Rating Methodology

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General Structured Finance

Structured finance rating methodology

CCXAP publishes the methodology for General Structured Finance.

Summary

China Chengxin (Asia Pacific) Credit Ratings Company Limited ("CCXAP") publishes the methodology for assessing the credit quality of all types of structured finance instruments other than Chinese nonperforming loan securitizations. The new rating methodology replaces "Rating Methodology for Assets-Backed Securities/Mortgage-Backed Securities" published by CCXAP in May 2014. The new methodology revises the rating framework to provide general guidelines for the analysis of structured finance transactions and apply to all types of structured finance instruments, with appropriate analysis models as we deem.

The methodology introduces the fundamental determinants for rating different structural products with a wide range of asset classes and explains in detail our approach to assessing each general rating determinant. This is a general method based on the basic principles of our structured product credit rating overview, and may not cover all the factors considered in the evaluation of the credit risk of the rated products. We are intended to provide a general understanding of how we analyze these risks and the specific credit analysis process should refer to the rating report.

In applying this methodology, the credit rating committee will consider all factors deemed relevant, including not only quantitative analysis such as model outcomes but also various qualitative and other factors.

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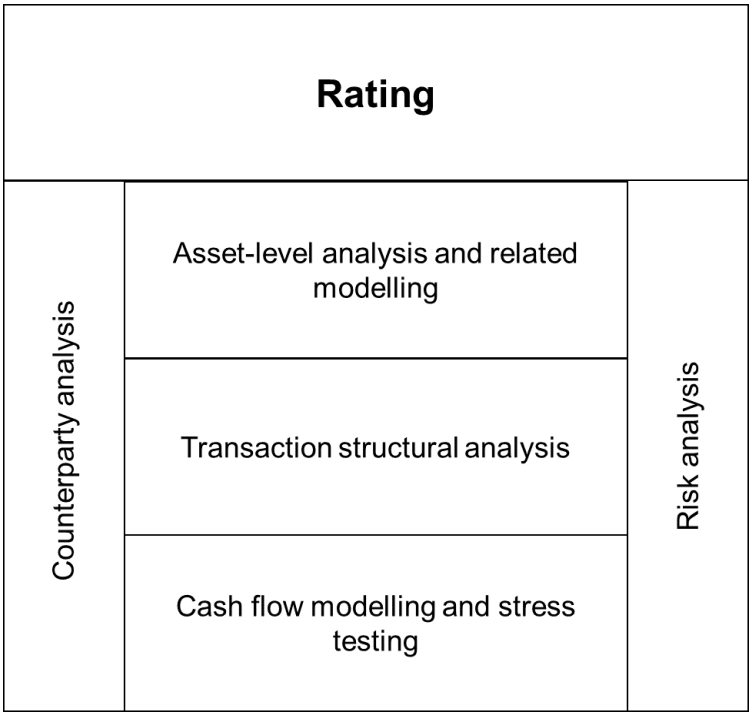
Introduction of Rating Methodology

Our analysis of general structured finance is based on five key factors listed in Exhibit 1 to assess its risks, including (1) asset-level analysis and related modelling; (2) transaction structural analysis; (3) cash flow modelling and stress testing; (4) risk analysis; and (5) counterparty analysis.

We build an asset default model or other quantitative analysis model based on the default characteristics of the underlying assets, and construct cash flow model based on transaction structures. Our ratings are based on the expected loss and collection timing of underlying assets, which are generated by combining default and cash flow models. In addition to quantitative analysis including model outcomes, we also consider various qualitative factors, such as different types of risks and counterparty credit quality. Taking these qualitative factors into consideration could cause the committee to adjust the ratings indicated by the model output.

Exhibit 1: Overview of CCXAP's Approach to General Structured Finance' Rating Assessment



Source: CCXAP research

Key Rating Drivers

1. Asset-level Analysis and Related Modelling

Asset-level analysis is a fundamental part of credit analysis of general structured finance. We select different analysis methods to construct default distributions that are suitable for the underlying assets, including qualitative analysis of features and quantitative analysis of models.

(1) Product Features

- **Asset types:** We investigate the nature of the underlying assets as the asset pool can be a combination of several assets of different natures.
- **Correlation of underlying assets:** We examine the characteristics of homogeneity and correlation of the underlying assets.
- **Amount of underlying assets:** We calculate the amount and dispersion of the underlying assets.

- **Quality of underlying assets:** We evaluate the credit quality of the debtors and counterparties involved in the pooled assets.
- **Value of underlying assets:** We calculate the value of the underlying asset with a fair valuation.
- **Historical performance of underlying assets:** We investigate the scale, time limit, and stability of the cash flow generated by the underlying assets through the historical data provided by the originator. We also examine the sufficiency of historical data, whether it has experienced a complete product cycle or economic cycle and the matching degree between the historical pool and the asset pool. Moreover, we evaluate whether projections of future cash flows are based on reasonable assumptions.
- **Underlying Asset Recovery:** We analyze the expected recovery rate and expected recovery time of the underlying asset.
- **Economic, legal, and regulatory factors:** We consider the macroeconomic environment, the regional economic development and industrial structure, the development status of the industry, and the regional judicial environment.

(2) Model Analysis

Monte Carlo simulation, static or dynamic analysis of historical data and cash flow coverage are the main quantitative methods to analyze the default risk of the underlying assets. We choose one of the methods or combinations of models based the characteristics of the underlying assets of the structured products, available data and external credit enhancement.

- **Monte Carlo simulation:** We simulate the default situation of a single underlying asset, so as to obtain the default situation of the entire asset pool, and then obtain the default distribution of the asset pool through a large number of simulations
- **Static or dynamic analysis of historical data:** We forecast the default and loss of the pooled assets in the future duration, according to the analysis of the historical asset performance provided by the originator with similar characteristics to the pooled assets.
- **Cash flow coverage:** We calculate the coverage ratio of cash inflows of asset pool to cash outflows of the senior class based on the cash flow forecast of the underlying assets and the design of the structured product distribution mechanism.
- **Rating model for commercial real estate portfolios:** We mainly use two indicators: Debt-to-Service Coverage Ratio (“DSCR”) and Loan-to-Value Ratio (“LTV”) to evaluate the credit risk of commercial real estate portfolios.

2. Transaction Structural Analysis

The transaction structure is determined by the counterparties to the transaction in the form of contracts to realize their ultimate interests in the transaction. The transaction structural analysis of general structured finance is based on transaction documents, which consist of the transaction purpose and applicable conditions. The feasibility of structural design is also considered, including asset entrustment or transfer method, cash flow collection and distribution mechanism, credit enhancement mechanism, credit trigger mechanism, and revolving mechanism.

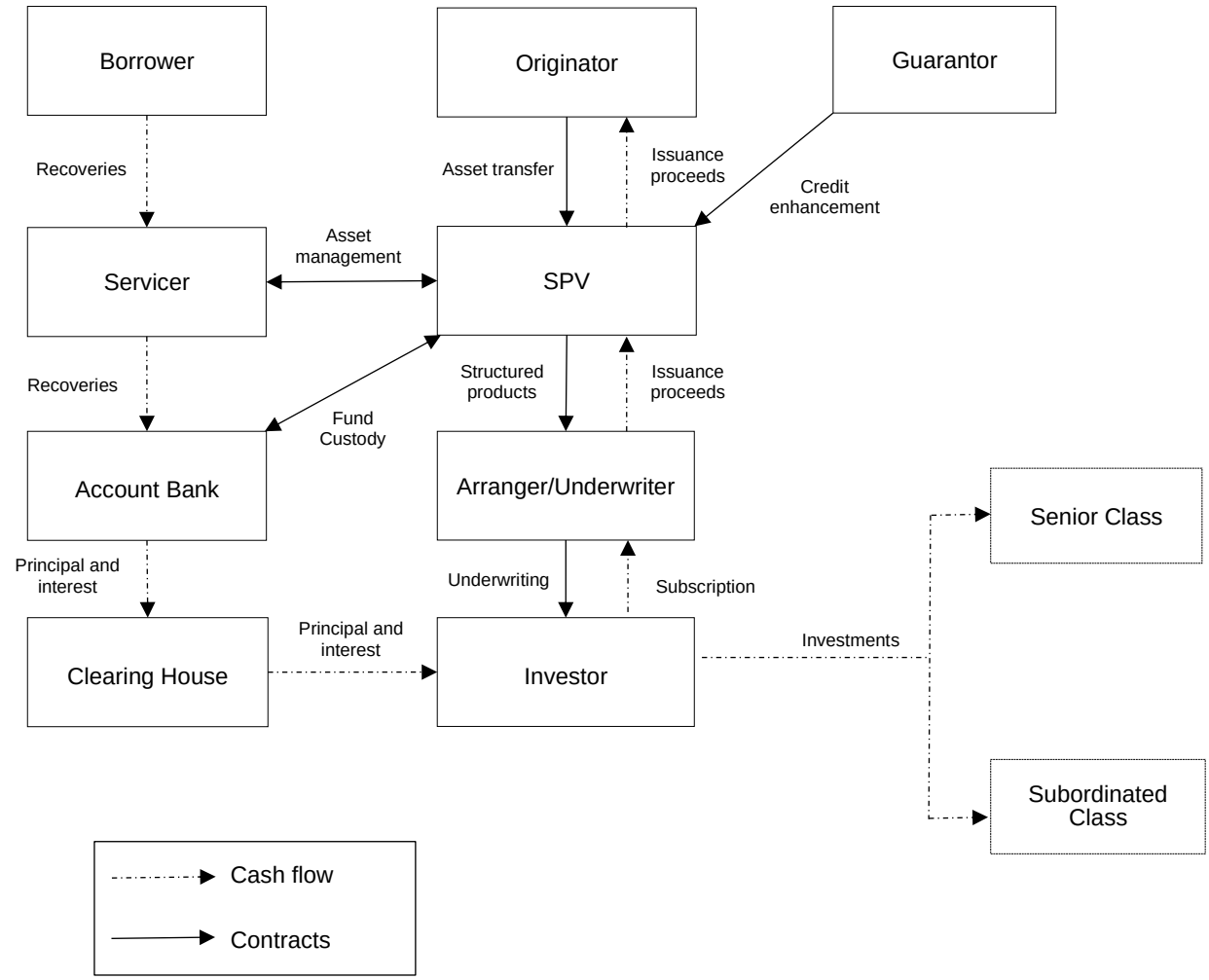
(1) Legal Structure

In structured finance transactions, the bankruptcy isolation of the underlying asset from the originator is usually achieved by establishing a special purpose vehicle (SPV). We review transaction documents and related legal

opinions to determine their impact on the transaction structure and whether collateral pools are isolated from the insolvency risk of entities participating in the securitization.

We evaluate the effectiveness of the true-sale and bankruptcy isolation by analyzing the possible impact of originator bankruptcy on the transaction and examining whether the cash flow of the underlying assets will suffer delays or shortages as a result. The underlying assets are transferred from the originator to the SPV, which acts as the new creditor. Ideally, in the event of insolvency of the originator, the underlying assets transferred to the SPV will not become part of the originator's bankruptcy estate.

Exhibit 2. Transaction Structure of General Structured Finance



Source: CCXAP research

(2) Collection and Distribution Mechanism

We assess the risk of cash flow mismatches and any collection and distribution mechanisms that can mitigate this risk. Among them, various transaction fees related to the establishment of products are usually paid first; the setting of transaction accounts and the collection and transfer of funds are important in cash flow supervision and prevention of capital mixing risks; the distribution sequence of asset income under different scenarios should match the hierarchical design of product structure.

(3) Credit Enhancement

When the credit of the underlying assets is insufficient to support the credit level required for the issuance of structured products, credit enhancements are often provided through subordination, over-collateralization, margin mechanism, reserve fund account, as well as third-party guarantees. We review below the effectiveness of the composition of credit enhancement in general structured finance.

- **Senior/Subordination:** A simple sequential structure that allocates principal top-down from the senior to the subordinate classes and provides a form of credit enhancement by amortizing the senior notes at a faster pace.
- **Over-collateralization:** The issued amount of general structured transaction is generally smaller than the principal balance of the underlying assets, and the excess assets are first compensated when losses occur, thus forming an amount of over-collateralization, which can provide credit support for the senior class.
- **Margin mechanism:** The originator or third-party deposits a guaranteed amount of cash into the margin account. Once the cash flow of the underlying assets cannot fully cover the repayment of the principal and interest of the senior class, the cash is withdrawn from the margin account to protect the principal and interest payment of the senior class.
- **Reserve fund account:** The amount of taxes, fees, and interest on the senior class that is paid in the later stage of the transaction is retained in advance, so as to make up for the liquidity risk that may arise in the process of product repayment in the future.
- **Third-party guarantees:** Third-party guarantees refer to the provision of guarantees, shortfall commitments or liquidity support for the repayment of structured products through external institutions.

(4) Trigger Mechanism

The credit trigger mechanism includes changing the cash flow payment sequence, supplementing cash flow, increasing the frequency of cash flow collection, and strengthening the independence of the underlying assets when there is a situation that is not conducive to the repayment of structured products (trigger conditions). It is a way to ensure that the principal and interest of structured products are paid.

- **Changes in operating conditions of counterparties.** Major counterparties include originators, servicers, fund custodians, and credit enhancers. When the operating conditions of counterparties deteriorate, it may affect the recovery and circulation of the cash flow of the underlying assets of the structured products. This triggers the accelerated collection and repayment mechanism of cash flow of structured products, as well as rights improvement events, reducing the possibility of credit risk.
- **Performance of underlying asset.** The setting of trigger conditions is generally based on the quantitative indicators of the asset pool, such as cumulative default rate. If the asset pool deteriorates to a designated level (triggering condition), it will trigger the accelerated repayment of structured products to give priority to the repayment of investors in senior class.
- **Repayment of senior class.** The transaction documents stipulate that a credit trigger event will be determined when the payment of principal and interest of the senior class deteriorates. The payment sequence after the occurrence of the credit trigger event will be used to guarantee the payments of the senior class.

(5) Revolving Mechanism

Some products may involve a revolving structure. During the revolving period, after the cash flow is collected, the principal of the product will not be repaid, but the remaining funds will be used to purchase new underlying assets after paying the payable taxes, fees, and interest. Since revolving transactions add complexity to the product structure and introduce additional uncertainty, we focus on the issues below.

- **Sufficiency of the underlying asset to enable revolving transactions.** Originators choose assets with sufficient business scale and steady growth of incremental business for structuring. The transaction documents will also stipulate that the originator must provide assets with a certain multiple of the purchasable amount for selection in each revolving period**.**
- **Consistency between the new underlying asset and the initial underlying asset characteristics.** The selection criteria for revolving will be specified in the transaction documents. These criteria generally constrain the newly added assets from four aspects: asset quality, income level/discount method, concentration and remaining period.
- **Trigger conditions for early termination of the revolving period as set out in the transaction documents.** The conditions generally include: (1) no purchase of assets within a specified continuous period; (2) a certain amount of funds not used for continuous purchases on a continuous purchase date; (3) an accelerated repayment event occurs; (4) an event of default occurs; (5) servicer dismissal event occurs.
- **The risk control capability of the originator.** The revolving structure can realize the continuous purchase of the underlying assets, compared with the static cash flow structured products, the cumulative default rate of such products is relatively high and analysis of the originator's risk control ability is required.

3. Cash Flow Modelling and Stress Testing

We incorporate a cash flow model to replicate the transaction's structural features including cash flow distribution, credit enhancement, and trigger mechanisms. The expected loss and expected timing are obtained as model results for mapping the rating of the products. The cash flow model is mainly composed of two parts: the asset-side cash inflow model and the product-side cash outflow model.

The asset-side cash inflow model is the cash inflow distribution of the underlying assets, that is, the amount and time of inflow. The product-side cash outflow model is the cash inflow calculated by the asset-side cash inflow model, which is paid to participating institutions and product investors in accordance with the sequential pay structure agreed in the transaction documents.

Stress Testing

Based on the cash flow model, we also undergo stress testing by adjusting the cash flow model parameters and assumptions to evaluate the expected loss under various stress scenarios.

4. Risk Analysis

(1) Liquidity Risk

We consider whether cash flows from assets and other sources are sufficient to pay the senior class interest and the various taxes that must be paid before the senior class interest. We mainly focus on the cash flow characteristics of the underlying assets, the credit enhancement or reserve funds in the transaction structure,

the fund transfers from the principal account to the income account, as well as the credit status of the servicers to evaluate the liquidity risk of the transactions.

(2) Legal Risk

The nature of the structure product means that after the originator or seller legally and validly transfers the underlying assets, it can be issued by SPV to form a legal structure that achieves bankruptcy remoteness. Therefore, it is necessary to pay attention to the inherent legal risks of structure product when rating, including the bankruptcy isolation of the underlying assets and the originator, the validity of the transfer of the underlying assets, and the validity and enforceability of the transaction documents between counterparties. We attach great importance to clear and affirmative legal opinions issued by law firms.

(3) Commingling Risk

The default of the transaction servicer would mix up with the recovered amount of the underlying assets with other funds of the servicers, if the asset servicer's credit status deteriorates or becomes insolvent. To assess the commingling risk of transactions, we focus on the transaction structure accounts, the commingling reserves, the collection payment transfer/transfer mechanism, as well as the credit quality of the servicer and credit enhancer. The frequency of transfers and reserves in the product accounts depends on the entity rating of the servicers and credit enhancers.

(4) Set-off Risk

Set-off occurs when a borrower is able to use amounts owed to it by a creditor to reduce a liability owed by it to the same creditor. The gross value of receivables may be reduced when the originator fails to pay SPV the amount corresponding to the offset in a timely manner. In order to evaluate the set-off risk of a transaction, we focus on the transaction structure account, the set-off reserves, as well as the credit quality of the originator.

5. Counterparty Analysis

The capabilities of counterparties in general structured finance may have a significant impact on product reimbursement. The counterparties are originators, servicers, trustees, fund custodians, and credit enhancers. We evaluate the role and strength of the counterparties by analyzing their development history, shareholder background, operational and financial status, internal control system, governance structure, and risk management. We analyze counterparty risk through reviewing counterparty dependencies and evaluating counterparty creditworthiness. Specifically, we evaluate how risks are linked between the rated instruments and the various transaction parties.

Assumptions and Limitations

The rating assigned is based on CCXAP’s forward-looking opinions, in which we assume any changes in the macro-environment are in line with our expectations and do not incorporate any unanticipated changes, such as the outbreak of war and devastating natural disasters.

The structured finance rating assigned is based on our view that the expected losses and the likelihood that interest and principal will be repaid on time for the senior class of structured products. CCXAP’s rating on structured products only represents the credit risk associated with the transaction and would not consider other non-credit risks that may affect investment returns. CCXAP’s rating of structured products does not have clear one-to-one correspondence and stable base relationship with the default rates or loss rates. The rating symbol

mainly reflects the relative ranking of the credit risk level of the rated product, rather than providing an absolute measure of default rates or loss rates.

In addition, some of the information and data in the rating of structured products rely on the information provided by other professional institutions recognized by regulators, and we assume that the data used in the rating is true, legal and does not contain misleading statements.

The structured finance rating incorporates our expectations of the rated security's future performance, which are mainly deduced from the historical information via our forward-looking models. The mathematical methods and quantitative models used are based on theoretical assumptions. Actual situations may differ from these theoretical assumptions, resulting in model risk. Moreover, the parameter assumptions used by the rating model are mainly based on historical data, which is limited and may not have experienced a full product cycle or economic cycle. As such, there is substantial uncertainty in the prediction and the mapped ratings sometimes may not match our final ratings. The ratings may include some qualitative factors. CCXAP will assess these factors in an objective and precise manner, but in some cases, the assessment may inevitably be influenced by subjective opinions.

Furthermore, the ratings rely on public information and information provided by the originators. Despite the fact that CCXAP will ensure the integrity, truthiness, and completeness of the data, due to the delay of information, the ratings may in some cases not reflect the rated security's credit risk in a timely manner.

Apart from that, the ratings are determined by our Credit Rating Committee and may be influenced by their empirical views that may not be incorporated into the rating methodology. As a result, the final rating may vary from the mapped rating from the methodology or quantitative model.

A credit rating is the analytical result of current credit worthiness and forward-looking opinion on the credit risk of a rated entity or a debt issue. Credit ratings issued by CCXAP are opinions on the current and relative future credit risk of the rated entities or debt issues, but do not address any other risks, including but not limited to liquidity risk, market price risk, and interest rate risk.

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