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Discussion Paper
on
Infrastructure Investments by Insurers

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Responding to this paper

EIOPA welcomes comments on the discussion paper on infrastructure investments by insurers.

Please send your comments to EIOPA in the provided Template for Comments, by email CP-15-003@eiopa.europa.eu, by 26 April 2015.

Contributions not provided in the template for comments, or sent to a different email address, or after the deadline will not be processed.

Publication of responses

Contributions received will be published on EIOPA's public website unless you request otherwise in the respective field in the template for comments. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure.

Please note that EIOPA is subject to Regulation (EC) No 1049/2001 regarding public access to documents and EIOPA's rules on public access to documents[1].

Contributions will be made available at the end of the public consultation period.

We kindly ask you to provide, where possible, evidence for your statements and its source. If you suggest criteria you should describe them as precisely as possible and provide evidence that they are effective. Proposals for the calibration should be as specific as possible with a detailed description of the calculation, the data to be used and their source.

Data protection

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[1] Public Access to Documents

1. Introduction

In recent years, infrastructure investments have been increasingly at the centre of discussions about growth promoting initiatives globally, across Europe as well as on a national level.

The European Insurance and Occupational Pensions Authority (EIOPA) has previously analysed the regulatory treatment of long-term investments, including infrastructure, and in particular provided advice on high quality securitisations.

In this context and following a call for advice by the European Commission, EIOPA has started a new work stream on infrastructure investments by insurers concentrating on a more granular treatment of infrastructure investments within the regulatory framework of Solvency II. In the course of its work EIOPA intends to:

- develop for regulatory purposes a definition of infrastructure investments that offer predictable long-term cash-flows and whose risks can be properly identified, managed and monitored by insurers;
- explore possible criteria for this new class of long-term infrastructure assets covering issues such as standardisation and transparency;
- analyse the prudentially sound treatment of the identified investments within a risk based supervisory system, focusing on their specific risk profile;
- identify any existing regulatory requirements (other than regulatory capital charges) that make it more difficult for insurers to invest in infrastructure, but which cannot be justified on a prudential basis;
- explore whether the current requirements in Solvency II are sufficient to ensure that the risks of this complex and, for insurers, relatively new asset class, are properly managed; and
- explore financial stability related issues pertaining to such investments.

Based on the mandate provided in the call for advice EIOPA will analyse both debt and equity investments. As the costs for an external rating by an External Credit Assessment Institution (ECAI) can be considerable for smaller projects, EIOPA will also look at the treatment of debt without such a rating. Reflecting the current European initiatives EIOPA intends to analyse only (direct and indirect) investments in infrastructure project[2] debt and equity.

The available evidence shows that the stability of the revenues of an infrastructure project has a significant impact on the risk[3]. EIOPA plans therefore to concentrate on projects where contractual arrangements considerably reduce the revenue risk.

EIOPA envisages providing its advice to the European Commission during the summer of this year. To produce the best possible outcome for this challenging task, EIOPA is engaging actively with stakeholders. One element of this is to publish - at this relatively early stage of the process - a discussion paper. It seeks to clearly set out the challenges that EIOPA has identified and invites stakeholders to provide as specific input as possible to assist in addressing these challenges. It also describes some initial proposals that EIOPA has developed for stakeholders to comment on.

Given the complexity of the issues discussed, EIOPA has judged that a high number of specific questions will assist stakeholders to provide relevant and useful input. Stakeholders may also prefer to provide input only on selected issues.

[2] Much of the available evidence for a different risk profile is for infrastructure projects. Moreover, infrastructure corporates do not face obvious funding challenges.

[3] Moody's (2013): Default and Recovery Rates for Project Finance Bank Loans, 1983–2011 Addendum.

The consultation period for this discussion paper needs to be seen in the broader context of the time available for EIOPA to respond to the Call for Advice. In addition, EIOPA will consult at a later stage on the draft Advice, once the responses to the discussion paper have been analysed and proposals have been developed.

We kindly invite stakeholders to consider, as a start, the following question with regard to potential obstacles to insurers to invest in infrastructure:

Q1: What elements in the Solvency II framework might prevent insurers from investing in infrastructure (other than capital requirements)? How could they be adapted while preserving the same level of policyholder protection?

2. Characteristics of infrastructure investments with a different risk profile

EIOPA would like to focus the analysis of infrastructure investments on the most promising segments, which have to meet at least the following criteria:

- The segment is an attractive investment prospect for insurers
- There are indications that a more granular treatment is warranted

In order to justify a more granular treatment the risk profile of certain infrastructure investments has to be markedly different than currently implied by the standard formula calibration for the Solvency Capital Requirement (SCR). For the sake of brevity they are called in the following investments with a different risk profile.

Q2: Which infrastructure investments (debt/equity, rated/unrated, credit rating, sectors, geographies, revenue-schemes, etc.) have a different risk profile than implied by the standard formula treatment and what is the evidence?

Infrastructure investments are often illiquid. Creating a liquid infrastructure asset class would bring a number of advantages for off-takers and investors (e.g. higher transparency and flexibility for portfolio adjustments).

Q3: How relevant is liquidity for infrastructure investments by insurers?

3. Definition of a category of infrastructure investments

Introduction

EIOPA is exploring the possibility to introduce a specific standard formula treatment for a category of infrastructure investments. Some possible general characteristics of such a category were already outlined in the previous chapters. In order to decide whether a particular investment falls into such a category a definition of infrastructure investments needs to be developed based on a list of clear and objective criteria.

This section discusses criteria for different dimensions of infrastructure project investments that could be used to define a specific category. In order to build an overall set of criteria and definition, each of these dimensions is considered in turn, starting with the issue of how to define project finance.

In principle many of the criteria discussed in this section could be applied to both debt and equity investments, for example criteria to mitigate construction risk. However, in other cases differences may be justified. Stakeholders are therefore asked to consider whether it would be appropriate to differentiate in their responses between debt and equity investments, and to explain their reasoning for doing so.

Another decision to be made is whether there should be different criteria for debt with and without an ECAI rating. One option would be to use the same criteria to decide whether all types of debt investments qualify for a preferable treatment, but then to have specific capital requirements for debt with and without an ECAI rating[4].

Q4: How could the criteria for debt with and without an ECAI rating differ and what is the rationale?

Definition of project finance

As outlined in the introduction, EIOPA is considering restricting the scope of the advice to debt and equity investments in infrastructure projects. Therefore, an important criterion for infrastructure investments is linked to project finance. There are already some existing definitions in other financial regulatory frameworks that may also be applicable here.

Q5: Do you think that the definition of project finance from Basel II[5] and/or the definition of specialised lending exposures as laid down in Article 147 (8) CRR could be used? Why (not)?

Q6: Are there any other definitions of project finance in existing legislation which could be used?

Definition of infrastructure

EIOPA is considering a relatively broad definition of infrastructure. Infrastructure projects where the standard formula treatment is in line with the risk profile would

[4] Further differentiation would also then be appropriate within the rated debt based on the credit quality steps.

[5] See Par. 221 and 222 in: BCBS (2005): International Convergence of Capital Measurement and Capital Standards. A Revised Framework.

then be disqualified by other suitable criteria. So far, EIOPA has identified the following options:

a. A wide definition based on existing definitions, which refer to a range of different characteristics such as:

- Provision of facilities or functions of general interest;
- Specific economic and financial features relating to credit risk, demand and competition, and restrictions on ownership or use of the assets;
- Long-lived;
- Capital intensive.

Such a definition would be more open to interpretation than option b. Nevertheless, this may not be an issue provided that the other criteria used are effective in eliminating investments where a different treatment is not justified.[6]

b. A definition that refers only to the facilities or functions that the infrastructure provides. For example: 'Assets that fulfil an identifiable function in the provision of facilities to the public in the areas of transport, communication, … (list of further functions)'

This is more precise than option a. The risk of excluding unintentionally relevant sectors seems limited as the functions should be stable (in contrast to the technologies). If this option is preferred, EIOPA would also consult on a complete list of functions with stakeholders.

c. A definition that focuses on the contractual arrangements governing the revenues produced by the assets. For example 'assets used to provide facilities or functions for which the contractually agreed revenues are sufficiently stable' – where 'sufficiently stable' would be further defined.

The option is premised on the notion that the different risk of certain infrastructure assets is not the result of any (physical) properties that these assets or the facilities/functions they provide may have. Instead, it is the contractual arrangements governing the payments to the investors that determine the risk profile.

d. No definition for infrastructure

In principle all projects within the chosen definition of project finance (see section "Definition of project finance" section) could qualify. But they would have to meet the other criteria discussed in this chapter. Contractual arrangements that provide sufficient certainty regarding the revenues for example are probably very rare outside the infrastructure sector.

Q7: Which is your preferred option and why (pros and cons)?

Q8: Could you provide a comprehensive and precise definition of infrastructure based on your preferred option?

Q9: Are there any legal definitions of infrastructure (investments) in existing legislation which could be of use?

[6] As set out in chapter 1 EIOPA is considering to limit the scope to investments where the revenue-risk is low due to contractual arrangements. Such arrangements are probably less frequent for non-infrastructure.

While a wide definition of infrastructure seems sensible, one could in principle consider excluding certain sectors from a specifically defined infrastructure investments category, for example ports (based on evidence that these sectors have generally higher risk). This would simplify the validation of the criteria. At the same time it may eliminate some investment opportunities where a different treatment could be justified.

Q10: In some infrastructure sectors the vast majority of projects do not offer stable revenues and/or have considerable technological risk. What could these sectors be?

Basel II and CRR as sources for criteria

There are different sources for criteria to identify those infrastructure projects that have a different risk profile than implied by the standard formula treatment. One could look at the characteristics of infrastructure projects that have performed better in the past. Another source could be existing criteria that are used in regulations by lenders or ratings agencies.

Q11: Are there any other sources of criteria that EIOPA should consider?

The criteria have to balance a number of requirements. On the one hand they should exclude infrastructure investments for which a different treatment cannot be justified. On the other hand the criteria should be as precise as possible and their verification should not be too burdensome.

Q12: Which are the most effective criteria and/or characteristics for identifying infrastructure investments with a different risk profile than implied by the standard formula treatment? What is the evidence for their effectiveness?

EIOPA is considering whether to use as a starting point the list of criteria for project finance in Basel II[7] and the specification regarding the factors to determine risk weights for specialised lending exposures that the European Banking Authority (EBA) is currently developing based on the empowerment in Article 153 (9) CRR[8] [9].

In some cases these criteria may already be specific enough to be used in the context of the Solvency II standard formula. In other cases, it may be necessary to develop more specific requirements.

Q13: Are the criteria in Basel II and the specification regarding factors to determine risk weights developed by the EBA for the Regulatory Technical Standard a good starting point?

[7] See Annex 6 "Supervisory Slotting Criteria for Specialised Lending" Table 1 — Supervisory Rating Grades for Project Finance Exposures in BCBS (2005): International Convergence of Capital Measurement and Capital Standards. A Revised Framework.

[8] Until now the European Banking Authority has not consulted on the Regulatory Technical Standard.

[9] For the Basel II criteria this could mean requiring that for certain criteria at least an "excellent" or "good" has to be achieved.

Q14: Do you have any comments on the usefulness of individual criteria in the Basel II list?

Q15: Do you have any proposals for how the Basel II criteria that are relatively high level could be further specified?

Q16: Are you aware of any criteria to determine either the quality of project finance in general or specifically of infrastructure project finance in legal texts that could be useful (e.g. transpositions of the Basel II criteria in non-European jurisdictions)?

Possible other criteria

This section considers more specific criteria that could form the basis of a definition for an infrastructure investments category. EIOPA is still developing its thinking in these areas and therefore for each type of criterion, EIOPA would like to ask the following questions to stakeholders for the criteria outlined below:

Q17: How effective are the described criteria in eliminating infrastructure investments for which a different treatment in the standard formula is not justified and what is the evidence?

Q18: How could the criteria be described as precisely as possible?

Q19: Could the respective aim be achieved with other criteria (please describe them as precisely as possible)? What is the evidence?

Political risk

In order to limit political risk, qualifying assets could be restricted to those in OECD countries. These countries are considered to be generally stable and the criterion is easy to verify.

Structural requirements

According to a Standard & Poor's study on the causes of defaults in project finance an insufficient degree of separation from the sponsors caused problems in a number of cases.[10] To avoid this one could require that the special purpose entity is properly separated from the sponsoring entity.

A second criterion in this category could be that the use of derivatives in the infrastructure project is restricted to risk mitigation purposes.

According to the literature a reason for the higher recovery rates in project finance is the active monitoring of creditors and their active engagement in cases where the project runs into problems. A third criterion (at least for direct investments) could therefore be the existence of mechanisms that ensure this active monitoring and engagement. Examples for the latter could be a "lead" creditor which is expected to actively protect the interests of all creditors or predefined policies, or the existence of action plans to ensure that adequate steps are taken to maximise the recovered amount in a distress situation.

[10] Standard & Poor's Rating Services (2015): Lessons Learned From 20 Years Of Rating Global Project Finance Debt.

Construction risk/Risks during the ramp-up phase

Standard & Poor's study cited above also identifies problems during the construction phase as a major reason for defaults. Also Moody's sees in its 2015 study a strong link between the observed elevated marginal default rates in the initial three year period of projects and construction phase risk or risks during the commencement and ramp-up of operations.[11]

At the same time, mechanisms to provide adequate protection to investors from these risks may be available. Considering the background of the current initiatives on the European level it seemed desirable to include also projects before the operating phase provided there is sufficient evidence that the risks involved can to a large degree be mitigated.

Q20: What mechanisms allow a sufficient mitigation of the risks associated with the construction and ramp-up period?

Q21: What are the requirements that these risk mitigants have to meet? Please define them.

Q22: One mechanism to mitigate the risks before the operational phase is a credit enhancement or a guarantee provided by public bodies. What would be the criteria to ensure that these mechanisms – potentially in interaction with others – provide a sufficient level of protection?

Revenue risk

Low revenue risk seems to be a main contributor to lower overall risk. Moody's showed that default rates for availability-based projects were considerably lower than for the infrastructure sector in general.[12] A possible criterion could therefore be a low revenue risk for the project, but there are a number of different aspects to consider as elaborated below.

A restrictive requirement could be that the level of revenues is contractually guaranteed, provided that the project meets the agreed performance levels. This would restrict the eligible projects to those with purely availability-based payments. There may be other contractual arrangements that provide a high degree of certainty about future revenues, such as contracts that are predominantly availability-based but with some used-based component, those with guaranteed returns on equity for net infrastructure, or those with guaranteed electricity prices for alternative energy generation.

The Annex outlines some initial ideas for how it could be decided whether such projects have low revenue risk.

Q23: What is your view on the proposals set out in the Annex? What could be suitable thresholds and how could they be derived?

Q24: Do you have alternative proposals for how to measure low revenue risk and what is the evidence that it is effective?

[11] Moody's Investor Service (2015): Default and Recovery Rates for Project Finance Bank Loans, 1983-2013.

[12] Moody's Investor Service (2013): Default and Recovery Rates for Project Finance Bank Loans, 1983–2011 Addendum.

Q25: What are other contractual arrangements than those in the Annex with low revenue risk? How could this be assessed with a criterion?

Another important component of revenue risk is the creditworthiness of the off-taker. Infrastructure investments are normally highly specific. This means that the default of the off-taker results in most cases in high losses for investors. Given that the lifetime of a project would normally span several decades, the probability of default, even for an investment grade non-public off-taker, is considerable.

Therefore, one possibility would be to consider only projects with a public off-taker (where a public off-taker is defined as central government or a regional government and local authority as set out in Article 109a (2) (a) of Solvency II Directive 2009/138/EC). The effect of this restriction might be relatively limited as non-public off-takers may be unwilling or unable to enter into contracts that provide sufficiently stable revenues.

Q26: What kind of non-public off-taker would have a sufficiently low risk of default? How could this be assessed (criterion)?

Financial structure

Equity provides a cushion for the debt holders. In addition, a smaller proportion of equity relative to debt translates into higher percentage losses for equity holders if the overall value of the project declines. This would suggest a need to introduce conditions on the capital structure. At the same time, UK PFI/PPP projects which generally use a high degree of leverage have been performing well. This indicates that a simple restriction on the debt to equity ratio would be too simplistic and the riskiness of the cash flows that the project generates has also to be reflected.

A possible approach would be to require a minimum Debt Service Coverage Ratio (DSCR) (or any other suitable ratio). This ratio seems to be common for project finance. Such a requirement would also be useful for equity investments. Due to subordination, there cannot be an elevated risk for debtors and low risk for equity investors at the same time.

Q27: What would be suitable ratios available to investors to measure the financial risk?

Q28: What would be a suitable minimum level for the ratios (e.g. corresponding to "investment grade")? What is the source and evidence for this level?

For debt a second criterion to consider is seniority. Obviously, a more senior claim is less risky than a more junior one. Moody's shows high recovery values for banks loans which are normally the most senior ones.[13] A criterion for debt investments in infrastructure projects could therefore be that they have the most senior position (especially if the calibration for unrated loans is based on a data set that consists of credits with the highest seniority).

[13] Moody's Investor Service (2015): Default and Recovery Rates for Project Finance Bank Loans, 1983-2013.

Q29: What would be the arguments for also making non-senior debt eligible?

One of the criteria proposed by the Basel Committee is that the useful life of the project exceeds the tenor of the loan. While this reduces the risk for the creditors, it may create a refinancing risk for the equity investors. A criterion could therefore be limited refinancing risk.

Q30: Is it necessary to limit the refinancing risk in infrastructure projects (please provide evidence) and what are suitable criteria?

Finally, one could also contemplate conditions to limit the prepayment risk for infrastructure project debt. Insurers will probably find such instruments attractive because they can be used to match liabilities. Moreover, a more favourable treatment may only be justifiable if the instrument is held to maturity. One could therefore require contractual mechanisms to reduce prepayment risk.

Q31: What significance does prepayment risk have and what would be a suitable criterion to limit it?

Operational risk

Contractual guarantees reduce the revenue risk considerably, but the payments are only due if the contractually agreed services are actually provided.

The above-mentioned Basel document contains some criteria to reduce operational risks that cover the expertise of the operator and the contractual arrangements between project company and operator. While this will mitigate the risks, the use of unproven technologies or designs could still cause problems. Therefore, one could consider a requirement that only proven technologies and designs are used.

Q32: How could a condition "proven technology and designs" be made operational?

Important but difficult to validate criteria

There might be a number of qualitative criteria that are important but which cannot be easily transferred into a limited number of clear and objective criteria for the standard formula (e.g. a "robust" contractual framework that protects debtors).

For equity investments a simple possibility for ensuring that a number of qualitative requirements are met would be to require a minimum external rating (e.g. investment grade). This would also safeguard a minimum level of quality for certain relevant aspects of the project. Furthermore, arguments for a lower risk of infrastructure equity investments compared to other equities would not be considered convincing if the debt of the project is not at least investment grade. However, the external rating approach has a severe drawback: for smaller projects the costs of procuring an external rating may be prohibitive. Moreover, regulation should try to reduce overreliance on ratings.

Relying on ratings agencies does not seem appealing. But if there was an alternative approach for an assessment by a suitable third party the task to identify infrastructure investments with a different risk profile than implied by the standard formula treatment would be considerably simplified.

Q33: How could criteria that are difficult to validate (such as those described above) be incorporated into the framework?

4. Regulatory risk charges and integration into the SCR calculation

Introduction

In its report on long-term investments EIOPA came to the conclusion that a new calibration of the capital requirements for infrastructure investments within the standard formula could not be recommended.[14] The main reason was a lack of data (market prices or reliable cash flow data for infrastructure project equity and market spread data for infrastructure project debt). In addition, where data was available (default and recovery rates for infrastructure project debt) it did not "fit" with the structure of the standard formula. Both issues would need to be resolved if a more granular calibration for infrastructure investments was to be considered.

The following sections outline a number of initial thoughts. Further work would, however, be needed before a judgement about their feasibility can be made. Ideas can be split into equity and debt instruments.

In addition, other constructive proposals not included in the list below may exist.

Q34: Do you have any other suggestions besides those described below for how to derive alternative risk charges? What is the evidence?

Partial Internal Models

The use of partial internal models to calculate the risk charge for infrastructure investments may be a relevant option to consider. Partial internal models allow insurers to reflect the specific risks of individual investments in a rather heterogeneous assets class. Moreover, modelling the idiosyncratic risks helps substantially in understanding and managing them.

Therefore, EIOPA is also exploring how partial internal models could be used in the context of investing in infrastructure projects.

Q35: How would requirements for partial internal models need to be adapted so that they are suitable for infrastructure projects without reducing the level of policyholder protection?

Equity investments

Calibration with historical cash flow data

As investments in infrastructure project equity are usually not listed, changes in market values cannot be observed directly. An alternative could be to use historical cash flow data for infrastructure projects to deduce changes in the market value of the project equity.

There are at least two major obstacles to overcome:

- Cash flow data of sufficient quantity and quality for infrastructure projects is needed;

[14] EIOPA (2013): Technical Report on Standard Formula Design and Calibration for Certain Long Term Investments

- There has to be a methodology to derive the changes in market prices from the historical cash flow data. Market prices for an asset will in many cases display much higher fluctuations than the underlying cash flows, as market valuations for the same cash flow stream may fluctuate considerably on a short-term basis. The methodology has therefore to be able to "de-smooth" the data.

Q36: What are potential sources for reliable cash flow data on infrastructure projects in a sufficient quantity?

Q37: How can historical cash flow data be transformed into an equity risk charge that reflects changes in market prices?

Calibration based on listed equities

There seems to be evidence that listed infrastructure does not generally have a lower risk profile than listed equities.[15] However, it might be possible to select a subset of listed infrastructure which has a larger degree of similarity with the investments that seem most promising (e.g. equity in infrastructure projects that have a low revenue risk). There are, for example, a few listed PFI/PPP projects in the UK[16]. The identified listed equity could then be used as proxy to derive a calibration.

Q38: Which listed equities could be a good proxy for equity investments with a different risk profile than implied by the standard formula treatment and what is the evidence that the risks are similar?

Q39: Can you provide any data regarding proxies?

Treatment as Type 1 equity

At the moment unlisted infrastructure investments would be treated as type 2. Unless new evidence can be found it may be difficult to justify a different risk charge than for type 1 equities for a certain segment of infrastructure equity investments. It may, however, be easier to argue that they should be allocated to type 1.

Q40: What is the evidence that a segment of infrastructure project equity has a risk profile that is similar to type 1 equities?

[15] Blanc-Brude (2013): Towards Efficient Benchmarks for Infrastructure Equity Investments. A review of the literature on infrastructure equity investment and directions for future research. p. 37-46.

[16] Blanc-Brude (2013): Response to EIOPA's Consultation on Standard Formula Design and Calibration for Certain Long Term Investments. Section 4.2 (http://docs.edhec-risk.com/mrk/000000/Press/EDHEC-Risk_Institute_Response_to_EIOPA_May_2013.pdf)

Diversification benefits between infrastructure equity investments and other equity investments

Infrastructure projects are subject to a number of idiosyncratic risks (e.g. delays in the construction phase). However, in the case of a high degree of certainty for revenues – due to contractual arrangements - the cash flows for equity investors could be regarded less sensitive to general economic variables than corporate equities.

On the other hand, market prices of investments often move in tandem even though their cash flows are not highly correlated.

One way to reflect a potentially lower correlation could be the introduction of a "type 3 equity" category for certain infrastructure equity investments with lower correlation to type 1 and type 2 equities while leaving the correlations between the equity risk sub-module and the other sub-modules of the market risk module unchanged.

Q41: Is there evidence for a lower correlation between the value of certain infrastructure equities and other risks within the standard formula in a stress period? How could this be reflected (data inputs, calculations in detail)?

Debt investments

In addition to the approaches outlined below EIOPA has also considered whether differences in the drivers of fundamental credit risk could result in lower spread volatility. There is evidence that the recovery rates for infrastructure project debt are higher than for corporate debt. There is also evidence that at least for the debt of infrastructure corporates the probability of downgrades is lower than for other corporates.

This suggests that the fundamental part of the credit spread for infrastructure project debt could be lower than for corporate debt with similar credit quality. While the risk charges in the spread risk sub-module are based on changes in spreads, and not on their absolute levels, the characteristics described in the previous paragraph may translate also into a lower volatility of the fundamental part of the spread.[17]

Nevertheless, the level of spreads does not depend exclusively on credit risk and a large part is driven by other factors. A lower volatility in the fundamental part of the spread may therefore not necessarily translate into a meaningful reduction in the volatility of the overall spread. For this reason EIOPA does not consider this to be a promising approach to be further pursued.

Specific spread risk charges for infrastructure project debt

During the work on the Long-Term Investments Report EIOPA was already confronted with the difficulty to retrieve relevant data on market spreads for infrastructure project debt. The research conducted indicated that there were only a limited number of project bonds for which market prices were available. In addition, many of the bonds were guaranteed by mono-liners reducing their usefulness for calibration purposes.

[17] If the recovery value was for example 100 % a sudden increase in the probability of default would have no effect on the fundamental part of the spread. It might also be that the recovery rates for infrastructure debt are less volatile.

The current situation has probably not changed substantially. However, project bonds from markets outside Europe may provide additional evidence. It might also be possible to identify certain infrastructure corporates with listed bonds and a similar risk profile to the project debt investments that were analysed by EIOPA. The observed spreads could then be used as a proxy.

Provided there is sufficient evidence one could consider alternate spread risk charges for infrastructure project debt. In this case, diversification effects when aggregating the spread risk charges for corporates, securitisations and infrastructure project debt into a single spread risk charge could be taken into account.

Q42: What evidence is available on spreads for project bonds in general and infrastructure project bonds in particular?

Q43: Is there evidence that movements in the spreads of infrastructure corporates differ from those of normal corporates with the same rating?

Q44: Is there evidence that infrastructure corporate debt (or a suitable subset) can be used as a proxy for infrastructure project debt with a different risk profile than implied by the standard formula treatment?

Spread reduction approach for hold to maturity infrastructure debt

Infrastructure assets will generally be bought with the intention to hold them to maturity. Holding a more liquid position in infrastructure debt may entail the same risks as an investment in any other liquid debt instrument and therefore not justify any specific treatment. Conversely, to the extent that robust safeguards are in place so as to ensure a buy-to-hold behaviour by the holder of infrastructure debt (for example requiring that undertakings are no longer allowed to use the approach if they sell "hold to maturity" infrastructure debt) an alternative treatment for such assets could be explored.

Infrastructure bonds would generally be covered in the spread risk sub-module. However, the spread sub-module of the standard formula captures both credit risk and volatility in prices driven by liquidity, investor sentiment etc. It has been argued that in cases where the insurer buys the debt instrument to hold to maturity the latter component of spread volatility may not be relevant. This suggests that investigating whether an adjustment factor could be applied to the spread risk charge, if certain conditions are met, may be worth exploring. Applying such a factor would in effect be an attempt to remove the part of the spread risk charge that is not credit risk related.

Depending on data availability such a reduction factor could be calibrated by infrastructure sector and credit quality step bucket.

One advantage of such a rather simple approach would be that the risk charge remains linked to the modified duration (which would not be the case if infrastructure debt was covered in the counterparty default risk module). Moreover, it would take the frequently made argument into account that infrastructure investments are usually held to maturity and are highly illiquid (i.e. they would be difficult to sell even if the insurer would desire to do so).

However, the implications would have to be considered carefully. If there are meaningful allocations by insurers to infrastructure project debt in the future one would also have to consider whether the calculation of the volatility adjustment would need to be modified.

Q45: Describe in detail (data, calculations) how an adjustment factor could be derived.

Q46: What conditions could ensure that insurers are in a position to hold the infrastructure investments to maturity?

Q47: What is the rationale to apply an adjustment factor for infrastructure debt but not for other (illiquid) debt investments like SME loans?

Treatment of infrastructure project debt in the counterparty default risk module

While data on credit spreads is not widely available for infrastructure project debt, there is a meaningful amount of data on default and recovery rates. If these investments were covered in the counterparty default risk module this evidence could be used for calibration purposes.

As the valuation of longer-term debt for Solvency II purposes is in principle based on spreads, the fact that higher spreads translate into a reduction in own funds would thus not be reflected if the risk charge were based on default and recovery rates. Assets covered in the counterparty default risk module usually have a short maturity so that any discrepancy between risk measurement and valuation would have limited impact only.

Q48: What is the rationale to cover infrastructure debt in the counterparty default risk module while other exposures like SME loans or rated corporates are allocated to the spread risk sub-module?

Q49: How could a counterparty default risk charge for infrastructure project debt be derived (model, correlations, data)?[18]

Q50: Would including infrastructure project debt in type 1 or type 2 (i.e. using the current calibration) reflect its risk profile?

Treatment of infrastructure project debt without ECAI rating

One general question that has to be answered is how to treat debt without an ECAI rating. Historical default rates for unrated project debt are available. The problem is that the historical projects may be very different from the current ones. In contrast, for external ratings one could – at least in principle – assume that a BBB rated project bond today is similar to a BBB rated project bond in the past.

As mentioned previously, one possibility would be to develop a number of quality criteria that unrated infrastructure debt has to meet. The risk charge for all of these investments would then be the same.

A potentially interesting alternative could be the use of internal ratings produced by banks: insurers may invest alongside a bank. The bank underwrites the loans and the insurer invests in the loan portfolio. This allows the insurer to achieve a higher degree of diversification and to benefit from the expertise of the bank. If the bank uses an internal model approved by the banking supervisor to measure the risk, this rating could then also be used for Solvency II purposes. A similar approach is followed in

[18] Please see for type 1 calibration: Peter ter Berg (2008) Portfolio modelling of counterparty reinsurance default risk http://www.risk.net/data/lifepensions/pdf/cutting_edge_0408_1.pdf

EMIR, for which the draft consulted last year proposes to allow non-banks to use the IRB model of a bank to assess the credit quality of collateral collected in OTC derivative transactions.

Q51: How can a minimum quality for infrastructure debt without an ECAI rating be ensured?

5. Risk management, investor information and standardisation

Risk management

To invest in infrastructure specific expertise is needed. EIOPA is therefore considering if specific risk management requirements for investments in infrastructure are appropriate in order to ensure that insurers can properly manage the risks.

In general, from a risk management perspective, Solvency II adopts a "principles-based" approach, whereby the requirements do not differentiate between investments in different types of assets. According to the current Solvency II framework infrastructure investments would be subject to the general requirements regarding investments, which are set out in Article 132 of Directive 2009/138/EC, the prudent person principle, and further elaborated in the delegated acts and EIOPA's Guidelines on the system of governance. In short, insurers need to be able to demonstrate that they can identify, measure, monitor, manage, control and report on the risk arising from their investments, as well as ensure that assets are invested in a manner that is appropriate to the nature and duration of their liabilities. It will also be necessary for insurers to consider their risk and solvency needs relating to their infrastructure investments within their own risk and solvency assessment (ORSA).

Nevertheless, there are more specific requirements that are likely to be relevant to investments in infrastructure given their nature. First, the requirement to ensure that investments which are not admitted to trading on a regulated financial market need to be kept to prudent levels.[19] Second, the assessment required by the Guidelines on the System of Governance prior to engaging in non-routine investments, for example to consider the impact of the investment decision on the quality, security, liquidity, and profitability of the undertaking's portfolio as a whole.[20]

Furthermore, in recognition that certain types of instruments present a high risk potential or high level of complexity, particular requirements are imposed in a number of specific cases or for certain asset types. This includes derivatives, the use of which is generally limited to efficient portfolio management and the reduction of risks[21], due for instance to the ability for losses significantly above the amount committed to be generated. Solvency II also includes detailed requirements regarding investments in securitisations and the provision of loans[22] by insurers.

Investments in infrastructure present potentially complex risks, which can also vary significantly between different types of infrastructure projects. These risks may be political or legal depending on the geographical location of the investment, or project based risks relating to nature of the project or its stage of development. It is also of critical importance for infrastructure investments that there is sufficient understanding of the assumptions upon which future performance or usage of the project, and thus payments to the financiers, are based. A thorough due diligence process is therefore vital before deciding upon an investment, but such investments will also require active engagement to monitor their ongoing performance and suitability.

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[19] See Article 132(4) third sub paragraph.

[20] See Guideline 26 of the Guidelines on system of governance.

[21] See the second sub paragraph of Article 132(4) of Directive 2009/138/EC. This restriction does not, however, apply to linked business where the investment risk is borne by the policy holder, and no guarantee of investment performance is given.

[22] For securitisations see Article 256 of the delegated acts; for loans see Article 261 of the delegated acts.

Many insurers currently do not have a lot of experience in this sector, and thus may need to establish expertise over time to manage the risks[23]. Consequently, EIOPA is exploring the development of specific risk management requirements to cover insurers' investment activities in infrastructure assets, to ensure that they are fully aware of and can control the risks. EIOPA also notes that the European Commission is empowered to develop qualitative requirements in the form of delegated acts to further specify how the risks arising from investments should be identified, measured, monitored and managed[24].

Some of the relevant areas for attention, which are being considered by EIOPA, are as follows:

- How should an insurer demonstrate to the supervisory authority that they have a comprehensive understanding of the investment and the underlying exposures? What competences and expertise are required?
- Would infrastructure investments always represent a non-routine investment?
    - If not, are there particular criteria that could be used to determine whether a particular investment decision is non-routine, e.g. materiality, type of investment vehicle, frequency of investment decision?
    - Do the elements in Guideline 26 of EIOPA's Guidelines on the system of governance cover all the relevant issues for infrastructure investments?
- What due diligence steps are necessary before investing in infrastructure? In particular, how should the insurer critically assess the assumptions underlying estimates of future performance or usage of the infrastructure project?
- What types of stress tests on projected cash flows would need to be performed and how frequently?
- Should insurers implement written policies and procedures describing specifically how they manage such investments?
- Should an insurer's internal reporting procedures provide that the administrative, management and supervisory body are regularly updated on material positions in infrastructure investments?

Q52: Do you have any comments on the areas of attention that EIOPA is considering? Are there any other areas EIOPA should consider?

Q53: Regarding the issue of due diligence specifically, do project sponsors provide financial models which can be used to evaluate the resilience of the project to severe downside stress scenarios?

Q54: Is there a kind of "industry standard" for financial models and would these models be subject to an audit?

[23] See for example McKinsey (2013): A risk-management approach to a successful infrastructure project. Working Papers on Risk. Number 52. p.5.

[24] The empowerment is in Article 135(1)(a) of Directive 2009/138/EC.

Investor information and standardisation

In order to perform due diligence and to monitor their infrastructure investments insurers need adequate information at the outset of the transaction and on a regular basis. Consequently, the availability of this information could be a part of the definition of a specific infrastructure investments category.

EIOPA understands that it is feasible for the project company to report to investors on a quarterly basis as well as ad-hoc in case of developments that have a material impact on the value of the investment.

Clearly, the offering documents and the regular reporting have to cover all the information that insurers need. EIOPA is not aware of any current deficiencies in this respect, but will explore whether minimum criteria on the information to be provided are useful.

Q55: What would be relevant information for investors in offering documents (i.e. prospectus) or reporting? Is this information currently included?

Q56: What would be the costs and benefits of introducing as a criterion for a specific infrastructure investments category the availability of a specified list of information?

Standardised information can increase transparency. If there are any existing or emerging standards regarding offering documents or reporting it could be considered to require compliance with these standards as one criterion for a specific infrastructure investments category.

Q57: Are there any existing or emerging standards regarding offering documents or reporting?

Q58: What is the added value and what are the costs of requiring the provision of information according to certain standards?

A further step towards standardisation would be to require that for infrastructure investments to fall into the specific category, the contractual arrangements contain certain standard elements. The existence of such standard elements would increase comparability. A disadvantage could be that contracts could no longer be adjusted to very specific needs in different jurisdictions.

Q59: What could be standardised elements for infrastructure investments in the specific category? What are the costs and benefits of requiring them?

Q60: How can standardisation of investor information and contractual elements contribute to a higher liquidity of infrastructure investments?

Annex: Revenue risk

All contracts have revenue risk. Even with fully availability-based contracts the project company has to deliver the contractually agreed services before the payments are due.

A very narrow definition of low revenue risk would be that there is absolutely no dependency of the payments on the level of usage and that the rules apply over the whole life-time of the project.

One might want to expand this in at least two directions:

a. There are some use-based components in a contract that is mainly availability-based (e.g. road with some caps and floors for revenues based on usage);

b. There is a regulatory regime that guarantees fixed prices (e.g. for electricity generated by a wind park) for a number of years but not over the whole life of the project.

The question would be how the allegedly low revenue risk in these cases can be captured with a criterion. First ideas could be:

- For unrated loans one could require that all coupon and principal payments in case a. are covered in the worst-case (i.e. the payments if the usage is zero) and in case b. by the projected net cash flows during the regulated period. This might be too restrictive for the latter case as the implicit assumption would be a terminal value of zero at the end of the regulated period;
- For equities in case a. the most rigorous approach from a theoretical perspective would be to compare the valuation used for Solvency II purposes with a valuation based on revenues in the worst-case (i.e. the payments if the usage is zero). If the values differ by no more than x % then there is low revenue risk. A slightly simpler criterion would be to compare the sum of the projected revenues used for the Solvency II valuation with the sum of the revenues in the worst case. Projects with low revenues would be the ones where the difference does not exceed y %. The problem with the latter approach is that revenue risk is difficult to measure without looking at the expenses[25];
- For equities in case b. one could require that the cash flows in the regulated period contribute at least x % to the overall value of the equity investment as determined for the purposes of the Solvency II balance sheet.

Some countries have guaranteed prices for electricity produced by alternatives. While the price per unit is guaranteed revenues fluctuate in line with changing output volumes (e.g. due to changes in wind velocities). If these projects are to be included this uncertainty has also to be reflected in a criterion.

With the criteria outlined above, where the revenues of a project were regulated for a part of the project's lifetime, this project would no longer qualify for the infrastructure investments category after a number of years (at the latest when the regulated period ends).

[25] If the revenues exceed the expenses only by a small margin even a relatively small drop in revenues could reduce the funds available to investors by a meaningful amount.