

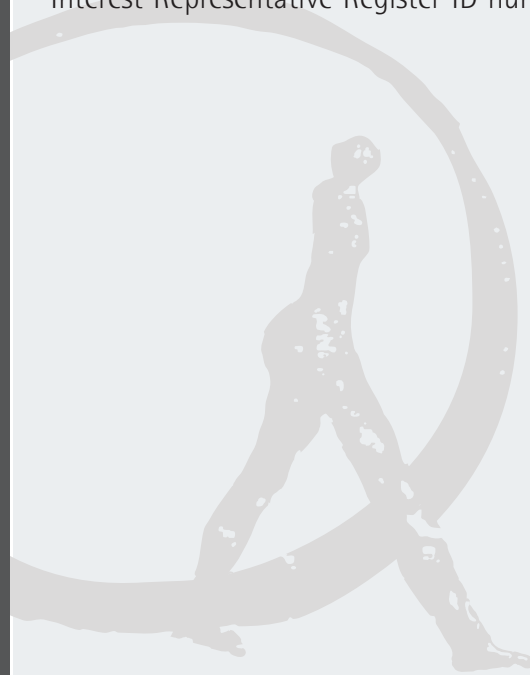
Response to the European Commission green paper on the long-term financing of the European Economy

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Contents

- Contents** **2**

- 1 Question 1: Do you agree with the analysis above regarding the supply and characteristics of long-term financing?** **3**
 - 1.1 Sources of long-term financing: the role of financial intermediation 3
 - 1.2 The characteristics of long-term financing: enforcing time-consistency 4

- 2 Question 2: Do you have a view on the most appropriate definition of long-term financing?** **7**
 - 2.1 Appropriate for whom? 7
 - 2.2 Example: defining long-term infrastructure financing 7
 - 2.3 Long-term financing as the credible opportunity to invest over multiple periods 9

- 3 Question 6: To what extent can institutional investors play a greater role in the changing landscape of long-term financing?** **10**

- 4 Question 7: How can prudential objectives and the desire to support long-term growth be balanced in the design and implementation of the respective prudential rules for insurers, reinsurers and pension funds?** **12**
 - 4.1 Modifying the Standard Formula: towards a project finance submodule? 12

- 5 Question 9: What other options and instruments can be considered to enhance the capacity of banks and institutional investors to channel long-term finance?** **15**

- Bibliography** **17**

This document presents the answers of EDHEC-Risk Institute (Edhec5710912562) to the questions of the green paper on the long-term financing of the European Economy published by the European Commission in March 2013.¹

1 Question 1: Do you agree with the analysis above regarding the supply and characteristics of long-term financing?

A careful analysis of the evolution of financial intermediation is necessary to identify not just the potential sources of long-term financing but the determinants of the decision to invest in long-term assets. Furthermore, a distinction must be made between the role and the nature of long-term financing. The "long-term" is only a relevant economic notion if similar outcomes cannot be obtained through series of short-term trades. Hence, the issue of long-term financing is primarily one of the effect of time on investment decisions and the potential time-inconsistency of investors. Identifying long-term investment through this prism could improve policy and regulatory focus.

1.1 Sources of long-term financing: the role of financial intermediation

The approach taken in the green paper on the long-term financing of the European Economy (2013) (henceforth, the *green paper*) to describe the supply of long-term financing relies on national accounting categories (i.e. the public sector, corporations, the household sector and the rest of the world). While this perspective is useful to highlight savings accumulation trends, a description of the sources of long-term *financing* would benefit from a focus on the intermediation of short- and long-term savings into long-term investments by the relevant investors. In turn, an analysis of the objectives and constraints (i.e. the incentives) of the relevant financial intermediaries would give a comprehensive view of the sources of long-term financing in Europe.

Generally speaking, as highlighted in the *green paper* (European Commission, 2013, p.8), there is a well-documented trend towards a greater role played by institutional investors in providing long-term finance to the economy, including pension funds and life insurance providers, as well as public pension reserve (PRFs) and sovereign wealth funds (SWFs).

Pension funds and insurance providers in particular, have become increasingly pivotal financial intermediaries. The *green paper* highlights the role of the household sector as a major source of long-term financing in Europe (European Commission, 2013, p.3). However, the means of intermediation of these savings are changing. During earlier phases of Europe's demographic transition, the deposit banks were the main channel through which the savings of the workforce provided a stable source of long-term financing for productive investments. With population ageing, a greater proportion of Europe's savings becomes 'pension savings' and needs to be invested to meet long-term, post-retirement income objectives.

Moreover, the relative share of the banking sector in providing long-term financing to the economy can be expected to decrease further, following the implementation of the Basel-3 Accords, which create new constraints and limit the ability of banks to extend to long-term credit.

The traditional maturity transformation role played by banks is an important dimension of long-term financing. To the extent that an increasing proportion of Europe's savings can be expected to be intermediated by insti-

1 - Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0150:FIN:EN:HTML>

tutional investors, the activity of providing long-term finance must evolve to meet the requirements of different capital providers.

An important difference between deposit banks and institutional investors, especially pension funds and insurance providers, is the explicit and long-term nature of their liabilities. Such investors can be expected to have long-term investment objectives that maximise the likelihood of meeting their liabilities, while also satisfying short-term constraints, such as funding or solvency ratios imposed by the relevant prudential regulators.

Thus, **insofar as long-term financing will increasingly be provided by institutional investors in Europe, it will be to respond to institutional investment needs** and focus on those investments and instruments that can best allow them to meet their long-term investment objectives while respecting their short-term constraints. Regulatory constraints such as Solvency-2 or accounting standards may actually limit the capacity of institutional investors to provide long-term financing.

A clear understanding of institutional investors' preferences on the supply side of long-term capital is thus essential to know how the demand for equally long-term investment can be met.

Indeed, providing long-term finance to the real economy is not a part of the mandate or mission statement of institutional investors, be they insurance companies or pension funds, and such investors cannot be expected to have much interest in financing infrastructure or SMEs *per se*. Institutional investors are nevertheless increasingly attracted to such investments because of the risk factors to which they provide exposure to, and the extent to which increasing their exposure to the aforementioned risk factors helps them achieve their own objectives.

1.2 The characteristics of long-term financing: enforcing time-consistency

In several places, the *green paper* makes a more or less explicit connection between long-term financing and long-term economic growth (see European Commission, 2013, pp.1-4), and suggests that one of the main characteristics of long-term financing springs from the ability to finance productive investment irrespective of the business cycle (European Commission, 2013, p.4).

We argue that a clear distinction must be drawn between the nature and the role of long-term finance in the economy.

Long-term financing is typically expected to play a role creating positive externalities and even solving market failures, as the *green paper* suggests. Technological innovation or the provision of public infrastructure projects are prime examples. However, externalities and market failures also exist in the short period and we see no reason to make such dimensions of public and private investments the preserve or defining characteristic of long-term finance.

While other sources of finance may have the same growth-enhancing role, the unique nature of long-term financing can be understood by focusing on the **role of time on investment decisions**.

The notion of *long-term* financing only makes economic sense if certain intended outcomes cannot always be replicated with a series of short-term trades. Indeed, economic agents can be "time-inconsistent" and fail to achieve long-term objectives through a series of individual steps. Time- or dynamic-inconsistency implies

that the regular re-appraisal of the cost and benefits of a particular course of action lead to continuously changing course of action, and never achieving the initial goal. In other words, if the long-term is only an accumulation of short-terms, investment behaviour can be such that the long-term never happens.

Such behaviour is explained in the economic literature either through the observed functional form of time discounting (i.e. agents are time-inconsistent because they discount future utility using a hyperbolic functional form instead of an exponential one (Kahneman and Tversky, 1979)) or the level of the time discounting factor if the short-term focus of investors leads to over-discounting the future (i.e. independently of the functional form, the level of the discount rate is too high (see Haldane and Davies, 2011, for a discussion)).

The solution to time-inconsistency in investment decisions is to **enforce** dynamic consistency by creating commitment mechanisms and building credibility (including credible threats).²

A good example of such phenomena is the project financing of large infrastructure projects. Such investments, have large upfront sunk costs and deliver benefits, including externalities, long into the future. They are also "relationship specific", which means that investors can be faced with the classic "hold-up" problem, while contractual incompleteness may also lead to frequent renegotiations between a project's investors and their sole or few clients (see Blanc-Brude, 2013, for a review and discussion of the nature of infrastructure assets).

In this context, without clear enforcement of commitment mechanisms, discounting the future is difficult to achieve with any accuracy. Indeed, the economic literature typically considers long-term contracts to be so incomplete that they can be considered completely useless (Hart, 1995).

Still, the corporate finance literature has long recognised the distinctive nature of project financing to address these issues (Brealey et al., 1996). For example, we argue in a recent paper (Blanc-Brude and Ismail, 2013b) that infrastructure project finance debt is the result of specific choices about the financing of new investment projects.

First, it implies a preference for delegating this investment to a third party via a dedicated corporate structure. This requires the selection of the project for dedicated limited-recourse financing by lenders, following the self-selection of project sponsors to invest equity at risk in a single-project, highly leveraged special purpose entity (SPE).

As a consequence, the average infrastructure project financing i.e. the bulk of *investable* infrastructure securities, is unlikely to be the same thing as the average infrastructure project. Instead, only high quality projects and managers should be found within structures that create such self-imposed, high-powered incentives and discipline mechanisms, while the remaining infrastructure projects are typically financed directly by the public sector.

Project finance, because it is single purpose, time-bound and self-contained has to demonstrate financial viability *ex ante* with a high degree of probability. In other words, project finance leads to self-selection and signalling that should minimise the adverse selection and moral hazard which otherwise characterises corporate finance, especially on the credit side.

2 - As long as enforcement is always effective, binding and credible, the expected outcome is the one defined by the first and last moments in the contract. Commitment mechanisms turn a multi-period game into a single-period case of 'false-dynamics' (Laffont and Martimort, 2002).

Project finance can be seen as a specific form of corporate governance, in which lenders play an instrumental role at the investment decision stage and that the structuring of project finance debt can be described as an optimisation exercise in which lenders can set most of the parameters usually controlled by the management of the firm in classic corporate finance.

In particular, lenders can use the price and non-price dimensions of debt instruments including maturity and repayment profiles, to maximise the net present value of project debt, while minimising credit risk through the use of covenants and extensive control rights over the project free cash flows.

In other words, **project financing is fundamentally about enforcing time-consistency so that long-term financing can take place.**³

And while the *green paper* is mostly concerned with the financing of "productive as opposed to financial capital" (European Commission, 2013, p.4), it remains that the decision to invest in long-term projects requires the creation of certain types of financial instruments that solve the specific problem of time-inconsistency.

To conclude, policy design and the regulation of long-term financing should be approached through the prism of the fundamental mechanism that distinguishes long-term financing decisions from other forms of financing: the necessity to overcome time-inconsistency. Infrastructure project financing, which is used to deliver the immense majority of public-private partnerships (PPPs) for public infrastructure delivery today (see Blanc-Brude, 2013, for a review), is an example of an institutional setup designed to create and enforce time-consistency in infrastructure investment and thus allow long-term financing to take place.

³ - A typical counter example is the tendency to under-fund public infrastructure maintenance by local and central governments. While it is objectively in the interest of politicians to have functioning infrastructure, the benefits are too far in the future and higher benefits can be obtained from investing public funds in shorter-term activities.

2 Question 2: Do you have a view on the most appropriate definition of long-term financing?

The appropriate definition of long-term financing should take into account the point of view of financial investors. The example of infrastructure investment illustrates that a definition of long-term infrastructure financing in terms of the financial instruments available at the underlying level i.e. project finance, provides a useful understanding of the drivers of long-term finance into infrastructure projects. On the contrary, a definition of long-term financing in terms of investment demand without taking the characteristics of available instruments into account reveals very little of the potential intermediation of liquid savings into long-term investments.

2.1 Appropriate for whom?

The *green paper* focuses on the role of long-term financing in fostering productive investment and economic growth in Europe.

But the *appropriate* definition of long-term financing should take into account the point of view of financial investors i.e. it should focus on the investment characteristics that attract investors to multi-period instruments, as opposed to more liquid ones with single-period durations and payoffs.

Indeed, defining long-term financing in terms of maturity thresholds (e.g. more than ten years) says very little about the decision to invest in productive assets over multiple periods.

In what follows, we discuss the definition of long-term financing with special reference to infrastructure investment.

2.2 Example: defining long-term infrastructure financing

The *green paper* focuses on the financing of productive investment in Europe, and "a significant share of the stock of long-term productive capital consists of public infrastructure" (European Commission, 2013, p.8). In a recent letter to EIOPA, the European Commission also highlighted the role of infrastructure as a major form of long-term investment (Faull, 2012).

As is the case for *long-term financing*, most publications on the subject highlight the absence of a widely accepted definition of *infrastructure*, which may or may not include such sectors as telecommunications, energy, oil & gas installations, as well as roads, schools and airports or even crematorium (see Kjorstad, 2013, on this last point).

But as we argued in our response to Question 1, investing in the real economy e.g. infrastructure, *per se* is not the primary motive of institutional investors. Instead, their focus is to invest in instruments yielding cash flows that have certain duration, return and risk characteristics.

The focus of an *appropriate* definition should be to identify the relevant instruments allowing such financing to take place.

For example, in its recent discussion paper, EIOPA correctly identifies that **long-term** investment in infrastructure may take the form of direct project financing, or investing in such projects via equity or debt funds, or through debt securitisation vehicles (EIOPA, 2013, p.35). EIOPA also highlights the role of the "look-through" principle under the Solvency-2 framework, according to which risk charges apply as if insurers had invested directly in the underlying assets used by funds or securitisation vehicles (EIOPA, 2013, p.49).

These three types of instruments are not found in equal measure today. Genuinely long-term, pass-through infrastructure equity funds seldom exist, since most "infrastructure funds" have relatively short investment period and typically use fund-level leverage (Blanc-Brude, 2013), while infrastructure debt funds and securitisation vehicles are still very new market developments that are yet to become widely available.

Thus, the limited relevance of indirect investment vehicles combined with a focus on the nature of the underlying mean that **defining long-term investment in infrastructure boils down to defining direct project financing**. Thankfully this has already been done in the context of the Basel-2 capital accord:

"Project finance (PF) is a method of funding in which investors look primarily to the revenues generated by a single project, both as the source of repayment and as security for the exposure. In such transactions, investors are usually paid solely or almost exclusively out of the money generated by the contracts for the facility's output, such as the electricity sold by a power plant. The borrower is usually a Special Purpose Entity (SPE) that is not permitted to perform any function other than developing, owning, and operating the installation. The consequence is that repayment depends primarily on the project's cash flow and on the collateral value of the project's assets." (BIS, 2005)

We argue in a new paper (Blanc-Brude and Ismail, 2013b) that project financing leads to the creation of several inter-related types of financial claims, splitting the total net operating cash flow of any given project between a senior, fixed-rate claim on the one hand, and subordinated, fixed-rate and variable rate claims on the other. Hence, the SPE capital structure consists of:

- **A senior tranche** (debt): By definition, senior debt has priority over junior claims regarding the project's free cash flows, in a structure known as a 'cash flow waterfall'. Effectively, the senior tranche is built to absorb the most predictable part of a project's net operating cash flow.
- **Junior tranches** ('mezzanine' debt, quasi-equity and 'pinpoint' equity) are subordinated to the senior tranche, and as such typically offer higher returns by reverse order of seniority.

Taken as a whole, the claims that constitute an instance of project financing can be interpreted as a portfolio of inter-linked bonds, with different maturities and grace periods, some paying a fixed rate of interest and some paying a variable rate of interest.

If project finance senior debt is akin to a self-amortising bond paying a fixed rate of interest, project finance "equity" has a known duration and is effectively the equivalent of a floating rate note issued by the Special Purpose Entity, with a bullet repayment of the principal when the later is dissolved at the end of a project's life.

2.3 Long-term financing as the credible opportunity to invest over multiple periods

Thus, we can define long-term infrastructure financing as "project finance" under the Basel-2 definition. In other words, by focusing on the characteristics of financial instruments used to finance infrastructure projects and that are attractive to investors, whether they are insurers, pension funds or, more traditionally, banks, we focus on the decision to invest in large projects with significant sunk costs and multi-period payoffs i.e. the intermediation mechanism that allows long-term financing to take place.

This perspective creates a clear distinction between what infrastructure may be financed by investors and the rest of real-world infrastructure projects, which, as productive and long-term as they may be, require direct public sector support to exist.

The opposite approach, which consists of focusing on infrastructure investment demand irrespective of the instruments available to finance such investments, often leads to a misleading representation of the infrastructure sector, in particular for new entrants like institutional investors. Numerous reports highlight the need to channel trillions of Euros into productive infrastructure by 2020 or 2030, for periods extending decades into the future. However, such "long-term" financing needs, while they are relevant for the policy maker, are not very informative for financial intermediaries mandated to transform savings into long-term investments.

3 Question 6: To what extent can institutional investors play a greater role in the changing landscape of long-term financing?

Asset allocation is the first-order problem for institutional investors. Hence, such investors can play a greater role in long-term financing to the extent that they can invest in the relevant assets on a well-diversified basis, insofar as they can thus gain exposure to a series of risk factors that are instrumental to achieving their respective investment objectives. These risk factors may be unique, better rewarded or simply in short supply.

We argued in our response to Question 1 that providing long-term finance to the real economy is not a part of the mandate or mission statement of institutional investors but that they are nevertheless increasingly attracted to such investments because of the risk factors to which they provide exposure to, and the extent to which increasing their exposure to the aforementioned risk factors helps them achieve their own objectives.

In the case of infrastructure projects for example, as highlighted a recent EIOPA discussion paper (EIOPA, 2013), these investments are unlisted at the underlying level. They are also characterised by a focus on cash flows rather than capital value or indeed collateral value, since, as we argued in a recent paper (Blanc-Brude, 2013) infrastructure investments are relationship-specific and have little or no value outside of the contractual framework that allows such long-term investments to take place. The characteristics of these cash flows spring from a number of commitment mechanisms created by writing long-term contracts between the relevant parties to an infrastructure project, be they public or private.

Thus, infrastructure cash flows are expected to be stable because they have been credibly contractually defined long in advance. As a consequence they are also expected to be less correlated with the business cycle, or even indexed on inflation, if such indexation has been included in the contractual or regulatory set up defining the investment.

There are two main reasons why insurers and other institutional investors may wish to increase their exposure to instruments yielding such cash flows: the construction of liability-hedging or -matching portfolios, and the management of short-term regulatory constraints such as solvency or funding ratios.

Instruments with a significant and well-defined duration, and yielding predictable cash flows are instrumental to build liability management portfolios, and long-term investments like infrastructure are one of the few alternatives to the bond market for such purposes; hence, the increasing interest of insurers and other institutional investors with long-term liabilities in this type of investment.

Institutional investors are also typically required to maintain a solvency or funding ratio above a certain threshold, while applying market valuation principles to their assets. By investing a larger share of their long-term assets in unlisted instruments that are valued less frequently such as infrastructure debt or equity, they can minimise the impact of sharp market downturns, as they have experienced in recent years on multiple occasions.

The first-order problem for an insurance company remains one of asset allocation. Meeting long-term objectives while respecting short-term solvency constraints are thus the fundamental motives for insurers to acquire long-term, unlisted assets.

We can call infrastructure *beta*, for shorthand, the combination of risk factor exposures implied by investing in infrastructure assets. Three questions underpin the notion of such a *beta*:

- Does it exist? In other words, can the demonstration be made of the distinctive behaviour of a basket of such assets? Answering this question implies identifying what a well-diversified basket of infrastructure debt or equity might be and how unique the exposure provided by such a basket is compared to other available opportunities.
- Is it accessible? How large is this basket and how can one become exposed to it?
- Is it relevant? Is there enough investable infrastructure in the world to be relevant at the strategic asset allocation level i.e. to invest at least a few percentage points of institutional investors' assets under management, which are estimated at USD85Tr in 2012.

The questions remain mostly unanswered today but current research efforts are geared towards collecting data and developing theoretical insights that will help answer them. EDHEC-Risk Institute is currently working to this end with industry partners in the context of the Meridiam/Campbell Lutyens research Chair on infrastructure equity investments and the NATIXIS research chair on infrastructure debt instruments.

4 Question 7: How can prudential objectives and the desire to support long-term growth be balanced in the design and implementation of the respective prudential rules for insurers, reinsurers and pension funds?

Insurers and pension funds are interested in long-term investments like infrastructure project debt and equity for the purposes of meeting long-term objectives and satisfying short-term constraints, and only the characteristics of the cash flows attached to these instruments are relevant from that perspective, not the sector of the economy in which these investments take place. It follows that a focus on infrastructure or SMEs from the point of view of prudential regulatory frameworks is less important than the question of the instruments used to finance these sectors and their role at the strategic asset allocation level for investors. In this context, we argue for example that a new 'project finance' sub-module should be added to the Solvency-2 framework.

The relevance of long-term investment in the Solvency-2 and other regulatory contexts springs from the motives of insurers and other institutional investors that we highlighted in our answer to question 6.

Thus, the Solvency-2 framework approaches the calculation of solvency capital requirements using building blocks representing a set of risk modules and submodules, the linear combination of which is known as the Standard Formula. By focusing on broad categories of risk factors, the Standard Formula implicitly addresses the strategic asset allocation of a typical insurer. Indeed, if they feel that the proposed risk modules and their calibration do not represent their individual situation, insurers have the choice of proposing their own risk model. The Standard Formula is thus meant to embody the average case.

It follows that justifying a revision of the Standard Formula to accommodate long-term investment as was the object of a recent EIOPA consultation (EIOPA, 2013), first requires the demonstration that such investments are relevant as a matter of strategic asset allocation for a typical insurer, which is typically done using a representative basket or benchmark.

This point is implicit in other parts of the Solvency-2 framework. For example, calibrating the "Global Equities" submodule based on the MSCI World Developed Price Equity Index assumes that a typical insurer is exposed to the "market portfolio" as represented by a market-cap weighted measure like the MSCI World 4. The Standard Formula thus implies that this market benchmark is a sufficient approximation of the risk taken by a typical insurer.

Likewise, measuring the risk inherent to investing in long-term unlisted assets such as infrastructure debt or equity should be made with reference to a representative or "well-diversified" basket of infrastructure assets. We may refer to an infrastructure *beta* for shorthand, even though we really mean gaining exposure to a series of risk factors, as we have argued in our response to Question 1.

4.1 Modifying the Standard Formula: towards a project finance submodule?

In our recent response to EIOPA's discussion paper on the calibration of the Solvency-2 Standard Formula to accommodate long-term investment (Blanc-Brude and Ismail, 2013a), we argue, as we have above, that insurers are interested in long-term investments like infrastructure project debt and equity for the purposes

4 - Market-cap indices are in fact only one of many ad hoc weighting schemes and may result in excessive concentration in a few constituents. As such, they may not be the most adequate measure of equity risk. (see Amenc et al., 2012, for a detailed analysis of the limits of cap-weighted indices)

of meeting long-term objectives and satisfying short-term constraints, and that only the characteristics of the cash flows attached to these instruments are relevant from that perspective, not the sector of the economy in which these investments take place.

It follows that a focus on infrastructure or SMEs from the point of view of the Solvency-2 framework is less important than the question of the instruments used to finance these sectors and their role at the strategic asset allocation level for insurers.

Focusing on the financing of industrial sectors by insurers may not allow the development of a robust regulatory framework since real world infrastructure and other sectors may well be financed using new instruments with different characteristics in the future, making past calibrations irrelevant.

Moreover, the growing interest of institutional investors in infrastructure investment has spurred a number of marketing initiatives by financial service and product providers which often stretch well beyond the notion of "infrastructure" advanced by, for example, by the OECD and highlighted in the EIOPA discussion paper (EIOPA, 2013, p.33).

However, a definition of infrastructure investment is not what is needed for the purposes of revising the Standard Formula. Instead, the **type of financial instruments** which have recently drawn insurance companies to the infrastructure sector is what needs to be identified and, if relevant, regulated.

In this perspective, we argue that the well-understood and documented project financing structures, as defined under Basel-2, are much more relevant to the revision of the Standard Formula than the ill-defined and changing notion of "infrastructure". Indeed, not only is project finance well-defined and easily identified, it is **a specific form of corporate governance designed to create the kind of financial instruments that insurers actually want**, but that are not currently represented in the Solvency-2 framework.

The tendency to confuse or equate Project Finance and infrastructure finance is a consequence of the overwhelming presence of infrastructure projects in the project financing sector. Project financing requires solving complex information and agency problems, which are addressed sub-optimally in standard corporate finance (Blanc-Brude and Ismail, 2013b). Comprehensive contracting and diligence are costly and, project financing tends to create high transaction costs (see for example (Dudkin and Vällilä, 2005)).

Because fixed start up (or transaction) costs are high, only large capital projects can justify such costs. Infrastructure projects, with capital investment programs ranging from several millions to several billions of dollars, tend to make up the bulk of projects that are large enough to justify the transaction costs of project financing.

However, other large investment projects than infrastructure can be project financed as well, such as casinos, heavy industry, theme parks, etc. which have been delivered using similar structures for decades.

And if most project finance is infrastructure finance, the reverse is not true, and it remains to be demonstrated that other infrastructure-related investments are different from corporate debt and equity.

To conclude, Project Finance allows investors to gain specific exposure to risk factors that are highly relevant to meet their own objectives. Insofar as this exposure is distinct from the one embodied in other risk modules and sub-modules, we may refer to a project finance *beta*.

The existence of this distinctive effect, in turn, justifies revising the Standard Formula to integrate what the academic literature recognises to be a specific type of financial instruments that is expected to behave neither like corporate debt or corporate equity or private equity.

Finally, from the perspective of public policy and the question of providing long-term financing to the real economy, project financing as it is defined above has provided the bulk of the financing to new *investable* infrastructure projects over the past three decades globally (see Blanc-Brude, 2013, for a discussion). It is therefore the most relevant investment route from this perspective as well.

5 Question 9: What other options and instruments can be considered to enhance the capacity of banks and institutional investors to channel long-term finance?

Depending on the objectives of investors, the co-investment model alongside a specialist bank may be used to optimise the benefits of delegation while building tailored liability-hedging positions. The specialist fund model requires developing the reporting, transparency and benchmarking.

Taking infrastructure project investment as the most relevant example, three investment options for institutional investors can be distinguished.

First, institutional investors can invest directly in long-term assets such as infrastructure projects. Infrastructure project financing is a highly specialised activity and requires equally specialised staff. Institutional investors that have made the choice of investing directly in projects (e.g. Canadian pension funds) have had to internalise this function completely. This route is costly and only open to large investors. It also creates the portfolio construction issues, in particular the so-called "lot-size" problem, and makes direct investment in long-term projects a very active investment strategy (see Blanc-Brude, 2012, for a discussion).

Second, a number of investors already co-invest alongside specialised lenders. There are two reasons to choose co-investment over direct investment for a pension fund or an insurer. First, the task of sourcing and structuring specific investments can be delegated to the specialist lender, which has sufficient internal capabilities to conduct this task. Co-investment nevertheless requires frequent interaction with project finance lenders and new staff is typically required for institutional investors to allow these exchanges to take place, albeit not on the same scale than if the deal sourcing and structuring function had been completely internalised.

Most importantly, beyond the benefits of delegating specific tasks, institutional investors that co-invest alongside a specialist bank can build dedicated portfolios that best correspond to their liability management needs, which is one of the main attractions of assets with long durations.

Finally, lenders can benefit from the regulatory arbitrage between their capital charges and that of their institutional co-investors since most of the financing can be realised by institutional players while banks are rewarded for their ability to source and structure investments.

Finally, insurers or pension funds can take a more passive or silent role in specialist investment funds offering to invest in a portfolio of long-term assets. Such investments may not require building up very much internal expertise for investors. However, issues with reporting and transparency have been highlighted in the case of closed-ended private equity infrastructure funds built on the classic "2:20" model (Blanc-Brude, 2013).

Other fund models exist and can be used to create investments that are useful for institutional investors (e.g. longer durations) and better align incentives between managers and investors. Such vehicles are instrumental to allow smaller investors to contribute to the long-term financing of the economy while benefiting from the characteristics of these investments.

In this context, EDHEC-Risk Institute is currently working with industry partners in the context of the Meridiam/Cam Lutyens research Chair on infrastructure equity investments and the NATIXIS research chair on infrastructure

debt instruments to develop a standardised cash flow reporting template for infrastructure investment in order to improve the transparency and benchmarking of infrastructure investments.

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