Covered Bonds and CDOs Public Entities' Asset Analysis Rating Criteria

Sector-Specific

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This report updates and replaces the *Covered Bonds and CDOs Public Entities' Asset Analysis Rating Criteria*, dated 24 September 2021.

Related Criteria

See Appendix 7

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Scope

This report presents Fitch Ratings' asset analysis approach for rating covered bonds and collateralised debt obligations (CDOs) backed by assets exposed to central, local and regional governments (LRGs) and government-related entities (GREs), collectively known as public entities (PEs).

The criteria assumptions are used to assess the asset-related risks in new and existing covered bonds and CDOs backed by PE collateral. To provide a complete analysis of a PE covered bond programme or CDO transaction, these criteria are applied in conjunction with the *Covered Bonds Rating Criteria* or *CLOs and Corporate CDOs Rating Criteria*, respectively.

Key Rating Drivers

All the key rating drivers described below are critical to the analysis of portfolios of PEs.

Public Entity Default Probability: Fitch analyses the default risk in the underlying PE portfolio based on available public ratings or, where none is available, Fitch internal credit opinions or rating assumptions.

Public Entity Recovery Rates: Fitch uses the same sovereign recovery-rate assumptions for all sovereigns. Recovery-rate assumptions for PEs are determined on a country-by-country basis by Fitch's Public Finance (PF) team. Lower standard assumptions are used for countries with no or low rating coverage. Recovery-rate assumptions for private-public partnership (PPP) loans are determined by Fitch's Global Infrastructure Group (GIG) team.

Country Concentration: Individual country concentration determines whether the programme or notes rating will be linked to the respective sovereign rating. If a portfolio of PE debt is concentrated within a country whose exposure in the portfolio significantly outweighs that of the next largest country, Fitch generally credit-links the notes' or covered bonds' rating to the rating of the sovereign.

Assets directly credit-linked to that sovereign (such as sovereign bonds) are modelled as risk free in all scenarios up to and including the sovereign's Foreign-Currency Issuer Default Rating (IDR).

Eurozone Exposures: Fitch assumes material contagion risk among eurozone members. When, in a model scenario run, a eurozone country is assumed to default, all eurozone countries rated lower than or at the same level as that country are also assumed to default.

Regional Concentration: Fitch expects regional concentration to result in higher portfolio default rates than for geographically diversified portfolios. This is included in the asset model through an intra-regional correlation uplift.

Obligor Concentration: The result of the portfolio analysis is disproportionally affected by large obligors. Fitch stresses the correlation and recovery assumptions for obligors representing more than 2% of the portfolio, with a minimum of the top three obligors being stressed, independent of their size.

Asset Model

The asset analysis is based on Fitch's Portfolio Credit Model (PCM), which is used to derive a distribution of portfolio default and loss rates. Portfolio default rates are a function of the portfolio's average credit quality and maturity, as well as its concentration in terms of obligor size, regional distribution and country exposures. The model uses correlations as the main parameter to model the volatility in the portfolio default rates.

The PCM utilises Monte Carlo simulation. Based on the simulated distribution of portfolio default and loss rates (recoveries are deterministic) a rating default rate (RDR) and rating loss rate (RLR) are determined for each liability rating level. The RDR and RLR are percentiles of the portfolio default and loss rate distributions that correspond to specific confidence levels. This approach is equivalent to the Credit Value at Risk concept.

The inputs for PCM consist primarily of the creditworthiness of the obligors, their type, their location, their assumed recovery rates defined according to the rating scenario and the asset amortisation profiles. These inputs are used to determine the probability of default and recovery rate for each asset as well as the pair wise correlation level between all assets, which form the input for the simulation.

For PE exposures, a rating has to be entered for each asset, which is used in conjunction with the default probability term structure to derive a probability of default assumption over the term of the exposure. The term structure of default rates applied to PE obligations is based on the historically observed term structure for rated corporates.

Substitute assets which have the same characteristics as ordinary cover of a public-sector programme are treated in the same way, while substitute assets that exhibit other characteristics are modelled as large corporates in line with the CLOs and Corporate CDOs Rating Criteria.

The model is available for download on the Fitch website (www.fitchratings.com) under the Fitch Portfolio Credit Model and is updated from time to time.

Model Application

The asset analysis will typically be completed for a given portfolio of PEs upon the initial assignment of covered bonds or CDO credit ratings. However, Fitch does not always run models when assigning or monitoring credit ratings for covered bonds, as described in the Covered Bonds Rating Criteria.

Previous results of Fitch's asset modelling will be carried forward at future rating reviews where the conditions for using the previous model output, as described in the Covered Bonds Rating Criteria, are met, and as determined in rating committees.

Public Entity Default Probability Assumptions

Public-sector pools typically consist of bonds and loans issued by, granted to, or guaranteed by PEs. Such entities could be sovereigns, LRGs (eg regions, provinces, departments, municipalities or inter-municipal groupings), GREs (eg public or corporate companies owned by those entities and financial institutions owned or sponsored by one of those entities) and, in limited cases, exposures to PPP loans.

Default Probability Analysis Assumptions – An Overview:

- Public ratings, credit opinions or rating assumptions are needed for at least half of the total portfolio balance. Alternatively, public ratings or credit opinions are needed for at least one-third of the total portfolio balance;
- The credit quality of guaranteed exposures is generally aligned to that of their guarantor;
- Specific rating assumptions are used for unrated exposures accounting for up to 2% of total portfolio balance, where available;
- Where no rating assumptions are available, unrated exposures are assigned a probability of default assumption equivalent to a 'CCC';
- Unrated single obligor exposures above 2% of total portfolio balance are assigned a probability of default assumption equivalent to a 'CCC' where no credit opinion is obtained;
- Obligors on Rating Watch Negative (RWN) are generally considered to be rated one notch below their published rating;
- The rating of the notes/bonds is generally credit-linked to the rating of a sovereign whose exposure significantly outweighs that of the next largest country in the pool;
- Additional conditional default risk is applied to reflect that a PE's performance is conditional on its applicable sovereign's performance.

Reliance on Public Ratings

If an obligor is publicly rated, the Fitch rating is used. If no Fitch rating is available, the lowest of the other publicly available ratings from Moody's and S&P is used, with a cap applied to such obligor ratings, at the applicable Fitch foreign-currency sovereign rating.

Minimum Portfolio Quality Threshold

Fitch will ascertain the aggregate credit quality of at least (a) half of the total portfolio (on a notional basis) through public ratings, credit opinions or rating assumptions, or (b) a third of the total portfolio (on a notional basis) through public ratings or credit opinions. If these thresholds are not met, Fitch may assign private credit opinions to unrated obligors.

Guaranteed Exposures

Fitch links all guaranteed exposures at their ultimate guarantor and assigns them the same default probability. We will make adjustments on a case-by-case basis to account for the characteristics of the provided guarantees. The rating of the ultimate obligor is used as the primary determinant of a guaranteed obligation's default probability, as long as the strength of the guarantee is sufficient.

Export Credit Loans

Public-sector portfolios can include loans (ECA loans) guaranteed or insured by export credit agencies (ECAs) of sovereigns, which Fitch typically links to the ultimate guarantor whose guarantee or insurance the ECA is providing (except very small exposures, of which no substantial legal analysis has been performed).

Fitch uses the rating of this ultimate guarantor as the primary determinant of the ECA loans' default probability. Where the ECA guarantee or insurance is viewed by Fitch as a direct irrevocable obligation of the sovereign, we will typically align the rating of the loan to that of the applicable sovereign. These rating inputs will be considered when ascertaining the minimum portfolio quality threshold.

Fitch does not use the rating of a publicly rated ECA as the primary determinant of the ECA loans' default probability. This is because it is based on the entity's non-ECA-related activities and does not address the standalone sustainability of ECA-related activity.

Rating Assumptions for Unrated Exposures

For the unrated portion of the portfolio, rating assumptions for a portfolio of PEs are used. These assumptions are country specific and may vary by level of governmental tier (eg regions, departments, municipalities and inter-municipal groupings). They are provided by Fitch's PF team, based on the approach outlined in the applicable PF International Local and Regional Governments Rating Criteria and Government-Related Entities Rating Criteria (see *Appendix 4*).

Other Unrated Exposures

Fitch will usually assign a probability of default assumption equivalent to a 'CCC' rating to any unrated obligor for which Fitch's PF team does not provide a rating assumption.

Obligor Concentration Adjustments

For any unrated single obligor concentrations above 2% of the total portfolio balance, Fitch will seek to obtain individual credit opinions. Should individual credit opinions for such obligors be unobtainable, Fitch will assign a probability of default assumption equivalent to a 'CCC' rating to such exposures.

Exposures on Rating Watch Negative (RWN)

Obligors on RWN are considered to be rated one notch below their published rating. However, if public information is available describing potential multi-notch downgrades, this will be taken into account by Fitch in its analysis.

PE Credit-Link to Sovereign

The performance of PEs is assumed to depend on the survival of their corresponding sovereign. If a portfolio of PE debt is concentrated within a country whose exposure in the portfolio significantly outweighs that of the next largest country, Fitch generally credit-links the notes' or covered bonds' rating to the rating of the sovereign.

If the covered bond rating is credit-linked to that of a sovereign, the sovereign is not assumed to default in a rating scenario up to and including the sovereign's foreign currency IDR.

- Assets directly credit-linked to the sovereign (such as sovereign bonds) are modelled as risk free in all rating scenarios up to and including the sovereign's foreign currency IDR, with their exposure to sovereign default and their default probability multiplier assumed to be 0%;
- The exposure to sovereign default is also assumed to be 0% for PEs from that country;
- In rating scenarios above the credit-linked sovereign's rating, no credit-link is assumed.

If the covered bond rating is not credit-linked to a sovereign and the sovereign defaults during the simulation, all of the sovereign assets as well as a proportion of the PEs from that country are assumed to default and are subject to the sovereign recovery rate.

If the portfolio does not include debt issued by the sovereign but only PEs from that specific country, PCM will create indicator sovereign assets to determine whether the sovereign has defaulted during the simulation.

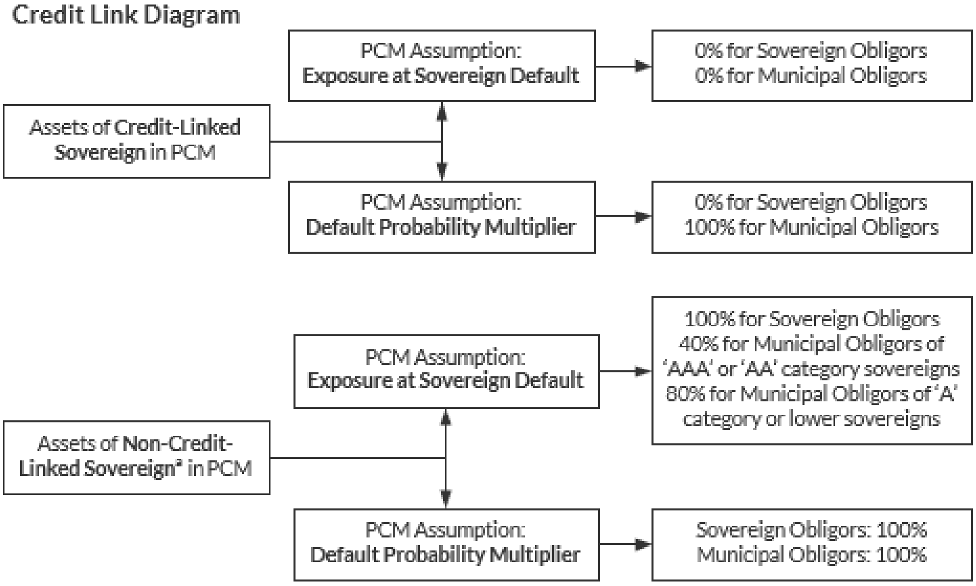
Default Probabilities of PE Assuming a Sovereign Default

For subnational obligors, the PF team's view on creditworthiness does not directly incorporate the contagion risk of a sovereign default, as the entities are typically rated below the corresponding sovereign. The default risk for PEs conditional on the default of the corresponding sovereign is viewed as significantly higher than the default risk indicated by the rating, credit opinion or rating assumption. To reflect this, the sovereign is modelled jointly with the PE in PCM and the PE performance is conditional on the sovereign performance.

Fitch associates the higher PE conditional default risk with a default probability assumption that considers the underlying obligor's applicable sovereign rating, ranging between 40% and 80%.

- The exposure to sovereign default and the default probability multiplier is assumed to be 100% for assets directly linked to the sovereign (such as sovereign bonds);
- The exposure to sovereign default is assumed to be 40% for PEs of 'AAA' and 'AA' category sovereigns and 80% for PEs of 'A' category or below sovereigns.

Credit Link Diagram



[a] Applicable for assets of Credit-Linked Sovereign in PCM in rating scenarios above the credit-linked sovereign's rating also
Source: Fitch Ratings

Public Entity Recovery Rate Assumptions

Fundamental characteristics, such as obligor type (sovereign or sub-sovereign entity) and jurisdiction, are regarded as the main drivers of recovery rates.

Recovery Rate Analysis Assumptions – An Overview:

- Fitch applies a uniform 40% base case recovery rate assumption for all sovereigns;
- Country-specific recovery rate assumptions are used for PEs;
- Fitch's recovery rates for PEs are applicable only if the corresponding sovereign is not assumed to be in default;
- PPP asset recovery rates reflect the contractual provisions of the loans as well as the underlying project agreements.

Recovery Rates for Sovereigns

Fitch uses an identical set of recovery assumptions for all sovereigns considered under the criteria. As a result, a uniform recovery rate assumption for all sovereigns is applied, with Fitch's base-case recovery rate set to 40% on a notional basis.

The base case recovery rates will then be "haircut" at different stress levels to reflect the possibility of country defaults in economically more stressful scenarios compared with the economic environment present for the historical cases.

Sovereign Recovery Rate Assumptions for Different Stress Levels

Rating Level	AAA	AA	A	BBB	BB	B
Recovery prospects (%)	15	20	25	30	35	40

Source: Fitch Ratings

Recovery Rates for Public Entities

Fitch has assumed recovery rates for PEs, which are applicable only if the corresponding sovereign is not assumed to be in default.

Fitch's recovery rate assumptions are country-specific and may be adjusted to reflect specificities of a given portfolio. A full list of Fitch's standard recovery rate assumptions for PEs can be found in *Appendix 5*.

For PPP assets, recovery rate assumptions are based on analyst opinions provided by Fitch's GIG team. The assumptions reflect the contractual provisions of the loans as well as the underlying project agreements (contracts) and, where applicable, will be disclosed in subsequent publications.

For German federal states, Fitch uses the same recovery rate assumptions as for the German sovereign reflecting the strong solidarity system in place. This means that the exposure to federal states is assimilated to the sovereign exposure.

Export Credit Loans

Assuming a default of the ECA loans' applicable sovereign, the defaulted ECA exposure is assumed to be subject to the sovereign recovery rate assumptions.

Portfolio Composition and Correlation Assumptions

Portfolio Composition and Correlations – An Overview:

- The rating of a sovereign may act as a de-facto rating cap for pools with a high geographic concentration;
- In its analysis, Fitch links the default of sovereign exposures within the eurozone;
- Fitch assumes an overall correlation of 4.5% for different credit quality PE portfolios;
- Fitch applies an increased pair-wise correlation between PEs within the same region, with a compensating reduction in the correlation between PEs of different regions;
- Fitch stresses the default and recovery expectation of large obligor concentrations above 2% of the total portfolio balance (outside of eurozone sovereign exposures).

Country Concentration

PE portfolios typically tend to show significant concentration in one main country but with assets also belonging to other jurisdictions.

Depending on its weight in the total portfolio, the rating of a large sovereign may act as a de-facto rating cap. Where a cover pool is mostly exposed to one sovereign, the overcollateralisation (OC) given credit to by Fitch is typically considered not to be sufficient to sustain the high stresses applied by the agency to the cover pool in a scenario where this sovereign is assumed to be in default (ie. in rating scenarios above the sovereign's rating).

Where the cover pool is diversified across different countries and thus not exposed to mainly one sovereign, a one-notch recovery uplift for the covered bonds above the rating of the sovereign with the largest concentration can typically be achieved. For programmes where OC given credit to by Fitch in its analysis roughly offsets stressed credit loss levels in such rating scenarios, a two- or three-notch recovery uplift for the covered bonds above the rating of the credit-linked sovereign can be used, in the absence of material risks to recovery expectations (see Covered Bonds Rating Criteria).

Treatment of Eurozone Countries

Fitch's methodology links all sovereign exposures within the eurozone by treating them as one single issuer in PCM. Fitch assumes that if a eurozone country with a certain rating defaults, then all sovereigns rated lower than or equal to that specific sovereign would default.

Correlation Assumptions

Besides the input assumptions for the obligor credit risk and the term of the exposures, the correlation assumption is the main parameter that determines the magnitude of the portfolio default rate and as a result the rating loss rate for each liability rating level within PCM.

For the purpose of deriving the correlation assumptions for PEs, Fitch considered sample data from 2008-2020, with a stress deemed commensurate with an 'A' stress scenario. The correlation was calibrated to match the RDR to the default rate expectation for the 'A' rating level. Overall, Fitch observed that PCM provides a good fit for the stress scenario, expressed by a correlation of about 4.5% for different credit quality portfolios.

Fitch correlation assumptions are applied to diversified portfolios of PEs, as long as the PEs' ratings show some distance to the respective sovereign rating. If this is not the case, Fitch may use higher correlation assumptions, which will be disclosed in the respective rating publications.

Regional Concentrations

Regions are usually the second governmental level ("tier") following the sovereign. Regional concentration varies among PE pools.

Fitch applies an increased pair-wise correlation level between PEs from the same region, which requires a compensating reduction in the correlation between regions to maintain the results for a diversified portfolio. Overall the correlation structure used in PCM is the following:

Pairwise Correlation Between PEs

(%)	Different regions	Same region
All	3.5	9.0

Source: Fitch Ratings

For emerging-market (EM) countries, the correlation framework applied reflects further additional stresses, including the likelihood of more volatile portfolio default rates and the importance of diversity within EM countries. Full PE correlation assumptions can be found in the PF Parameters module of Fitch's Portfolio Credit Model.

Obligor Concentrations

Fitch considers credit risk to be higher in portfolios with large obligor concentrations. For obligors representing more than 2% of the total portfolio balance, Fitch will increase the pair-wise correlation by 50%, with a minimum stress on the top three obligors independent of their size. The correlation stress will primarily affect results in higher rating scenarios and address the possibility of increased performance volatility from large obligors. It is not applied to the artificially created "eurozone issuer" as the linkage of these sovereign exposures already forms an additional stress in itself.

Furthermore, concentration risk is addressed with respect to recovery assumptions by applying a factor of 0.75 to the recovery rate assumption of the same obligors. This stress is applied within the model framework, and has an impact on the portfolio loss distribution.

Cash Flow Model Assumptions

The rating dependent default and recovery estimates as well as the default timing derived from the asset analysis are used as an input in Fitch's cash flow model alongside prepayment, servicing costs and recovery timing assumptions. The cash flow modelling will determine the break-even OC or credit enhancement for a given rating.

Default Timing Distribution

Fitch's default timing is based on the annual default distribution generated by PCM and does not vary across rating levels. Using the PCM generated default distribution is in line with applying the historically observed term structure for rated corporates, given the limited default data available for PEs.

Where appropriate, Fitch may adjust its default timing assumptions depending on programme or transaction characteristics or if there is evidence that the default timing distribution from the asset model is overly stressful or not stressful enough. Such an adjustment will be highlighted in the rating communication.

Prepayment Rates

Fitch tests for high and low prepayment rate scenarios. Prepayment assumptions are applied as constant annualised rates on the whole portfolio.

The low stress consists of assuming a constant prepayment rate (CPR) equal to zero at all rating levels. A weighted average high prepayment stress assumption is applied at all rating levels on a portfolio basis, based on a 5% high CPR assumption for those debt instruments contained in the PE portfolio that are allowed to repay before maturity and a 0% CPR assumption for those that are not.

Servicing Costs

Fitch applies servicing costs of 10bp a year in a 'AAA' scenario. The servicing cost assumptions are scaled down for lower rating scenarios to obtain notch-specific assumptions, as follows:

Servicing Cost Assumptions

Rating scenario	Servicing costs (bp a year)
AAA	10
AA+	9
AA	8
AA-	8
A+	7
A	7
A-	7
BBB+	6
BBB	6
BBB-	6
BB+	5
BB	5
BB-	5
B+	4
B and below	4

The fees are applied to the outstanding portfolio balance, including performing, delinquent and defaulted assets
Source: Fitch Ratings

Fitch may choose to apply higher servicing costs assumptions for example in cases where less standardised asset types are included in the pools.

Recovery Timing

The recovery timing is the length of time it will take to receive the recovery proceeds. Fitch's recovery timing assumptions for all sovereigns is five years.

Recovery timing assumptions for defaulted PEs are based on expert opinions provided by Fitch's PF team. For countries where Fitch has sufficient rating coverage, country specific recovery timing assumptions are used. For the remaining countries, longer standard recovery timing assumptions of 10 years are used (see *Appendix 6*).

Fitch's recovery timing assumptions for defaulted PPP exposures have been aligned to those for defaulted PEs (see *Appendix 6*). These assumptions are based on the close relation of legal claims under PPPs to those of PEs.

Recoveries from sovereign exposures (including ECA loans) and subnational PE exposures are assumed to be obtained in one payment.

Treatment of Delinquencies

Given the nature of public-sector assets, Fitch does not assume that a proportion of delinquent assets will re-perform after a given period in its cash flow analysis.

Variations from Criteria

Fitch's criteria are designed to be used in conjunction with experienced analytical judgment exercised through a committee process. The combination of transparent criteria, analytical judgment applied on a transaction-by-transaction or programme-by-programme basis, and full disclosure via rating commentary strengthens Fitch's rating process while assisting market participants in understanding the analysis behind our ratings.

A rating committee may adjust the application of these criteria to reflect the risks of a specific transaction or entity. Such adjustments are called variations. All variations will be disclosed in the respective rating action commentaries, including their impact on the rating where appropriate.

A variation can be approved by a rating committee where the risk, feature, or other factor relevant to the assignment of a rating and the methodology applied to it are both included within the scope of the criteria, but where the analysis described in the criteria requires modification to address factors specific to the particular transaction or entity.

Criteria Disclosure

In the initial and subsequent rating agency commentaries or rating reports, Fitch expects to disclose the following items together with those mentioned in the Covered Bonds Rating Criteria:

- Any variations to criteria, as mentioned in the section Variations from Criteria above;
- Any correlation adjustments applied to the asset analysis;
- Adjustments to the default timing assumptions used in the cash flow analysis;
- Where applicable, recovery rate assumptions for PPP loans.

Criteria Limitations

Ratings, including Rating Watches and Outlooks, assigned by Fitch are subject to the limitations specified in Fitch's Rating Definitions and are available at https://www.fitchratings.com/site/definitions.

Appendix 1: Data Adequacy

Fitch performs a loan-by-loan analysis based on information provided by issuers. An overview of the data fields the agency expects to receive is provided in *Appendix 2*.

Fitch expects to be provided with a history of originator-specific performance data of the public-sector book sufficient to validate the data received. This includes information on assets in arrears, default rates and recovery rates, if applicable. As there are only limited historical default cases for PEs, in determining the obligor default rates Fitch uses the long-term default rates of corporate entities. These default rates are based on the recent decades since 2001, and incorporate default rates from Fitch, S&P and Moody's. Fitch believes this data set to be objective and robust, as it reflects the broadest set of default statistics available.

Fitch may also request legal memoranda if considered necessary in the assessment of legal risks.

The agency examines the data received in regular file reviews and expects to receive results from regulatory audits, if available. In the absence of information on the key rating drivers Fitch will form conservative assumptions derived from experience with similar programmes or transactions and market observations. The agency may also adjust results to reflect missing information if it considers this necessary.

The agency may request additional information for large exposures above 2% of the cover pool balance or CDO portfolio in less granular programmes or transactions. This is because Fitch is of the opinion that the default of such large exposures may significantly increase the expected loss.

If Fitch considers the available historical data or the loan-level information insufficient, the agency may decline to rate the transaction or place a rating cap on the bonds or notes.

Data Sources

The key rating assumptions described under the criteria are derived from inputs provided by Fitch's Structured Credit, Public Finance and Sovereign teams, as well as issuers of Fitch-rated public-sector covered bonds programmes.

Appendix 2: List of Data Fields

The data that Fitch uses to model portfolios of public sector assets is based on line-by-line borrower- and loan-level information and specific asset cash flows.

Data Fields for the Public-Sector Assets Analysis

Exposure type	Loan, bond or Schuldscheindarlehen (SSD)
Credit derivative	Yes/no
Name of counterparty	Text
Debtor type	Sovereigns, supranationals, subnational Tier 1, subnational Tier 2, subnational Tier 3, public-sector companies with guarantee, private law municipal companies, public-sector financial institutions with guarantee, other financial institutions, others
Guarantor	Text
Country	Text
Region within the country	Text
External Rating 1	Text
External Rating 2	Text
External Rating 3	Text
Internal Rating (debtor)	Text
Internal Rating (guarantor)	Text
Currency	Text
Amount in original currency	Number
Euro amount	Number
Interest rate type	Fixed, floating
Start date	Date
Redemption type	Annuity, constant amortisation, bullet
Final maturity	Date
Weighted average residual maturity	Date
Maturity if borrower exercises earliest call option	Date
Amount in arrears	Number
Days in arrears	Number
Repo-able	Yes/no
Substitute asset	Yes/no
Postal code (debtor)	Number
Postal code (guarantor)	Number
Interest reset date	Date
Interest rate	Number
Loan ID/ISIN	Text

Source: Fitch Ratings

Data Fields for Public-Sector Covered Bonds Cash Flow Analysis (Cont.)

Assets	
Asset cash flows	No prepayments, no defaults, based on current applicable interest rates and applicable maturity date of the loan/bond
	Details of all assumptions made in determining the cash flows provided
Liabilities	
Series/identifier	Text, number
Currency	Text
Outstanding amount in currency of issue	Number
Outstanding amount in base currency	Number
Issuance date	Date
Maturity date	Date
Call date	Date
Nature of call option	Text
Interest-rate type	Fixed, floating
Fixed-rate coupon	Value
Floating-rate reference rate	Text
Floating-rate margin	Value
Currency swap rate	Value
Placement type	Text
Structured bond	Yes/No
	Underlying formulae applied
Zero coupon bond	Yes/no
Extended maturity date	Date
Post-extension interest-rate type	Fixed, floating
Post-extension fixed-rate coupon	Value
Post-extension floating-rate reference rate	Text
Post-extension floating-rate margin	Value
Placement type	Text
Structured and zero-coupon bonds	
Liabilities cash flows	Details of all assumptions made in determining the cash flows provided

Source: Fitch Ratings

Appendix 3: Rating Assumption Sensitivity

This criteria report is used as part of the analysis of public-sector covered bonds and CDO transactions.

The rating performance of covered bond programmes and CDO transactions backed by PE assets will depend primarily on the factors listed in Fitch's Covered Bonds Rating Criteria and CLOs and Corporate CDOs Rating Criteria. For covered bonds, one of these factors is the level of relied-upon OC to which Fitch gives credit, which the agency compares with the break-even OC for the rating.

One of the two components of Fitch's break-even OC for a given rating is the credit loss, which is derived according to these criteria. An increase in credit loss could directly increase the break-even OC for a given rating. If the break-even OC for a given rating rises above the relied-upon OC, this may lead to a downgrade of the programme (or vice versa).

Appendix 4: Subnational PEs Rating Assumptions

Fitch's rating assumptions have been derived by Fitch's PF team to reflect a conservative average credit quality of the respective obligors on a portfolio basis. This means that some obligors, if individually reviewed, may have lower credit opinions, while the credit assessment of the majority of obligors, if individually reviewed, could carry higher credit opinions than these rating assumptions would indicate.

The rating assumptions are country specific and may vary by level of governmental tier (eg regions, departments, municipalities and inter-municipal groupings). The rating assumptions are based on limited data and should not be taken as an absolute credit quality level for an unrated obligor or a portfolio of obligors. The rating assumptions may be updated periodically, to reflect changes in Fitch's overall assessments or in light of additional data or information.

Subnational PEs Conservative Average Rating Assumptions

Country	Subnational PE tier	Rating assumption
France	Regions (mainland France)	A
	Regions (overseas France)	BBB
	Departments	A
	Large municipalities	BBB
	Metropolis	A
	Urban communities	A
	Large metropolitan communities	A
	Hospital centres	A+
	University hospitals	AA-
Germany	Laender	AAA
	Municipalities	BBB-
Italy	Local governments	BB
Spain	Autonomous communities	BBB-

Source: Fitch Ratings

Appendix 5: Subnational PEs: Recovery Rate Assumptions

Fitch's recovery rate assumptions are based on analyst opinions provided by Fitch's PF team and should not be taken as absolute recovery rates for PE portfolios within a specific jurisdiction.

For countries where Fitch has sufficient rating coverage, country-specific recovery rate assumptions are used, whereas for those other countries considered under the criteria, lower standard recovery rate assumptions are used. In each case, the recovery rates are based on limited data and represent an average recovery rate expectation for a representative pool of PEs in a given jurisdiction. The recovery rates are applied in scenarios where the applicable sovereign is not assumed to default in the analysis.

Subnational PEs Recovery Rate Assumptions (%)

Country	AAA	AA	A	BBB	BB	B
Austria	60	70	75	80	80	80
Belgium	60	70	75	80	80	80
Canada	15	20	25	30	35	40
Cyprus	15	20	25	30	30	30
Czech Republic	15	20	25	30	30	30
Denmark	15	20	25	30	30	30
Estonia	60	70	75	80	80	80
Finland	15	20	25	30	30	30
France	60	70	75	80	80	80
Germany	70	80	85	90	90	90
Greece	15	20	25	30	30	30
Hungary	15	20	25	30	30	30
Iceland	15	20	25	30	30	30
Ireland	15	20	25	30	30	30
Italy	30	40	45	50	50	50
Japan	15	20	25	30	30	30
Latvia	15	20	25	30	30	30
Lithuania	15	20	25	30	30	30
Luxembourg	15	20	25	30	30	30
Malta	15	20	25	30	30	30
Netherlands	15	20	25	30	30	30
Norway	60	70	75	80	80	80
Poland	60	70	75	80	80	80
Portugal	60	70	75	80	80	80
Slovakia	15	20	25	30	30	30
Slovenia	15	20	25	30	30	30
South Korea	15	20	25	30	30	30
Spain	60	70	75	80	80	80
Sweden	15	20	25	30	30	30
Switzerland	70	80	85	90	90	90
United Kingdom	60	70	75	80	80	80
United States	50	60	65	70	70	70

Source: Fitch Ratings

In its analysis, Fitch will apply a 0% recovery rate assumption at all rating levels for any subnational PE of a country not listed in the above table.

Appendix 6: Subnational PE Recovery Timing Assumptions

Fitch's recovery timing assumptions are based on analyst opinions provided by Fitch's PF team and should not be taken as absolute recovery timings for PE portfolios within a specific jurisdiction. For countries where Fitch has sufficient rating coverage, country-specific recovery timing assumptions are used, whereas for those other countries considered under the criteria, longer standard recovery timing assumptions are used. In each case, the recovery timings are based on limited data and may be adjusted periodically to reflected changes in Fitch's underlying opinions or in light of additional data or information or to reflect specificities of a given portfolio.

Subnational PEs Recovery Timing Assumptions (Years)

Country	Subnational PE tier, where assumptions differ	Years
Austria		5
Belgium		3
Canada		5
Estonia		5
France		7
Germany	Laender	5
	Municipality	3
	PSE	5
Italy		10
Norway		5
Poland		5
Portugal		7
Spain		7
Switzerland		5
United Kingdom		3
United States		5
Cyprus, Czech Republic, Denmark, Finland, Greece, Hungary, Iceland, Ireland, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Slovakia, Slovenia, South Korea, Sweden		10

Source: Fitch Ratings

Fitch's recovery timing assumptions for PPP assets are provided by Fitch's GIG team and should not be taken as absolute recovery timings for PPPs within a specific jurisdiction. Fitch applies recovery timing assumptions for PPP asset in line with the country-specific recovery timing assumptions for PEs, as shown in the table above.

Appendix 7: Related Criteria

Global Covered Bonds: Master Criteria

Covered Bonds Rating Criteria (August 2022)

Fitch's Foreign-Currency Stress Assumptions for Residual Foreign-Exchange Exposures in Covered Bonds and Structured Finance - Supplementary Data File (June 2021)

Fitch's Covered Bonds Refinancing Spread Level (RSL) Assumptions - Supplementary Data File (August 2022)

Fitch's Covered Bonds European CRE MVD Assumptions - Supplementary Data File (June 2021)

Global Structured Finance and Covered Bonds: Cross-Sector Rating Criteria

Structured Finance and Covered Bonds Country Risk Rating Criteria (July 2022)

Global Structured Finance Rating Criteria (October 2021)

Structured Finance and Covered Bonds Counterparty Rating Criteria (July 2022)

Structured Finance and Covered Bonds Counterparty Rating Criteria: Derivative Addendum (August 2022)

Structured Finance and Covered Bonds Interest Rate Stresses Rating Criteria (September 2021)

Other Related Criteria

International Local and Regional Governments Rating Criteria (September 2021)

Government-Related Entities Rating Criteria (September 2020)

CLOs and Corporate CDOs Rating Criteria (September 2022)

U.S. Public Finance Tax-Supported Rating Criteria (May 2021)

State Revolving Fund and Municipal Finance Pool Program Rating Criteria (September 2021)

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