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Rating Action: Moody's assigns (P)Aaa Rating to European Financial Stability Facility (EFSF)

Global Credit Research - 20 Sep 2010

First-time rating assignment

Frankfurt am Main, September 20, 2010 -- Moody's Investors Service has today assigned a provisional long-term rating of (P)Aaa to the prospective debt issuance programme of the European Financial Stability Facility (EFSF).

RATING RATIONALE

The (P)Aaa rating is based on EFSF's contractual elements, including the irrevocable and unconditional guarantees by the participating states, EFSF's cash reserve and the loan-specific cash buffer as well as the creditworthiness of the participating Aaa Eurozone Member States and their firm commitment to EFSF.

Each loan to a member state will be funded by a debt issuance by the EFSF. The debt issuance will be used to fund the loan, the EFSF cash reserve and a loan-specific cash buffer which represents an additional cash set-aside to support repayment of the debt. At the same time, all member states participating in the EFSF program but not borrowing from the program will provide a 120% guarantee of the entire EFSF debt issue, apportioned by their respective shares in the European Central Bank's capital.

The loan-specific cash buffer will be sized so that the remaining portion of the debt issue that is not fully backed cash will be fully covered by Aaa-rated member states.

"As a result, each EFSF debt issuance is backed first by the promise to repay the loan by the borrowing member state, then by Aaa-rated guarantees and cash sufficient by themselves to cover all of associated debt service if the loan is not repaid, plus guarantees from the non-Aaa rated members states participating in the EFSF support program," explains Dietmar Hornung, Vice President -- Senior Credit Officer in Moody's Sovereign Risk Group.

The outlook on the provisional rating is stable, in line with the stable rating outlooks of 15 of the 16 participating countries.

Risks that could negatively affect the creditworthiness of a programme after its issuance include a potential deterioration in the creditworthiness of the participating Eurozone Member States. Changes in the ratings of these countries could result in downward pressure on ratings assigned to EFSF issuances.

The creditworthiness of issuance programmes would be particularly sensitive to changes in the ratings of Aaa countries with large EFSF contribution keys, i.e. Germany, France, and the Netherlands. Moreover, a weakening of the Eurozone Member States' commitment to EFSF could have negative rating implications.

Although the primary backing for EFSF's debt are EFSF's loans to recipient member states, the following credit enhancements are in place.

(i) Over-guarantee mechanism: Each guarantor is required to issue an irrevocable and unconditional guarantee which in aggregate amounts to an overall 120% over-guarantee of the obligations of the EFSF (principal and interest) in respect of the funding instruments issued or entered into by the EFSF. Hence, each Eurozone Member State issues a capped guarantee in proportion to its share in the ECB capital, leading to guarantees that exceed the value of the issued debt by 20%. If a supporting state becomes a borrower, it may -- if all guarantors agree -- step out as a guarantor although this would not affect its liability under existing guarantees. In such a case, the share of new guarantees or guarantees of new debt issuances that were previously potentially supported by this state would be redistributed according to the same principle (i.e. share of the Eurozone Member State in the ECB's capital), up to the point that a country reaches the limit of its guarantee commitment.

(ii) EFSF cash reserve: An additional credit enhancement is represented by the EFSF's cash reserve. Funds distributed to a borrower will be net of an up-front service fee (calculated as 50 basis points on the aggregate principal amount of each loan) and the net present value of the interest rate margin that would accrue on each loan at the contractual rate to its scheduled maturity date. The cash reserve will ultimately provide remuneration for the guarantors but will initially be retained by the EFSF as loss-absorbing capital.

(iii) Loan-specific cash buffer: In addition to the cash reserve, every time the EFSF makes a loan under a loan facility agreement to a borrower member state, it will establish a loan-specific cash buffer which will be sized such that each EFSF loan is fully covered by Aaa guarantees and/or an amount of cash equal to the relevant portion of the EFSF cash reserve plus any loan-specific cash buffer.

(iv) Potential additional support: While a pure quantitative analysis of the contractual arrangements per se supports the assignment of a (P)Aaa rating, the downgrade risk of a programme after its issuance is mitigated by the strong implicit support for this facility evident among the participating countries. Statements by the Eurozone Members' respective heads of state reflect the high-level commitment to EFSF.

Nevertheless, a default on EFSF debt would entail significant pecuniary and political costs for Europe. "Apart from threatening the survival of the European Monetary Union, it would also result in considerable reputational risks for core European countries like Germany and France, and would likely increase their borrowing costs," says Mr. Hornung.

In the event that the existing contractual credit enhancements proved insufficient to EFSF debt service requirements, additional support from the Eurozone Member States would likely be sought. The EFSF Framework Agreement accommodates possible changes in the facility's mechanics that could be implemented in order to preserve its creditworthiness.

For further information, please refer to Moody's Special Comment entitled "Key Elements of EFSF's (P)Aaa Rating," which is available on www.moodys.com.

EFSF's rating was assigned by evaluating factors relevant to the specific characteristics of the Facility, reflecting its dual nature as financing

facility and a vehicle of public policy. These attributes were compared against other issuers, and its rating is believed to be similar to other issuers of similar credit risk.

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MOODY'S INVESTORS SERVICE

SPECIAL COMMENT

Key Elements of EFSF's (P)Aaa Rating

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Summary

On 20 September 2010, Moody's Investors Service assigned a provisional long-term rating of (P)Aaa to the prospective debt issuance programme of the European Financial Stability Facility (EFSF).[1]

The (P)Aaa rating is based on EFSF's contractual elements including the irrevocable and unconditional guarantees by the participating states, EFSF's cash reserve and the loan-specific cash buffer, as well as the creditworthiness of the participating Aaa Eurozone Member States and their firm commitment to the EFSF.

Each loan to a member state will be funded by a debt issuance by the EFSF. The debt issuance will be used to fund the loan, the EFSF cash reserve and a loan-specific cash buffer, which represents an additional cash fund that is set aside to support repayment of the debt. At the same time, all member states participating in, but not borrowing from, the EFSF programme will provide a 120% guarantee for the entire EFSF debt issue, apportioned by their respective shares in the ECB capital.

The loan-specific cash buffer will be sized so that the remaining portion of the debt issue that is not fully backed by cash will be fully covered by contributions from Aaa-rated member states.

As a result, each EFSF debt issuance is backed first by the promise to repay the loan by the borrowing member state, then by Aaa-rated guarantees and cash so as to cover all the associated debt service if the loan is not repaid, plus guarantees from the non-Aaa-rated members states participating in the EFSF support programme.

The outlook on the provisional rating is stable, in line with the stable rating outlooks currently held by 15 of the 16 participating countries.

[1] Moody's assigns a provisional rating when it is highly likely that the rating will become final after all documents are received. Moody's will monitor the transaction on an ongoing basis to ensure that it continues to perform in the manner expected. Any subsequent changes in the rating will be publicly announced and disseminated through Moody's Client Service Desk.

Risks that could negatively affect the creditworthiness of an EFSF debt programme after its issuance include a potential deterioration in the creditworthiness of the participating Eurozone Member States. Changes in the ratings of these countries could result in downward pressure on ratings assigned to EFSF issuances.

The creditworthiness of issuance programmes would be particularly sensitive to changes in the ratings of Aaa countries with large EFSF contribution keys, i.e. Germany, France and the Netherlands. Moreover, a weakening of the Eurozone Member States' commitment to EFSF could also have negative rating implications.

This Special Comment provides a comprehensive analysis of the credit's structure (section 1) and the Eurozone Member States' Commitment to the EFSF (section 2), as well as a quantitative scenario analysis (section 3) and a structured analysis (section 4) in which we explore the value of the additional credit protections in the EFSF's structure.

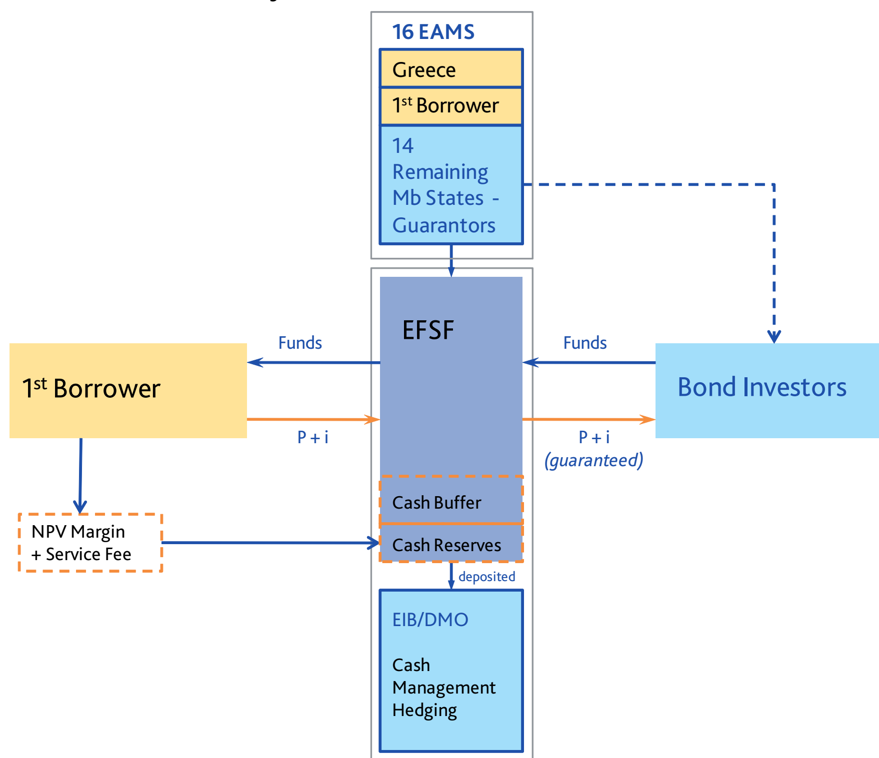
The supplementation of the scenario analysis with a structured portfolio analysis is valuable as it combines the explicit discussion of some scenarios – reflecting what market participants apparently believe to be some of the more likely borrowers and more likely defaulters, while recognizing that these scenarios remain highly unlikely – with the broader stochastic analysis of the full range of possible borrowers and defaulters.

1. Credit Structure

While the primary backing for EFSF's debt is EFSF's loans to recipient member states, there are credit enhancements in place – the first of which is represented by member states' guarantees (EAMS, see exhibit 1).

EXHIBIT 1

Financial Flows Summary



Each guarantor is required to issue an irrevocable and unconditional guarantee at an amount equal to the product of (a) the contribution of a key percentage[2] as a function of the guarantor's share in the ECB capital, (b) 120%, and (c) the obligations of the EFSF (principal and interest) in respect of the funding instruments issued or entered into by the EFSF. Hence, each Eurozone Member State issues a capped guarantee in proportion to its share in the ECB capital, leading to guarantees that would exceed the value of the issued debt by 20%.

If a supporting state becomes a borrower, it may step out as a guarantor if all guarantors agree, and the share of new guarantees or guarantees of new debt issuances previously potentially supported by this state will be redistributed according to the same principle (share of the Eurozone Member State in the ECB capital) up to the point that a country reaches the limit of its a guarantee commitment (adjusted EFSF contribution key). However, the stepping-out of a guarantor does not affect its liability under existing guarantees.

If a borrower were to default on its payment obligation, the EFSF can call on the guarantees, the accumulated cash reserve and the relevant loan-specific cash buffer.

Hence, an additional credit enhancement is represented by the EFSF's cash reserve. Funds distributed to a borrower will be net of an up-front service fee (calculated as being 50 basis points on the aggregate principal amount of each loan) and of the net present value of the interest rate margin that would accrue on each loan at the contractual rate until its scheduled maturity date.

The cash reserve will ultimately provide remuneration for the guarantors, but will initially be retained by the EFSF as loss-absorbing capital the cash reserve is only to be distributed to guarantors after the repayment of all funding instruments that have been issued by the EFSF.

In addition, every time the EFSF makes a loan under a loan facility agreement to a borrower member state, it will establish a loan-specific cash buffer. This cash buffer will be sized on the date that a loan is advanced to a member state such that it is equal to the difference (if it is a positive amount) between (i) the anticipated funding requirements in respect of such loan (aggregate principal amount of funding instruments to be issued to finance such loan plus anticipated funding costs); and (ii) 120% of the available Aaa guarantees to cover such funding instruments, plus the portion of the general cash reserve that was constituted by the service fee and the anticipated margin that is retained from such a loan on the date of its disbursement.

Hence, the loan-specific cash buffer represents an additional retention from the cash amount remitted to the relevant borrower, and will be placed in an account that is dedicated to meeting shortfalls on loans made to the relevant member state under its loan facility agreement. The economic effect of this approach is that, on the date of each disbursement, the loan in question is fully covered either by Aaa guarantees or cash in the form of a portion of the general cash reserve or cash retained in the loan-specific cash buffer.

As long as the funding instruments, which have been issued by the EFSF in relation to a loan that is made to a borrower member state, have not been fully reimbursed, the loan-specific cash buffer relating to that loan is not available to cover shortfalls in respect of any other loans made to borrower member states. If there is a shortfall in payments received from a borrower member state in relation to a loan, then the EFSF shall debit the relevant loan-specific cash buffer to cover the shortfall (after

[2] The proportion of a debt issuance guaranteed by any individual member of the Eurozone is set according to its share of the Eurozone Member State in the ECB capital (EFSF contribution key). Each country's share can evolve over time (as supporting states become borrowers and cease to be guarantors), as well as per issuance.

taking into account any actual guarantee payments) and use the debited amount to make payments on the related funding instruments.

When a borrower member state makes a timely repayment of a loan on its final maturity date, the remaining relevant loan-specific cash buffer will be used to reimburse the related funding instruments. If a loan to a member state is not fully repaid on its final maturity date, then – once all funding instruments that have funded this loan have been repaid in full either by drawing on the guarantees or on the relevant loan-specific cash buffer or otherwise – the EFSF will have the discretion to release the remaining loan-specific cash buffer (if any) either to reimburse the guarantors for payments made to cover shortfalls under that loan, or to permit the EFSF to meets its obligations under funding instruments generally.

In the event that the existing guarantees, the cash reserve and the loan-specific cash buffer prove insufficient for EFSF debt service requirements, additional support from the Eurozone Member States would likely be sought. The EFSF Framework Agreement allows for changes to be made to the facility's mechanics in order to preserve its creditworthiness. In this respect, the Eurozone Member States may adopt other credit enhancement mechanisms to sustain the creditworthiness of debt issued by the EFSF, for example by accommodating an increase in the aggregate amount of guarantees which might be issued, increases in the share capital, increases in level of commitments for share capital, or an extension of the life of the facility.

The EFSF enjoys support or cooperation from the European Commission, the European Investment Bank (EIB), the European Central Bank (ECB) and the International Monetary Fund (IMF). The German Debt Management Office (DMO/ Bundesrepublik Deutschland Finanzagentur GmbH) will operate as the facility's funding agent.

2. The Eurozone Member States' Commitment to the EFSF

The EFSF was created in the wake of the global financial crisis. At a time when spreads on government bonds of some European Monetary Union (EMU) countries were soaring, and parts of the market were betting on a break-up of the EMU, the Eurozone Member States agreed on 10 May 2010 on a large stabilization package that involved the EU and the IMF and included the creation of EFSF as a key building block.[3]

The purpose of the EFSF is to provide a borrowing facility to member states that may face difficulties accessing the market, either through lost access to market or to exposure to interest rates that are judged as being too high.

Any Eurozone Member States that requests financial assistance through the EFSF needs to agree on a Memorandum of Understanding with the European Commission containing key conditions regarding financial and economic adjustment. The Commission – in liaison with the ECB and the IMF – will closely monitor the applicable conditionality and compliance with them before disbursements are made.

As intended by the Eurozone Member States, the announcement of the package gave a strong signal to investors and had a decisive impact on market sentiment: although spreads on bonds issued by some

[3] Please refer to Moody's Special Comment entitled EMU Act II: EU Support Package Alleviates Liquidity Concerns

governments of the Eurozone remained elevated compared with levels recorded at the beginning of the year, they fell from their peaks after the announcement of the package.

The overall size of the stabilization package is €750 billion, comprising the EFSF with a lending capacity equivalent to €440 billion worth of guarantees, the EFSM (European Financial Stabilization Mechanism)[4] with €60 billion worth of lending capacity, and an additional credit line from the IMF, worth up to half the amount drawn from the EFSF and EFSM, or a maximum of €250 billion.

In essence, the EFSF reflects the political commitment of the Eurozone Member States to the preservation of the Euro and the European Monetary Union (EMU). The EFSF is conceived as part of an overall package with the purpose of (i) creating a unified policy response, (ii) resolving structural imbalances and (iii) strengthening structural reforms.

While a prospective issuance in line with EFSF's structure holds a (P)Aaa rating, the strong implicit support for this facility that is evident among the participating countries mitigates potential migration risk for existing issuances. Moody's has considered the extremely unlikely, but nevertheless conceivable scenarios, in which the existing support structure could prove inadequate. The strong backing from the participating countries suggests that, in those extreme scenarios, additional explicit support might be forthcoming from healthy participating countries.

Statements by the Eurozone Members' respective heads of state reflect the high-level commitment to EFSF. On 11 February 2010, the heads of state said that "the Eurozone Member States will take determined and coordinated action, if needed, to safeguard financial stability in the Eurozone as a whole." In the aftermath of the Greek crisis, the Eurozone Member States' leaders have agreed on the need for stronger policy coordination and swift response to preserve financial stability.

Indeed, the actions that have been taken since then were unprecedented in form and size (Greece package on 12 April 2010, European support package on 10 May 2010). In this context, the EFSF represents a key building block in the Eurozone Member States' effort to develop a permanent mechanism for crisis resolution.

Moreover, the leaders of Germany and France – the largest Aaa-rated Eurozone Member States – have repeatedly stated that the stability of the European Monetary Union (EMU) is a prerequisite for the economic and financial stability of Europe. The EFSF is intended to be an important part of the foundation, preserving the economic and financial stability of the EMU in times of stress.

A default on EFSF debt would entail significant pecuniary and political costs for Europe. Apart from threatening the survival of the EMU, it would also induce considerable reputational risks for core European countries like Germany and France, and would likely increase their borrowing costs. Germany's commitment to the success of the EFSF is further reflected in the decision to delegate the management of the EFSF debt issuance programme to the German DMO.

The broad implicit commitments by the member states to support the EFSF – in addition to the explicit commitments laid out in the agreements – are supportive underpinnings of the rating.

[4] The EFSM's structure is similar to the existing balance of payments facility that exists for non-EMU countries.

Moody's anticipates that, in the event of potential incremental problems such as the default of guarantors, additional support would likely be forthcoming.[5]

The consideration of implicit support in the rating of the EFSF is in line with our methodological approach for the rating of Multilateral Development Banks (MDBs). For such entities, our ratings consider both the existing contractual levels of support and the potential for additional support, which we call "implicit support." There have been no defaults among Moody's-rated MDBs to date. However, there have been multiple instances of MDBs faced a potential weakening of their credit standings, and the participating states responded with proactive recapitalizations that went beyond their contractually required commitments. We would expect similar levels of commitment by the states participating in the EFSF.

In addition, the tight conditions underpinning EFSF lending are a key feature of the facility and will be monitored by the Commission and the IMF. This tight conditionality backs the EFSF's creditworthiness in two ways. Firstly, the conditionality supports a gradual improvement in the creditworthiness of countries drawing from the EFSF because they need to show a strong commitment to tackling their problems. Secondly, the EFSF's conditionality also underscores the guarantor countries' commitment to the facility as those countries' political commitment to support is conditional on the willingness of the fiscally weak countries to address their fiscal and economic challenges.

3. Scenario Analysis

Subsequent to the outline of the credit's structure in the previous sections, this section discusses the quality of the credit support underlying the EFSF under certain low probability borrowing and default scenarios that are currently being discussed by market participants. This analysis generates the following key findings:

1. In the event that multiple countries borrow from the facility to meet their three-year borrowing needs, subsequently default and provide no recoveries on their defaulted obligations, then the facility's debt service would still be paid on a timely basis (scenarios 1 and 2).

2. In the event that multiple countries were to borrow and all countries that currently do not carry stable Aaa ratings were to default subsequently, the EFSF would still service its debt on a timely basis (scenarios 3 and 4).

3. In the event that a large group of countries simultaneously loses market access, the current lending capacity of the EFSF would likely be overwhelmed by the resulting financing needs of those countries.[6] Hence, in such a scenario, we believe that it would be unlikely that the EFSF with its current issuance capacity would start issuing.

[5] Such "undefined" support measures are embedded in the EFSF framework agreement through the credit enhancement clause [Clause 5(3)]: "The EAMS may by unanimous decision approve and adopt such other credit enhancement mechanisms as they consider appropriate. Such other credit enhancement measures might include, amongst other techniques, the provision of subordinated loans, warehousing arrangements, liquidity lines or backstop facilities to EFSF, issuance by EFSF of subordinated loans."

[6] The rationale of such a contagion scenario applies to any scenario that includes Italy (Aa2, stable outlook) as a recipient country, because the three-year gross borrowing requirements of Italy alone could not be covered by EFSF's current capacity.

For the avoidance of doubt, the following discussion is intended to illustrate our understanding of the mechanics of the EFSF programme only. It is not intended as a Moody's view on the likelihood of any of these scenarios.

» Scenario 1: Spain, Portugal and Ireland lose market access simultaneously, borrow from the EFSF and then default simultaneously

This scenario assumes that Spain (rated Aaa, under review for possible downgrade), Portugal (A1, stable outlook) and Ireland (Aa2, stable outlook) lose market access simultaneously, borrow from EFSF and subsequently default simultaneously. Under this scenario, the guarantee commitment would be utilized at 61.6%.[7,8] With the assumption of no recovery on EFSF's loans, the guarantee commitment would be utilized at 88.0%. Hence, the call on guarantees would be sufficient to protect EFSF bondholders from the default of the borrowers in this scenario.

» Scenario 2: Spain, Portugal, Ireland, Malta and Slovakia lose market access simultaneously, borrow from the EFSF and then default simultaneously

Spain (Aaa, rating under review for possible downgrade), Ireland (Aa2, stable outlook) and all non-Aaa/Aa-rated countries – i.e. as Portugal (A1, stable outlook), Malta (A1, stable outlook) and Slovakia (A1, stable outlook) – lose market access simultaneously, borrow from the EFSF and subsequently default simultaneously. Under this scenario, the guarantee commitment would be utilized at 65.0%. Again, with the assumption of no recovery on EFSF's loans, the utilization rate would rise to 92.9%. As in scenario 1, EFSF bondholders would not suffer from a default on EFSF's loans.

» Scenario 3: Spain, Portugal and Ireland lose market access simultaneously, borrow from the EFSF, and then all non-Aaa/STA countries subsequently default simultaneously

Spain (Aaa, rating under review for possible downgrade), Portugal (A1, stable outlook) and Ireland (Aa2, stable outlook) lose market access simultaneously and borrow from EFSF. All countries that do not currently hold Aaa ratings with a stable outlook – i.e. Belgium, Cyprus, Ireland, Italy, Malta, Portugal, Slovakia, Slovenia and Spain – subsequently default simultaneously. Under this scenario, the guarantee commitment would be utilized at 86.1%. With the assumption of no recovery on EFSF's loans – and given that the remaining guarantees (from the Aaa/STA countries Austria, Finland, France, Germany, Luxembourg and Netherlands) and the cash balance would not be sufficient to cover the entire debt issued – the facility's debt service would be paid thanks to the loan-specific cash buffers.

» Scenario 4: Spain, Portugal, Ireland, Malta and Slovakia lose market access simultaneously, borrow from the EFSF and all non-Aaa/STA countries subsequently default simultaneously

Spain (Aaa, rating under review for possible downgrade), Ireland (Aa2, stable outlook) and all non-Aaa/Aa-rated countries – i.e. Portugal (A1, stable outlook), Malta (A1, stable outlook) and Slovakia (A1, stable outlook) – lose market access simultaneously and borrow from the EFSF. All non-Aaa/STA countries (i.e. Belgium, Cyprus, Ireland, Italy, Malta, Portugal, Slovakia, Slovenia and Spain) subsequently default simultaneously. Under this scenario, the guarantee commitment

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7 To be on the conservative side, we assume short-term issuance and immediate default. Note that this analysis is not sensitive to the size of the issuance as long as the issuance does not exceed the lending capacity of the facility.

8 Throughout the scenario analysis, unless otherwise specified, we assume a uniform recovery rate of 30% across countries. This is a conservative assumption as the assumed recovery rate is below the historically observed sovereign recovery rates (see Moody's Special Comment entitled "Sovereign Default and Recovery Rates, 1983-2009", April 2010).

would be utilized at 89.7%. Again, with the assumption of no recovery on the EFSF's loans – and given that the remaining guarantees (from the Aaa/STA countries Austria, Finland, France, Germany, Luxembourg and Netherlands) and the cash balance would not be sufficient to cover the entire debt issued – EFSF note holders would benefit from the loan-specific cash buffers and would not suffer from a default on the EFSF's loans.

Our analysis leads us to conclude that the discussed scenarios, regardless of whether or not they assume a recovery on EFSF's loans, would not lead to a default on EFSF instruments.

Moody's anticipates that, in the case of incremental problems such as those described in the contagion scenario, additional support would likely be forthcoming. Such "undefined" measures are embedded in the EFSF framework agreement through a credit enhancement clause. However, if contagion were to include countries that are currently rated Aaa with a stable outlook, it would be reasonable to assume that any support mechanism would be overwhelmed, and we would therefore not expect the EFSF to issue additional debt. That said, as the rating of the EFSF is a function of the creditworthiness of the participating Eurozone Member States, such a scenario would likely bring about transition/downgrade risk for the EFSF.

4. Structured Analysis

The provisional (P)Aaa rating is further supported by the results provided by a second approach generally used by Moody's in rating portfolio transactions or structured instruments.

Why a CDO Approach?

The performance of each individual EFSF issuance ultimately relies on the comparison of (i) the joint default behaviour of a pool of sovereign obligors to (ii) the level of protection provided by the credit enhancement mechanisms that are in place (i.e. the guarantee over-collateralization and the cash reserve in this case). Notes issued by EFSF can therefore be viewed as instruments backed by claims on Eurozone Member States for an aggregate of 220% of the notes amount (i.e. 100% claim on the borrower plus a 120% claim on the pool of guarantors) and further supported by a cash reserve.

Hence, the creditworthiness of EFSF's rated instruments is dictated by the likelihood of recovering at least 100% of the loan amount out of a pool of claims amounting to 220% (net of the cash reserve amount). This risk problem is very similar to that faced in Collateralised Debt Obligation (CDO) transactions, in which debt instruments typically rely on the performance of a pool of obligors given a certain level of credit enhancement.

Background

Our quantitative approach to assessing the credit quality of CDO debt instruments primarily relies on three key assumptions:

- The default probability of each obligor (generally inferred from its rating).
- The asset correlation between each pair of obligors. The assumption, when paired with the ratings of the two obligors, is sufficient to infer the probability of their joint default and their default correlation more generally. The higher the asset correlation between obligors, the higher their joint default probability and default correlation. For example, if an A2-rated credit defaults, then a 50% asset correlated Aa2-rated credit will see its default probability multiplied by 35 times

(becoming equivalent to a Baa3-rated credit). Using the same example but assuming a 90% asset correlation would imply the multiplication of the Aa2-rated credit default probability by 184 times (becoming equivalent to a Ba3-rated credit).[9]

» The expected recovery rate should they default.

Based on these assumptions, a portfolio loss distribution can be inferred, stating the probability of each loss scenario (from 0% to 100% of the portfolio). For each such loss scenario, the resulting payments to the rated debt are calculated and compared to the payment promise under the transaction documents. If a shortfall arises, the loss is recorded. The average loss across all scenarios weighted by the probability of each loss scenario (as provided by the loss distribution) gives the "expected loss" of the debt instrument the basis for its rating.

Base Case Analysis

A number of potential EFSF issuances (i.e. different combinations of borrowers and guarantors) have been tested under this quantitative approach, and have resulted in expected loss levels consistent with that of a Aaa-rated instrument. The key benchmark for this analysis was a base case in which there is a single borrowing / debt issuance with a five-year maturity. The analysis depends on the following key numerical assumptions:

» The default probability of each Eurozone Member State was inferred assuming that the borrower would be rated Ba1 at the time of issuance and all guarantors (except France and Germany) had been downgraded by two notches from their current ratings.[10] This translated into a simple average default probability ranging from 0.6% to 1.2% over five years. We note that the usage of ratings lower than those currently prevailing is not standard and conservative. However, this approach was applied here in response to the specific nature of the EFSF, whereby a definitive rating would only be issued if at least one Eurozone Member State is experiencing difficulty accessing the market. These stressed rating assumptions are, therefore, intended to capture the presumed credit deteriorations that might prevail at the time of assigning ratings to the first issuance of EFSF debt instruments.

» The asset correlation[11] between any two Eurozone Member States was assumed to be 50%. Firstly, Eurozone Member States are correlated on the basis of a synchronized economic and fiscal cycle. To the extent that these countries are integrated, the economic difficulties that one country encounters is likely to be shared by another one. However, the purpose of the EFSF is to allow the borrower to rectify the budgetary and debt evolution following the conditions stated in the IMF/EC programmes. Secondly, the recent episode in the bond market demonstrates that there is a high degree of correlation in terms of financing risk, but also a discrimination among Eurozone countries sanctioned by differences in spreads. However, the mechanism is designed to shield the borrowing countries from market pressures. A default by one borrower will not imply a default by another one based on increased interest rates demanded by market participants. Nonetheless, the

[9] To better appreciate the order of magnitude of this input, it is important to note that it relates to assumed "asset" correlation and not assumed "default" correlation. Asset correlation can be viewed as an assumption about the link between the environment surrounding two credits. A 100% asset correlation assumption will mean that credits are assumed to face the exact same environment, but the default experience of each credit will depend on its credit strength (as measured by its rating) to deal with such environment. At very high asset correlation levels, if the assumed environment is adverse enough to cause the default of the higher rated obligor, the lower rated obligor will experience a very similar environment and will always default when the higher rated obligor defaults. Smaller shocks that do not cause a default by the higher rated obligor may, however, still cause the lower rated obligor to default.

[10] Still, to be on the conservative side, the loan-specific cash buffer is sized as if all of today's Aaa countries were still rated Aaa, in order to make the cash buffer as small as possible.

[11] We emphasize that the assumption relates to "asset" correlation, as opposed to "default" correlation, please see footnote 9.

contagion risk component might affect the guarantors if they are required to finance the call on guarantees through the market.

» Assumed recovery rates were based on random distributions around means for each country ranging from 20% to 40%, leading to a simple average of the means of 27.5%. For each country, this assumption was based on the average historical recovery rate of defaulted corporate issuers domiciled in this country (recoveries on corporate issuers having in the past proven to be lower on average than the recovery on sovereign bonds of the country in which they are domiciled).

» A cash reserve representing 10% of the loan funded at the time of issuance. The cash reserve amount is assumed to be the present value of an expected spread of 2.5% over a period of five years discounted at 8%.

Break-Even Analysis

However, Moody's notes that very limited information is available to calibrate the asset correlation assumption between EU sovereigns. Given this and other uncertain assumptions underlying the simulation, a break-even analysis has been completed. Each key assumption has been stressed individually (all other assumptions being maintained equal) to the point where model results show an expected loss level close to the maximum of the range consistent with a Aaa rating. The results of this analysis were as follows:

» Default probabilities could be inferred after assuming all Eurozone Member States ratings are downgraded by three notches.[12]

» Asset correlation could be increased to 90% across all Eurozone Member States.

» Alternatively, the asset correlation assumption could be increased to 90% among all non-Aaa-rated/stable outlook Eurozone Member States, while maintaining a 50% pair-wise asset correlation among other EAMS and between members of the two subgroups.

» Assumed recovery rate could be as low as zero.

The amount of cushion between the assumptions retained for the base case and the break-even assumptions as determined in the analysis above (i.e. the most conservative possible assumptions that would still warrant a Aaa rating from a quantitative standpoint), was deemed sufficient to cover uncertainties surrounding key assumptions.

[12] Again, the loan-specific cash buffer is sized as if all of today's Aaa countries were still rated Aaa, in order to make the cash buffer as small as possible.

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