

# SPECIAL REPORT

## International

### DCR's Approach to Rating Existing Trade Receivables Transactions in Emerging Markets

#### *EXECUTIVE SUMMARY*

Existing trade receivables securitization has evolved over the last few years. Although a reasonably mature product in the developed markets of the United States and Europe, it is still in the developmental stage in the emerging markets. Nonetheless, trade receivables securitization can provide an attractive funding avenue to the cash-strapped emerging market issuers. Unlike future-flow securitization, the reliance is on the existing assets and not on future, yet-to-be-generated assets in existing trade receivables securitization. Therefore, the rating is not inextricably linked to the originator's performance, thereby providing a fundraising route for those issuers whose credit quality constrains them from using the future-flow securitization route. Trade receivables securitization can enable access to investment-grade funding even if the corporate does not have an investment-grade rating.

This report details DCR's approach to rating

single-seller trade receivables securitization, based on its well-established framework for rating such transactions in developed markets and for adopting the methodology to its experiences and exposures to such transactions in emerging markets. DCR does acknowledge that each trade receivables securitization is unique in its own respect and that the methodology may require certain adjustments depending on the specifics of each transaction. However, DCR perceives that the following general approach can be used as a guideline for all transactions.

As in virtually all of its rating methodologies, DCR considers both qualitative and quantitative factors in its approach. In addition to the review of seller/servicer and underlying collateral/obligor characteristics, DCR analyzes the legal, structural and sovereign issues in determining the required credit enhancement and rating of a trade receivables transaction.



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April 1999

## Structure

In a typical trade receivables transaction, the existing trade receivables of the originator are assigned to a special-purpose vehicle (SPV), which issues securities backed by such assigned receivables. As the trade receivables are of a short-term nature, the typical paydown of the underlying assigned receivables should be approximately one to six months (exact paydown period will depend on the payment terms). However, the trade receivables securitization may be structured to last as long as two to five years—possibly longer—through use of a revolving period. In the revolving period, the collections received from the receivables are used to pay interest only to the investors and the balance is used to repurchase new receivables.

The revolving of short-term assets allows issuers to use securitization as part of a long-term funding strategy and allows trade receivables securities to meet investors targeted maturities. A long revolving period also implies assessing the sustainability of new receivables generation capacity of the originator. However, the same is not a constraint to the rating, as nongeneration of new receivables should trigger early amortization and, therefore, should initiate paydown prematurely.

The principal amortization can be in the form of uncontrolled amortization or controlled amortization. In the case of uncontrolled amortization, all collections are used for allocation toward the interest and principal repayments, and the purchase of new receivables is ceased. The principal amortization period is structured with a sufficient cushion from the normal paydown of the underlying receivables (i.e., if the receivables generally pay down in four months, the

principal amortization period is set at eight months to account for a stressed collections scenario). Controlled amortization involves a specified schedule of principal payments and the purchase of new receivables not fully ceased. Excess collections, after paying interest and scheduled principal, are partially reinvested to purchase new receivables. However, the underlying collateral requirement is usually higher in the case of controlled amortization.

The principal amortization can commence earlier on, triggering an early amortization event. The early amortization events can be segregated into performance-based triggers such as an increase in the defaults, delinquencies, a change in payment terms and nonperformance-based triggers (i.e., bankruptcy of originator, cross default by the originator, commencement of legal proceeding against the originator, etc). Fewer performance-based triggers are needed if a dynamic reserve is incorporated as credit enhancement (detailed later in the section titled “Credit Enhancement”). This also reduces the prepayment risk for investors who are averse to early amortization events.

The receivables pool balance may vary over time because the collections and new receivables generation are generally not uniform. For example, a seller may generate \$10 million in new receivables, but the receivables collected are only \$6 million in a specified period. In this case, the SPV purchases new receivables of \$6 million from the collections account and make up the difference with \$4 million of seller notes to the seller or issues of variable funding certificates. The seller notes and variable funding certificates are not legally subordinated to the investor class, although they can be structured as subordinated. The fluctuations in the receiv-

### Existing Trade Receivables Versus Future-Flow Trade Receivables

1. In the case of existing trade receivables, the reliance is on existing receivables that are already generated, whereas in the case of future-flow receivables, the reliance is on future, yet-to-be-generated receivables.
2. In existing trade receivables, the transaction rating is not linked to the underlying corporate's performance rating. Rating is decoupled from the originator's rating, and the underlying receivables characteristics and performance determine the transaction rating. The transaction rating can be several notches higher than the originator's LC rating. In a future-flow transaction, the transaction rating is strongly tied to the originator's performance and is typically constrained by the corporate's LC rating.
3. The receivables must be of a minimum critical level to justify an existing trade receivables transaction. For example, a US\$50 million existing trade receivables transaction would require existing receivables of at least the same amount and typically higher (number depends on the rating level and credit enhancement requirement). The originator should also be in a position to maintain the same level of receivables on a continuous basis in the future to support the transaction; otherwise the transaction could pay down. In a future-flow transaction, there is no such requirement of a minimum level of receivables. However, typically the annual exports to principal issuance should be approximately 0.75 to 1.00, depending on the risks and mitigants of that particular transaction.

ables pool balances are absorbed by such seller or variable funding certificates. Many trade receivables transactions are structured as master trust, providing flexibility to convert or substitute seller certificates (held by originator) into new investor certificates, provided reserve requirements and rating agencies' conditions are met.

It is important that the receivables pool balance is maintained at a certain minimum level. One way to ensure a minimum level of receivables is the collateral sufficiency test. That is the aggregate receivables less required credit enhancement need to be greater than the investor principal outstanding. This trigger is important because if collections decline or dilutions or losses increase, a collateral shortfall may occur. If there is insufficient collateral, this trigger traps collections in an excess funding account until such time as the collateral is sufficient, or if the deficiency continues without the cure for a specified period, the deal winds down.

### Onshore Versus Offshore Trade Receivables

There are two main classifications of trade receivables securitization: onshore trade receivables securitization and offshore trade receivables securitization.

#### Onshore Trade Receivables

In the case of an onshore trade receivable securitization, the receivables are generated in a single country and are typically denominated in local currency. These receivables are then assigned to a domestic or overseas SPV. The funding can be raised in local currency

(LC) in the concerned country or in foreign currency (FC) in the overseas markets. The transaction rating of domestically raised funds would be constrained by the sovereign LC rating (although not necessarily capped), as the onshore receivables are severely impacted by sovereign macroeconomic conditions and legal constraints, and will reflect the payment ability of the transaction in the local currency.

Onshore trade receivables in which funding is raised overseas in FC are subject to exchange rate, convertibility/transfer risks and sovereign macroeconomic risks. DCR believes that ratings of such onshore transactions could be constrained by both the sovereign FC and LC rating. The sovereign FC ceiling can be exceeded by incorporating a proper cross currency swap covering exchange rate and convertibility/transfer risks. In such a swap the payments in domestic currency are made to an onshore branch of swap counterparty whose corresponding offshore branch agrees to remit the payment in dollars abroad.

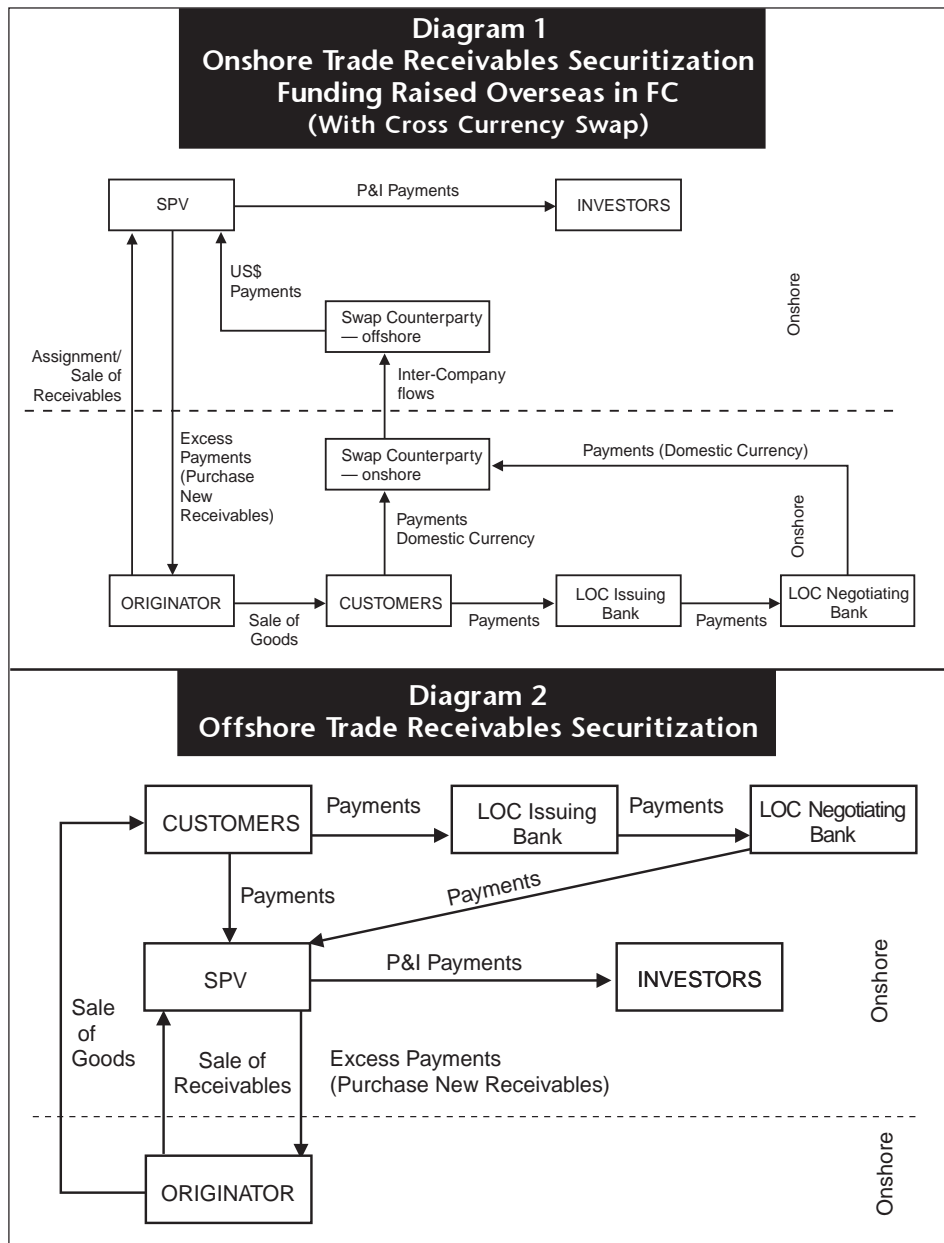
However, DCR also believes that even though the FC ceiling is pierced with a proper cross currency swap, the LC ceiling will, in most cases, constrain the transaction rating (although not necessarily cap it), as the underlying collateral (domestic receivables) cannot be completely insulated from the domestic economic, political and the legal environment of the concerned country.

DCR perceives that the onshore trade receivables performance would be significantly impacted by severe macroeconomic conditions such as high inflation and real interest rates, plunging real incomes, severe recession

**Table 1**

### Linkage of Trade Receivables Securitization to Sovereign Ceilings

	<b>Sovereign FC Ceiling</b>	<b>Sovereign LC Ceiling</b>
Onshore trade receivables, Onshore funding (LC obligations backed by LC receivables)	Not applicable	Constrained by sovereign LC rating; difficult to breach, although possible to exceed depending on the degree of influence the macroeconomic and legal environment the sovereign has on the transaction performance
Onshore trade receivables, Offshore funding (FC obligations backed by LC receivables)	Breached if proper cross currency swap is existent	
Offshore trade receivables, Offshore funding (FC obligations backed by FC receivables)	Automatically breaches FC ceiling as receivables are generated offshore	Breached, as offshore generation of receivables and offshore obligors isolate sovereign risk to a large extent
	Transaction rating capped at certain notches above sovereign FC, depending on transaction specifics, as sovereign interference and expropriation risk cannot be fully ruled out	



or political and social disturbances. For example, if country X is rated 'BB+' on FC and 'BBB+' on LC, then DCR believes that an existing trade receivables transaction in country X should not be rated much higher than 'BBB+' (this is assuming the credit enhancement, collateral characteristics, legal issues, swap mechanism and other transaction features are in conformity with the level of rating). However, it would be difficult to define a set benchmark for the rating level cap, as the influence of the sovereign LC rating on potential performance of the asset-backed transaction will vary across sovereigns and time periods. Despite the LC sovereign rating constraining the transaction rating, it still enables a noninvestment-grade originator on an LC basis to achieve an investment-grade transaction rating.

**Offshore Trade Receivables**

In offshore transactions, the receivables are basically export receivables denominated in hard currencies that are generated offshore, such as the U.S. dollar. These receivables automatically provide a natural hedge against the exchange rate, convertibility and transfer risks and, therefore, are not constrained by the FC ceiling of the country. Also, as the receivables are generated offshore and obligors are in other countries, these receivables are also, to a large extent, isolated (although not completely) from the macroeconomic and legal risks of the originating country, enabling the transaction rating to be higher than the LC sovereign ceiling.

Nonetheless, DCR perceives that the

transaction is still subject to a certain degree of sovereign expropriation and interference risk. Certain agreements under the transaction, such as the sale/assignment of receivables agreement (or sale of goods agreement) between the originator and the overseas SPV, are likely to be governed under domestic laws. This provides leeway to the sovereign to take some drastic actions under the color of law to expropriate receivables in an extreme economic stress situation. DCR will, therefore, cap the transaction rating at a certain level above the sovereign FC rating, depending on transaction and sovereign specifics.

The typical onshore and offshore trade receivables structures are shown on the facing page.

### Other Structural Issues

Besides assignment of receivables directly to the SPV, some trade receivables structures also incorporate the sale of goods to an intermediary that, in turn, assigns the receivables to the SPV. A common reason for having an intermediary is to bypass certain tax and regulatory issues in certain countries. Sale of receivables directly to an SPV could attract value-added tax and could require obtaining approval from regulatory authorities. By having an intermediary SPV between the goods that are sold (instead of assigning receivables), the aforementioned tax and regulatory issues are avoided. This intermediary, in turn, assigns the receivables, and such assignment does not fall under the regulatory laws of the originating country.

Another advantage that can be obtained if the intermediary can be structured as a typical bankruptcy-remote SPV, with its underlying assets "ring fenced" against the competing claims of all its creditors (including the originator selling goods to the intermediary SPV), is to prevent redirection and co-mingling risks. This intermediary SPV assigns all the receivables to a trust or a new SPV. However, as the payment flow in a trade receivables transaction is quite complex, involving a large number of customers who use different modes of payments—letter of credit (LOCs), documents against payment (DPs), documents against acceptance (DAs), etc.—there is a possibility that some payments may flow back to the intermediary rather than to the new SPV or trust, to which the receivables are assigned. This may occur notwithstanding the existence of notices and acknowledgments (as explained in the section titled "Legal Considerations") to obligors with instructions to pay directly into a separate account under the sole domain of the trustee for the benefit of investors. In this case, as the intermediary SPV is a "ring fenced" SPV and

controlled by the trustee, such receivable collections can be structured to be claimed back by the trust, mitigating redirection/co-mingling risks.

The SPV or the trust to which the receivables are assigned (either by the originator directly or through an intermediary SPV) must set up a separate collection account to which all the payments are directed. Funds held in such an account should not be subject to entrapment in the bankruptcy estate of the originator. For this it is necessary that all the payee obligors have been given instructions to pay directly to the specific trust collection account. The payee obligors in a trade receivables transaction are not only the customers paying directly but also customers paying through LOCs and other banking instruments. The notices, therefore, need to be served not only to customers but also to the LOC negotiating bank (in case the beneficiary named in the LOC or other banking instruments is not the designated trust account) through which LOCs and other banking channel payments are routed. The payment mechanism has to be carefully analyzed and it must be ensured that payments are directed only into the specific trust collection account by issue of notices to all intermediaries involved like negotiating banks.

### Collateral Considerations

The receivables represent indebtedness of obligors from the sale of goods. The obligors are the customers that pay directly and the LOC issuing banks in cases in which receivables are backed by LOCs. DCR works with the seller/servicer to achieve eligibility requirements that are not disruptive to the normal course of business, yet provide investor protection. Some examples of receivables deemed ineligible include receivables aged beyond a certain number of days; receivables due from originator's affiliates (although certain structures may allow this); receivables due from certain countries or currencies in case of cross-border transactions; and receivables due from government or government agencies having a right to offset. These gross eligible receivables are further adjusted with a concentration reduction amount to arrive at the net eligible receivables or the borrowing base. The concentration reduction generally includes limits on receivables by region, country, currency and rating level of obligors (including LOC banks).

The purpose of concentration reduction is to ensure the losses or disputes from large obligors do not translate into significant losses for the pool. The concentration limit will depend on the specific transaction and the rating sought for the transaction. However, as a broad benchmark DCR will re-

quire that single noninvestment-grade and investment-grade obligors do not exceed 5% and 10% of the aggregate receivables pool, respectively. Similarly the benchmark limit for noninvestment-grade and investment grade country is 10% and 20%, respectively. The net eligible receivables or the borrowing base is arrived at after deducting the requisite concentration reductions. This is the amount on which the funding is raised and credit enhancement is sized to arrive at the issuance amount of the investor certificates.

<b>Table 2</b>	
<b>A Sample Eligible Receivables and Issuance Amount Calculations in Trade Receivables Securitization</b>	
<b>Gross Receivables</b>	
<b>Less Ineligible Receivables (as per eligibility criteria)</b>	
■	Receivables aged beyond a certain number of days
■	Receivables due from certain ineligible countries
■	Receivables due from certain ineligible currencies
<b>Gross Eligible Receivables</b>	
<b>Less Concentration Reduction</b>	
■	Obligor limit by rating category
■	Obligor limit by country/region
■	Obligor limit by currency
Net eligible receivables (borrowing base)	
Less subordination (or reserve requirements)	
Net principal funding amount	

### Credit Enhancement

Two types of credit enhancements can be applied for existing trade receivables securitization: a dynamic reserve mechanism and static credit enhancement. In a trade receivables pool, receivables pay out within two to three months and the pool composition and characteristics could vary considerably from period to period. The dynamic reserve is a formula-driven form of credit enhancement that constantly adjusts the amount held in the reserve fund in response to changes in pool performance. A dynamic reserve can be much more preferable compared to static credit enhancement, both from investors' and issuers' perspective.

From the investor's perspective, a dynamic reserve allows for a continuous credit enhancement in concert with the performance of underlying assets, takes into account changes in pool characteristics and protects against rapid deterioration of pool performance. It also enables investors to match their returns to maturity as it prevents any early wind-down in case of a spike in losses above a trigger level. From the issuer's perspective, a dynamic reserve provides an enhancement structure more economical than static reserve. It prevents undue penalty requiring a specific amount of cash in the re-

serve account irrespective of the underlying pool's performance. It also considerably reduces the chances of early amortization of the transaction, as fewer performance-based triggers are incorporated in the structure.

#### Dynamic Reserve Credit Enhancement

A dynamic reserve equals the sum of the loss reserve and dilution reserves. The loss reserve sizes the amount required to cover losses using a multiple of past delinquency as a proxy for losses. The dilution reserve amount protects the investor against losses resulting from dilutions such as returned items and billing disputes. DCR uses a sophisticated model for calculation of the dynamic reserve. DCR's dynamic reserve calculation also utilizes a volatility factor based on standard deviation for both the loss and dilution components of the reserve calculation, which is unique in the industry. The complete details of dynamic reserve calculations, along with an illustration, are attached in the Annex on page 10.

The dynamic reserve is set up along with a minimum reserve floor. The reserve floor functions as protection from credit risk implicit in obligor concentrations and ensures that expected levels of dilutions are covered at minimum. It mitigates the risk of loss to investors resulting from the likelihood that a target number of obligors will default in their payment obligations during an amortization period. The reserve floor is calculated by adding an amount equal to certain obligor concentrations. The reserve floor should at least cover a certain number of the obligors in different rating categories, depending on the transaction's rating. The reserve floor should also cover expected dilution, and a stress multiple of the 12-month average dilution will need to be assessed.

#### Static Credit Enhancement

Static credit enhancement can be preferable for a pool of receivables exhibiting little volatility across various performance parameters in the past. For calculation of the static credit enhancement, information on the last four to five years of historical data on receivables performance, including delinquencies, losses and dilutions, is required. The historical data should cover at least one recession cycle of the concerned industry, which will give an indication of the stressed reserve level requirement. DCR will apply its dynamic reserve calculation model on the historical numbers and will typically assume the maximum reserve requirement in any month as the static reserve level for the transaction. This reserve level may be adjusted (upward or downward) if the current operating and expected environment of the receivables so warrant.

If the details on the historical performance are not available or historical performance does not cover a recessionary cycle, DCR, in such circumstances, can use its CBO approach to analyze the receivables. In this case, each rating of each receivable obligor will be analyzed, along with its concentration by rating category, country, region, industry, etc. A box approach will be used in which the receivables always have to satisfy a predesignated rating level, country, region and other specific concentration limits throughout the term of the transaction.

Stricter concentration limits will be placed *vis á vis* concentration limits placed to cull out ineligible receivables (as detailed earlier). Receivables in excess of the concentration limit specified will be deemed ineligible and in the absence of sufficient generation of new receivables in the future periods, the transaction can pay down if the collateral sufficiency test is not met. To arrive at the targeted transaction rating, this pool of receivables will be analyzed based on CBO methodology. This method of calculation of static reserve presupposes that the credit quality or the ratings of all the receivable obligor is known.

#### **Carrying Cost Reserve**

The rating also accounts for the need of reserves sufficient to cover the costs associated with the administration of the securitization itself. Because trade receivables do not have an explicit interest rate, a discount sufficient to cover carrying costs on stressed basis must be imputed. The carrying cost reserve requirement is based on the actual interest costs during the time required to wind down the securitization plus trustee fees, servicing fees and other administrative costs. This reserve requirement is over and above the credit enhancement requirement on dynamic or static basis, which specifically cover default and dilution risks and not the administration costs.

#### **Credit enhancement for onshore trade receivables transactions**

DCR's model for dynamic reserve calculations uses a specific stress multiple commensurate with the transaction rating level (for details on specific stress factors, refer to the **Annex**). This stress multiple is applied to the key performance parameters such as default/dilution ratio, default/dilution horizon stress, etc., to arrive at the dynamic reserve amount. However, these specific stress multiples relate to the receivables generated in a 'AAA' (LC rating) country or offshore receivables in which no single-country risk is present. DCR perceives that in the case of onshore trade receivables, significantly impacted by the sover-

eign macroeconomic and legal conditions, the stress multiple will be different from the specific stress multiple typically used for a 'AAA' (LC rating) country or offshore trade receivables transactions.

DCR perceives that the stress multiple is a function of the sovereign macroeconomic and legal environment of the underlying collateral. Therefore, the stress multiple used if the receivables are generated in a 'AAA' (LC rating) country such as the United States and in any 'BBB'-rated (LC rating) emerging market country has to be different. The degree of difference will be transaction-specific and will critically depend on the targeted transaction rating and the concerned sovereign's domestic economic situation and legal environment, with the sovereign's local currency rating as the broad benchmark.

#### **Legal Considerations**

In legal analysis of trade receivables, the two key areas DCR focuses on are:

- The sale or assignment of receivables to the SPV; and
- The enforceability of such sale or assignment against the obligors.

The SPV to which the receivables are assigned should be bankruptcy remote. The SPV buys the receivables from the originator and sells/pledges them to the trust, thereby distancing receivables from the risk of originator's bankruptcy. DCR's stress scenarios for establishing legal requirements assume that any noninvestment-grade seller experiences bankruptcy during the life of the transaction. Therefore, in all trade receivables transactions, DCR needs to be assured that the trustee has a superior interest in the receivables compared to the interest of other creditors. DCR also evaluates the risk that such interest may be subject to noninsolvency-related and timing delays, such as those that may arise due to sovereign or corporate reasons. DCR will also need to review the potential applicability of bankruptcy law in any of the related jurisdictions that provide for a debt moratorium, automatic stay or other similar delays in the exercise of the creditors' rights and the effect such laws may have on the transfer of receivables prior to bankruptcy or liquidation. Certain legal opinions relating to true sale/nonconsolidation and the perfection of first perfected security interest are required to ensure legal soundness.

The issue of notes to the seller from the SPC for ineligible receivables could affect the true sale characteristic of the transaction in certain jurisdictions. The legal opinion should provide a comfort to DCR that such seller notes do not hinder true sale characterization or else the transaction should incorporate requisite

covenants, such as capping the amount of the seller note, to ensure the soundness of the legal structure of the transaction.

The obligors in trade receivables transactions should be issued a written notice in which the originator instructs the obligors to effect all payments to a collection account that is under the control of a trustee. The notices by themselves may not be enough to bind the obligors to pay into the collection account and the acknowledgments from the obligors as a receipt by countersigning on notice should be obtained. However, in many trade receivables transactions (particularly cross border), because the numbers of the obligors are very large, it is somewhat impracticable for the originator to obtain acknowledgments from all the obligors.

In such a situation, DCR could rely on legal opinions from various obligors' jurisdictions stating that notice by itself is enough for perfection of assignment against the obligors. However, if such jurisdictional legal opinion cannot be obtained, then acknowledgments have to be obtained from the obligors to ensure enforceability of notice. Overall notices and acknowledgments or jurisdictional legal opinions are necessary to ensure that obligors pay into the specific collection account and to mitigate any payment diversion risks.

In addition to legal opinions on true sale, first perfected security interest and notice and acknowledgments, certain other opinions from each applicable jurisdiction regarding enforceability of transaction documents; enforceability of foreign judgments; necessary government consents; and no immunity from legal process, etc., need to be obtained. The specific requirements for a particular transaction will determine the requirements of the legal opinions.

### **Seller/Servicer Issues**

The evaluation of capabilities of the servicer is a key component of rating a trade receivables transaction. Typically, in all trade receivables transactions, the seller is the servicer for the transaction also. DCR reviews the servicer's system capabilities, capacity and flexibility, controls in place to mitigate errors and fraud, management/reporting structure and contingency plans. A sophisticated accounts receivables system is essential to trade receivables transactions because of the rapid turnover of the receivables and very frequent reporting requirements (perhaps on a daily or weekly basis). DCR also evaluates the seller/servicer's financial condition and the risk of bankruptcy. A financially distressed seller/servicer may have a negative impact on the pool's performance. An obligor's willingness to pay a financially troubled seller/

servicer may decrease if collection efforts are expected to slacken. Thus, the financial instability of the seller/servicer may result in higher dilutions, set-off risks and delinquencies.

### **Backup Servicer**

As in the emerging markets, the transaction rating is typically several notches higher than the seller/servicer rating to mitigate the risk of seller's bankruptcy or deterioration of seller's financial condition. DCR will require in most transactions that a "hot" or "warm" backup servicing mechanism is in place to ensure continuous servicing during bankruptcy of the seller/servicer. (A "hot" backup runs a parallel administrative system for receivables, while a "warm" backup reviews the periodic servicer reports, verifies the pool's cash flows and receives monthly computer tapes.) The requirement of a backup servicing mechanism is of particular importance in emerging markets even though the same is not rigidly applied in developed markets.

For a rapidly revolving asset type like trade receivables, the timeliness of transfer to the backup servicer's system is critical. For this reason, DCR prefers the backup servicer be involved in the servicing process at the beginning of the transaction. The backup servicer should be provided with all the data files and the same should be checked for operations in its system. The backup servicer should receive all the data files on a fixed periodic basis and maintain an on-line link-up with the existing servicers' systems so that it has real time data and active oversight of servicing. The backup servicer transfer time plan should be clearly set up. Also, the backup servicer servicing capabilities in terms of its track record, experience, staffing levels, data handling, processing capabilities and set-up needs to reviewed.

The triggers incorporated in the transaction for the backup servicer commencement need to be carefully analyzed. In view of the importance of backup servicer and linkage of receivables performance to the seller's financial condition, the triggers should be proactive to warn any potential bankruptcy of the originator. The triggers, therefore, should be linked directly to the servicer's financial condition such as its debt-to-capital ratio, cross defaults on other obligations, commencement of any legal proceeding against the seller, etc.

### **Fraud Risks**

The review of the seller/servicer's structure of management and controls/checks in place is also necessary to mitigate fraud risks. Fraud risk is present in securitizations of all asset types. However, it is of critical importance in

rapidly revolving asset type like trade receivables. This risk is further increased when a trade receivables transaction is structured in a subinvestment-grade sovereign.

To mitigate fraud risks, the initial pool of receivables, the invoicing procedures, reporting systems, etc., should be audited by a certified public accounting firm (preferably "big-five"). Such an audit, as well as a review of management controls and checks in place, should be carried out throughout the term of the transaction. The servicer report incorporating complete details on receivables performance, reserve requirements and compliance to transaction covenants in a collection period should be prepared in a predefined format throughout the life of the transaction. The same needs to be vetted by a certified public accounting firm on a regular basis. The servicer report is typically prepared by the seller/servicer. However, DCR may insist that a third-party servicer take on this responsibility in certain cases to further mitigate the fraud risks.

## Major Risks

**Legal risks:** The legal risks are mitigated by suitable legal opinions on the bankruptcy remoteness of SPV, true sale of receivables to the SPV and ensuring enforceability of notices in applicable jurisdictions either through obtaining acknowledgments from customers or through jurisdictional legal opinions.

**Obligor default and dilution risks:** The default risk of the obligors and dilution risks are mitigated by culling out ineligible receivables, setting up concentration limits and determining credit enhancement levels based on historical analyses of payments (in case of static credit enhancement) and ongoing analyses of payments (in case of dynamic reserve).

**Sovereign risks:** DCR perceives the element of sovereign risks is in both offshore and onshore trade receivables transaction. In offshore trade receivables, the risk is considerably muted, although the risk of sovereign interference in a severe stress situation cannot be ruled out. In onshore trade receivables, the transaction is subject to a higher degree of legal and macro-economic risks, as receivables are generated onshore, and therefore, the transaction rating is typically capped near the LC rating, depending on the transaction structure and the sovereign involved.

The two other major elements of sovereign risks are detailed below:

◆ **Redirection risks.** There is no product redirection risks in the transaction, as the funding is against only the existing receivables. The payment redirection risks are mitigated by issuing notice to all obligors (including negotiating banks in the case of indirect LOC payments by customers) and obtaining acknowledgments or legal opinion in relevant jurisdictions to ensure enforceability of the notices.

◆ **Transfer and convertibility risks.** In the case of an offshore trade receivables (offshore funding backed by offshore obligors), transaction automatically mitigates against transfer and convertibility risks, as the receivable payments do not enter the originator's country. In the case of an onshore trade receivables in which the funding is raised overseas (offshore funding backed by onshore receivables), the transfer and convertibility risk is typically mitigated by incorporating a cross currency swap.

**Fraud risks.** The risk of fraud is mitigated by an initial audit of the receivables pool and invoicing procedures and, thereafter, a regular audit of the same along with a review of the seller/servicer's structure of management and controls and checks in place, throughout the term of the transaction. The installation of a hot third-party servicer that prepares the servicer report also mitigates the fraud risk to a certain extent. While fraud risk is apparent in all securitizations involving the originator acting as the servicer, DCR believes the risk is increased when structuring a transaction in a subinvestment-grade sovereign.

**Servicing risks.** The servicing risks are mitigated by incorporating a "hot" or "warm" backup servicing mechanism. As the originator typically is the main servicer, the transaction covenants should have suitable proactive backup servicer triggers forewarning a originator's deteriorating financial condition and impending bankruptcy. Review of the backup servicer transfer plan and the backup servicer's credentials is also necessary to ensure smooth operation of the transaction in the case of triggering the backup servicer event. **DCR**

**Annex**

**Calculating the Dynamic Reserve**

**Dynamic Reserve** = Loss Reserve + Dilution Reserve (subject to a minimum required reserve floor)

**Loss Reserve** = (A x B x C x D) + E

- A = Rating Multiplier
- B = Default Ratio
- C = Default Horizon Stress
- D = Payment Terms Factor
- E = Default Volatility Factor

**Rating Multiplier:** This number is used to add a multiple of stress commensurate with the transaction's rating level to the other Loss Reserve components (see table below)

**Default Ratio:** Highest three-month rolling average (of the most recent 12 months) of the default percentage that is an approximation of the losses, plus any identified write-offs less than 91 days past due when written off, divided by the total sales in the month in which these loss proxy accounts were generated. This sales number is used to account for the time-lag effect when estimating performance rates. Assuming 30-day payment terms and accounts in a delinquent bucket of 91-120 days used as a loss proxy, the Default Ratio would equal the highest three-month rolling average over a 12-month of all accounts 91-120 days past due plus any identified non-pays, as a percentage of sales four months prior.

**Default Horizon Stress:** All sales that occurred during the default horizon as a percentage of eligible receivables. The default horizon is the lesser of (1) the actual time from origination for a receivable to become ineligible for the purposes of securitization, or (2) the sum of the weighted-average payment terms and the number of days delinquent used to approximate losses, in the example above, the default horizon is approximately four months (30 + 91 = 121 days). Given stable originations and a 30-day portfolio turnover, the stress would equal approximately four. This stress, in conjunction with the Default Ratio, quantifies the amount of receivables likely to default that are embedded in the current portfolio.

**Payment Terms Factor:** Current weighted-average payment terms divided by the original weighted-average payment terms. On the first day of a transaction, this factor will always be one, but a sampling of accounts throughout the term of the transaction will indicate changes in the weighted-average payment terms. This factor is used to adjust the horizon stress if there is a fluctuation in the payment terms, since the originator has the ability to control/change payment terms.

**Default Volatility Factor:** The 12-month sample standard deviation of the monthly default percentage (an approximation of the losses, plus an identified write-offs less than 91 days past due when written off, divided by the total sales in the month during which these loss proxy accounts were generated), multiplied by the Z value. The Z value provides a confidence interval commensurate with the rating of the transaction (see Table below). This Volatility Factor protects investors from spikes occurring after a period of relatively stable performance.

**Dilution Reserve** = [(A x B) + E] x C x D

- A = Rating Multiplier
- B = Dilution Ratio
- C = Dilution Horizon Stress
- D = Payment Terms Factor
- E = Dilution Volatility Factor

Rating Multipliers and Appropriate "Z" Values		
Required Rating	Rating Multipliers	"Z" Values
AAA	2.50	2.58
AA	2.25	2.58
A	2.00	1.96
BBB	1.50	1.96

**Rating Multiplier:** This number is used to add a multiple of stress commensurate with the transaction's rating level to the other Dilution Reserve components (see table above).

**Dilution Ratio:** 12-month average of the percentage of current dilutions over the sales in the month originating the dilutions.

**Dilution Horizon Stress:** Cumulative sales in the dilution horizon divided by the ending balance of the eligible receivables. The dilution horizon is the weighted-average time lag between the sale and the recognition of dilution, as estimated using a sampling of invoices for dilutive items. This stress, in conjunction with the Dilution Ratio, quantifies the amount of receivables likely to be subject to dilution that are embedded in the current portfolio.

**Payment Terms Factor:** See above.

**Dilution Volatility Factor:** Sample standard deviation over 12 months of the percentage of current dilutions over the sales in the month originating the dilutions, multiplied by the Z value. The Z value provides a confidence interval commensurate with the rating of the transaction (see table above). This volatility Factor protects investors from losses due to dilutions in a wind-down scenario, even after a period of relatively stable dilutions.

## Case Study: The Mechanics of the Dynamic Reserve

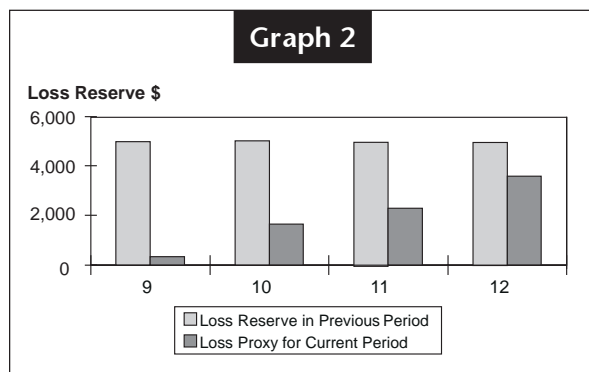
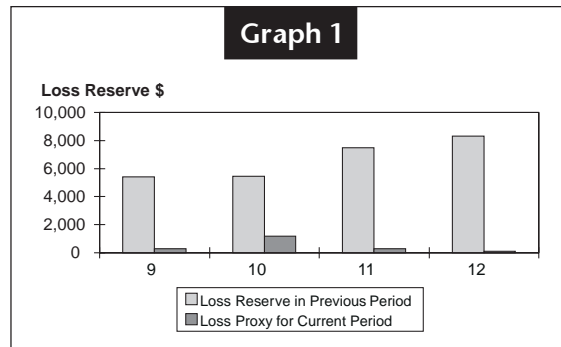
The following illustrates the mechanics of the dynamic reserve in an actual trade receivables transaction (note that numbers have been changed slightly to protect the identity of the transaction). In both the Loss Reserve and Dilution Reserve tables (page 13), it is possible to see that every level of losses or dilutions is met by more than adequate credit enhancement coverage.

**Mechanics of the Loss Reserve:** The following illustration emulates a 'AAA'-rated security with constant 30-day payment terms so the Rating Multiplier always equals 2.50 (see page 10) and the Payment Terms Factor always equals 1 (30 days/30 days). In month 10, the number used as a loss proxy has increased from the previous month's level of 1.25%. In this case, the loss proxy is a sum of any accounts identified as non-pays and accounts 91-120 days delinquent. Because the loss proxy increased, the three-month rolling average of the loss proxy (column ii) also increases. Taking the highest three-month rolling average gives a Default Ratio of 0.73%, meaning that for every \$1.00 of originations there is \$0.0073 of embedded loss. To account for the losses embedded in the portfolio that were generated since the period in which the loss proxy accounts were generated, the Default Horizon Stress is calculated by dividing the four-month cumulative sales by the ending balance of eligible receivables. Thus, it is expected that if a wind-down commences in month 10, 2.24% ( $3.07 \times 0.73\%$ ) of the total portfolio is expected to result in losses during the wind-down period. The 12-month sample standard deviation of the loss proxy increases from 0.10% to 0.24% in month 10. The standard deviation is then multiplied by the 'AAA' Z value of 2.58% (see page 10) to calculate the Default Volatility Factor of 0.62%. The Default Volatility Factor is added to the product of the Rating Multiplier, Default Ratio, Default Horizon Stress and Payment Terms Factor to realize the required Loss Reserve percentage [ $(2.50 \times 0.73\% \times 3.07 \times 1) + 0.62\% = 6.22\%$ ].

**Wind-down protection:** In a wind-down scenario, the reserve levels remain at the levels required in the month preceding the wind-down. The Loss Reserve table illustrates that when the highest losses occur (month 10), the reserve level required in the previous month (4.24%) provides support equal to 3.4X the single-month loss rate (1.25%). As the default horizon stress in month nine is 3.23, the month nine reserve level is sufficient to cover losses during a wind down. Graph 2 presents a striking representation of the sufficiency of the reserve, in dollar terms, if a wind-down commences in month 10. The graph shows that the reserve account, held at the month nine level (4.24%), covers even the peak Default Ratio for the balance of the horizon [ $1.25\% - (3 \times 0.73\%) = 3.44\%$ ]. Notwithstanding a wind-down, the Loss Reserve immediately increases dramatically in response to a spike of the loss proxy indicator, as illustrated in Graph 1.

**Volatility Protection:** The Dilution Reserve table presents the effect on the reserve calculation of an increase in dilutions in month 12. While the Dilution Reserve increases substantially at the end of the month, the table indicates that the Dilution Volatility Factor is a strong catalyst in the reserve requirement increase. Dilutions more than double from month 11 to month 12, but the Dilution Ratio increases by only 7.9% because it is a 12-month rolling average calculation. The standard deviation calculation, however, captures the spike and causes the Dilution Volatility Factor to increase 2.4%, from 2.54% to 3.16%.

**Mechanics of the Dilution Reserve:** The calculation of the Dilution Reserve is similar to that of the Loss Reserve. However, because a 12-month rolling average of Dilutions has more of a tendency to dampen spikes than the three-month rolling average that is used in the Loss Reserve calculation, the volatility factor is embedded in, rather than added to, the Dilution Reserve. Taking Month 12 as an example, dilutions as a percent of sales in the month that generated the dilutions increased to 5.76% from 2.33%. This dramatic increase met an increase in the Dilution Ratio from 3.16% to only 3.41%. However, the 12-month



## Case Study (cont'd)

sample standard deviation simultaneously increased to 1.22%, in turn causing the Dilution Volatility Factor to reach 3.16% (1.22% times the 'AAA' Z value of 2.58).

In this example, the 'AAA' Rating Multiplier is used and the Payment Terms Factor remains unchanged at 1. To calculate the required Dilution Reserve level, the product of the Rating Multiplier and the Dilution Ratio is added to the Dilution Volatility Factor ( $2.50 \times 3.41\% + 3.16$ ), then this sum is multiplied by both the Dilution Horizon and the Payment Terms Factor ( $((2.50 \times 3.41\%) + 3.16) \times 1.63 \times 1$ ).

Annexure (cont'd)

Loss Reserve

Month	A Rating Multiplier (for 'AAA' rating)	i Loss/Proxy/ Sales 4-Month Prior	ii (3-Month Rolling Avg. of i)	B Default Ratio 12-Month Peak of ii)	iii 4-Month Cumulative Sales	iv Ending Balance Eligible Receivables	C Default Horizon Stress (iii/iv)	D Payment Terms Factor	v 12-Month Sample Standard Deviation (of i)	E Default Volatility Factor (2.58xV)	vi Loss Reserve ((AxBxCxD)+E)
1	2.50	0.32%	0.44%	0.56%	\$349,600	\$110,700	3.16	1	0.13%	0.33%	4.71%
2	2.50	0.60%	0.49%	0.56%	\$362,000	\$120,750	3.00	1	0.14%	0.35%	4.51%
3	2.50	0.42%	0.45%	0.56%	\$387,500	\$121,700	3.18	1	0.14%	0.35%	4.77%
4	2.50	0.33%	0.45%	0.56%	\$382,600	\$112,800	3.39	1	0.10%	0.27%	4.98%
5	2.50	0.52%	0.42%	0.49%	\$386,400	\$116,000	3.33	1	0.11%	0.28%	4.37%
6	2.50	0.50%	0.45%	0.49%	\$397,900	\$123,900	3.21	1	0.11%	0.27%	4.21%
7	2.50	0.47%	0.49%	0.49%	\$391,900	\$120,900	3.24	1	0.11%	0.27%	4.28%
8	2.50	0.40%	0.45%	0.49%	\$399,800	\$109,750	3.64	1	0.11%	0.27%	4.78%
9	2.50	0.54%	0.47%	0.49%	\$396,000	\$122,750	3.23	1	0.10%	0.25%	4.24%
10	2.50	1.25%	0.73%	0.73%	\$361,000	\$117,500	3.07	1	0.24%	0.62%	6.22%
11	2.50	0.76%	0.85%	0.85%	\$356,000	\$126,750	2.81	1	0.25%	0.64%	6.62%
12	2.50	0.27%	0.76%	0.85%	\$356,000	\$118,200	3.01	1	0.26%	0.68%	7.09%

Dilution Reserve

Month	A Rating Multiplier (for 'AAA' rating)	i Dilutions/ Sales 2-Month Prior	B Dilution Ratio (12-Month Avg. of i)	ii 2-Month Cumulative Sales	iii Ending Balance Eligible Receivables	C Dilution Horizon Stress (ii/iii)	D Payment Terms Factor	iv 12-Month Sample Standard Deviation (of i)	E Dilution Volatility Factor (2.58 x iv)	v Dilution Reserve ((AxB)+E)xC+D)
1	2.50	5.05%	3.26%	\$191,000	\$110,700	1.72	1	1.65%	4.26%	21.39%
2	2.50	2.04%	2.95%	\$186,500	\$120,750	1.55	1	1.54%	3.98%	17.55%
3	2.50	3.96%	3.09%	\$196,500	\$121,700	1.62	1	1.46%	3.76%	18.57%
4	2.50	3.16%	3.10%	\$196,100	\$112,800	1.74	1	1.35%	3.48%	19.55%
5	2.50	3.64%	3.16%	\$189,900	\$116,000	1.64	1	1.28%	3.29%	18.33%
6	2.50	3.79%	3.22%	\$201,800	\$123,900	1.63	1	1.22%	3.15%	18.25%
7	2.50	3.92%	3.29%	\$202,000	\$120,900	1.67	1	1.18%	3.03%	18.80%
8	2.50	3.03%	3.27%	\$198,000	\$109,750	1.80	1	1.12%	2.90%	19.95%
9	2.50	2.81%	3.45%	\$194,000	\$122,750	1.58	1	0.77%	1.98%	16.76%
10	2.50	1.44%	3.26%	\$163,000	\$117,500	1.39	1	0.95%	2.45%	14.69%
11	2.50	2.33%	3.16%	\$162,000	\$126,750	1.28	1	0.98%	2.54%	13.33%
12	2.50	5.76%	3.41%	\$193,000	\$118,200	1.63	1	1.22%	3.16%	19.08%

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Based in Hong Kong, Mr. Agarwala is responsible for credit rating analysis of structured finance transactions in the Asia-Pacific region. He works on various traditional existing asset-backed types, such as trade, credit card and consumer receivables, aside from nontraditional future-flow transactions including trade and financial future-flows.

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## Long-Term Debt & Preferred Stock Rating Scale

### Rating Definition

- AAA** Highest credit quality. The risk factors are negligible, being only slightly more than for risk-free U.S. Treasury debt.
- AA+** High credit quality. Protection factors are strong. Risk is modest but may vary slightly from time to time because of economic conditions.
- AA**
- AA-**
- A+** Protection factors are average but adequate. However, risk factors are more variable and greater in periods of economic stress.
- A**
- A-**
- BBB+** Below average protection factors but still considered sufficient for prudent investment. Considerable variability in risk during economic cycles.
- BBB**
- BBB-**
- BB+** Below investment grade but deemed likely to meet obligations when due.
- BB**
- BB-** Present or prospective financial protection factors fluctuate according to industry conditions or company fortunes. Overall quality may move up or down frequently within this category.
- B+** Below investment grade and possessing risk that obligations will not be met when due. Financial protection factors will fluctuate widely according to economic cycles, industry conditions and/or company fortunes. Potential exists for frequent changes in the rating within this category or into a higher or lower rating grade.
- B**
- B-**
- CCC** Well below investment grade securities. Considerable uncertainty exists as to timely payment of principal, interest or preferred dividends. Protection factors are narrow and risk can be substantial with unfavorable economic/industry conditions, and/or with unfavorable company developments.
- DD** Defaulted debt obligations. Issuer failed to meet scheduled principal and/or interest payments.
- DP** Preferred stock with dividend arrearages.

## Short-Term Debt Rating Scale

### Rating Definition

- High Grade*
- D-1+** Highest certainty of timely payment. Short-term liquidity, including internal operating factors and/or access to alternative sources of funds, is outstanding, and safety is just below risk-free U.S. Treasury short-term obligations.
- D-1** Very high certainty of timely payment. Liquidity factors are excellent and supported by good fundamental protection factors. Risk factors are minor.
- D-1-** High certainty of timely payment. Liquidity factors are strong and supported by good fundamental protection factors. Risk factors are very small.
- Good Grade*
- D-2** Good certainty of timely payment. Liquidity factors and company fundamentals are sound. Although ongoing funding needs may enlarge total financing requirements, access to capital markets is good. Risk factors are small.
- Satisfactory Grade*
- D-3** Satisfactory liquidity and other protection factors qualify issues as to investment grade. Risk factors are larger and subject to more variation. Nevertheless, timely payment is expected.
- Non-Investment Grade*
- D-4** Speculative investment characteristics. Liquidity is not sufficient to insure against disruption in debt service. Operating factors and market access may be subject to a high degree of variation.
- Default*
- D-5** Issuer failed to meet scheduled principal and/or interest payments.

Credit ratings are based on information obtained from sources believed to be accurate and reliable and are not a recommendation to buy, sell or hold a financial obligation. We do not perform an audit in connection with any information received and may rely on unaudited information. Credit ratings may be subject to revision, suspension or withdrawal at any time as necessary due to changes in or unavailability of information or other circumstances.



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