) is net, due to the fact that advance payments to suppliers and sub-contractors are subtracted from the cash, banks and investments account. At the same time, despite the fact that non-payment of the NCFOs does not constitute a default for the purposes of this methodology, since they do not represent a debt obligation, such obligations represent a future expenditure of resources that may be paid through contracted debt.

The calculation of the municipality's debt only takes direct debt into account. In the event that the municipality notifies this ratings agency that it is taking on a contingent or co-signed debt, that type of debt will then also be identified as part of the total debt. In fact, it may be decided whether or not to affect the PA negatively with a qualitative consideration, depending on the nature of the contingency such as an indirect debt represents.

Revenues, Expenditures and Their Projections

Revenues

Revenues are divided into two main categories, federal revenues and municipal revenues. Federal revenues are divided into accounts for Participation, or Line Item 28, Contributions, or Line Item 33, and other federal and state revenues (originally received from the federal government). The latter are usually the result of a solicitation process, and as a result are subject to high levels of volatility. We record 100% of Participation revenues (or revenue sharing), including revenues prioritized as a source of payment of structured debt. Subsequently, the allocated revenues (i.e., used to service the structured debt) are subtracted via the expenditure accounts. This situation causes revenues to increase. For municipal revenues, we take into account taxes, fees, proceeds, royalties and other revenues that do not come from a source within the federal government or the respective state government.

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Within the revenues category, Unrestricted Revenues (UR) are separated. This concept represents revenues (prioritized or not) that can be used to pay debt and is calculated as the sum of Participation and municipal revenues. There may be some exceptions to this rule, as in the case of the Contributions that can be utilized to pay debt, when this concept is easily identifiable.

Lastly, we do not consider inflows resulting from new debt as revenues. Revenues received as advance payments are registered as such in the year in which they are received. In the same way, inflows intended for payments that are not made are taken as revenues in the fiscal year in which they are received. However, in the calculation of the Adjusted Primary Balance (APB), these revenues are not included, so as to avoid positive balances or exaggerated deficits. The foregoing is also intended to avoid excessive surpluses or deficits in the APB when these resources are paid out.

Expenditures

Expenditures are divided into two main categories, current and non-operational. A third category are the “Adefas,” obligations from previous fiscal years. These represent expenditures accrued in previous years that are being registered and paid for in the current fiscal year. This concept loses relevance in an accounting method based on accrual movements, in contrast to an accounting method based on cash movements.

Among the current expenditures, the methodology identifies the following accounts: personal services, materials and supplies, general services, financial costs, transfers and subsidies, and other running expenditures. In contrast to states, municipalities do not make transfers to other entities.

The debt service (DS) account is composed of interest from any type of debt and amortizations on structured debt. For their part, amortizations of unsecured debt, as well as revenues resulting from financing, are not accounted for in the revenue and expenditure statements.² Because of this, we use the Primary Balance metric to determine the Balance by excluding payments required as a result of past debt. This Balance is free from the differentiation of amortizations mentioned above since it results from the subtraction of financing costs from the Financial Balance.

Projections

Historical information will be based on the municipal accounts and their auxiliary documents submitted by the Municipalities, which may be subject to adjustments in order to improve their comparability, especially if virtual items are identified. Furthermore, HR Ratings reserves the right to present the historical information according to the criteria utilized in generating ratings. For its part, the municipality’s financial information will be projected according to the accounting standards used by this ratings agency, such that any discrepancies between historical information and projections may be identified. The purpose of this is to make the projections consistent and comparable across all municipalities.

For the projection of revenues and expenditures, historical information, behavioral trends and the analyst’s perception regarding the macroeconomic context and political future of

² We cannot exclude amortisations of structured debt from the calculation of expenditures due to the fact that the revenues earmarked for making those payments are included. Not doing so would have the effect of exaggerating the financial surplus of the municipalities.

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the subnational entity are taken into account. In the case of financial costs, the analyst needs detailed information from the municipality in question regarding its debt obligations, specifically interest rates agreed upon and amortization calendars.

In the event of a financial deficit, the analyst will develop an assumption as the structure of future financing. Initially, the analyst will attempt to model his forecasts consistent with the current structure of the entity's debt. If the current structure cannot be projected, the analyst will have to incorporate into his forecasts the generalized assumptions applied to all municipalities in the same situation. These assumptions will be determined internally and basically consist of establishing an order for each type of financing to be taken into account, such that the analyst will have to determine the amount and characteristics of the additional debt.

The NCFOs will be projected as remaining constant, unless the latest information received from the municipality allows us to identify a future payment of those amounts. The NCFOs will not be taken into account as an additional financing option, as far as possible.

Preliminary Analysis, quantitative approach

Within the URM, the performance of the municipalities is evaluated according to their observed and expected behavior. We take financial information from historical data into account in order to then project the performance of the municipalities over the coming fiscal years in a base scenario and in a stress scenario.³ The sum of the rating for each scenario multiplied by its respective weight gives us the PA. The weighting of the metrics, years, and scenarios will be identical for all municipalities and remain unchanged until the Methodology Committee updates it.

The scenarios consider three analytical dimensions that group six different metrics according to their nature. They are described as follows:

Balance Dimension: Adjusted Primary Balance

a) Adjusted Primary Balance (APB) to Total Revenues (TR)

The Primary Balance is defined as the difference between revenues and expenditures, excluding all financial costs. Revenues include all assigned resources that may be utilized to make debt payments. Primary expenditures, for their part, do not include the revenues that are assigned and transferred to structured debt trusts. These revenues are incorporated as a financial cost. For their part, Total Revenues take federal and municipal revenues into account and also include all resources assigned to debt payments.

This dimension captures the immediate performance of the municipality, as it takes the relationship between revenues and expenditures into account. Given that a percentage of their revenues comes from federal transfers, the amounts over which the municipalities do not have direct control, the financial performance of the subnational entities is not only subject to its own decisions. With that in mind, the municipalities must be able to demonstrate that they have the ability to react to possible unexpected changes in the flow of revenues from the Federal Government.

³ As opposed to the basic scenario, the stress scenario would not include fiscal years observed in the evaluation of its metrics in the measurement of the AP.

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This addendum makes an adjustment to the Primary Balance. The adjustment consists of subtracting the change in restricted cash from the previous year to this year from this year's Primary Balance. As such, its formula is as follows:

$$\text{Adjusted Primary Balance} = \text{Primary Balance in } t_0 - (\text{restricted cash in } t_0 - \text{restricted cash in } t_{-1})$$

The inclusion of the restricted cash adjustment allows a reduction in the volatility of the metric caused by assigned revenues that are not used in the year they are registered.

Different Types of Debt Dimension

This dimension analyzes the degree of leverage that a municipality possesses. For the measurement of total we include both structured and unsecured debt. Structured debt is debt backed up by the assignment of specific revenue sources. Federal revenue sharing participations is the most common example. The assignment of a source of revenue generally occurs through a process of transferring those resources to a trust charged with the task of using them to service the structured debt.

If the use of working capital support is identified, this will be taken into consideration as part of short-term debt, and not as NCFOs. They are added to short-term debt and are subtracted from the municipality's current liabilities.

b) Net Debt (ND) to Unrestricted Revenues (UR)

This is the most relevant metric of this dimension. The numerator is obtained by subtracting unrestricted assets in cash, banks and investments, as well as any financing reserves the municipality may have accumulated, from the total direct debt. The municipality's UR, previously defined in the section on revenues, is used as the denominator.

c) Unsecured Debt (UD) to Total Debt (TD)

This second metric in the dimension analyses the proportion of unsecured debt with respect to total debt. In fact, the methodology in general measures the credit risk of the municipality's UD. Structured debt is included in the analysis process because it can limit the ability to fulfil UD payment obligations. For that reason, it is important to measure the percentage of TD that is comprised by UD, on the understanding that the larger the percentage, the greater the municipality's unsecured credit risk.

d) Non-Cost Financial Obligations (NCFOs) to Unrestricted Revenues

The metric that complements this dimension allows us to evaluate the municipality's ability to honour all obligations including those that, if they are not paid, do not, strictly speaking, constitute a default. This calculation is relevant in that the NCFOs could constitute a significant burden on the municipality, limiting it in its ability to satisfy its unsecured debt obligations. It is important to bear in mind that, in this addendum, NCFOs are calculated as net from advance payments to suppliers and contractors.

Total and Unsecured Debt Service Dimension

Debt Service (DS) is defined as the sum of interest and principal amortization payments made on the municipality's debt. This last analytical dimension enables us to measure the debt burden, and it also provides information on the municipality's past financial behavior. It is of vital importance, given that it reflects the current consequences of indebtedness

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from previous periods. Aggressive indebtedness in previous years would result in restrictions on the municipality's financial freedom and a significant impact on its public finances. A favorably structured debt, in terms of its amortization calendar and costs, is easier to handle than a similar debt with heavy amortizations in the near future and a higher interest rate.

e) Total Debt Service (TDS) to Unrestricted Revenues

As the name suggests, this first metric of the dimension includes servicing of the municipality's total debt in the numerator. The sum of unsecured debt servicing and structured debt servicing is divided by the UR. It is important to note that short-term debt contracted for and paid off within the same fiscal year is not taken into account.

f) Unsecured Debt Service (UDS) to Unrestricted Revenues Net of Structured Debt Service (SDS)

The final metric to be taken into account in order to arrive at the PA rating, measures the relationship between service to unsecured debt alone and UR, from which, for this metric, the amount of SDS is subtracted. In the calculation of the DS, both for total and unsecured debt, we assume that the entirety of short-term unsecured debt is paid off during the fiscal year when the current municipal government's term ends. The aim of this metric is to measure the municipality's ability to honour its unsecured obligations alone. For the calculation of this metric, SDS is subtracted from UR.

Stress Scenario

As with all HR Ratings analysis methodologies, the weight assigned to the stress scenario is less than the weight assigned to the base scenario when they are combined to obtain the final rating. This practice is based on the fact that the base scenario is by definition the most likely scenario, such that the scenario in which we evaluate the entity's ability to cope with adverse conditions has a lower likelihood of occurring.

The process for generating projections for the stress scenario is the same as the one utilized for the base scenario. The relative weighting of different time periods and metrics remains the same, unless the analysis committee justifies changes due to unusual conditions. In the same way, the result undergoes the same normalizing process, given that they share the same rating ranges. The only exception is in the choice of years taken into consideration for the analysis over time, for which the stress scenario uses only the year in progress and future years, leaving out past years.

Stress conditions considered include adverse macroeconomic and financial factors that are common to all municipalities. We use the same values for stress factors for all the entities, which provides comparability to the results for the range of municipalities in this scenario. The stress conditions included in the analysis model are as follows:

- Revenues, both municipal and federal, will be assigned a lower rate of growth than in the base scenario.
- The categories that imply expenditures for the municipality will be assigned a higher rate of growth than in the base scenario.
- The term that the municipality will require for repaying new financing as according to our projections, will be reduced.

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- Likewise, the reserves the municipality has to maintain with regard to the financing mentioned above are expected to represent a greater percentage than in the base scenario.
- The interest rates used for debt service will increase according to macroeconomic conditions of stagflation, or low growth with low inflation rates.
- The interest rate surcharges used for estimating debt service will increase, with respect to the base scenario.
- Lastly, if any contingent liability or other additional risk factor to which the municipality could be subject, is identified, the analyst will evaluate the likelihood of that event occurring and incorporate it into the metrics' development. The contingency will be assessed quantitatively or qualitatively, depending on its nature.

The degree of stress in these conditions will be revised periodically so that they better reflect current national economic conditions.

Algebraic Calculation of the PA

As has been discussed in various sections of this document, the PA is the result of a quantitative process calculated using the sum of weighted values obtained from the metrics defined in the previous section for each of the periods taken into account, for both the base scenario and the stress scenario.

The scenarios represent a dynamic analysis, in that they project the performance of the metrics described above over a number of periods. Weighting over time is maintained for all metrics, and in all cases, the estimation of the year in progress will be weighed most heavily and years further in the future will receive a lower weighting.

It is important to point out that in extraordinary cases, the analysis committee may modify the weights for certain periods or even decide to consider one period of analysis differently from the rest of the municipalities evaluated. Such cases require a very clear and complete rationale for the change included in the minutes of the committee meetings.

The methodology ensures a normalization process, which implies interpreting each value according to a standardization range for each metric in each year, in order to allow effective comparison between municipalities. Even though the base scenarios and the stress scenarios are generated under different financial and economic conditions, this normalization procedure will be carried out equally in both scenarios, even maintaining the same weighting.⁴ It is important to point out to the reader that the stress scenario only takes the current and projected periods into consideration, leaving out the historical periods.

A detailed example of the run for this analysis methodology using a hypothetical case is provided in *Methodology for Public Finances, Unsecured Note Ratings for Mexican States*.

Qualitative Adjustment Considerations

Once the results of the PA have been derived, the next step is to evaluate the effects and impact of the qualitative criteria described in this section. These factors can move the PA up to three notches in either direction. The reasons given for the determination to raise or lower an entity's rating must be explicitly provided in the corresponding analysis

⁴ Normalized values are converted into equivalent partial alphabetical ratings.

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committee's minutes. It will usually be the analyst responsible for the case or the department director who recommends such an action to the committee on the basis of the analysis conducted. No weighting is set forth for the considerations. These qualitative factors can be grouped into the following categories:

Sensitivity to Resource Management

We evaluate whether a municipality carries out activities aimed at improving its collection of local revenues and to what extent, and how beginning with an initial situation, this may represent a benefit or serve as a detriment to said municipality. This includes factors like whether or not it has the ability to seek out other resources beyond federal funds, the establishment of alternative forms of payment that allow taxpayers to make payments and the updating of property values.

Contingencies

We also identify possible unbudgeted risks, such as court rulings, contingencies related to securities for water companies or social security agencies, ongoing trials of any nature, and the recognition of past debts that may result in the additional withholding of revenues that have not been satisfactorily accounted for in the quantitative section.

Transparency, Quality and Opportuneness of Information

In accordance with the General Methodological Criteria that apply to all types of assets evaluated by this ratings agency, the analysis team will, at all times and throughout the time that the municipality is rated, evaluate the veracity, clarity and timeliness of the information it receives, as well as the disposition and professionalism of the officials responsible for it.

Political Context

In view of the experience we have regarding this aspect, we pay special attention to the outcomes of electoral processes, impeachment proceedings and aspects related to public safety, among others.

Credit History

If the municipality has had an unsatisfactory payment performance in the past, the negative effect on the rating is taken into account. If the municipality has fallen into default, this situation will be treated as an extraordinary adjustment consideration, as this permits the rating to be lowered to the minimum possible score, which generally requires a reduction of more than three notches.

Other

This category includes any other aspect that the analyst assigned to the case considers relevant, and such inclusions must be submitted to the analysis committee and duly justified.

Extraordinary Qualitative Adjustment Considerations

Due to the complex nature of the municipalities rated, it is possible that the analyst will identify an exceptional risk factor peculiar to a municipality, such as a natural disaster or a



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non-payment situation resulting from a “lack of willingness.” Although the likelihood that such an event would occur is low (which is a supposition that a random event will not necessarily respect), the analyst will recommend the analysis committee take such a situation into account qualitatively.

Furthermore, this aspect accounts for the possibility that the adjustment limit of three notches included in the Adjustment Considerations may not be sufficient to evaluate the credit risk that these considerations represent for a municipality. The PA can therefore be adjusted by a greater degree in order to determine the FR. In the same way as with the Qualitative Adjustment Considerations, the use of Extraordinary Qualitative Adjustment Considerations must be approved by the analysis committee and justified in its minutes, as well as described in the corresponding report.