MANHATTAN COLLEGE

School of Business

Student Research Working Paper Series

Credit Rating for Project Finance

Bruno Bunzl ‘14

Internship Research Study

Working Paper SRWP #4
Spring 2014

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Bruno Bunzl

Advisor: Amira Annabi

Thursday, May 15, 2014

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Executive Summary

This report is based on my experience as an intern in the Project Finance team at Santander Global Banking and Markets in New York from November 2013 to May 2014. The main duties as an intern consisted in supporting my team in basic, time-consuming tasks such as making sure the formatting of presentations was correct, inputting data into our risk evaluation programs, and helping whichever team member that required my help.

Most notably, I conducted a 2-month long research on the residential solar financing and presented my results to the head of Global Banking and Markets, and prepared a private placement memorandum, a 300-strong pages long document explaining the details of a $300 million wind farm transaction. This particular transaction was specially delicate because the farm has been underperforming and the wording needed to be carefully selected as to not to alarm potential buyers.

As for the skills learned, the most important aspect that I've been able to develop has been the aforementioned capacity of writing with a particular wording style, as well as my knowledge of financial modeling. I believe that my role has been successful since I have received a job offer to join Santander Global Banking and Markets.

As for this report, it details the methodology the main credit rating agencies, as well as KBRA, a specialized agency, use to rate project finance transactions, in addition to a description of what Project Finance is, its history, development and market.

Project Finance is the long-term financing of infrastructure, energy and other large-scale projects based upon the projected cash flows of the project. The project debt is most commonly non-recourse and may be secured by a first priority lien on all of the project's equity and assets, including rights to revenue under the project's contracts, so that investors are able to assume control of a project in an event of default.

Most Project Finance transactions are organized as a bankruptcy-remote special purpose entity, such that the investors' interest in the project is shielded from financial difficulties that may affect the project's parent or equity holders. Assets that have been financed using this structure include but are not limited to pipelines, refineries, power generation facilities (renewable and non-renewable), toll roads, airports, docking facilities, mines, and various industrial facilities. Many operators in the infrastructure and energy sectors are now considering traditional Project Finance structures as a way to raise capital for large scale projects.

I) Introduction

The International Project Finance Association defines Project Finance (PF) as:

"*The financing of long-term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure where project debt and equity used to finance the project are paid back from the cash flow generated by the project*".

In other words, project financing is a loan structure that relies on the project's cash flow for repayment –as opposed to traditional lending, which relies on the collateral. Because of this, Project Finance is technically called limited recourse financing. Because of this limited risk –meaning that if the project fails, the exposure of the sponsors will be limited to the equity invested in the project-, it is very attractive for private companies.

The Project being financed is always set up as a Special Purpose Entity (SPE) –generally called Special Purpose Vehicle, outside the United States-, which means that it will appear off the balance sheet of the sponsors. Because of this, Project Finance is sometimes called off-balance sheet lending.

a. The History of Project Finance

Limited recourse lending first appeared in ancient Greece, where it was used to finance maritime voyages: the liability of the parties was limited to the assets involved in the trip. The first modern use of Project Finance in infrastructure, however, dates to the development of the Panama Canal, and consequently expanded to the US through its use in the development of the oil and gas industry in the early 20th century[1].

The first use of Project Finance in high-risk infrastructure schemes was in the finance of the North Sea oil fields in the 1970s and 1980s. Until then, most projects were previously financed through utility or government bond issuances. In countries like the United Kingdom, a specific form of Project Finance was developed, called public-private partnerships (PPP) that allowed projects to be operated through a partnership between government and the private sector, structured as a long-term concession arrangement. In 1999, the UK adopted the "Standardisation of PFI Contracts" which effectively commoditized PPP in the UK, enabling the Project Finance market to support huge volumes of contracts, with transaction values as low as USD 40m, which would normally be regarded as economically unviable due to transaction costs. PPP has since been extensively used in Europe in diverse investments, from street lighting, schools, military accommodation and equipment, roads, hospitals and prisons.

[1] Gardner & Wright, 2.
[2] Five year default rates according to Moody's

In the United States, Project Finance gained ground after the Public Utility Regulatory Policies Act (PURPA) of 1978, that deregulated electric generation, and the Public Utilities Holding Company Act of 1994 and the consequent international privatization, that created an opportunity thanks to the creation of long term power purchase contracts available from utilities and government entities. PURPA provided a regulatory impetus for independent power producers (IPP) through the requirement of long term offtake contracts for the power they produced.

Project Finance consequently boomed and reached a peak at the time of the Asian financial crisis (1997), but the subsequent downturn in industrializing countries was offset by growth in the OECD countries, continuing the peak until around 2000. Since then, demand for Project Finance has remained slightly below the peak but consistently high, as the demand of public utilities and infrastructure remains high. In addition, in the last decade there has been a huge boom in Islamic Project Finance schemes in the Middle East.

b. The Project Finance Market

Modern, high risk Project Finance was developed in Europe in the 1970s and 1980s and has traditionally been the focus of the global project financing market, generally as a result of European governments push for infrastructure investment and use of PPP. However, since the financial crisis, Asia Pacific volumes have exponentially grown to represent a significant shift in the balance of Project Finance investment.

	2010		2007	
	USD m	%	USD m	%
Asia Pacific	98,708.3	47.42%	44,842.3	20.38%
EMEA	83,931.2	40.32%	130,667.3	59.40%
Americas	25,534.5	12.27%	44,476.3	20.22%
Global Total	**208,173.9**	**100.00%**	**219,985.9**	**100.00%**

Figure 1: Project Finance transactions by region. Source: Reuters Project Finance International

This is due to India's huge demands for domestic infrastructure development, which as of 2010 have provided more than a quarter of the global volume, as well as the inertia of the Spanish boom that lasted until 2008 (it has since decreased considerably, but as of May 2014 no complete data has been published), as seen on Figure 2:

Country		USD m	%
1	India	54,801.7	26.32%
2	Spain	17,376.1	8.35%
3	Australia	14,592.1	7.01%
4	United States	13,423.8	6.45%
5	United Kingdom	13,020.8	6.25%
6	Taiwan	12,064.4	5.80%
7	Saudi Arabia	10,000,2	4.80%
8	Switzerland	5,371.2	2.58%
9	France	5,350.7	2.57%
10	Italy	5,014.5	2.41%
	Top 10 Global	**151,015.5**	**72.54%**
	Global Total	**208,173.9**	**100.00%**

Figure 2: Project Finance transactions per country (2010), Source: Reuters Project Finance International

As for the sector breakdown, power and transportation dominate the market. These sectors dominate Project Finance because they are highly capital intensive, with an essential position in the national infrastructure, with long asset lives and generally predictable revenue streams, they are ideal assets for a Project Finance structure.

Sector	USD m	%
Power	73,300.4	35.21%
Transportation	52,315.4	25.13%
Oil & Gas	25,950.8	12.47%
Leisure & Property	13,824.2	6.64%
Telecommunications	13,382.7	6.43%
Petrochemicals	11,306,4	5.43%
Mining	8,857.7	4.25%
Industry	6,306.0	3.03%
Water & Sewage	1,577.5	0.76%
Waste & Recycling	1,266.6	0.61%
Agriculture & Forestry	86.3	0.04%
Global Total	**208,173.9**	**100.00%**

Figure 3: Project Finance transactions by sector (2010), Source: Reuters Project Finance International.

c. Transactional Stakeholders

Due to the sophistication that most projects involve, there is a substantial amount of stakeholders with risk involved –with the consequent detailed allocation of risks between stakeholders. Figure 4 below by Gardner and Wright from HSBC provides a generic overview of the principle parties which typically feature in most project financings. The typical contractual relationship between these parties is shown.

Stakeholders	Role in the Project
Sponsors	• The equity investor(s) and owner(s) of the Project Company – can be a single party, or more frequently, a consortium of Sponsors • Subsidiaries of the Sponsors may also act as sub-contractors, feedstock providers, or offtaker to the Project Company • In PPP projects, the Government/Procurer may also retain an ownership stake in the project and therefore also be a Sponsor
Procurer	• Only relevant for PPP - the Procurer will be the municipality, council or department of state responsible for tendering the project to the private sector, running the tender competition, evaluating the proposals and selecting the preferred Sponsor consortium to implement the project
Government	• The government may contractually provide a number of undertakings to the Project Company, Sponsors, or Lenders which may include credit support in respect of the Procurer's payment obligations (real or contingent) under a concession agreement
Contractors	• The substantive performance obligations of the Project Company to construct and operate the project will usually be done through engineering procurement and construction (EPC) and operations and maintenance (O&M) contracts respectively
Feedstock provider(s) and/or Offtaker	• More typically found in utility, industrial, oil & gas and petrochemical projects. • One or more parties will be contractually obligated to provide feedstock (raw materials or fuel) to the project in return for payment • One or more parties will be contractually obligated to 'offtake' (purchase) some or all of the product or service produced by the project • Feedstock/Offtake contracts are typically a key area of lender due diligence given their criticality to the overall economics of the project (i.e. the input and output prices of the goods or services being provided)
Lenders	• Typically including one or more commercial banks and/or multilateral agencies and/or export credit agencies and/or bond holders

Figure 4: Typical stakeholders of a Project Finance transaction. Source: Gardner & Wright, HSBC

II) Credit Rating

In order to evaluate the risk of any project, and therefore evaluate what interest charge on the investment, Project Finance lenders originally evaluated and assigned an internal credit rating to each project. This practice, however, tends to be biased. Consequently, nowadays almost every single project uses a third-party that specializes in assessing the risk of a financial obligation.

These third-party corporations are called credit rating agencies and their main business is to evaluate corporations and organizations, which pay the credit rating agencies to seek a credit rating for themselves or for its debt issues. While most small and medium sized companies do not generally need a credit rating, large and multinational corporations generally seek a credit rating in order to get access to the major financial markets: credit ratings give investors a quick idea of the corporation, as well as giving financers a general idea of the risk a particular asset has and the consequent interest demanded by the market.

The market for credit rating is divided among three major agencies that control 95% of the market, and several smaller "niche" agencies. The three major credit rating agencies are:

- Standard and Poor (S&P): based in the US, controls around 40% of the market
- Moody's Investors Service (Moody's): based in the US, controls around 40% of the market
- Fitch Credit Ratings (Fitch): dual-headquartered in New York City and London and controlled by France-based FIMALAC, controls around 15% of the market.

These figures understate the dominance of Moody's and S&P, since the norm for debt issuers is to obtain ratings from these two, and only occasionally turn to Fitch, for example if Moody's and S&P disagree.

In order to provide a balanced and objective rating, a substantial due diligence must be conducted on the borrower's financial situation and capacity to service/repay the debt. The credit rating has an inverse relationship with the possibility of debt defaulting: a high credit rating indicates that the borrower has a low probability of defaulting on the debt; conversely, a low credit rating suggests a high probability of default. The chart below shows a comparison of the equivalent scores of the big three rating agencies.

It is to be noted that any project rated to be of investment grade (its credit rating is BBB- or higher by Standard & Poor's or Baa3 or higher by Moody's) are considered by the rating agency as likely enough to meet payment obligations that banks are allowed to invest in them. Anything below is considered to be high yield, or also called junk bond. Because of the amounts involved in Project Finance, there are few to none project finance operations involving high yield bonds.

Probability of Default[2]	Moody's	S&P	Fitch	Credit worthiness
0.15%	Aaa	AAA	AAA	An obligor has EXTREMELY STRONG capacity to meet its financial commitments.
0.15%	MAa1	AA+	AA+	An obligor has VERY STRONG capacity to meet its financial commitments. It differs from the highest rated obligors only in small degree.
0.20%	Aa2	AA	AA	
0.20%	Aa3	AA-	AA-	
0.40%	A1	A+	A+	An obligor has STRONG capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligors in higher-rated categories.
0.60%	A2	A	A	
0.60%	A3	A-	A-	
1.5%	Baa1	BBB+	BBB+	An obligor has ADEQUATE capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.
2%	Baa2	BBB	BBB	
4%	Baa3	BBB-	BBB-	
7%	Ba1	BB+	BB+	An obligor is LESS VULNERABLE in the near term than other lower-rated obligors. However, it faces major ongoing uncertainties and exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitments.
9%	Ba2	BB	BB	
19%	Ba3	BB-	BB-	
25%	B1	B+	B+	An obligor is MORE VULNERABLE than the obligors rated 'BB', but the obligor currently has the capacity to meet its financial commitments. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitments.
31%	B2	B	B	
43%	B3	B-	B-	
50%	Caa	CCC	CCC	An obligor is CURRENTLY VULNERABLE, and is dependent upon favorable business, financial, and economic conditions to meet its financial commitments.
65%	Ca	CC	CC	An obligor is CURRENTLY HIGHLY-VULNERABLE.
80%		C	C	The obligor is CURRENTLY HIGHLY-VULNERABLE to nonpayment. May be used where a bankruptcy petition has been filed.
100%	C	D	D	An obligor has failed to pay one or more of its financial obligations (rated or unrated) when it became due.

Figure 5: Credit Rating Tiers. Source: Morgan Stanley

Credit rating changes can have a significant impact on financial markets. A prime example of this effect is the adverse market reaction to the credit rating downgrade of the U.S. federal government by

[2] Five year default rates according to Moody's

Standard & Poor's on August 5, 2011. Global equity markets plunged for weeks following the downgrade.

The rest of nationally recognized credit rating agencies are Kroll Bond Rating Agency, A. M. Best Company, Dominion Bond Rating Service, Japan Credit Rating Agency, Egan-Jones Rating Company, Morningstar and HR Ratings.

Among them, Kroll Bond Rating Agency (KBRA) is the newest rating agency, having been launched four years ago. Since then it has gained a niche market in Project Finance in the US, where it is generally used as the second agency, together with either S&P or Moody's[3].

[3] According to Alberto Garcia, VP of the Santander PF team in NYC

III) The Rating Process

The credit rating agencies approach when evaluating Project Finance transactions focuses on the ability to produce a stable revenue stream so that it can meet its financial obligations under various stress scenarios. During the rating process, the rating agency typically meets with the project sponsor's management team and will request preliminary data and information about the project specifications.

Although most rating agencies end up giving the same project a similar score, the process differs slightly. The big three credit rating agencies are notorious for having substantially opaque rating processes, with Moody's and Fitch using a specific approach for each sector, while Standard & Poor's uses a common approach for all Project Finance operations, with two different credit scores. The first one for the construction profile, and the second for the operations profile, which are then summed up in a product profile score. This score is then modified by external factors such as government support, sovereign rating limits and full credit guarantees, which then constitutes the project rating.

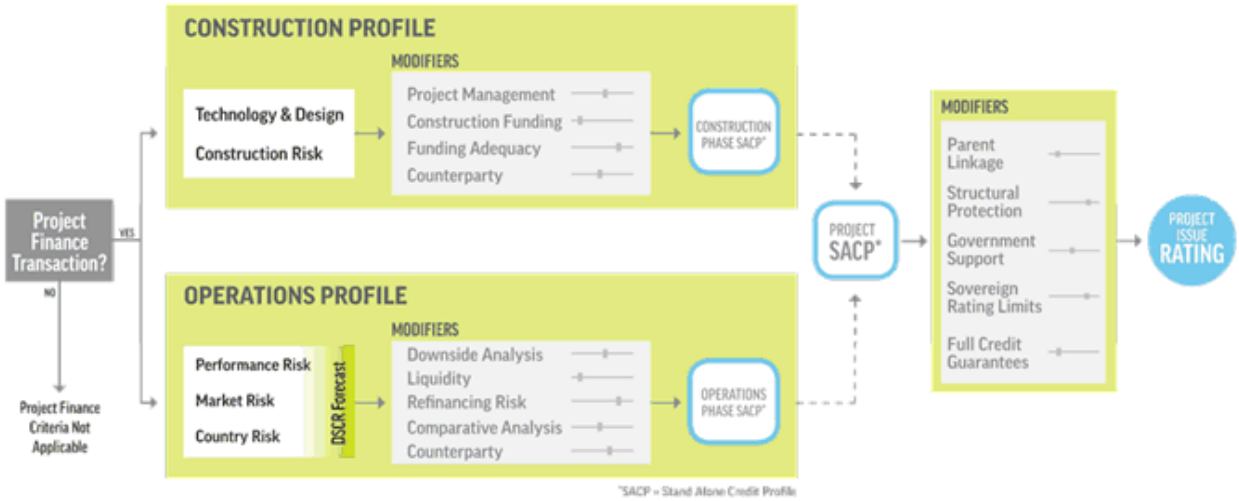

Figure 6: Project Finance Ratings Framework, S&P

KBRA, on the other hand, uses a simplified, clear approach for all Project Finance operations –part of the reason why it's been quite successful despite being the youngest rating agency-. It's approach is to use four primary credit determinants: Operations (weighted at 40% of the overall KPRS), Counterparty Exposure & Competitive Position (30%), Construction (20%) and Transaction Structure (10%). Each category is given a *Weak*, *Average* or *Strong* score, and the weighted average will amount to a Project Risk Score. KBRA then modifies the score with the financial risk profile (the same way S&P uses modifiers) and that is their official rating (see figure 7 below).

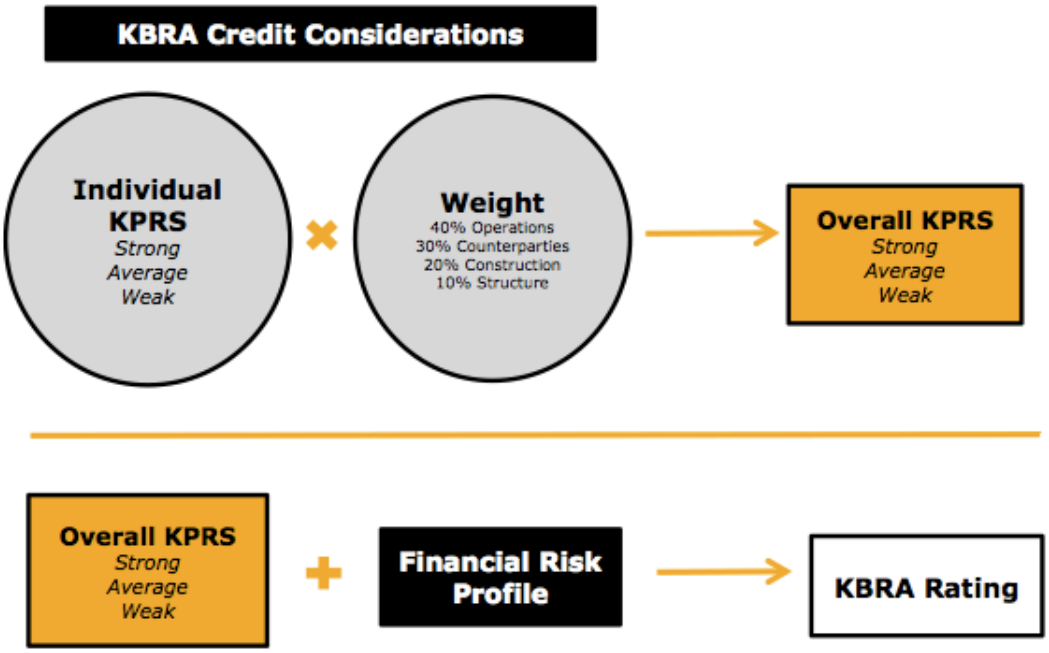

Figure 7: Credit Considerations, KBRA

All rating agencies, however, use a different weight for each subcategory based on the asset category. For example, in a renewable energy power generation project, the technology and resource assessment subcategories typically form a greater portion of the overall score, especially if the technology is unproven. In contrast, the relative weight of technology in calculating the score for a gas-fired generation asset might be lower since such technology has a long track record and is considered proven. Similarly, the resource assessment is often awarded a greater weighting in oil, gas and renewable energy transactions.

An example of KBRA's detailed methodology can be found on Annex I. Figure 8, located below is a simplified version:

Credit Determinant	Subcategory	Weight
Construction	Construction	20%
Operations	Operator	5%
	Technology	15%
	Operations & Maintenance	10%
	Resource Assessment	10%
Counterparty Exposure &	Counterparty Exposure	15%

Competitive Positon	Competitive Position	15%
Transaction Structure	Transaction Structure	10%

Figure 8: Project Finance Risk Scores, KBRA

IV) Credit Determinants

One of the things that all Rating agencies have in common is that the identify the same clusters of risk:

- Construction
- Operation
- Counterparty Exposure
- Transaction Structure
- Financial Risk

The main documents used to evaluate the project's risk are those made by the Independent Engineer report (IE), set up by a third-party firm that specialize in evaluating the project, generally called classification societies or consultancies. Some of the biggest companies in the field are Germanischer Lloyd (GL), Bureau Veritas, Garrad Hassan, Det Norske Veritas (DNV) and Applus.

1. Construction

The first cluster is construction; Project Finance transactions usually depend on a small number of discrete assets to generate revenue, with numerous cases of a single asset acting as the collateral. Consequently, the project has to be built on time and operate as planned, or it will go burst. Most projects that end up defaulting do so mostly because of construction delays, technology issues or operational problems that result in the project being offline. Therefore, the rating agencies aim to review of the project's construction strategy and operations in order to determine the likelihood that the project will be built in a timely manner, within budget and operate according to the sponsor's forecast.

This starts with the timeline for obtaining the required permits, with some projects relying more on the permits than other based on their sensitive nature or national strategic importance. Then, the contractor is examined by taking into account its experience and financial position –a contractor with experience building similar project will be more likely to finish on time. It also helps if the equipment manufacturer and the contractor have experience working together. On the other hand, a contractor with limited experience constructing similar assets may find more difficult completing the project on time and within budget.

2. Operations

The second cluster is operations, which refers to the risk that an asset will experience operational problems, increasing costs and lowering the availability of the project. Because there are several possible risks, the rating agencies examine the operator, technology, operations and maintenance strategy, and

resource assessment. Investment-grade projects are generally run by experienced operators and use proven technology –that's a vast majority of the Project Finance operations- and will have an adequate fuel supply agreement to power the asset (let's not forget that minimizing risk is far more important than return in Project Finance). Each project should have comprehensive insurance policies and business interruption insurance to protect investors from unexpected events.

Operator

The project operator manages the project's overall operations. It is responsible for overall maintenance and makes sure that the asset operates in the most efficient manner. In order to rate the operator, the rating agencies review the operator's experience with other similar assets in order to determine if it can operate the project efficiently. It also affects how easily the operator can be replaced and the operator's contractual agreement with the project ensure its interests are aligned with those of debt investors. An effective contract usually includes financial bonuses and penalties that are based on the overall performance of the project.

Technology

The technology is extremely important because it has a direct impact on the project's return. Using proven technology, with a long an effective track record will make a project far more likely to be successful than new technology-based projects. Projects using new technology tend to experience severe operational issues that reduce the return on the project to the point that many of them end up defaulting.

Resource Assessment

Projects in the energy sector need several fuel sources to power the assets; usually it will be specific to the project and therefore might be from a renewable resource, such as wind or solar, or from a third party such as a natural gas provider. In the case of the resource assessment, the rating agencies depend a lot on the IE, since some projects involve new, sophisticated technology that may well be out of reach of the rating agency's. In those cases, the agency might bring a second IE to evaluate the particular technology, under strict confidentiality agreement (and not the project itself).

In the case of renewable resources, the score on the resource assessment will depend directly on the clarity and feasibility of the forecasts, as well as the availability of the resource and assumptions made in the sponsor's pro forma forecast.

In the case of fossil fuel powered projects, and since the objective of Project Finance is to minimize risks, the score will be directly related to whether there is a long-term agreement with a third party fuel supplier, thus reducing the project's cash flow volatility.

3. Counterparty Exposure

Because the projects rely on a substantial amount of counterparties in order to operate and generate revenue, a big part of the rating is tied to the counterparties ratings or credit assessment. Specially in the case of electric generation projects (renewable energies, gas), there is generally an entity such as a public utility that agrees to purchase all of the project's production for a certain period of time, and the revenues from the project will be directly dependent on this entity. Major counterparties in a typical project finance transaction may include:

- Power purchasers: Power purchasers are normally utilities that enter Power Purchase Agreements (PPA) and therefore become the offtakers of the project. This means that there is a contract that makes the offtaker purchase all the energy generated by the project at an agreed price for a certain period of time. The rating agencies generally just look at the price and length of the agreement, its clauses, and obviously the strength of the utility company.
- Suppliers: This category typically includes fuel providers for power plants or raw material suppliers that are critical to the normal functioning of the project. The rating agencies evaluate the operational capacity, replaceability and credit quality of suppliers if they provide a critical function.
- Service Providers: This category typically includes O&M, technology or original equipment providers. The rating agencies assess the replaceability of the service party, specifically evaluating if the service provided is standard with market rate contracts and if there are adequate funds for replacement. If either the services or the equipment provided is proprietary, then the operational ability and credit quality of the service provider may be a key credit constraint on the project debt's rating.

Competitive Position

The rating agencies look at the project's competitive position by reviewing its revenue drivers. This varies from industry to industry, but it takes into account that projects that operate in merchant markets will have a higher volatility on their cash flows than a renewable energy project whose revenues are fixed by its PPA. In order to minimize the volatility, merchant markets projects generally hedge their revenues to increase stability, but their competitive position generally remains weak and have a worse score.

Another aspect that should be taken into account is that many PPA projects have minimum production threshold, with penalty charges if the minimum is not reached. Depending on how hard these thresholds are to reach, the score will be affected.

4. Transaction Structure

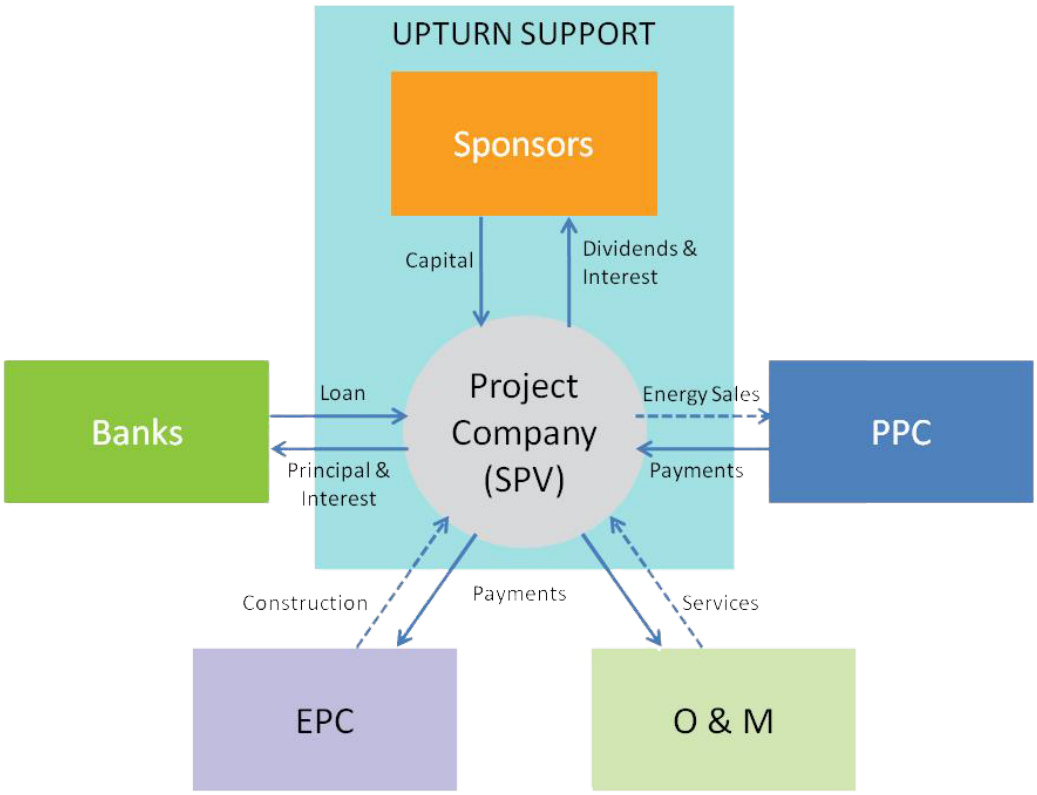

Figure 9: Typical Project Finance Structure, Investopedia.com

The transaction structure of the project affects directly the likelihood of the debt being paid in time and in full. In addition, it should not be forgotten that one of the main objectives of project financing is to delink the rating of the project debt to the rating of the sponsor. In order for this to happen, it requires that:

- The project entity is structured as a limited purpose, bankruptcy-remote entity
- The debt investors have a security interest in the assets and equity of the project
- The project is contractually entitled to a cash flow stream that can support the proposed debt service under varying levels of financial stress

Most project finance transactions utilize a special purpose vehicle ("SPV") as the issuer of non-recourse debt to reduce the risk that a project could be consolidated with a parent/sponsor in a bankruptcy. In order to do so, the project needs to be ring-fenced, legally set up as a bankruptcy-remote entity. The rating agencies have to figure this out by doing a detailed review of the financing documents, including a review of the payment waterfall, performance triggers, representations and warranties, covenants, events

of default, and enforcement mechanisms in the event of a breach. If the project is not set up this way, the rating will be the same as the sponsor's creditworthiness.

In the case that multiple tranches of debt are issued, they generally review all agreements pertaining to the intercreditor relationship to make sure that all rated tranches are adequately protected by the transaction documents in a manner consistent with the rating of the securities.

5. Financial Risk

The last cluster is the financial risk. The financial risk is normally determined by evaluating the predictability and stability of the cash flows. This is done by evaluating the debt service coverage ratios and leverage metrics, refinancing risk, and the availability of liquidity.

Debt Service Coverage & Leverage Metrics

The single most used financial metric to evaluate a projects repayment capability is the debt service coverage (DSC), the amount of cash flow available to meet annual interest and principal payments on debt, including sinking fund payments. A DSCR of less than 1 would mean a negative cash flow. A DSCR of less than 1, such as .95, would mean that there is only enough net operating income to cover 95% of annual debt payments.

The necessary DSC is calculated through the performance of sensitivity analyses, typically focusing on changes in the project's operations, expenses, technology, and financial obligations, to gain insight into a project's cash flow profile. An investment grade project should be able to repay its debt under most scenarios, including those involving severe stress.

The table below (figure 10) shows KBRA's debt service coverage requirements. It is similar to S&P's and Moody's, but due to its simpler credit score process it is clearer to understand:

KPRS	KBRA Rating Category					
	AA	A	BBB	BB	B	CCC
Weak	N/A	N/A	N/A	1.30-2.00x	1.20-1.50x	1.10-1.35x
Average	> 3.00x	1.75-3.25x	1.30-2.00x	1.20-1.50x	1.10-1.35x	1.00-1.25x
Strong	> 2.75x	1.50-3.00x	1.20-1.75x	1.10-1.35x	1.00-1.25x	1.00-1.15x

Figure 10: Average Debt Service Coverage, KBRA

While DSCs are critical in the analysis, the project debt's amortization schedule may also have a significantly impact on the rating view of the financial risk profile. For example, in the case of Term Loan B structures with periodic 1% mandatory amortization, lower amounts of cash flows will be required to

meet a targeted debt service amount than in a transaction where full amortization occurs within the same timeframe. In Term Loan B structures or similar transactions, it is difficult to compare financial metrics purely based on DSCs. Consequently, the rating agencies may evaluate the project on the basis of residual debt remaining at maturity and the likelihood of the debt being serviced if refinanced at a higher rate. Amortizing structures where the debt is completely paid off are considered the most stable. Interest-only structures with no or minimal expected amortization are considered the weakest, all other things being equal.

Liquidity

Because any asset-operating project might encounter operational problems, all investment grade projects need to have significant liquidity, typically in the form of a debt service reserve account, to pay the project's financial obligations during periods when the project is offline or experiencing financial stress.

Investment grade projects will likely have a debt service reserve account sized to pay interest for a six to twelve month period and distribution tests to trap cash in case the project experiences stress. The reserve account could either be cash-funded or back-stopped by a letter of credit from a financial institution whose rating or credit assessment does not act as a constraint on the project debt's rating.

Most projects also provide liquidity for maintenance expenses using a separate account either prefunded by the sponsor or funded and consistently replenished by project revenues over the course of the transaction. For some commodity related projects, there might also be a separate working capital account in order to provide the project with additional liquidity.

Recovery Analysis

When the probability of default increases, the rating agencies put more emphasis on the recovery analysis. Although purely speculative, they have to determine the project's recovery prospects using liquidation values or a discounted cash flow approach. Both valuation techniques provide a terminal value which is then used to determine recovery values across the project's capital structure.

Sovereign Risk

The ownership of a project by a sovereign or a project's exposure to sovereign credit risk may impact a project's credit quality. Sovereign risk may be considered when either the project or any material counterparty is located in a country with a hazardous environment for normal business activities or where the contractual basis of economic activities may not be honored. Sovereign risks include political

instability, threats of violence or war, instability of the financial system, and a judicial system's unreliability with respect to enforcing contracts.

V) Personal Conclusion

Working for Santander has been an incredible experience. My team was great, I met a lot of interesting people, and working in midtown NYC is extremely exciting and motivating.

In these 6 months, I have expanded my knowledge in structured finance considerably, seeing and applying a lot of the theoretical knowledge I acquired in class: corporate structures, swaps and futures were the norm in each project.

And while I honestly believe that going to class is important, hands-on experience is far more useful, specially when it comes to job-hunting. This is the second time that I intern for Santander, on the summer of 2013 I worked for their Project Finance team in London –through which I was able to land the internship in New York-, and through this

Consequently, my advice to any student is that they should get as much experience as possible. It will not only expand what you learn in the classroom, but will help you network and meet new people, giving you a major advantage when looking for a full time position.

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Appendix A

KBRA Scoring System & Attributes

KBRA Project Risk Scores (KPRS) – Scoring System & Attributes

Credit Determinant	Subcategory	Weight	KPRS Weak	KPRS Average	KPRS Strong
Construction	**Construction**	20%	Contractor with little relevant experience; floating contract; aggressive budget and schedule; difficult construction	Contractor with some relevant experience; fixed rate contract; reasonable budget and schedule; reasonable construction	Contractor with significant experience and strong financial position; fixed rate contract with financial incentives and penalties; reasonable budget and schedule; simple construction
Operations	**Operator**	5%	Operator with little relevant experience; irreplaceable operator; compensation is not performance-based	Operator with some relevant experience; operator can be replaced; compensation is based on performance	Operator with significant experience; operator can be replaced; compensation is based on performance
	Technology	15%	Unproven technology with limited performance history	Proven technology with some performance history	Proven technology with significant performance history
	Operations & Maintenance (O&M)	10%	O&M is managed by the project and funded from cash flow from operations	O&M is managed by the project or third party and expenses are funded through reserve accounts	O&M is managed by a reputable third party through a long-term service agreement with fixed pricing
	Resource Assessment	10%	Fuel is purchased on the open market; resource assessment is opaque and is based on a number of assumptions	Fuel is purchased through a third party at predetermined prices; resource assessment is acceptable and based on some historical data	Fuel is purchased through a long-term agreement with fixed pricing; resource assessment is exceptional and based on significant historical data
Counterparty Exposure & Competitive Position	**Counterparty Exposure**	15%	Weak counterparties; aggressive contractual terms	Creditworthy counterparties; reasonable contractual terms	Counterparties whose creditworthiness is rated above the project's; favorable contractual terms
	Competitive Position	15%	Production will be sold into merchant market	Merchant exposure with some hedging to mitigate price fluctuations	Production is sold to a creditworthy offtaker through a long-term agreement
Transaction Structure	**Transaction Structure**	10%	Relatively strong bankruptcy remoteness provisions; no distribution tests; refinancing risk; cross-default provisions with other debt; weak cash management	Strong bankruptcy remoteness provisions; limited refinancing risk; adequate distribution tests; adequate cash management	Strong bankruptcy remoteness provisions; strong distribution tests; no refinancing risk; strong cash management