

Quo Vadis Infrastructure Financing?

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List of Abbreviations

Basel II	Second Basel Accords issued by the Basel Committee on Banking Supervision
Basel III	Third Basel Accords issued by the Basel Committee on Banking Supervision
CRD	Capital Requirement Directive
CRD IV	Capital Requirement Directive IV
DSCR	Debt Service Cover Ratio
LCR	Liquidity Cover Ratio
LLCR	Loan Life Cover Ratio
NSFR	Net Stable Funding Ratio
PLCR	Project Life Cover Ratio

1. Introduction

At the beginning of the 21st century the financial industry is facing a significant change after the turmoil of the global financial crisis starting in 2007. The laws previously applicable were disrupted and the idea of borderless opportunities became a phenomenon of the past. While negative effects of the global financial crisis became less disastrous in 2009/2010 telltale signs of further baneful events became evident. The global financial crisis was replaced by the euro financial crisis in 2010.

When the global economy is driven by downside risk and banks as well as equity providers are facing tremendous write-offs and losses a growing community of investors can be identified, which supports the view that an investment decision solely based on upside potential can't be sustained. After 2007 asset classes like asset backed securities are considered to be obnoxious and out-of-favour. Investors became aware that other investments could provide a better risk-return profile than synthetic products which had been wrapped and rewrapped many times.

One of those down-to-earth asset classes are infrastructure investments. Those investments are predominantly directed towards projects in the energy or transport infrastructure sector, e.g. tall roads, seaports, airports, gas pipelines, gas storages, power plants, electricity networks etc. Nevertheless, also projects for construction and operation of schools, prisons and hospitals are considered to be public infrastructure. All Infrastructure assets have in common that they serve basic needs of a population. The flexibility of demand and price sensitivity is therefore less distinctive than in other product areas. As a consequence the attractive yield of an infrastructure investment is accompanied by a relatively low risk profile.

Nonetheless, also infrastructure investments faced a couple of challenges during the global financial crisis and the euro financial crisis. Focus of the following analysis is therefore the impact of the global financial crisis from 2007 till 2009 and the euro financial crisis in 2010 and 2011 on infrastructure debt investments. Furthermore we will dare an outlook on the chances and obstacles in the years to come.

2. The project finance market in 2006/2007

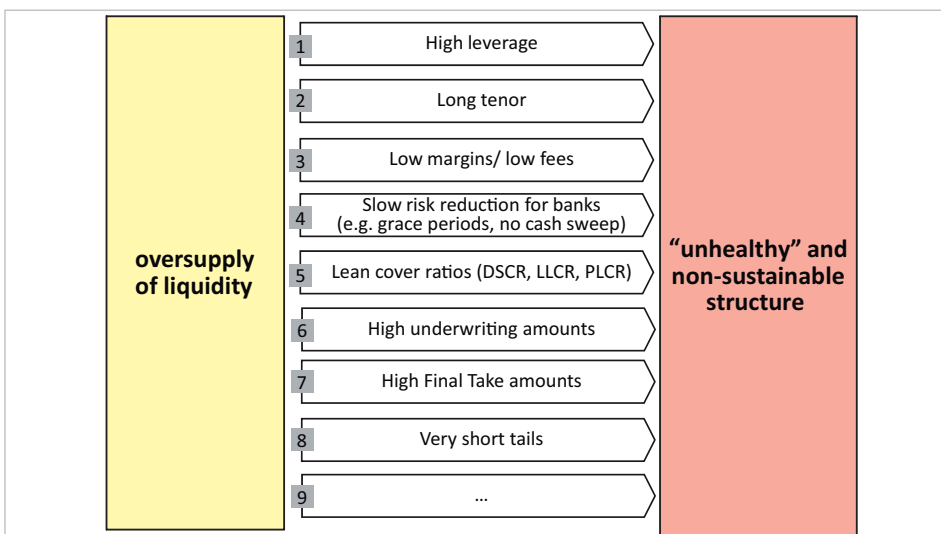
The infrastructure debt financing market or in other words the project finance market in 2006/2007 was characterised by a tremendous oversupply of liquidity. Too many banks were active in the market and chased few transactions. As a matter of a fact at that time the project finance market was a buyer's market. In a different way from other markets a buyer's market in project finance lead not just to a cheap pricing for the credit facilities, but as well to a borrower friendly structure of credit agreements.

The most important structural elements are in this respect the equity ratio, long tenors and lean cover ratios for project finance facilities. Regarding the proportion of debt and equity an equity ratio of 20% to 30% is more or less standard in most sectors. In 2006/2007 the equity ratio came down to 10% and below. With respect to the tenor a significant increase could be seen in 2006/2007. The term of the facilities went up to more than 30 years for some projects. In addition cover ratios like Debt Service Cover Ratio (DSCR), Loan Life Cover Ratio (LLCR) and Project Life Cover Ratio (PLCR) became insufficiently lean. To set an example, it is unlikely that lenders are willing to accept a minimum DSCR below 1.2 times under normal market conditions for a power generation project with a standard risk profile in Western Europe. In 2006/2007 the minimum DSCR for such projects came down to 1.1 times and below.

While those “aggressive” structures are in favour of the borrower they put the banks at a disadvantage. Such lean credit structures do not reflect the risk implied sufficiently. An equity ratio of 10% and below can be considered as inadequate for protection against a principal agent conflict. The sponsor of a project has not enough “hurt money in the game”. As soon as any deviation from flatness (i.e. a deviation from the banking case) occurs, the sponsor is tempted to step back from the project. To lose the amount already invested could be by far less than providing over and over supplementary financial assistance in form of equity injections. Regarding the tenor can be stated – the longer the tenor the higher the probability of any cash flow variances. In addition lean cover ratios are just another word for small buffers until an event of default for the repayment of debt can occur.

Figure 1 below provides a couple of additional structural elements which could widely be seen in 2006/2007 before the global financial crisis stopped unsustainably structured transactions.

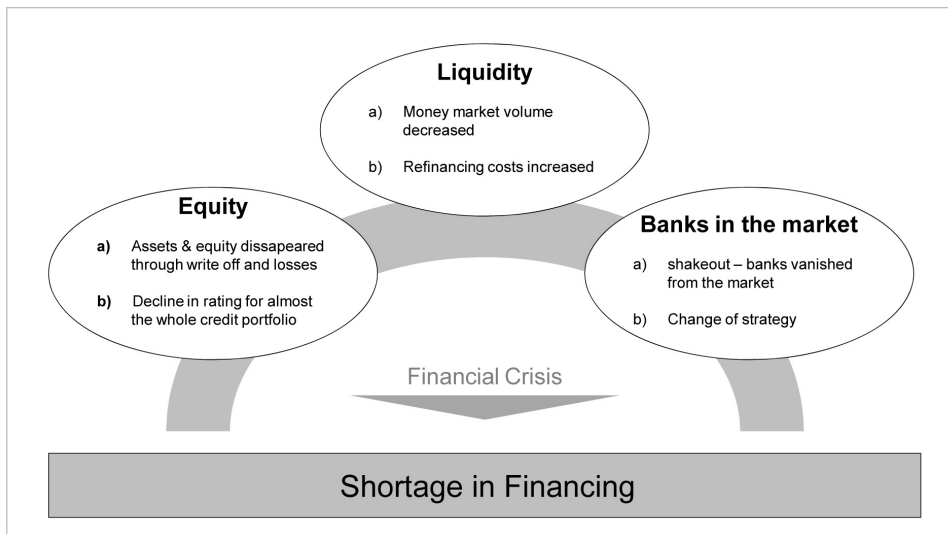
Figure 1: Project finance market in 2006/2007



3. Areas affected by the global financial crisis

The global financial crisis had its seeds in the United States of America. Retail banks were willing to provide home loan financings to private customers which lived beyond their means. Market participants joined the game expecting an ever increasing price for private real estate. The outstanding accounts were securitised and sold predominantly to American and European banks. The pitcher went often to the well, but was broken at last. The market collapsed as the prices for private real estate decreased and the vast majority of borrowers were not able to repay their loans.

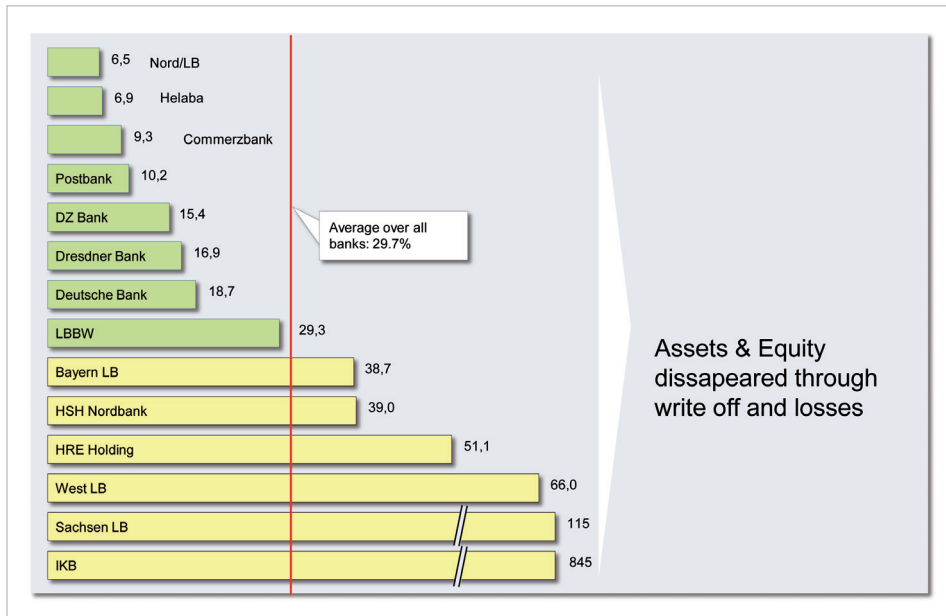
Figure 2: Effects of the global financial crisis



The effect on the financial markets was disastrous on a global basis. Assets and equity of banks disappeared through write off and losses. Additionally the quality of credit portfolios of nearly all banks suffered. This led to a decline in rating of almost the whole credit portfolio with increasing equity requirements due to Basel II. The liquidity was significantly shortened. Money market volume was reduced and syndication vanished from the market. Furthermore the number of lenders in infrastructure financing decreased severely. Banks stepped out of the market, some due to shakeouts others due to a change in strategy.

In summary the whole market was hallmarked by a shortage in liquidity. Too many projects chased narrow liquidity.

Figure 3: Write offs in percent of banks equity (June 2007 to September 2008)



Source: "Deutschland-Bericht" International Monetary Fund (IMF), No 09/15, January 2009

Anyway has to be stated that the situation described above did not put all banks at a disadvantage in project finance. Banks still active in lending during the financial crisis faced a sellers' market. Due to an excess demand for liquidity they were able to achieve a higher margin accompanied by bank friendly structures. This led to higher returns on equity and a lower risk profile of the facilities. In addition they were able to focus on reputable transactions with a perfect match to their skills and risk appetite.

In other words, although most banks suffered during the global financial crisis, winners could be seen in the market. Those banks which were still able to provide debt facilities to infrastructure projects could boost their business and increase their return on equity. They were the winners of the global financial crisis.

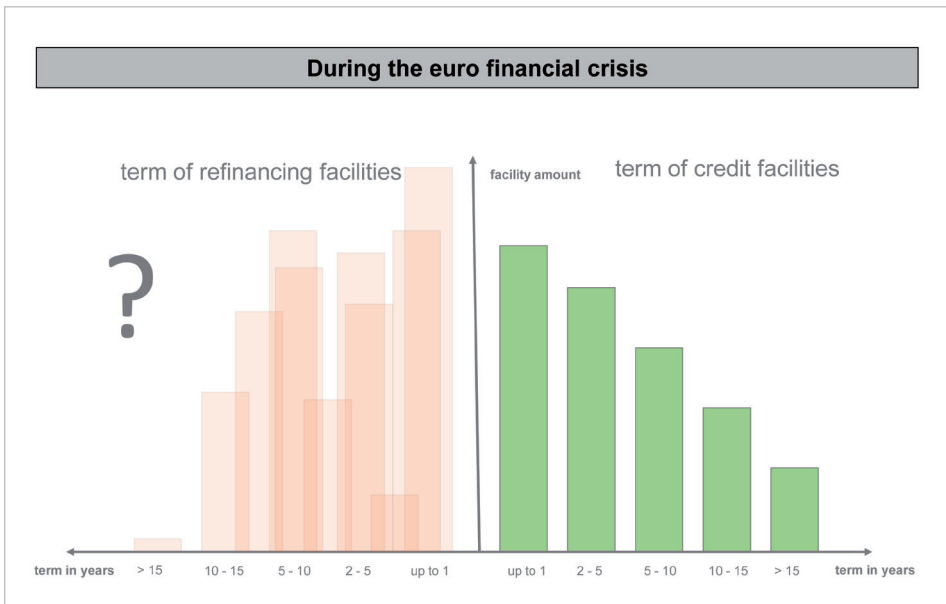
4. Areas affected by the euro financial crisis

It is a widely held belief that the global financial crisis and the euro financial crisis had a similar effect on the market. Although this is true to a certain degree the most critical point during the euro financial crisis was liquidity in the market, more precisely the price for liquidity.

Before the global financial crisis banks were able to achieve both short term and long term funding. Although terms for credit facilities on the left side of the balance sheet, were longer than terms for refinancing facilities on the right side of the balance sheet the need for term transformation was limited. For a credit facility with a tenor of about 15 years it was necessary to achieve a refinancing just two to four times. The need for term transformation increased during the global financial crisis significantly. To provide a credit facility with a tenor of about 15 years it was required to achieve a refinancing up to 15 times. Most of the banks therefore stopped lending with a term of more than five years. Such a market environment is not a good starting point for long term lending because the risk of term transformation is huge. Nonetheless, even under such market conditions long term lending can be achieved. As long as the funding costs are stable it is possible to calculate the risk premium required to bare the risk of term transformation. But as soon as the refinancing costs – as illustrated in Figure 4 – start to get highly volatile it becomes more and more difficult to forecast the risk premium for term transformation.

During the euro financial crisis market forecast was highly dependent on political discussions and decisions. Those discussions and decisions were inconstant, unpredictable and lobby-driven. It is therefore fair to say that the uncertainty during the euro financial crisis jeopardised long term lending. Lenders were unable to calculate risk premiums for term transformation due to ongoing and never-ending political discussions.

Figure 4: Term of credit facilities and refinancing facilities during the euro financial crisis



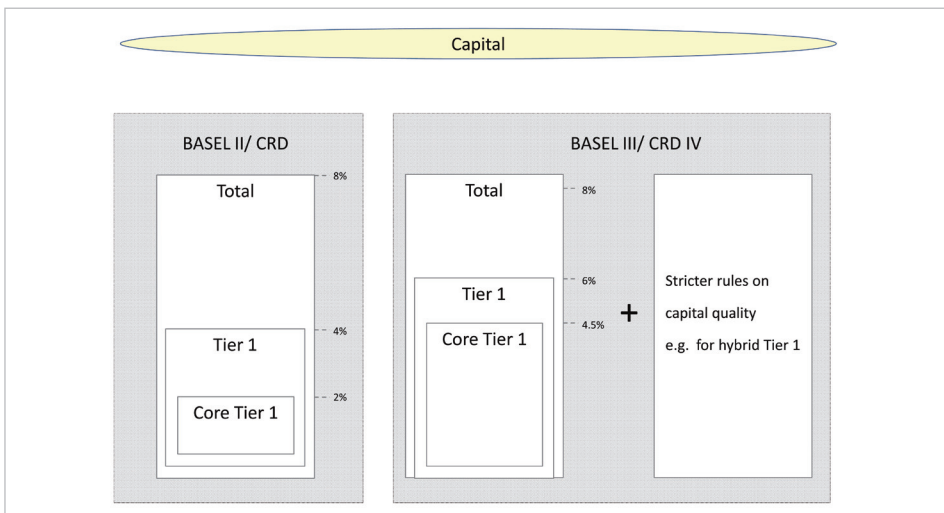
5. Basel III and the consequences for infrastructure financing

Not only could a negative shift of the market have a tremendous impact on infrastructure financing. Also regulatory requirements could bare supporting or freezing elements for project financing. One example of a regulation with a significant impact on infrastructure financing is Basel III. That supervisory regulation is directed towards the invigoration of banks and the financial system as a response to the financial crisis. It tries to achieve this goal by increasing quality and quantity of regulatory capital, by implementing a leverage ratio and by setting up rules for short and medium term liquidity. It has to be stated that Basel III is not a directly binding act. It is a global regulatory standard which has been worked out by Basel Committee on Banking Supervision. Basel III has been enacted in the European Union by the Capital Requirement Directive IV (CRD IV).

In comparison to Basel II the new regulation Basel III, which will be implemented in the European Union from January 2013 onwards, requires the same percentage of regulatory equity capital (8% of the risk weighted credit exposure), but a higher proportion of Tier 1 and Core Tier 1 capital. Details of composition and level of required capital can be seen in Figure 5 below.

In addition to 8% minimum equity capital Basel III requires further buffers: A capital conservation buffer, an analytical buffer and a systemic buffer. The total minimum capital including the additional buffer can sum up to a percentage of 12% to 16%. In comparison to 8% in the past the new regulation will therefore lead to a severe increase of required regulatory equity capital.

Figure 5: Required regulatory capital according to Basel II and Basel III



Furthermore, Basel III will restrict the overall leverage ratio to 3%. The respective ratio will be calculated as follows:

$$\text{Leverage ratio} = \frac{\text{Tier 1 capital}}{\text{Total exposure}} \geq 3\%$$

It is necessary to emphasize that the total exposure within the above mentioned formula is not risk weighted. The individual ratings of transactions or credit facilities have therefore no impact on the maximum total exposure.

In addition to the capital requirements above Basel III implements for the first time regulations which are directed towards liquidity – the Liquidity Cover Ratio (LCR) and the Net Stable Funding Ratio (NSFR). The LCR should ensure that any bank is able to stand a stress scenario for a period of 30 days. It is calculated with the following formula:

$$\text{LCR} = \frac{\text{High Quality Liquid Assets}}{\text{Total net liquidity outflows over 30 – day time period}} \geq 100\%$$

The NSFR will be calculated as follows:

$$\text{NSFR} = \frac{\text{Available stable funding}}{\text{Required stable funding}} \geq 100\%$$

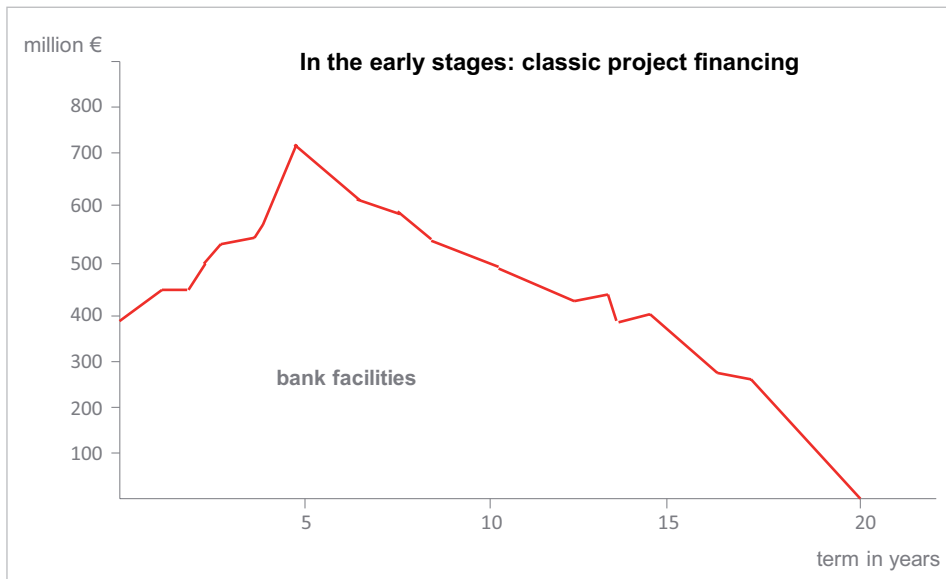
The above mentioned NSFR is somewhat problematic, because there are two ways to comply with the legal requirements of the NSFR: (i) longer term of the refinancing facilities and/or (ii) shorter tenor of the credit facilities. In the cold light of day it is more than unlikely that banks will extend the tenor of their refinancing facilities. Refinancing facilities of 10 years and more are hard to find and – if available – costly. While the regulatory authorities intended to increase the term of the refinancing facilities it is more likely that the banks will alter their asset profile rather than their refinancing profile. The trouble is that shorter credit facilities will leave the refinancing risk with the borrower.

In summary Basel III penalises long term lending. At the end of the day borrowers will be confronted with a higher margin while banks will lose a part of their term transformation gratification.

6. Outlook – Where do we go from here?

Ever since project finance is used for infrastructure financing one phrase appears to describe the market development in the best way: “Nothing endures but change.”¹ During the time of project finance commencement the whole debt amount was normally supplied via bank facilities (cf. Figure 6). Only a limited number of transactions could be structured by on project finance bonds.²

Figure 6: Disbursement and installment profile of classic project financings



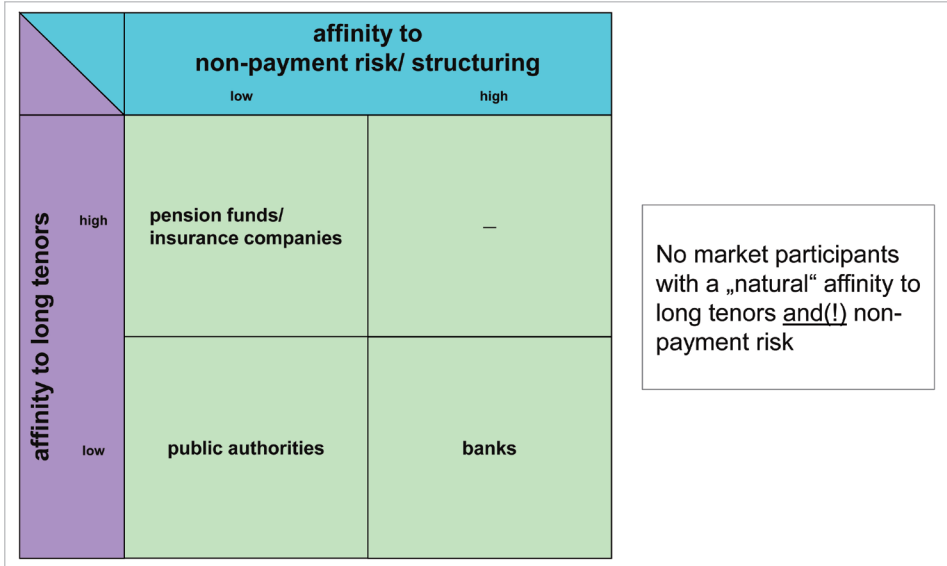
Even though banks were able and willing to provide long term financings they are not a “natural partner” for long term facilities. Based on their skills and knowledge they are qualified to structure a project finance transaction. However they dislike a high risk of term transformation which occurs within the frame long term lending. Additionally, regulatory requirements cast long term financing into doubt.

Regarding the tenor of infrastructure financings pension funds and insurance companies would be a “natural partner”. But these market participants miss the respective knowledge to structure a project finance transaction.

1 Heraclitus of Ephesus, (535 BC – 475 BC).

2 See Brodehser, P.: “Internationale Projektfinanzierung: Strukturen und Instrumente der Bankintermediation” (2012), pp. 212ff.

Figure 7: Affinity matrix

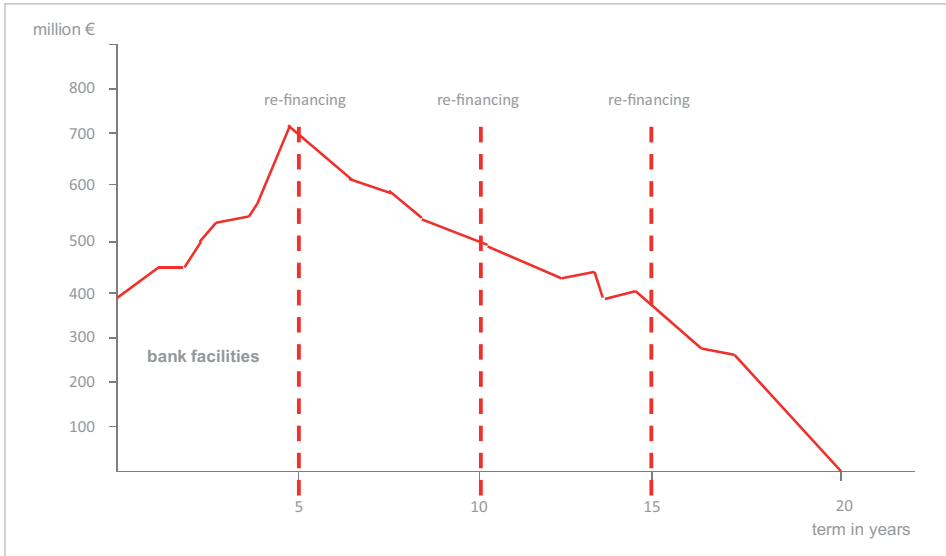


Source: Heathcote, C. (2010), p. 15

The gap illustrated in Figure 7 can partially be closed by project finance bonds. The banks will undertake the task of structuring the transaction. Subsequently the loan receivables are securitised and sold to institutional investors. Nevertheless, the sole use of bonds is limited to special sectors, countries and stages of projects.³ Another solution is using mini perm financings (cf. Figure 8). Mini perm structure is just another word for splitting the tenor of the credit facilities up. For instance the lenders provide facilities with a tenor of five years. After five years the borrower is obliged to refinance the facilities. However, it has to be mentioned that the borrower has to bare the refinancing risk. A refinancing can lead to higher margins and a borrower unfriendly structure after refinancing has been achieved.

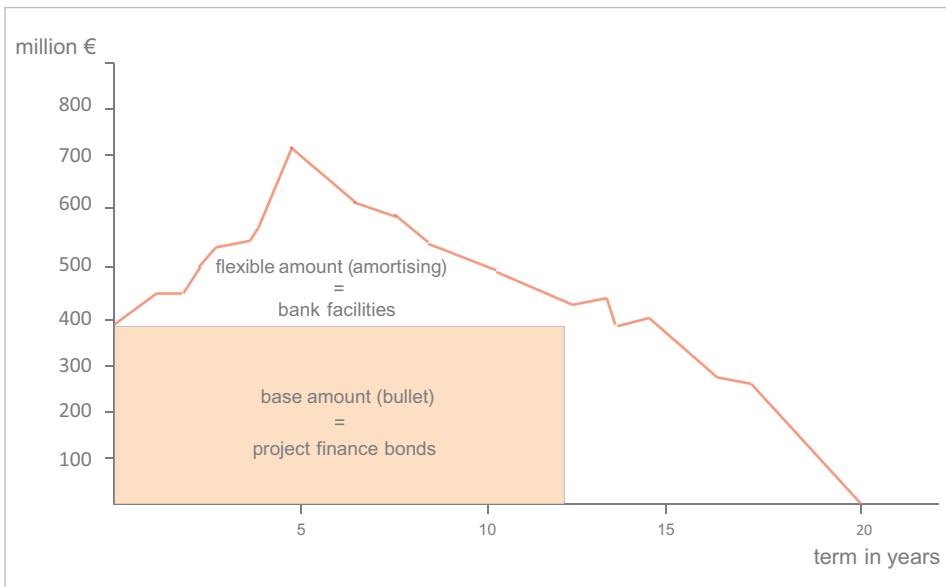
³ See Brodehser, P.: "Internationale Projektfinanzierung: Strukturen und Instrumente der Bankintermediation" (2012), pp. 212ff.

Figure 8: Mini perm structure



A further solution is the combination of bank facilities and bonds as illustrated in Figure 9. By embedding project finance bonds in a transaction at least a part of the long term financing can be handed over to institutional investors. Nevertheless, a significant proportion of long term lending remains with the banks.

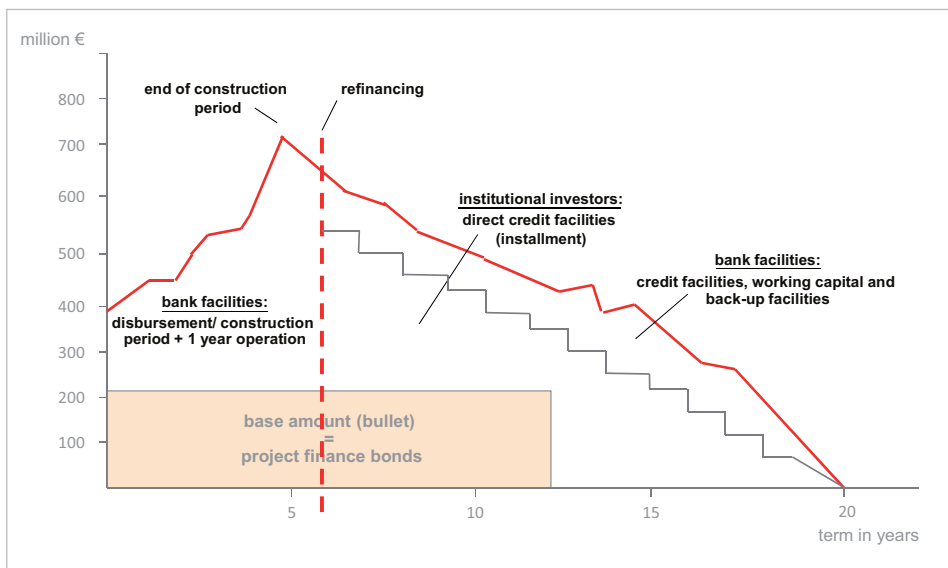
Figure 9: Embedding of project finance bonds



A potential structure to combine the strengths of each market participant is illustrated in Figure 10. A base amount is born by project finance bonds from the very first. The remainder during construction will be financed via bank facilities. Those bank facilities will have a higher pricing than project finance bonds. But in the same manner bank facilities are able to provide ex post any flexibility needed, e.g. amendment of disbursement profile, amendment of credit amount etc.

After the construction phase is successfully completed and one year of operation has been performed the assets are supposed to be “stabilised”. A major part of the long term lending can now be handed over to institutional investors. They can – as a “natural partner” – contribute to the financing as a long term lender. On top of that banks can offer additional credit facilities in the form of term loans, working capital or backup facilities etc. In doing so, banks can contribute with their know-how to transactions while leaving long term lending to institutional investors.

Figure 10: Additional direct participation of institutional investors



But for all that, there are some obstacles to overcome to get institutional investors involved. First of all there is a lack of experience and human resources to perform a project finance transaction. Assembling a team of infrastructure professionals could be time intensive and costly. Even if a team is already implemented it will need a couple of months until an institutional investor is introduced onto the market as a project finance lender.

Furthermore there are some regulatory burdens. In some jurisdictions regulations on lending require a banking license, e.g. in Germany. It is either required to apply for an own banking license or to be “fronted” by another project finance lenders. Moreover

regulations in future in the insurance industry could disadvantage or even ban direct infrastructure lending (e. g. via solvency II).

In addition the volatility of greenfield projects and accounting variance during the construction period are not easy to handle for a newcomer in the project finance market.

In summary banks are still a notch above other market participants in managing project finance and infrastructure finance risk, especially during construction and disbursement. But non-volatile assets after a successful completion of construction can be handed over predominantly to institutional investors.