S&P Global
Market Intelligence

Annual Global Project Finance Default and Recovery Study, 1980-2014

June 2016 – Public Release

Project and Infrastructure Finance

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Executive Summary

The Project Finance Default and Recovery Study ("PF Study" or "Study") is an annual update to the report published by S&P Global Market Intelligence's Risk Services group in November 2014 analyzing the default and recovery performance of project finance debt issues worldwide.

This study is based on an updated aggregate-data repository from a consortium of participants in the project finance market segment. While collected in 2015, the data in the Study is from 2014. The data repository includes 7,959 projects—624 defaulted and 377 resolved originated globally from 1980 to 2014. We observe that:

- The annual default rate for the PF Study increased from 0.9% in 2013 to 1.3% in 2014.
- The 10-year cumulative default rates for the PF Study are consistent with the 10-year cumulative default rates for corporate issuers of low investment-grade (S&P Global Ratings Corporate Issuer Credit Rating[1] of 'BBB')
- Marginal default rates for the PF Study, which record the proportion of projects performing at the start of the year that default in the year, are initially in-line with marginal default performance of high speculative-grade debt ('BB'). However, by year 10 after project origination, project finance marginal default rates become more consistent with investment grade marginal default performance ('BBB').
- Project finance loan recovery rates average 77% with a median of 92%
- Restructuring represents the most used strategy and results in the strongest recovery rate outcome of all loan remediation strategies, averaging 91%
- The P3/PFI[2] project finance segment had a lower average default rate than the PF Study and stronger average recovery rate performance.
- The average recovery rate for projects with Export Credit Agency ("ECA") Facility support was slightly higher than the PF Study, but lower than P3/PFI projects.

1 S&P Issuer Credit Rating (ICR) represents S&P Global Ratings' opinion of an obligor's overall capacity to meet its financial obligations. The opinion focuses on the obligor's capacity and willingness to meet its financial commitments as they come due. The opinion is not specific to any particular financial obligation, nor does it reflect specific statutory or regulatory preferences, nor does it reflect the creditworthiness of guarantors or insurers, or the existence of other forms of credit enhancement on the obligation.
2. Public Private Partnerships (P3), or Private Finance Initiatives (PFI), refers to infrastructure projects that are funded and operated through a joint effort of government and private business. These partnerships allow a government entity to grant a concession or right to a private consortium to design, develop, build, operate and maintain an infrastructure asset that serves a public good for a specified period, which often spans decades.

1 Project Finance Default and Recovery Study Overview

S&P Global Market Intelligence has been engaged by a consortium of project finance lenders to collect their Project Finance loan portfolio information and report aggregate default and recovery statistics on an annual, albeit anonymized basis.

We wish to thank each of the Project Finance Consortium members for their support, contribution and insights which has helped the Study evolve to become one of the largest, most comprehensive sources of global project finance default and recovery information on the market today. This Default and Recovery Study release is an abbreviated version for public consumption of the more in-depth analyses we perform for the members using the data provided by the Consortium.

The S&P Global Market Intelligence Project Finance Consortium database warehouses project credit performance data dating back to 1980. Every year S&P Global Market Intelligence collects updated default and recovery data from the participants. We check data quality against business rules, standardize and aggregate the information based on our proprietary portfolio management and pooling methodologies.

In addition to the long history, many of the major lenders in this asset class have been part of the Project Finance Consortium, enabling us to provide a credible, robust default and recovery database offering credit risk statistics and benchmarks that may be applied to the broader project finance market of syndicated loan and debt transactions. Unless specified, all information (commentary, exhibits, etc.) in this update comes from the Project Finance Consortium database.

While the PF Study focuses on the historical performance of unrated project finance debt issues, we also mention S&P Ratings' Special Report[3] "Lessons Learned from 20 Years of Rating Global Project Finance Debt", which reports on historical performance and current risk factors of project and infrastructure finance debt rated by S&P Global Ratings (S&P Ratings).

S&P Global Ratings Project Finance Consortium Default And Recovery Database

In the current PF Study, the project finance database grew by 5% to 7,959 projects from the 7,596 covered in the 2013[4] Study. There were a total of 624 projects that reported an event of default, up from 576 in the previous Study.

There were 377 projects that have emerged from default and resolved. Since project finance is a low default asset class, this comprehensive data set provides an objective and valuable benchmark, especially under the Basel regulatory requirement that banks must use other quantitative validation tools and comparisons with relevant external data sources as part of their risk analyses.

[3] Ben Macdonald and Michael Wilkins, "Lessons Learned from 20 Years of Rating Global Project Finance Debt," Standard and Poor's Ratings Services CreditWeek, January 21, 2015.
[4] Several transactions that were re-categorized by consortium members from project to public finance are not included in the Study.

Default Analysis Methodology

The definition of default adopted in this study is based on the standard Basel II definition of default, which captures a wider range of defaults, including circumstances wherein a reporting bank considers that the obligor is unlikely to pay its credit obligation in full. The definition was applied by all participants in the consortium and approved by the consortium steering committee.

A project is in default if:

- A payment is past due more than 90 days on any material credit obligation
- The lender takes a charge-off or an account-specific provision because of a perceived deterioration in credit quality of the project exposure
- The lender sells the project instrument at a material credit-related loss
- The lender consents to a distressed restructuring likely to result in a diminished financial obligation caused by the material forgiveness of principal or interest
- The obligor has sought or has been placed in bankruptcy protection

Recovery Analysis Methodology

The resolution definition was applied by all participants and approved by the consortium steering committee.

A project is resolved if:

- After default, a project loan(s) resumes scheduled payments on a regular basis (i.e., it returns to performing)
- Following restructuring work out, scheduled payments resume based on restructured debt service
- The lender sells or transfers the defaulted debt instrument
- Liquidation proceeds have been distributed to creditors
- Bankruptcy process is completed
- The guarantor provides additional capital support covering some portion of scheduled debt service

2 Distribution of Projects

Project Distribution by Origination Year

The PF Study includes 7,959 projects originated globally from 1980 to 2014, segmented by region and industry. Exhibit 1 plots project distribution by year of origination. 80% of projects were originated on or before 2009.

Determined by origination year, Exhibits 1(a) and 1(b) indicate that on a weighted average basis, across each regional and industry cohort, the Study provides approximately 11 years of continuous performance history offering a robust time series of default and recovery information.

In 2014, there were 339 new projects reported representing a 31% increase over last year's new issuance volume.

Exhibit 1: Projects by Year of Origination

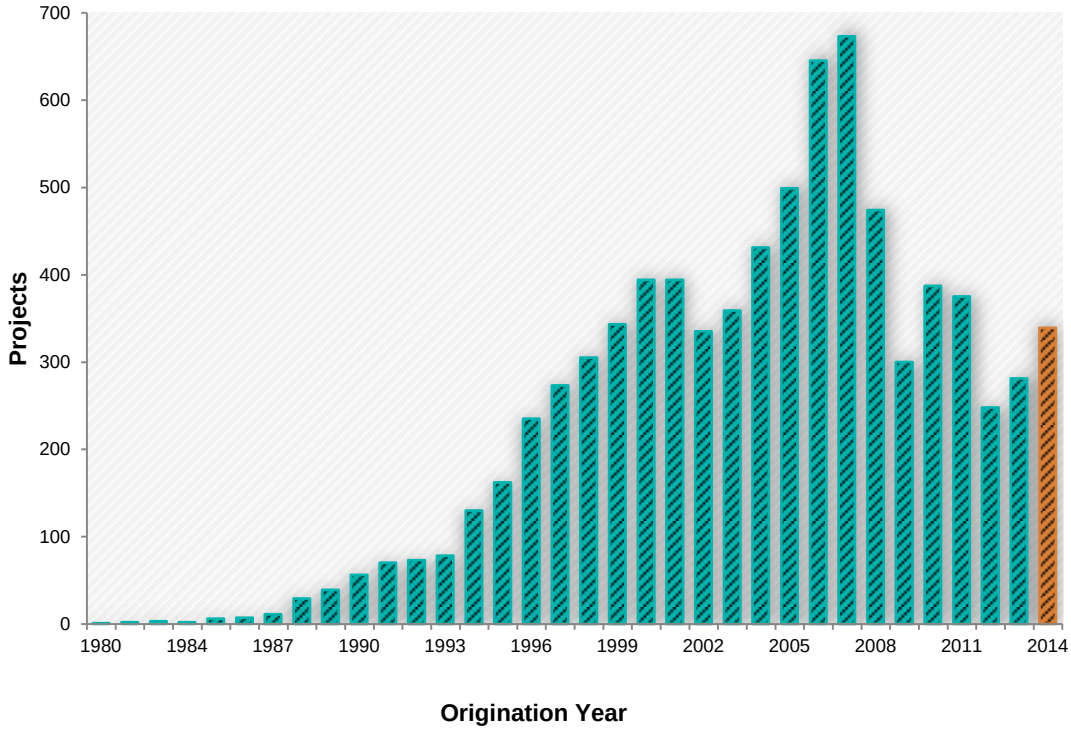


Exhibit 1(a) **Cohort Age by Region** (years)

Region	dB%	WA Age
Western Europe	41.6	10.1
North America	20.8	11.9
Asia Pacific	11.6	11.2
Africa & Middle East	8.3	10.8
Latin America	7.6	11.5
Oceania	5.9	10.8
Eastern Europe	4.2	11.3
Total	**100.0**	**10.9**

Exhibit 1(b) **Cohort Age by Industry** (years)

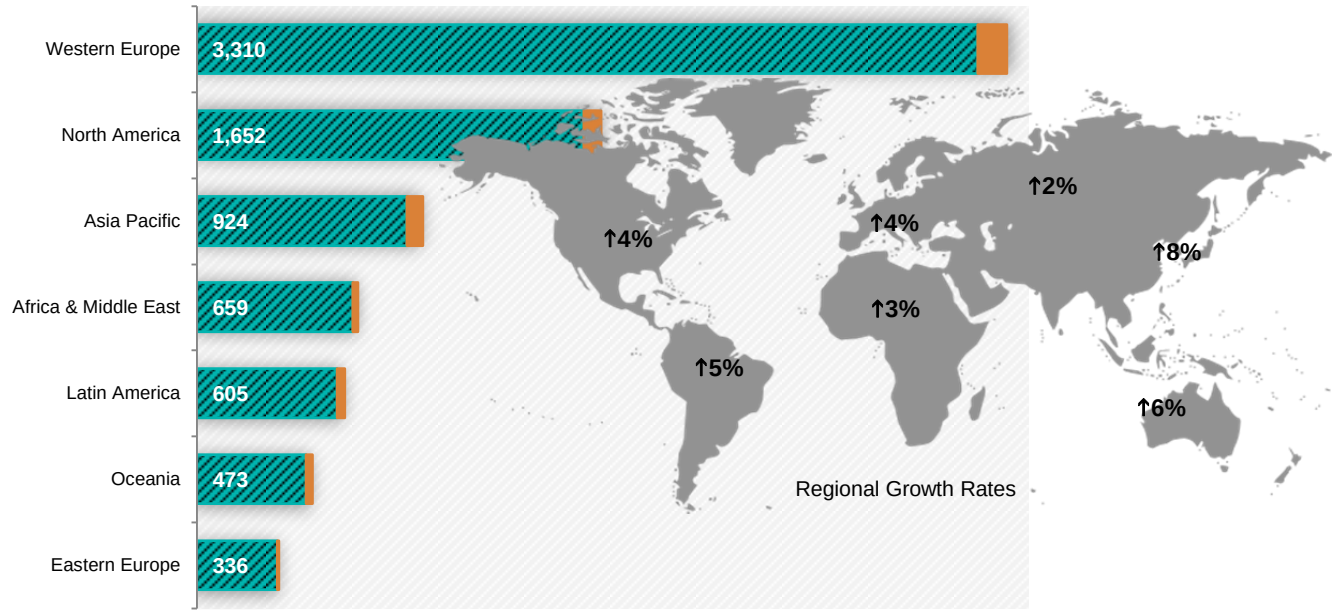
Industry	dB%	WA Age
Power	38.0	10.7
Infrastructure	28.9	10.0
Oil & Gas	13.9	10.8
Media & Telecom	6.3	14.1
Metals & Mining	5.3	13.0
Chemicals Production	2.2	11.6
Other	1.6	11.0
Manufacturing	1.4	15.7
Transportation	1.4	6.5
Leisure & Recreation	1.1	11.2
Total	**100.0**	**10.9**

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Project Distribution by Region

Exhibit 2 illustrates the regional project distribution of the PF Study. The orange section of each bar represents new projects originated in 2014. The Asia-Pacific (8%) and Oceania (6%) segments demonstrated the strongest regional growth[5] year-over-year. There was a 5% average project increase across all regions.

Exhibit 2: Project Distribution by Region and Growth Rate



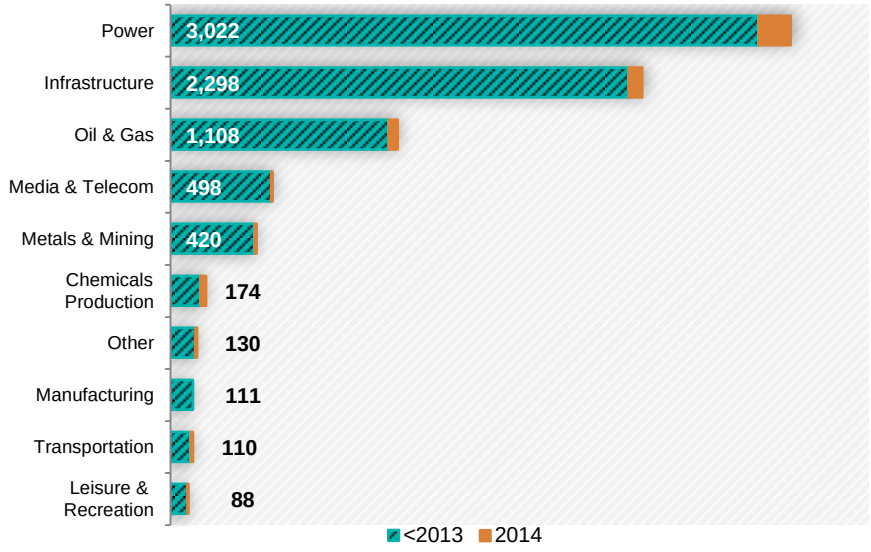
Source: Annual Global Project Finance Default and Recovery Study, December 2015.

5 Calculated as the percentage of new projects to the total number of outstanding projects within each region from the previous Study period.

Project Distribution By Industry

Exhibit 3 illustrates the industry project distribution of the PF Study across 10 sectors. The orange portion of each bar represents projects originated in 2014. The Chemicals Production (19%) and Transportation (12%) segments demonstrated the strongest growth year-over-year. There was a 6% average project increase across all industries.

Exhibit 3: Project Distribution by Industry



Industry	YOY Growth
Power	6%
Infrastructure	3%
Oil & Gas	4%
Media & Telecom	1%
Metals & Mining	2%
Chemicals Production	19%
Other	7%
Manufacturing	-
Transportation	12%
Leisure & Recreation	5%
Average	**6%**

Source: Annual Global Project Finance Default and Recovery Study, December 2015

New 2014 Project Distribution By Industry and Region

Bank lending to the global project finance sector is again on the upswing, following the long decline since 2011. For 2014, total project lending stood at $321.3 billion, up 4% on the $309.5 billion signed in 2013, and the second-highest annual volume on record, behind 2011's $331.1 billion[6].

In 2014, there were 339 new deals reported to the study. Regional and industry highlights include:

- Power had the strongest new-issuance activity adding 158 deals (47% of all new 2014 deals) worldwide. Renewable energy (116 projects) outpaced non-renewables (42 projects) almost 3 to 1.
  - In Western Europe, France ranked first adding 15 energy projects – 14 renewable (11 solar, 1 wind farm and 2 other) and 1 non-renewable followed closely by the U.K., adding 12 deals – 11 renewable (8 solar and 3 wind) and a transmission/distribution facility.

6 Michael Wilkins, "Are Rumors for Global Project Finance Bank Lending's Demise Greatly Exaggerated?" Standard & Poor's Rating Services, January 21, 2015.

  - In North America, the U.S. led the region adding 31 projects – 23 renewable (11 wind farm, 10 solar and 2 hydro plants) and 8 non-renewables.
  - In Asia-Pacific, Japan added 27 projects – 25 renewable (24 solar and 1 wind farm) and 2 coal-fired plants.

- In Latin America, Brazil represented over half (55%) of new issuance in the region adding a mix of power, oil and gas and transportation projects.

- Oil & Gas added 46 new deals (14% of all new deals) worldwide primarily in the Asia-Pacific region (5 in South Korea, 4 in China, 2 in India, and 3 other countries in the region).

- Transportation infrastructure also added 46 new deals worldwide with strong issuance in Australia (10 deals), 9 in the U.K., and 4 each in France, Brazil and the U.S.

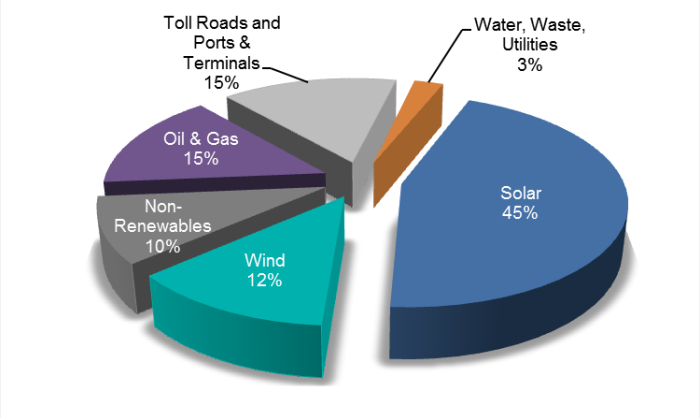
3 Default Rate Trends and Analysis

The PF Study includes 624 projects that have reported an event of default occurring from 1987 to 2014.

Update

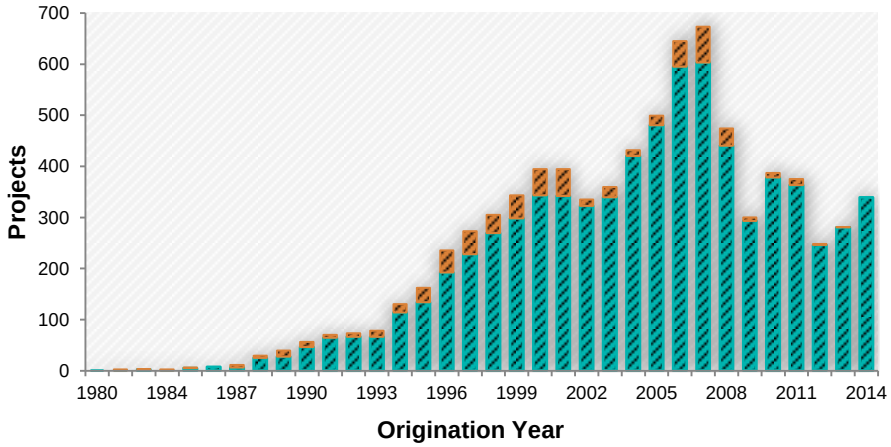
67.5% of defaults reported in 2014 were in the Energy Sector, particularly concentrated in solar projects across Western Europe (see Figure 1 below).

Figure 1: 2014 Project Defaults by Sector



Illustrating project vintage year performance, Exhibit 4 plots the distribution of defaults (in orange) across their respective year of origination.

Exhibit 4: Defaulted Projects by Year of Origination



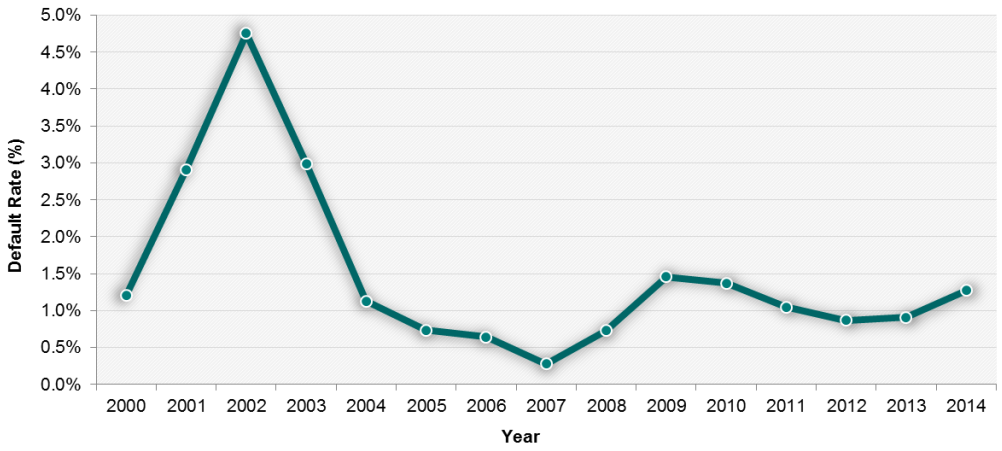
Source: Annual Global Project Finance Default and Recovery Study, December 2015

Despite being supported by a single asset, nonrecourse PF debt structuring demonstrates long-term resilient credit performance.

Annual Project Finance Default Rate

The PF Study annual default rate increased from 0.9% in 2013 to 1.3% in 2014 (Exhibit 5). Over the past 15 years, performance has been relatively stable after its peak at 4.8% in 2002. During this period, the Study's annual default rate averaged 1.5%.

Exhibit 5: PF Study Annual Default Rate (2000-2014)

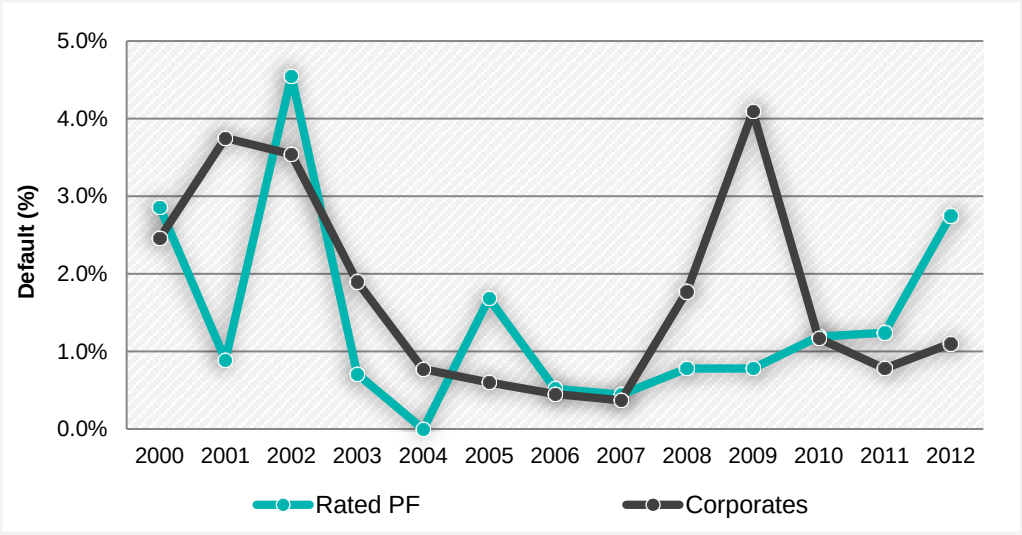


Source: Annual Global Project Finance Default and Recovery Study, December 2015

S&P Rated Project Finance Annual Default Rate Comparison Versus S&P Rated Corporate Issuer

In the past 20 years, S&P Global Ratings has rated 513 projects, covering more than 573 separate debt issues (some projects had more than one debt issue). The average initial rating for project financings is 'BBB-'. Of the 573 issuances, 39 have defaulted. Since the first S&P rated project finance default in 1998, the annual default rate for all rated project finance debt has averaged 1.5%, remaining slightly below the average corporate issuer default rate over the same period of 1.8% (1998-2012). Please see figure below.

Exhibit 5a: Rated Project Annual Default Rate and Rated Corporate Issuers



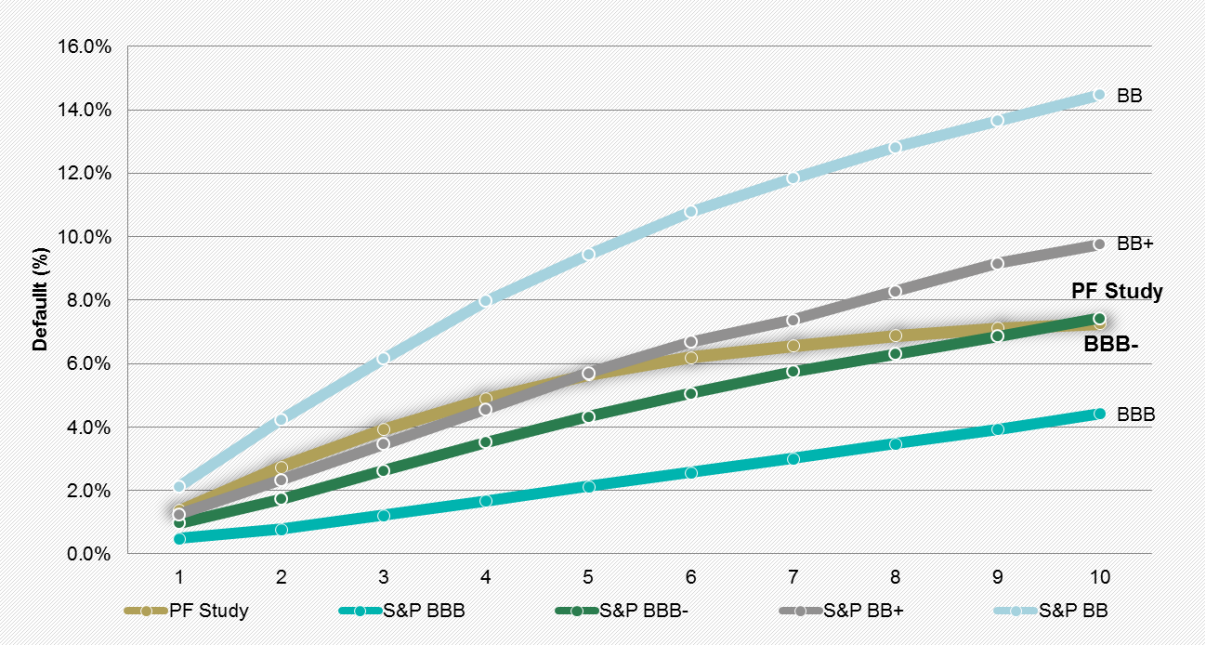
The average rated project finance default rate has varied over time with changing economic conditions, but on average, performance suggests that projects are no more risky than corporate entities at comparable rating levels[7].

10-Year Cumulative Default Rate – PF Study Versus S&P Rated Corporate Issuer

Exhibit 6 compares the 10-year cumulative default rates for the PF Study data set based on origination year cohorts from 1981 to 2014 against the 10-year cumulative default rates of corporate bonds rated 'BBB', 'BBB-', 'BB+', and 'BB'.

The data illustrates that the PF Study 10-year cumulative default rate is similar to that of a 'BBB-' rated corporate issuer at year 10 (Y10); however, the default rates in earlier years are substantially higher than that of a 'BBB-' issuer. This default behavior is unique to project finance because of the inherent construction phase risk when a project has no operational revenue. The cumulative default rate usually stabilizes after year 5 (Y5) as projects enter into their operational phases and start to generate cash flows.

Exhibit 6: 10-Year Cumulative Default Rate Comparison between PF Study And S&P Rated Corporate Issuer



7 Ben Macdonald, "Project Finance Default and Recovery: Shale Gas Fuels Rise In U.S. Defaults," S&P Global Credit Portal Research, August 9, 2013.

	# Projects	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
1981	1	0	0	0	0	0	0	0	0	0	0
1982	1	0	0	0	0	0	0	0	0	0	0
1983	3	0	0	0	0	0	0	0	1	0	0
1984	6	0	0	0	0	0	1	1	0	0	0
1985	8	0	0	1	0	1	1	0	0	0	0
1986	14	0	1	0	1	1	0	1	0	0	0
1987	21	1	0	1	1	0	1	0	0	0	0
1988	31	0	1	2	0	2	1	0	2	0	0
1989	60	1	2	0	2	1	1	3	1	1	0
1990	98	2	0	5	2	3	5	2	2	0	1
1991	151	0	5	2	3	10	2	3	0	5	0
1992	219	5	4	3	10	2	4	1	5	0	1
1993	279	4	3	10	4	5	1	6	0	4	1
1994	347	4	11	6	6	2	7	0	5	2	2
1995	454	11	9	8	3	10	2	6	4	3	1
1996	578	10	12	11	15	3	9	6	5	1	3
1997	753	12	21	24	7	13	15	6	2	4	2
1998	967	27	26	10	25	26	12	4	4	4	0
1999	1168	30	13	34	31	21	5	5	5	2	1
2000	1411	16	39	47	30	11	6	8	2	1	0
2001	1683	45	72	40	16	8	8	2	2	0	1
2002	1889	86	58	19	13	11	3	2	3	1	2
2003	2005	59	21	13	13	6	2	3	1	2	3
2004	2121	24	15	14	6	6	5	2	3	7	2
2005	2313	16	15	7	6	8	2	4	7	3	4
2006	2480	16	7	9	10	8	5	8	5	6	
2007	2862	8	16	18	22	16	11	8	9		
2008	3289	21	37	37	27	17	17	14			
2009	2946	43	41	29	23	22	22				
2010	2987	41	30	25	24	24					
2011	2952	30	25	25	32						
2012	3107	26	28	39							
2013	3186	29	39								
2014	3333	40									

10-year Cumulative Default Rates

PF Study	1.39%	2.75%	3.93%	4.91%	5.67%	6.20%	6.58%	6.89%	7.14%	**7.28%**
S&P BBB	0.49%	0.78%	1.22%	1.68%	2.13%	2.57%	3.01%	3.48%	3.94%	4.44%
S&P BBB-	0.97%	1.73%	2.63%	3.52%	4.33%	5.07%	5.75%	6.31%	6.86%	**7.44%**
S&P BB+	1.25%	2.33%	3.47%	4.56%	5.71%	6.68%	7.38%	8.29%	9.16%	9.76%
S&P BB	2.13%	4.24%	6.16%	7.97%	9.44%	10.78%	11.84%	12.82%	13.67%	14.48%
S&P BB-	3.65%	6.22%	8.66%	10.84%	13.00%	14.73%	16.41%	17.82%	19.05%	20.01%
S&P B+	6.36%	10.36%	13.83%	16.49%	18.50%	20.33%	21.96%	23.43%	24.86%	25.97%

Source: S&P CreditPro®, Annual Global Project Finance Default and Recovery Study, December 2015

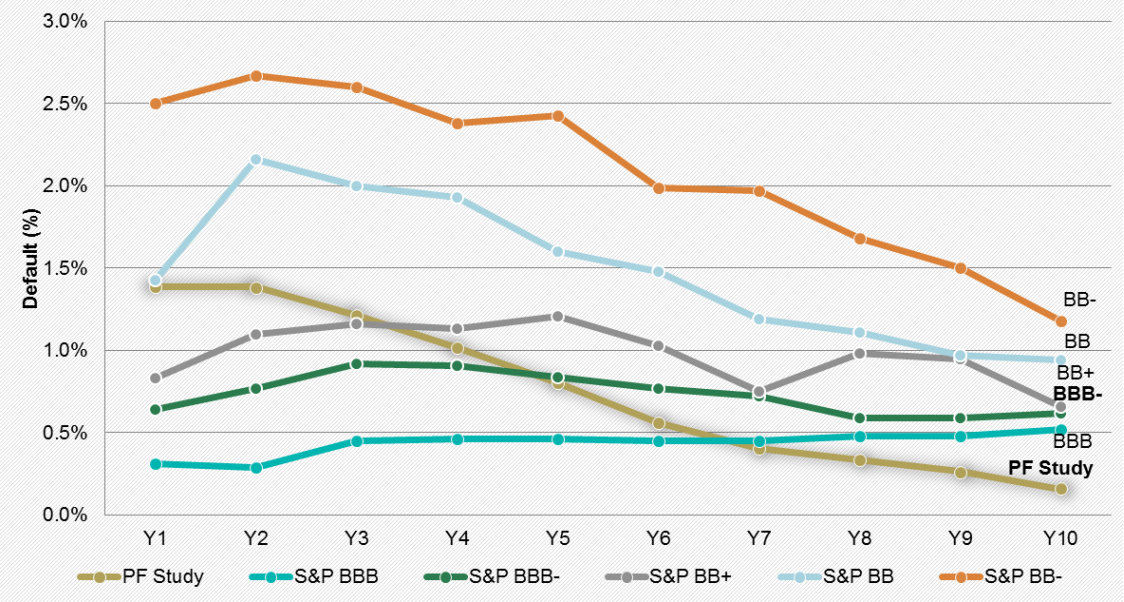
The 10-year cumulative default rates for the PF Study are consistent with the 10-year cumulative default rates for corporate issuers of low investment-grade quality ('BBB-').

10-year Marginal Default Rate – PF Study Versus S&P Rated Corporate Issuer

Exhibit 7 plots the marginal default rates for the PF Study data set based on origination year cohorts from 1981 to 2014, against the marginal default rates of corporate bonds rated 'BBB+', 'BBB', 'BBB-', 'BB+', 'BB', and 'BB-'.

While the average 10-year marginal default rates between project finance and 'BBB-' rated issuers are essentially identical at 0.75% and 0.74%, unlike corporates, which exhibit an increasing marginal annual default rate in the first three years before gradually dropping, PF debt had a higher default rate in the first four years that subsequently drops significantly. Similar to the performance pattern in 10-year cumulative default rate, we believe this can be partially explained by the construction and ramp-up phase risks inherent in most projects.

Exhibit 7: Marginal Default Rate – PF Study versus S&P Rated Corporate Issuer (1981-2014)



	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Average
PF Study	**1.39%**	1.38%	1.21%	1.02%	0.80%	0.56%	0.40%	0.33%	0.26%	**0.16%**	0.75%
S&P BBB+	0.22%	0.27%	0.29%	0.32%	0.35%	0.24%	0.26%	0.30%	0.30%	**0.28%**	0.28%
S&P BBB	0.31%	0.29%	0.45%	0.46%	0.46%	0.45%	0.45%	0.48%	0.48%	0.52%	0.44%
S&P BBB-	0.64%	0.77%	0.92%	0.91%	0.84%	0.77%	0.72%	0.59%	0.59%	0.62%	0.74%
S&P BB+	0.83%	1.10%	1.16%	1.13%	1.21%	1.03%	0.75%	0.98%	0.95%	0.66%	0.98%
S&P BB	**1.43%**	2.16%	2.00%	1.93%	1.60%	1.48%	1.19%	1.11%	0.97%	**0.94%**	1.48%
S&P BB-	2.50%	2.67%	2.60%	2.38%	2.43%	1.99%	1.97%	1.68%	1.50%	1.18%	2.09%

Source: S&P CreditPro®, Annual Global Project Finance Default and Recovery Study, December 2015.

Comparative analysis suggests that the chance that a performing project at the start of the year will default in that year is initially in-line with marginal default performance of high speculative-grade debt ('BB'). However, by year 10, after project origination, project finance marginal default rates become more consistent with investment-grade marginal default performance ('BBB+').

Default Rate by Region

Exhibit 8 provides the distribution of defaults for the PF Study across seven regions versus the reported year of default[8] from 1987 to 2014. Given the regional concentration of the Study data set, it comes as no surprise that the majority of defaults occurred in Western Europe with 246 (39.4% of total defaults) followed by North America with 159 (25.5%). However, note that Latin America and Oceania experienced a disproportionately higher number of defaults relative to the total number of projects in their respective regions.

Moreover, while a little more than half of (348 projects or 55.8%) defaults occurred on or before 2004 globally, there are distinct differences across regions. In Western Europe 37% of defaults occurred before 2004 with 63% happening between 2005 and 2014, with notable momentum in

8 Because of display limitation, project defaults occurring on or before 2004 are aggregated and presented with each subsequent default year from 2005 to 2014.

the last five years. Over the same period, the opposite is true across the North America, Latin America and Asia-Pacific regions, where most defaults occurred before 2004.

Exhibit 8: Distribution of Defaults by Region and Year of Default (1987-2014)

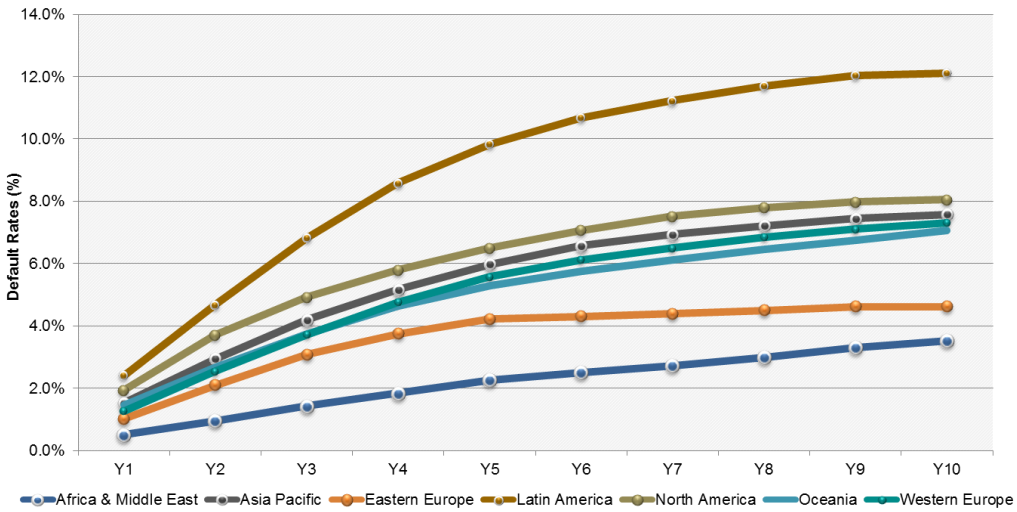
	Year of Default			
Region	< 2004	2005 to 2014	**Total Defaults**	Regional Concentration (%)
Western Europe	90	156	246	39.4%
North America	105	55	159	25.5%
Asia Pacific	65	15	80	12.8%
Latin America	53	17	71	11.4%
Oceania	19	13	32	5.1%
Africa & Middle East	9	11	20	3.2%
Eastern Europe	7	9	16	2.6%
Total	**348**	**276**	**624**	**100.0%**
Default Year Concentration (%)	55.8%	44.2%	100.0%	

Source: Annual Global Project Finance Default and Recovery Study, December 2015.

10-year Cumulative Default Rate by Region

Exhibit 9 plots the 10-year cumulative default rates by region for the PF Study data set based on origination year cohorts from 1981 to 2014. This vector provides the cumulative magnitude and rate of increase (or "speed") of defaults experienced across each region.

Exhibit 9: 10-year Cumulative Default Rates by Region (1981-2014)



Region	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Western Europe	1.27%	2.54%	3.72%	4.77%	5.58%	6.13%	6.50%	6.85%	7.11%	7.31%
North America	1.94%	3.70%	4.92%	5.79%	6.49%	7.06%	7.52%	7.80%	7.98%	8.05%
Latin America	2.41%	4.68%	6.83%	8.59%	9.83%	10.68%	11.22%	11.71%	12.04%	12.12%
Asia Pacific	1.52%	2.94%	4.19%	5.16%	5.98%	6.57%	6.93%	7.21%	7.44%	7.57%
Oceania	1.45%	2.66%	3.74%	4.63%	5.29%	5.75%	6.11%	6.45%	6.74%	7.07%
Eastern Europe	1.02%	2.09%	3.08%	3.75%	4.22%	4.30%	4.39%	4.50%	4.61%	4.61%
Africa & Middle East	0.50%	0.96%	1.42%	1.84%	2.27%	2.51%	2.73%	2.99%	3.30%	3.53%

Source: Annual Global Project Finance Default and Recovery Study, December 2015.

Exhibit 10 provides the time to default ("TTD") project distribution across each region (in years).

Exhibit 10: Time to Default Rates by Region in Years (1987-2014)

Region	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total	Average
Western Europe	6	12	36	34	45	45	26	15	8	7	4	2	3	1	2		**246**	4.5
North America	4	18	37	41	16	10	11	12	3	4	3	1					**159**	3.6
Latin America	1	7	9	15	8	11	7	5	2	2	3						**71**	4.3
Asia Pacific	3	6	14	15	10	10	8	6	3	3	1	1					**80**	4.1
Oceania	1	6	3	6	5	4	1	2	1				1	1		1	**32**	4.3
Africa & Middle East	1	2		4	1	4	3			2	1	1		1			**20**	5.4
Eastern Europe		1	2	6		6				1							**16**	3.9
Total	**16**	**52**	**101**	**121**	**85**	**90**	**56**	**40**	**17**	**19**	**12**	**5**	**4**	**3**	**2**	**1**	**624**	4.2
%Total	2.6	8.3	16.2	19.4	13.6	14.4	9.0	6.4	2.7	3.0	1.9	0.8	0.6	0.5	0.3	0.2	100	

Source: Annual Global Project Finance Default and Recovery Study, December 2015.

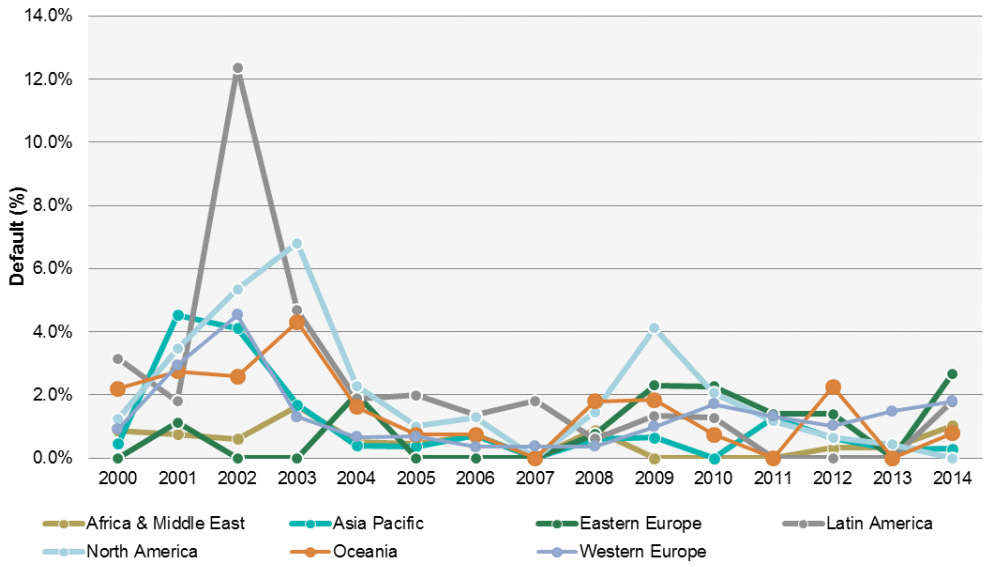
The data suggests that a default may occur at any time during a project's life and that, between regions, average TTD varies from 3.6 to 5.4 years. The average TTD across regions is 4.2 years. Also note that approximately 75% of defaults occur within the first five years.

Annual Default Rate By Region

Annual default rates provide indicators of historical downturn periods and default volatility across regions and market segments. S&P Global Market Intelligence employs a static pool methodology to calculate the annual default rate statistic. A static pool is formed on the first day of each year covered by the PF Study and followed from that point forward. Our analysis assigned all project finance deals included in the study to one or more static pools. The pools are static in that their membership consortia is constant, similar to a buy-and-hold portfolio.

Exhibit 11 plots the annual default rate by region from 2000 to 2014.

Exhibit 11: Annual Default Rates by Region (2000-2014)



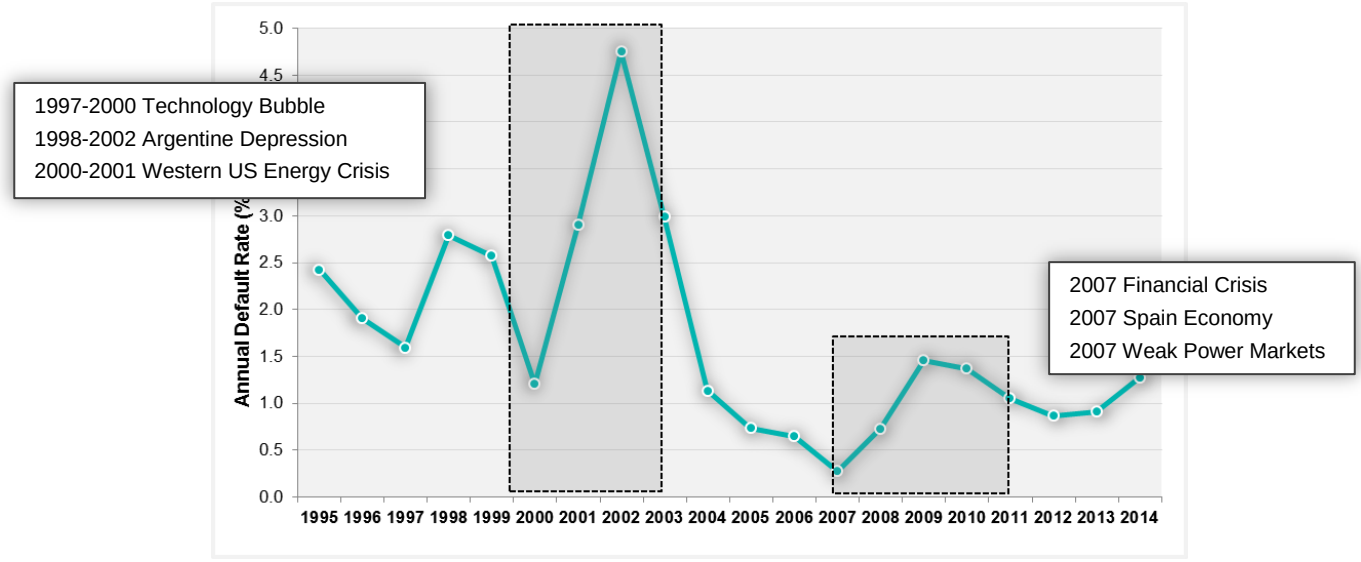
Region	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Western Europe	0.9%	2.9%	**4.5%**	1.3%	0.7%	0.7%	0.4%	0.4%	0.4%	**1.0%**	1.7%	1.3%	1.0%	1.5%	1.8%
North America	1.3%	3.5%	5.3%	**6.8%**	2.3%	1.0%	1.3%	0.0%	1.5%	**4.1%**	2.1%	1.2%	0.7%	0.4%	0.0%
Latin America	3.1%	1.8%	**12.4%**	4.7%	1.9%	2.0%	1.4%	1.8%	0.6%	**1.3%**	1.3%	0.0%	0.0%	0.0%	1.8%
Asia Pacific	0.5%	**4.5%**	4.1%	1.7%	0.4%	0.4%	0.7%	0.0%	0.6%	0.7%	0.0%	**1.3%**	0.6%	0.3%	0.3%
Oceania	2.2%	2.8%	2.6%	**4.3%**	1.6%	0.7%	0.7%	0.0%	**1.8%**	1.8%	0.7%	0.0%	2.3%	0.0%	0.8%
Africa & Middle East	0.9%	0.8%	0.6%	**1.6%**	0.5%	0.4%	0.7%	0.0%	0.9%	0.0%	0.0%	0.0%	0.3%	0.3%	1.0%
Eastern Europe	0.0%	1.1%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.8%	**2.3%**	2.3%	1.4%	1.4%	0.0%	2.7%

Source: Annual Global Project Finance Default and Recovery Study, December 2015.

While project financing typically includes structural features such as pledged collateral and contracted off-take agreements, which can mitigate debt service coverage volatility and exposure to parents and other counterparties, the data suggests that it does not completely insulate a project from shocks within economic cycles. Credits with market exposure in certain sectors may be more vulnerable to sudden swings in regional and local market dynamics.

Over the last 20 years, we have seen increases in project finance defaults during two periods – around 2000-2003 and 2008-2011. We discuss several large macroeconomic events that coincide with these periods that may have contributed to project underperformance.

Exhibit 11a: Project Finance Peak Default Periods over the Last 25 Years



- Technology Bubble (1997-2000): The fallout from the dot-com collapse influenced global default rates between 2000 and 2003, as more than 50 Internet cable and telephony projects defaulted – notably, projects in the U.S., the U.K., Germany, Australia, and Bermuda.

- Western U.S. Energy Crisis (2000-2001): The crisis had considerable impact on North America annual default rates. Driven by the market disruption and eventual bankruptcy of the energy conglomerate, Enron, many power plants across the U.S. were adversely affected. Annual default rates in North America steadily increased from 3.5% in 2001, 5.3% in 2002 and peaked at 6.8% in 2003. With the exception of a handful of thermal power plants, most defaults were non-renewable energy projects and all were based in the U.S.

Enron Corporation's Collapse also had a global domino effect on Enron-sponsored subsidiary power projects, which relied on Enron as the main revenue counterparty (e.g. Teesside Power Financing Ltd. in the U.K., which defaulted in 2002).

- Argentine Depression (1998-2002): The economic stress from the depression in Argentina contributed largely to the dramatic 2002 spike in the Latin America annual default rate rising from 1.8% in 2001 to 12.4% in 2002. Within this period, the majority of defaults in the region occurred in Argentina – across non-renewable energy, oil & gas, water treatment, telephony, and metals/mining projects.

- Financial Crisis and Weak Power Markets (2007): The collapse in natural gas prices and reduced energy demand after the 2007 economic downturn globally stressed many projects across industry sectors; particularly, power, and oil & gas.

- Slack Spain Economy (2007): Since 2007, there have been a significant number of project defaults in Spain (ranked third behind the U.S. and the U.K. in defaults globally) – primarily in the renewable energy, transportation and public services segments.

Default Rates By Industry

Exhibit 12 provides the distribution of defaults for the PF Study across industry versus the reported year of default from 1987 to 2014. Given the industry concentration of the PF Study data set, the majority of default observances occurred in Power with 227 (36.4%) followed by Infrastructure with 149 (23.9%). However, we note that Media & Telecom and Leisure & Recreation experienced a disproportionately higher number of defaults relative to the total number of projects in their respective industry segments.

In terms of the occurrence of defaults across default year, differences can be seen across industries. In Media & Telecom, 90% of the sector's defaults occurred on or before 2004. In contrast, only 20% of Infrastructure defaults occurred during the same period with most underperformance occurring between 2009 and 2013.

Exhibit 12: Distribution of Defaults by Industry and Year of Default (1987-2014)

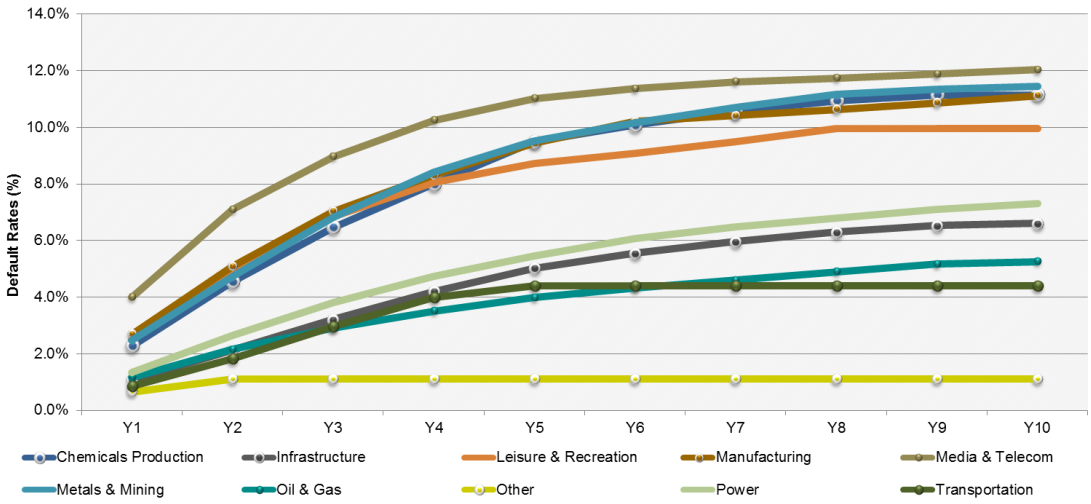
	Year of Default			
Industry	< 2004	2005 to 2014	**Total Defaults**	Industry Sector Concentration (%)
Power	150	77	227	36.4%
Infrastructure	32	117	149	23.9%
Media & Telecom	71	9	80	12.8%
Oil & Gas	29	36	65	10.4%
Metals & Mining	34	15	49	7.9%
Chemicals Production	14	7	21	3.4%
Manufacturing	13	3	16	2.6%
Leisure & Recreation	3	7	10	1.6%
Transportation		4	4	0.6%
Other	2	1	3	0.5%
Total	**348**	**276**	**624**	**100.0%**
Default Year Concentration (%)	55.8%	44.2%	100.0%	

Source: Annual Global Project Finance Default and Recovery Study, December 2015.

10-Year Cumulative Default Rate By Industry

Exhibit 13 plots the 10-year cumulative default rates by industry for the PF Study based on origination year cohorts from 1981 to 2014 providing overall industry sector performance and default levels to date.

Exhibit 13 – 10-year Cumulative Default Rates by Industry (1981-2014)



Cumulative Default Rate	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Power	1.33%	2.65%	3.80%	4.72%	5.46%	6.08%	6.48%	6.80%	7.09%	7.32%
Infrastructure	1.06%	2.14%	3.21%	4.21%	5.03%	5.55%	5.96%	6.30%	6.53%	6.61%
Media & Telecom	4.00%	7.10%	8.97%	10.24%	11.02%	11.36%	11.61%	11.74%	11.88%	12.03%
Oil & Gas	1.17%	2.16%	2.90%	3.51%	3.98%	4.33%	4.59%	4.90%	5.17%	5.26%
Metals & Mining	2.47%	4.72%	6.81%	8.42%	9.51%	10.15%	10.71%	11.17%	11.35%	11.44%
Chemicals Production	2.27%	4.55%	6.46%	7.99%	9.49%	10.08%	10.57%	10.94%	11.15%	11.15%
Manufacturing	2.68%	5.09%	7.03%	8.31%	9.43%	10.21%	10.41%	10.63%	10.86%	11.12%
Leisure & Recreation	2.49%	4.87%	6.85%	8.07%	8.72%	9.08%	9.49%	9.94%	9.94%	9.94%
Transportation	0.85%	1.82%	2.95%	3.98%	4.39%	4.39%	4.39%	4.39%	4.39%	4.39%
Other	0.65%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%

Source: Annual Global Project Finance Default and Recovery Study, December 2015.

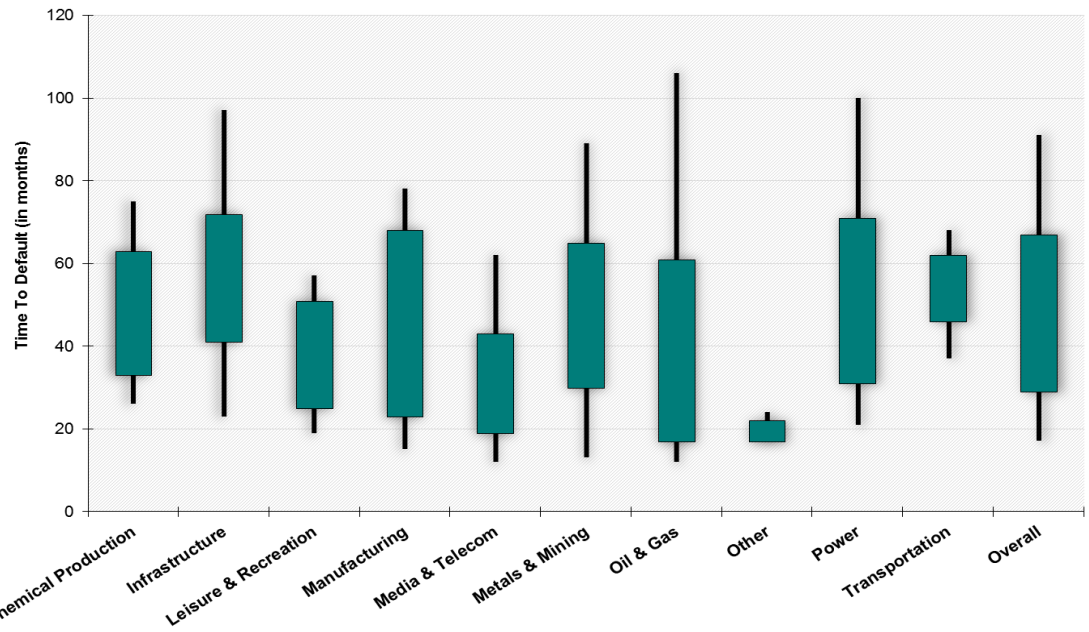
Time To Default

TTD, the statistic briefly introduced in earlier discussions, is defined as the time period between the project origination date[9] and the reported default date[10], offering some indication of the reasons contributing to underperformance.

Exhibit 14 is a summary of the TTD across industries. The bottom and top of each bar indicate the 25th and 75th percentiles of the TTD (i.e., half of the defaults fall within the bar). The bottom and top of the corresponding vertical lines indicate the 10th and 90th percentiles, respectively.

9 The static date field that identifies a project's financial closing date ("Origination/Purchase Date").
10 The performance date field that identifies the date that a non-performing PF instrument is considered to be "in default". (Default event definitions used in the PF Study that are outlined in Section 1 follow the standard "Basel II" Default Framework and Guidelines.)

Exhibit 14: Time to Default by Industry (in months)



Source: Annual Global Project Finance Default and Recovery Study, December 2015.

The wide range of default timing across industries illustrates that a default can happen at any time during a project's life. Some project defaults are due to technology or construction issues early in a project's life (i.e., short TTD), while others default from operational issues later in their life – attributable to factors such as low market price, lower-than-expected volumes or unexpected maintenance costs.

Across industries, the average TTD is 4.2 years suggesting that projects tend to have a relatively higher chance of default during the end of construction and the ramp-up of operations. In general, the PF Study data suggests that, should a project survive beyond this initial period, the likelihood of its default drops considerably.

However, default experience has shown that construction and ramp-up issues aside, there are other risk factors that drive project finance defaults.

S&P Global Ratings recently redesigned its methodology for analyzing project finance debt. Using a more granular assessment of risks and a "downside-stress" analytical framework, the revised valuation is designed to isolate exactly which risk events/changes could put a project in distress.

In the context of our revised criteria and default analyses of rated project finance debt, we outline the following broad risk factors that contribute to project underperformance.

Factor	% of Defaults	Aggregates	% of Defaults
Technology or design (during construction/ramp-up)	20.6	Technology and operations	29.4
Operational (underperformance, higher capital expenditures, etc.)	8.8		
Hedging/commodity exposure	5.9	Market for input or output	32.4
Market exposure (price or volume)	26.5		
Structural weakness at the parent	17.7	Structure/counterparties	35.3
Counterparty failure	17.7		
Regulation	2.9	Regulation	2.9

Source: Ben Macdonald, "Lessons Learned from 20 Years of Rating Global Project Finance Debt," Standard & Poor's Ratings Services CreditWeek, January 21, 2015.

Note that in rated PF, only approximately 20% of defaults resulted primarily from technology or early operational failure, and that market exposure risk is the biggest cause of default. Moreover, analysis suggests that project underperformance is typically caused by more than one driver.

The PF Study currently does not collect the data specifically required to completely determine which of the risk factors from our criteria framework may have led to the default of a given project; however, the Study does collect the phase (i.e. construction or operation) when the credit defaulted.

In the following sections, we provide a discussion of the annual default rate performance across individual industry vis-à-vis the total number of projects by year of default[11], the TTD, and the project phase at default.

Across each industry section, we observe that almost 75% of defaults occur within the first five years after a deal's closing, indicating that this is the critical high-risk period when a deal is most vulnerable to credit default.

The TTD data suggests that the risk is most acute at the point when a project starts its transition into operations and is confronted by a confluence of risk events (e.g., market or industry downturn, change in regulation, cost overrun, etc.), essentially altering the industry operating environment for which the deal was originally structured.

Projects are structured with dedicated liquidity (i.e., internal reserve accounts and restrictions on purpose), providing some protection to lenders. However, once these reserves are depleted, restrictions on asset sales or change in strategy means that a project has fewer options and limited recourse, increasing the chance of default.

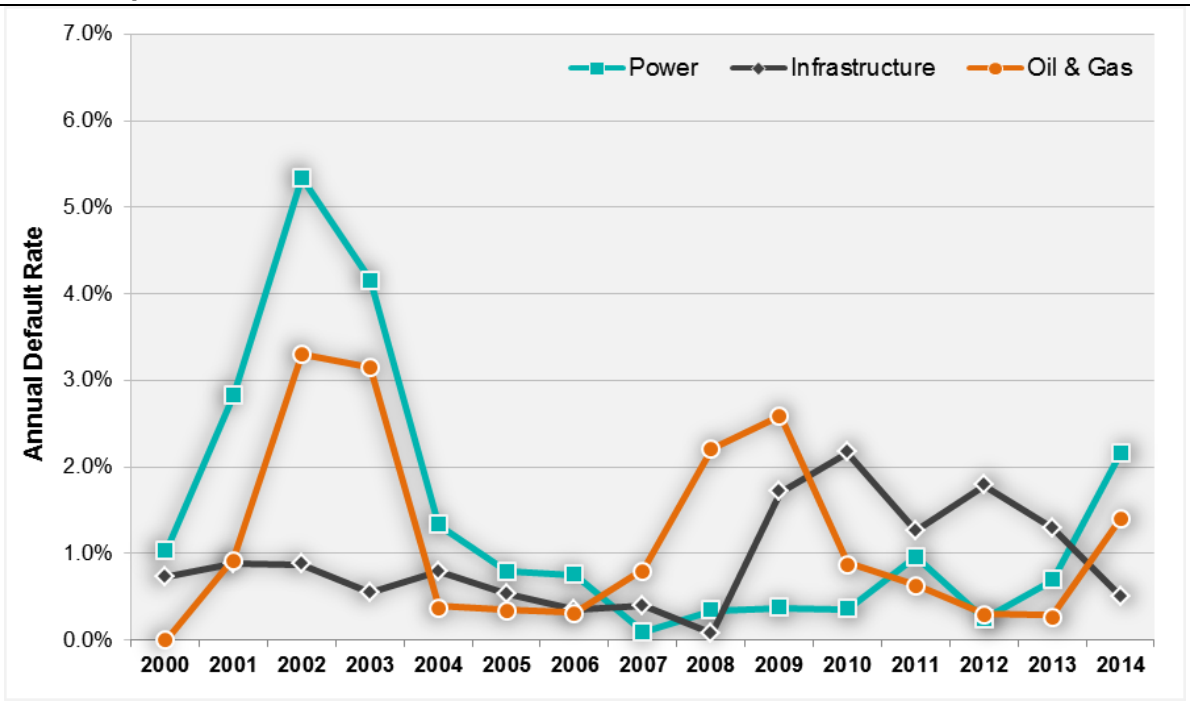
11 Because of display limitation, project defaults occurring on or before 1999 are aggregated and presented with each subsequent default year from 2000 to 2014. Actual default history covers the period from 1987 to 2014.

Annual Default Rate By Industry

Exhibit 15 illustrates annual default rates by industry sector, for the period 2000 to 2014, to better identify cyclical downturn periods and default volatility. We employ the same static pool methodology described in our regional annual default rate calculation.

This June 2016 release is an abbreviated version of the more in-depth analyses we perform using the data provided by the Consortium. Publication of certain details is withheld to maintain confidentiality of participants.

Exhibit 15: Annual Default Rates by Industry – Power, Infrastructure, and Oil & Gas (2000-2014)



Annual Default Rate	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Power	1.0%	2.8%	**5.3%**	4.2%	1.3%	0.8%	0.8%	0.1%	0.3%	0.4%	0.4%	1.0%	0.2%	0.7%	2.2%	1.4%
Infrastructure	0.7%	0.9%	0.9%	0.6%	0.8%	0.5%	0.4%	0.4%	0.1%	1.7%	**2.2%**	1.3%	1.8%	1.3%	0.5%	0.9%
Oil & Gas	0.0%	0.9%	**3.3%**	3.1%	0.4%	0.3%	0.3%	0.8%	**2.2%**	2.6%	0.9%	0.6%	0.3%	0.3%	1.4%	1.2%

Source: Annual Global Project Finance Default and Recovery Study, December 2015

- **Power** is the largest industry sector by volume (3,022 projects) and growth covered in the PF Study. Currently at 2.2%, the sector's annual default rate averaged 1.0% since its peak of 5.3% in 2002. From 2007 to today, historically low natural gas prices and reduced energy demand have primarily caused power projects with market or commodity risk exposure to underperform.

  The power sector is segmented into non-renewable and renewable energy projects. Renewables are further divided into Solar, Geothermal, Wind, Biomass, Hydro-electric and Renewable-Other cohorts.

Non-renewables make up 70% of defaults in the Power sector – concentrated across four countries -- the U.S., the U.K., Argentina, and Italy. While the subsector's average TTD is 4.4 years, defaults have occurred as far back as 14 years after origination. Available project phase data suggests that 20% of defaults have occurred during construction.

There was a particularly significant increase in non-renewable defaults between 2001 and 2003, likely driven by the acute market volatility from the Western U.S. Energy Crisis and the Argentine Depression, discussed earlier. The majority of defaults during this three-year period occurred across the U.S., U.K. and Argentina.

The 2014 non-renewable defaults were domiciled in Italy and operational. These projects have likely just completed transitioning from construction and could face performance headwinds of having to operate under the country's continued weak economy and austerity policies, as well as from the pressure of low commodity prices and market demand.

The renewable energy defaults covered in the PF Study concentrated primarily across three countries – Spain, Germany, and the U.S. The TTD across the 6 segments varies from 3.0 years for biomass to 6.3 years for hydro – averaging 4.8 years overall. Reported project phase data indicates 9% of defaults occurred during construction.

Renewable energy deals are typically exposed to resource volume risk (i.e., water volumes at hydro plants, and wind or solar resources at other plants not meeting forecasted levels).

In the last three years, there has been a considerable increase in the number of renewable (solar and wind farm) defaults in Spain, suggesting that the underperformance is due more to local market volatility rather than endemic problems across the entire sector. Regulatory and/or tariff policy changes impacting project operating fundamentals are likely factors increasing industry risk.

In the wake of the 2008 financial crisis and the country's sluggish economy, the Spanish government drastically cut its subsidies for solar power, and capped future increases in capacity at 500 MW per year, impacting the industry worldwide. In 2010, the Spanish government went further, retroactively cutting subsidies for existing solar projects.

In 2011, existing wind farms in Spain became more susceptible to financial distress after the government's energy reforms changed their right to charge certain amounts of compensation, which had been set for a 20 year period, and imposed a new compensation system[12].

In Germany, there have been several renewable energy defaults (geothermal, biomass, and wind farms) since 2000. Despite strong government support and subsidy policies, projects have been impacted by cost overruns, regulatory disputes and questions of conservation. However, one of the biggest issues facing the German renewable energy market is that it still needs to build and modernize the distribution infrastructure to transmit power to where it is needed, which may pose operating concerns down the road.

In addition, renewable energy subsidies have caused German consumer and commercial energy prices to nearly triple since 2010[13]. Similar to what happened in Spain, the German

12 "Wind power has increased by 175 MW in Spain in 2013, the lowest rate of growth in 16 years," Spanish Wind Energy Association (AEE), January 28, 2014.

government may impose regulatory caps on the number of new solar and wind installations eligible for subsidy and other energy reforms affecting the performance of existing projects.

Except for a plant in Italy, the renewable defaults reported in 2014 are in operation. As alluded to earlier, the solar and wind projects in Spain and Germany face regulatory and/or tariff policy reforms and uncertainty that could adversely impact operating and revenue fundamentals of existing deals.

- **Infrastructure** is the second largest industry sector by volume (2,298 projects) and growth covered in the PF Study. From 2000, the sector's annual default rate had averaged 0.6% until a dramatic increase to 1.7% in 2009. Defaults peaked to 2.2% in 2010 and have since improved to the current level of 0.5%. We keep in mind, however, that from 2009 to 2013, Infrastructure's annual defaults averaged 1.6%, indicating a relatively "stressed" period for the sector.

  The Infrastructure sector is segmented into five subsectors: Transportation; Public Buildings; Ports & Terminals; Water, Waste & Utilities; and Infrastructure-Other.

  Sector defaults are driven by the Transportation subsector, which is segmented into roads, railroads, and tunnels. The TTD averages 5.0 years with 37% of defaults occurring during construction.

  Transportation has been particularly vulnerable to cost overruns and delays from construction problems that impact operating revenues, which in turn deplete project reserves. Defaults from Project Finance, rated by S&P Ratings, include: Metronet Rail BCV Finance PLC in the U.K., 2008; SSL Finance PLC; Lane Cove Tunnel Finance Co. Pty Ltd. in Australia, 2008; and Eurotunnel S.A. in the U.K., 2006.

  In addition to construction, transportation projects are also exposed to volume or usage-based risk that is, volume or usage that fails to meet forecasted demand (e.g., Autopistas Del Sol S.A. in Argentina, 2009 and the Greater Beijing First Expressways Ltd. in China, 2008).

  There was a considerable uptick in the number of transportation defaults from 2009 to 2013 concentrated primarily in Spain, Greece, the U.S. and Portugal.

  Within this period, S&P Ratings downgraded the ratings of two parent companies with exposure to multiple toll roads across Spain, France, and Portugal (Abertis Infraestructuras S.A. and BRISA Auto-Estradas de Portugal S.A.) because of the decline in traffic volume in the motorways they operate and weak economic environments in Spain and Portugal.

  More recent S&P Global Ratings' market research suggests that the toll road-transportation sector has demonstrated greater stability mostly because of a stronger global economy in 2014, supporting modest increases in traffic volumes and toll revenues ameliorating projects' usage risk-levels[14]. Moreover, the continued decline in oil and gasoline prices **has** not only reduces driving costs, but has also acted much in the same way as a tax cut, boosting discretionary spending.

13 Matthew Karnitschnig, "Germany's Expensive Gamble on Renewable Energy," Wall Street Journal, August 26, 2014.
14 Peter V. Murphy, "Global Toll Road Operators Have Turned A Corner, With Credit Quality Likely to Improve in 2015," Standard & Poor's Ratings Services CreditWeek, January 21, 2015.

Despite its recent stability, one of the main risks facing the sector globally stems from a changing regulatory environment impacting existing tariff contracts and concessions having adverse effects on projects' operating fundamentals.

The transportation defaults reported in 2014 were all well-seasoned projects – reportedly all still in operation. While local economies show recent signs of improvement strengthening traffic usage and revenues that could help these deals rebound, changing regulatory policies and local economic environments could pose future operating challenges.

Defaults in the Public Buildings subsector are made up primarily of hospital/healthcare facilities and school/education projects in Western Europe. The average TTD is 4.4 years with 12% of defaults occurring during construction.

Often referred to as social infrastructure, these deals are availability-based projects that rely on payments typically made by a highly-rated counterparty, such as government affiliates, once the project is operating and "available" for use.

The primary risk is operating risk, such as lifecycle budgeting or in some cases, risks associated with the declining credit quality of counterparties[15]. Four healthcare projects in the U.K., under a common issue name (Consort Healthcare), all defaulted in 2010 from operating risks (i.e., service failures and construction defects) as well as counterparty downgrades.

- **Oil & Gas** is the third largest industry sector (1,108 projects) covered in the PF Study. Currently at 1.4%, the sector's annual default rate averages 1.1% since its peak of 3.3% in 2002. Not unlike the Power sector, historically low natural gas prices and reduced energy demand have put many Oil & Gas projects into distress in recent years. The average TTD is 3.8 years with 38% of defaults occurring during construction.

  The rise in the number of defaults between 2001 and 2003 were concentrated in Argentina, Australia, and the U.S.

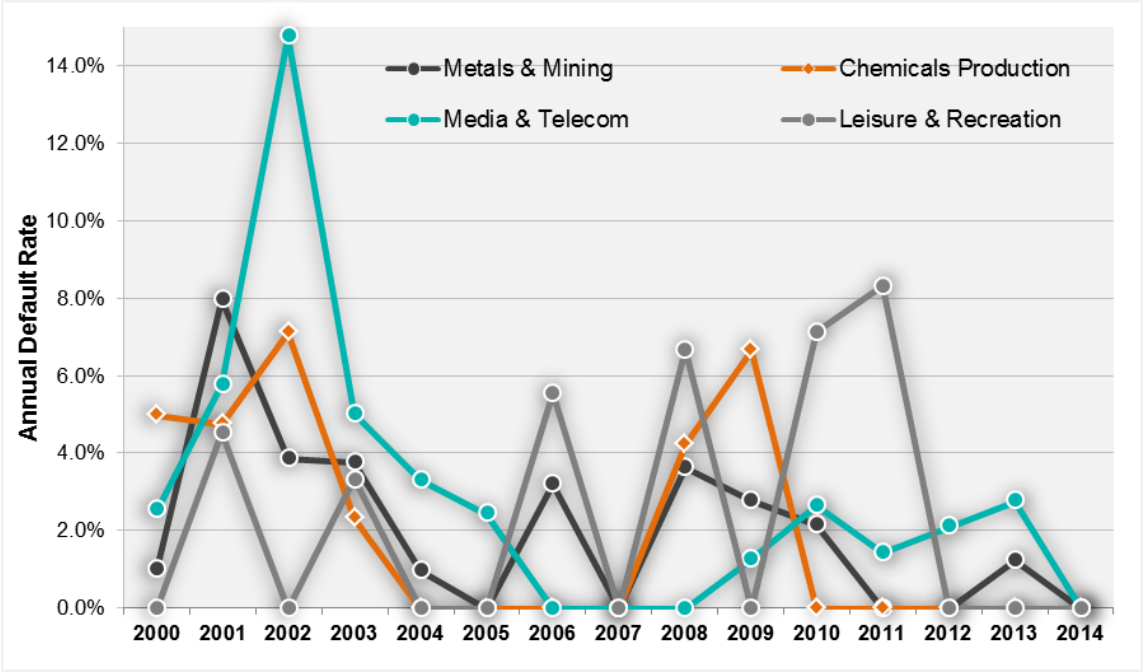
  The Argentine government's approximately $100 billion default in 2001 has kept the country locked out of international financial markets, making it difficult to raise capital for drilling and expensive projects that are exposed to operating risk from higher capital expenditures. In the decade of 2001-2010, Argentina's Oil & Gas Institute reported that domestic oil production declined by 22 percent[16].

  The subsequent uptick in defaults starting in 2008 occurred mainly in projects the U.S., the U.K., and Australia.

  Except for a couple of deals in Australia and Brazil, the 2014 defaulted projects are reportedly all in operation. Brazil deals are exposed to capital expenditure volatility and higher operating costs considering that Brazilian refineries are not able to refine all internally consumed oil. Brazil needs to export crude oil and imports oil products, mainly gasoline[17].

15 Anne C Selting, "Top 10 Investor Questions For 2013: Global Public Private Partnership Infrastructure Investment," Standard & Poor's Ratings Services, December 5, 2012.
16 Charles Newbery, "Struggles to cut cost delay oil play production in Argentina: At the Wellhead," Platts, August 17, 2015.
17 Marcos Panassol, et al, "The Brazilian Oil & Gas Industry, A period of great transformation," PricewaterhouseCoopers Brasil Ltda., 2013.

Exhibit 16: Annual Default Rate by Industry – Metals & Mining, Chemicals Production, Media & Telecom, and Leisure & Recreation



Annual Default Rate	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Metals & Mining	1.0%	**8.0%**	3.9%	3.8%	1.0%	0.0%	3.2%	0.0%	**3.6%**	2.8%	2.2%	0.0%	0.0%	1.3%	0.0%	2.0%
Chemicals Production	5.0%	4.8%	**7.1%**	2.3%	0.0%	0.0%	0.0%	0.0%	4.2%	**6.7%**	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%
Media & Telecom	2.5%	5.8%	**14.8%**	5.0%	3.3%	2.5%	0.0%	0.0%	0.0%	1.3%	2.7%	1.4%	2.1%	2.8%	0.0%	3.0%
Leisure & Recreation	0.0%	4.5%	0.0%	3.3%	0.0%	0.0%	5.6%	0.0%	6.7%	0.0%	7.1%	8.3%	0.0%	0.0%	0.0%	2.4%

Source: Annual Global Project Finance Default and Recovery Study, December 2015

- **Metals & Mining** represents the fifth largest industry sector (420 projects) in the Study. Since its peak of 8.0% in 2001, the sector has shown some annual default rate volatility that has stabilized in the last three years. The sector's TTD averages 4.2 years with 18% of defaults occurring during construction.

  Between 2000 and 2003, defaults were concentrated in Ireland, Venezuela, the U.S., Spain, and Indonesia.

  Since 2008, defaults have been intermittent mainly across South Africa and the U.S.

  Across the portfolio of projects that S&P has rated, there were three Mining defaults all based in Australia.

  Primarily a result of technology failure, Bulong Operations Pty. Ltd., a nickel and cobalt mine, defaulted in 2000. The project relied on cash flow from operations to meet debt service costs during start up. Design changes, increased construction costs, and difficulties with commissioning delayed revenues quickly drained project reserves. The project was forced to raise more debt increasing the required cash flow levels all leading to a downward spiral.

Both the Murrin Murrin Holdings Pty. Ltd. and its part-owner Glencore Nickel Pty. Ltd. projects defaulted in 2002, primarily because of low prices for their output products.

- The **Chemicals Production** sector's relatively small size (174 projects) and de minimis growth led to somewhat over-represented annual default rate volatility. From its 15 year all-time high of 7.1% in 2002 (caused by a few well-seasoned plants in Asia), to the 2008-2009 increase to 6.7%, the sector has not experienced a single default in the last five years.

- While the **Media & Telecom** sector (498 projects) experienced the highest annual default rate of any industry covered in the Study (14.8% in 2002), 90% occurred on or before 2004.

  Between 2000 and 2003, projects distributed worldwide defaulted suggesting a turbulent market downturn. As suggested earlier, the dot-com market collapse and subsequent failure of many communications companies adversely impacted telephony/cable/networking infrastructure projects globally. The sector TTD average is 2.9 years with all defaults occurring during operation.

- The **Leisure & Recreation** sector like the Chemicals Production, exhibits over-represented default volatility because of its small cohort size (88 projects) and static growth. Currently at 0%, the sector has not had a default in the last three years. The sector TTD is 3.3 years with all defaults occurring during operation.

  Typically categorized as economic infrastructure, Leisure & Recreation projects are exposed to volume risk in that they rely on (less predictable) revenues linked to customer traffic or usage.

  Since 2008, there have been a handful of sector defaults, a theme park in Hong Kong, hotels in the U.S. and Germany and projects in Spain that defaulted in 2011 reflecting the scaled down spending and weakened consumer demand as economies struggled to recover from the financial crisis.

4 Recovery Trends and Analysis

The PF Study includes 1,543 debt instruments across 377 projects that have emerged from default from 1987 to 2014.

Update

79% of remediated loans reported in 2014 were in the Infrastructure Sector – particularly concentrated in Ports & Terminals and Toll Road projects across Western Europe (see Figure 2 below).

Figure 1: 2014 Loan Recovery by Sector (Note: The Infrastructure Sector is comprised of the following Sub-Sectors: Ports & Terminals, Toll Roads, Public Buildings, and Infrastructure Other)

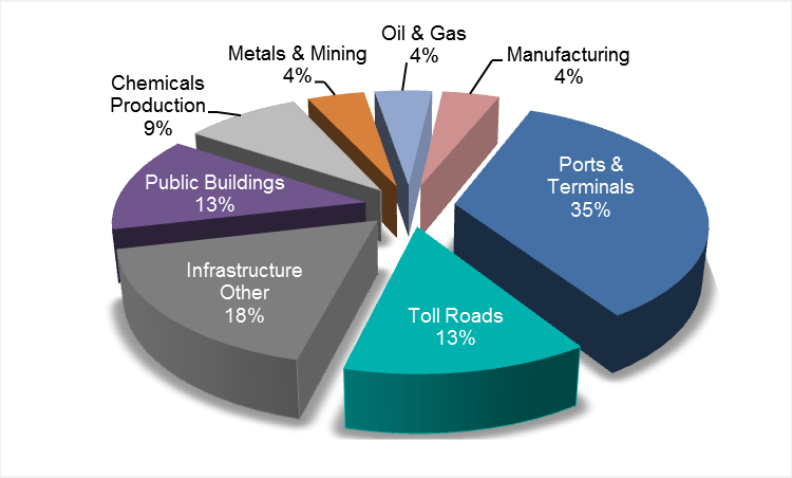
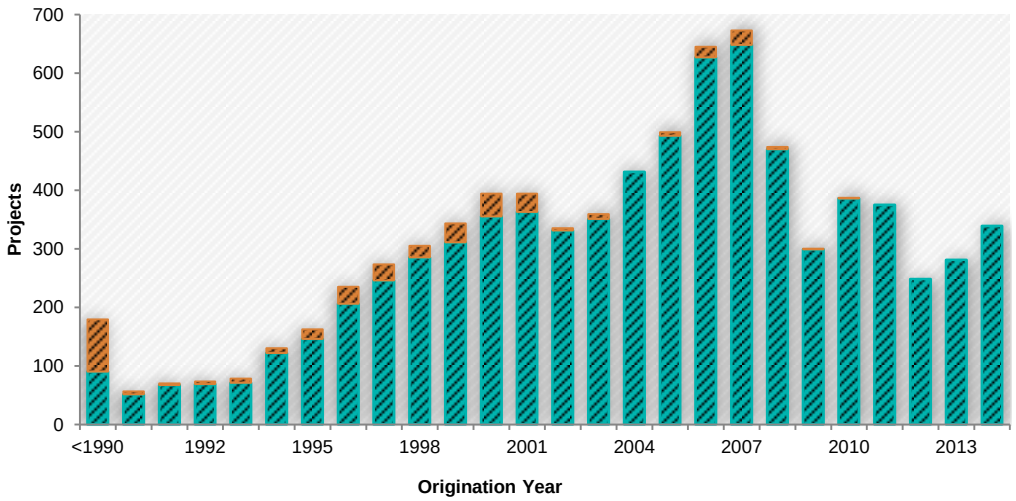


Exhibit 17 plots the distribution of these projects across their respective year of origination.

Exhibit 17: Recovered Projects by Origination Year



Source: Annual Global Project Finance Default and Recovery Study, December 2015.

Distribution Of Recovery Rates

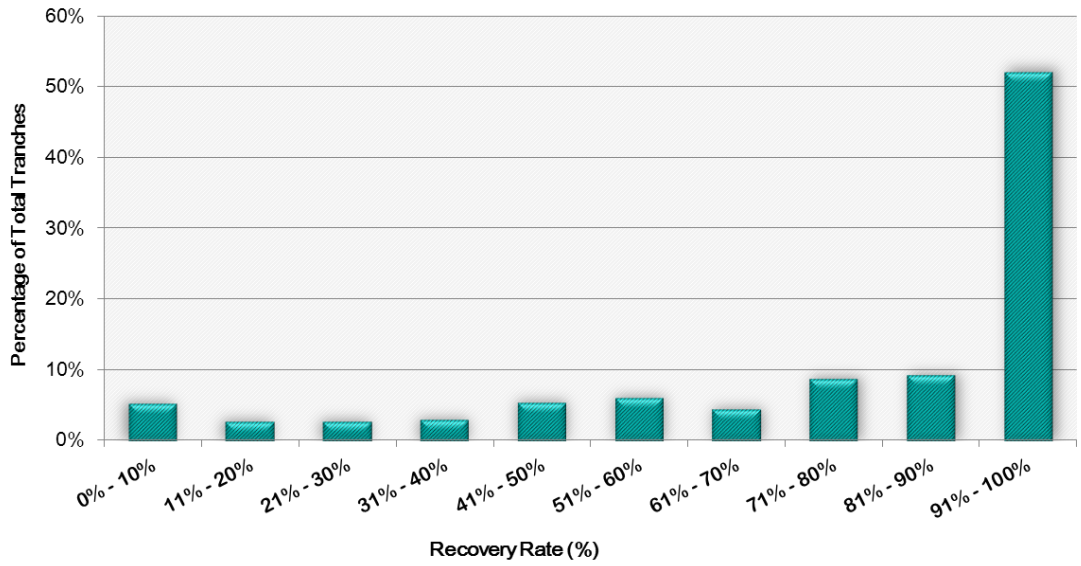
Project finance loan recovery levels appear to be relatively high when compared to other asset classes. As shown in Exhibit 18, more than half of the resolved debt issues (approximately 52% of all resolved loans) recovered between 91% and 100% on a discounted basis. (Note: Nominal recoveries are discounted incorporating reported loan rate, default, and resolution date information.) The median discounted recovery rate at instrument level was 91.5% while the average discounted recovery rate was 76.6%.

While the average recovery rate is high, recovery rates form a barbell distribution, with some lenders receiving almost 100%, while others received minimal amounts, with few projects achieving recoveries close to the mean.

The barbell shape of the distribution suggests that creditors will receive either very high or minimal recoveries.

Project level recovery rates[18] were similar to loan recovery levels. The median discounted recovery rate at project level was 89.2% while the average discounted recovery rate was 75.0%.

Exhibit 18: Distribution of Discounted Recovery Rates at Instrument Level



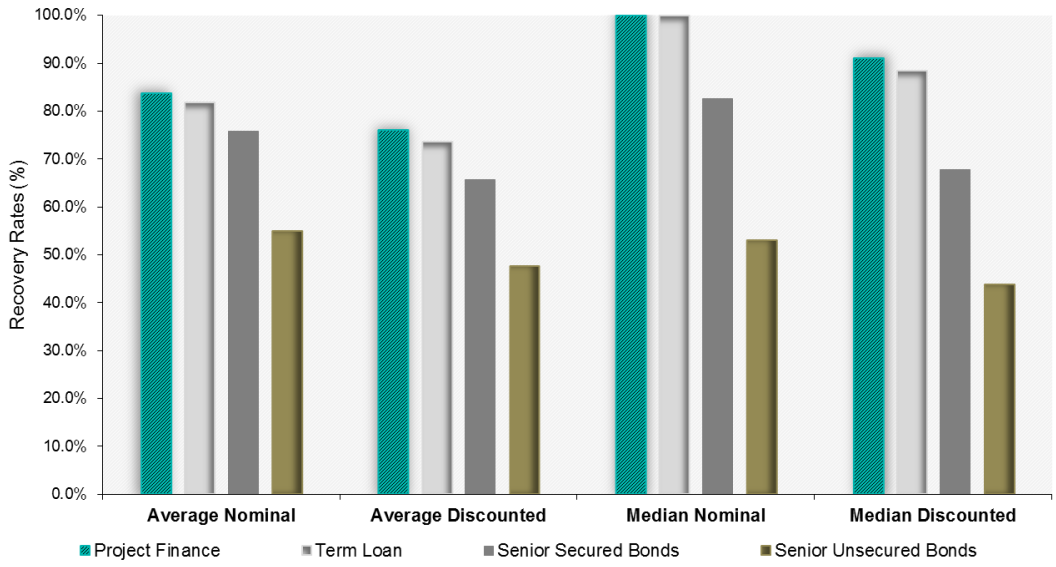
Source: Annual Global Project Finance Default and Recovery Study, December 2015

18 In order to calculate project-level discounted recovery rates, individual debt instruments are discounted and then weighted by their outstanding balance-at-default, and then rolled up to the project level. As the database grows, increasing the number of recovery observances, the impact of summary recovery statistics being driven by a single instrument diminishes.

PF Study Recovery versus Corporate Debt

Instrument level recovery behavior of the Study have been compared against corporate debt instruments by, average nominal, average discounted, median nominal, and median discounted recovery rates. Three instruments, term loans, senior secured bonds and senior unsecured bonds were used to benchmark against project debt recovery performance. The results are illustrated in Exhibit 19.

Exhibit 19: Instrument Recovery Rate Comparison between Project Finance and Corporate Debt



Source: S&P CreditPro®, Annual Global Project Finance Default and Recovery Study, December 2015

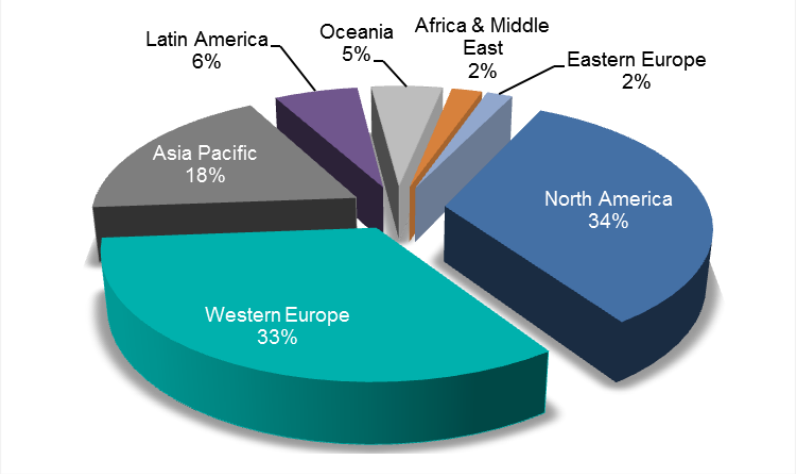
The analysis suggests that on average, project finance loans recovered at a higher rate than other bank loans and bonds.

Recovery Rate By Region

Exhibit 20 provides the distribution of recoveries for the PF Study across seven regions versus the reported year of emergence (i.e., 1987 to 2014). The majority of recovery observances occurred in North America (34%), Western Europe (33%), and Asia Pacific (18%).

In analyzing recoveries by emergence year, we observe that the total number of observances between 2002 and 2005 period makes up approximately 65% of the recovery data in the Study.

Exhibit 20 – Distribution of Recoveries by Region (1987-2014)

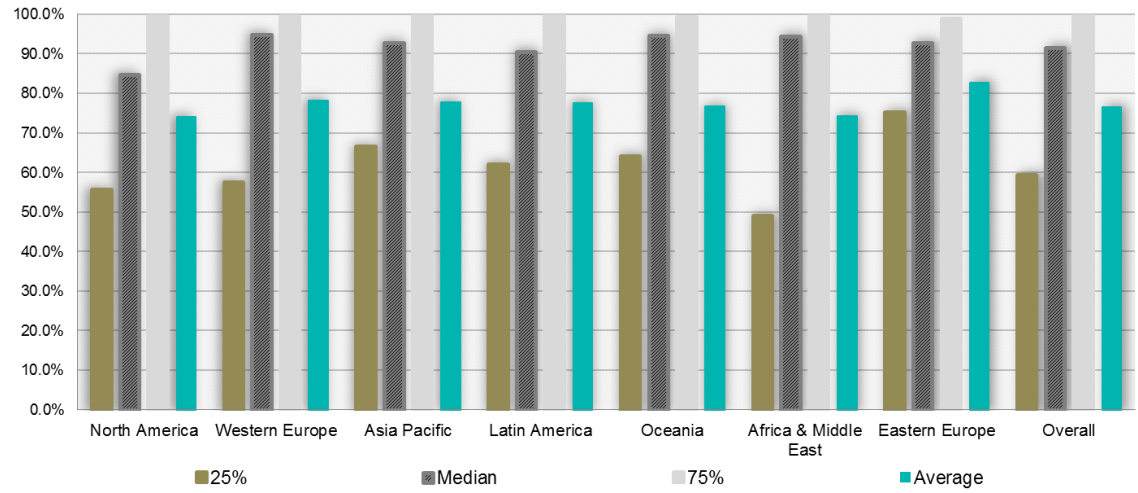


Source: Annual Global Project Finance Default and Recovery Study, December 2015

Recovery Rate Distribution By Region

Exhibit 24 plots the discounted recovery distribution by region. Across all seven regions, the average discounted recovery rate is 77%. Recoveries averaged highest in Eastern Europe and weakest in North America. North America is, however, driven by a sample size that is 18 times larger than Eastern Europe, as well as has a much wider inter-quartile range (i.e., difference between the 25th and 75th percentiles).

Exhibit 21: Distribution of Discounted Recovery Rates by Region



	Average Recovery				
Region	0% - 20%	20% - 40%	40% - 60%	60% - 80%	80% - 100%
North America				✓	
Western Europe				✓	
Asia Pacific				✓	
Latin America				✓	
Oceania				✓	
Africa & Middle East				✓	
Eastern Europe					✓
Overall Regional				✓	

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Time To Resolution:
The time to resolution ("TTR") statistic is defined as the length of time between the reported loan default date and the reported resolution date[19].

Exhibit 22 provides the TTR loan distribution across each region, in years. Resolution periods across regions range from 1.3 years to as long as 2.6 years because of a number of factors such as, differences in jurisdiction, bankruptcy laws, and remediation strategies adding significant complexity and timing. The average time to resolution across regions is 1.8 years.

Exhibit 22: Time to Resolution by Region (in years)

Region	25%	Median	75%	Inter-Quartile Range	Average
North America	0.6	1.5	2.6	2.0	1.7
Western Europe	0.3	0.7	1.9	1.6	1.4
Asia Pacific	1.0	2.2	4.0	3.1	2.6
Latin America	0.3	1.6	4.0	3.8	2.4
Oceania	0.4	0.8	2.0	1.6	1.3
Africa & Middle East	0.0	1.0	2.1	2.1	1.5
Eastern Europe	0.1	0.8	2.9	2.8	2.2
Overall	**0.4**	**1.2**	**2.5**	**2.1**	**1.8**

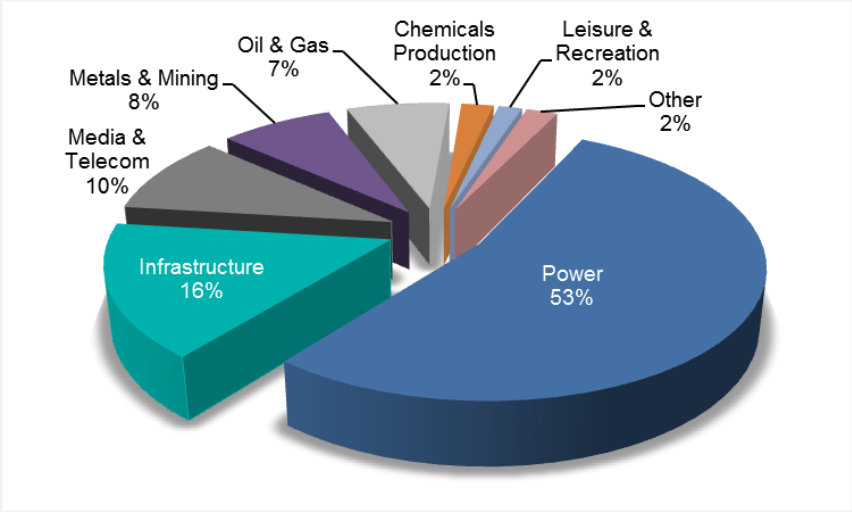
Source: Annual Global Project Finance Default and Recovery Study, December 2015

19 The performance date field that identifies the date a non-performing ("defaulted") project debt instrument is no longer considered to be "in default" completing all remediation(s) undertaken ("Resolution Date [Date no longer in default]")..

Recovery Rate By Industry

Exhibit 23 provides the distribution of recovery observances in the study by industry versus the reported year of emergence from default (i.e., on or before 1994 to 2014). The Power sector represents 53% of all recoveries.

Exhibit 23: Distribution of Recovered Tranches by Industry (1987-2014)



Source: Annual Global Project Finance Default and Recovery Study, December 2015

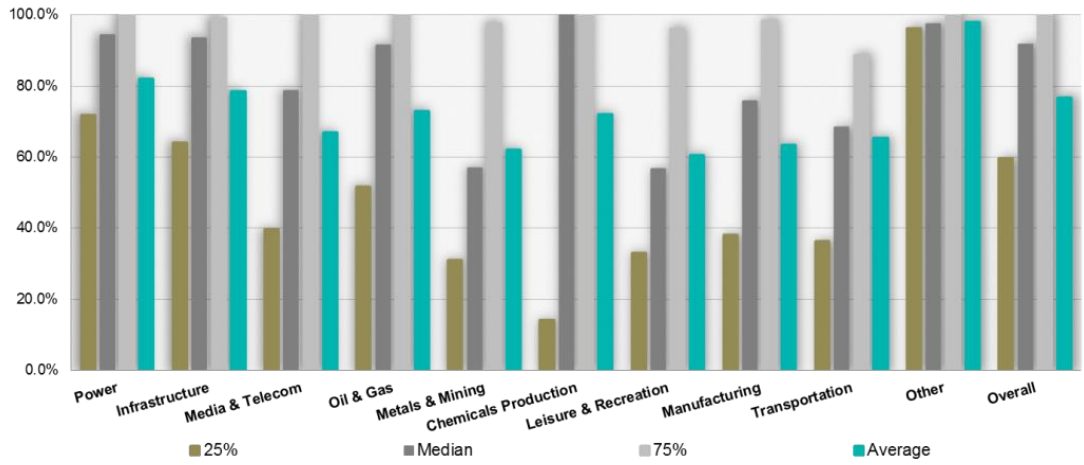
We now see that the 2002 to 2005 period, covering the large proportion of loan recoveries, is concentrated across five sectors: Power, Infrastructure, Media & Telecom, Metals & Mining, and Oil & Gas.

4.4.1 Recovery Rate Distribution by Industry

Exhibit 24 plots the statistical distribution of recovery rates by industry. The average discounted recovery rate was highest in the Power sector and weakest in Leisure & Recreation.

Several sectors, such as Metals & Mining and Media & Telecom, exhibit broad inter-quartile ranges indicating a notably wide distribution of recovery performance.

Exhibit 24 – Distribution of Discounted Recovery Rates by Industry



	Average Recovery				
Industry	0% - 20%	20% - 40%	40% - 60%	60% - 80%	80% - 100%
Power					✓
Infrastructure				✓	
Oil & Gas				✓	
Metals & Mining				✓	
Media & Telecom				✓	
Leisure & Recreation			✓		
Manufacturing			✓		
Transportation				✓	
Chemicals Production				✓	
Other					✓
Overall Industry				✓	

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Remediation periods across industry sectors vary on average from 1.1 years, for some infrastructure projects, to as long as 3.9 years for geo-thermal energy plants. The average resolution period across all industries is a little under two years.

Exhibit 25 also looks at the possible impact that the length of time it takes to reach resolution may have on final loss outcomes. All other factors aside, results indicate timing matters. The data suggests that shorter – less than 1 to 2 year remediation periods – on average, have stronger recovery rates compared to longer periods.

Exhibit 25: Time to Resolution and Average Recovery Rate

	Average Recovery				
Time to Resolution	0% - 24%	25% - 49%	50% - 69%	70% - 89%	90% - 100%
<1 year					✓
1-2 years				✓	
2-3 years				✓	
>3 years			✓		
Overall				✓	

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Recovery Rate By Resolution Type

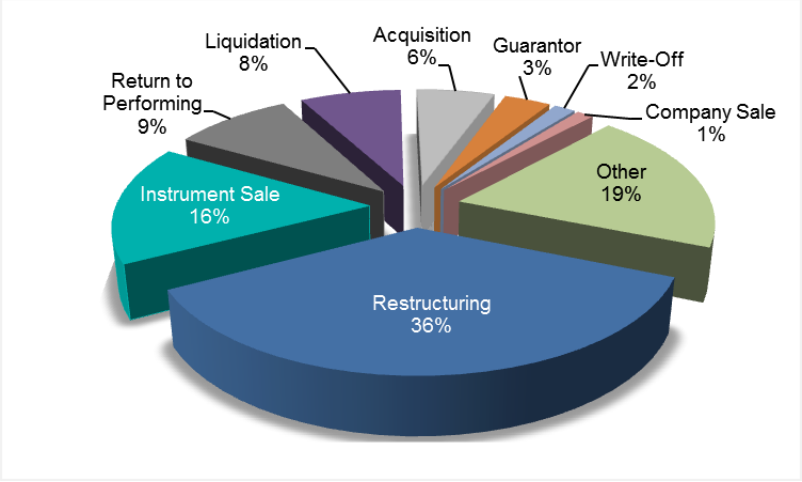
Based on the recovery information reported to the Study, S&P Global Market Intelligence classified each recovered project debt instrument into one of 10 standardized "resolution types" or "strategies" as follows:

- Restructuring
- Instrument sale
- Return to performing
- Liquidation
- Acquisition
- Guarantor
- Write-off
- Company sale
- Debt-to-equity exchange
- Not provided

Recovery Rate Distribution By Remediation Type

Exhibit 26 provides the distribution of recoveries in the Study across the 10 resolution types and compares the average discounted recovery for each strategy.

Exhibit 26: Recovery Rate by Resolution Strategy



	Average Recovery				
Resolution Type	0% - 20%	20% - 40%	40% - 60%	60% - 80%	80% - 100%
Restructuring					✓
Instrument Sale				✓	
Return to Performing					✓
Liquidation			✓		
Acquisition				✓	
Guarantor					✓
Write-Off		✓			
Company Sale				✓	
Debt-to-Equity Exchange			✓		
Other				✓	
Overall Across Resolution				✓	

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Restructuring represents the most utilized, as well as the strongest average recovery of all resolution strategies, in the Study once a project fails to meet its debt service obligation. Project financings have long tenors with principal typically being repaid later in the amortization period. Principal forbearance, forgiveness and/or interest modification restructuring limit the overall magnitude of principal loss, resulting in stronger recovery rates. Recoveries from restructuring seem to benefit from short, <1-2 year work out periods.

Instrument Sale includes loans that are sold at a loss. While this strategy allows a lender to cash-out quickly, it may not fully realize the optimal value of the loan given distressed, fire-sale conditions, as suggested by the its average recovery rate. Further, the data indicates that longer, 2 to 3 year remediation periods have relatively stronger recoveries.

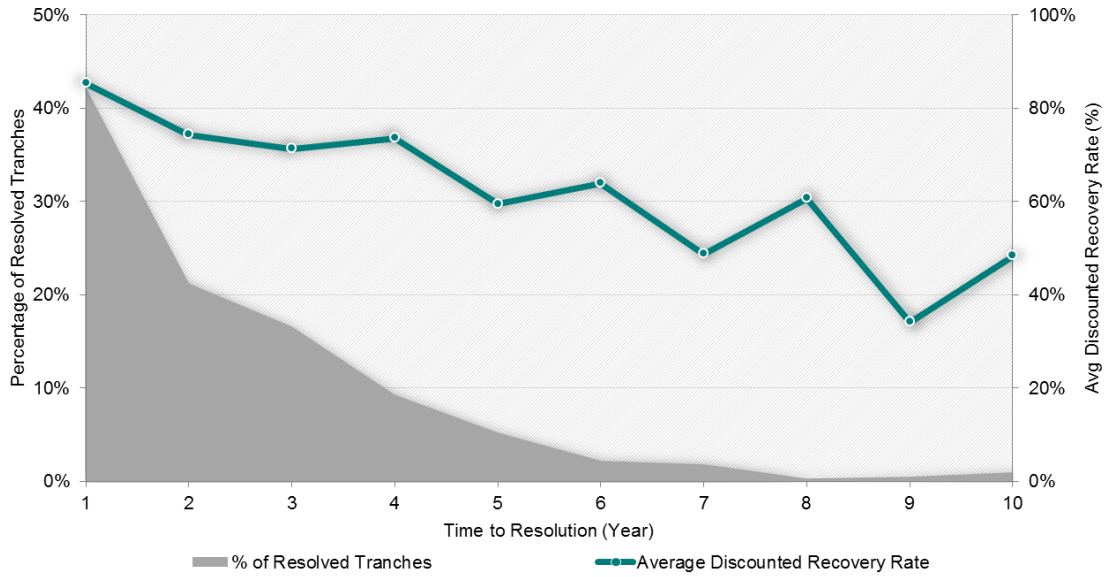
Liquidation of assets and Write-Off appear to be the resolution strategies of last resort resulting in weak average recovery. While duration seems to have meagre effect on liquidation-based recoveries, the data suggests that short, quick write-off strategies may help ameliorate loss severity.

Time to Resolution versus Recovery Rate

Exhibit 27 plots the percentage of resolved project loans by TTR versus the corresponding average discounted recovery rate at the time of emergence. The analysis suggests that an inverse relationship exists between the TTR and the discounted recovery rate (i.e., the longer the time to emerge from default, the lower the recovery rate). Longer recovery processes typically incur higher costs.

Note however, that a small number of resolved instruments were identified that have long TTR periods (as long as 10 years) with high discounted recovery rates.

Exhibit 27: Time to Resolution versus Recovery Rates



Source: Annual Global Project Finance Default and Recovery Study, December 2015

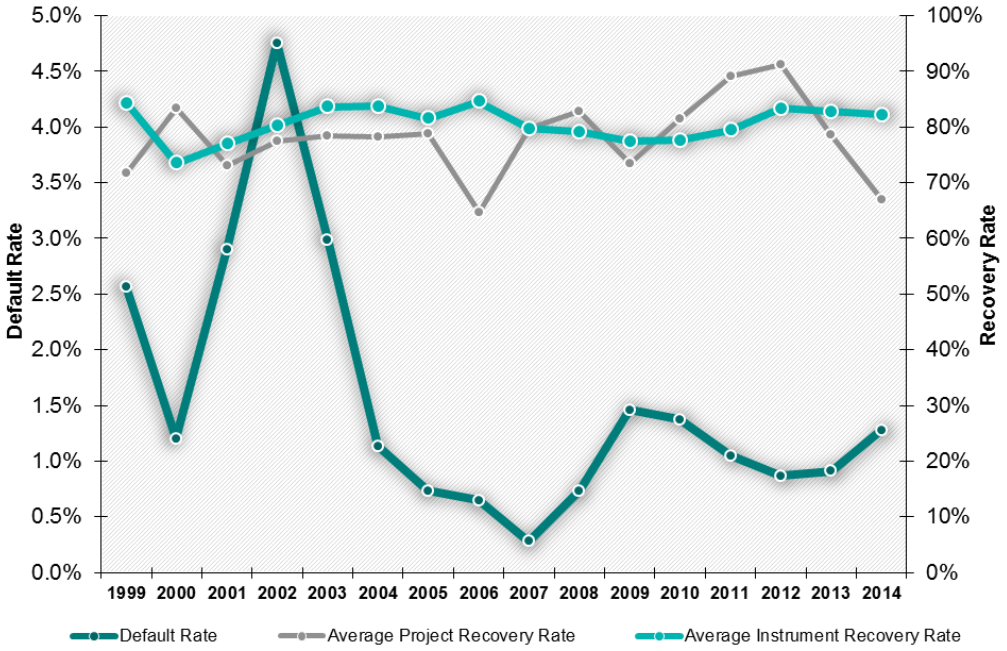
Annual Default Rate versus Recovery Rate by Resolution Year

Exhibit 28 plots the PF Study annual default rate versus the average discounted instrument- and project-level recovery rate (by year of resolution) since 1999[20].

Despite a 1% drop from 2013, the average discounted instrument-level recovery rate has been stable since 1999, averaging 81% over the last 15 years.

20 Data before 1999 are not used in this analysis because of insufficient resolution information.

Exhibit 28: PF Study Annual Default Rate versus Average Discounted Instrument- and Project-Level Recovery Rates (1999-2014)



	Resolution Year															
Average Recovery Rate	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Instrument-Level	84%	74%	77%	80%	84%	84%	82%	85%	80%	79%	77%	78%	80%	83%	83%	82%
Project-Level	72%	83%	73%	77%	78%	78%	79%	65%	80%	83%	73%	81%	89%	91%	79%	67%

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Average discounted project-level recovery rates exhibit more volatility because project recoveries are weighted by the reported instrument balance(s) at the TTD. Since 1999, project recoveries have averaged 78%.

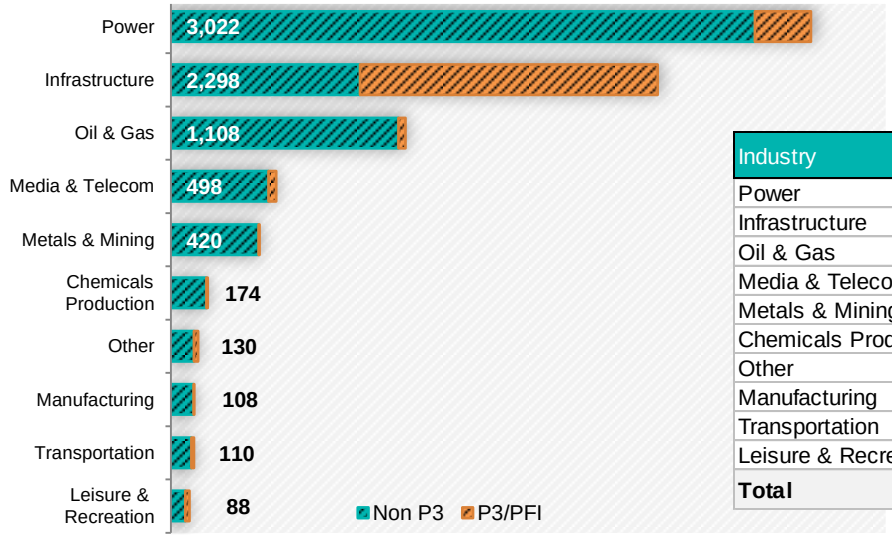
While there was a moderate decline between 2007 and 2011, the data suggests that project recoveries maintained relatively more stability through economic cycles and market downturn periods, performing independently of defaults. The calculated correlations between default rate and average instrument- and project-level recoveries are -0.11 and 0.08, respectively, suggesting little relationship between the two metrics.

5 Public Private Partnership/Private Finance Initiative Performance Overview

The PF Study includes 1,806 Public Private Partnership/Private Finance Initiative (P3/PFI) projects originated from 1987 to 2014.

Exhibit 29 provides the industry breakdown of P3/PFI to Non P3 projects in the Study.

Exhibit 29: P3/PFI Project Industry Distribution across PF Study



Industry	Non P3	P3/PFI	Total
Power	2,757	265	3,022
Infrastructure	894	1,404	2,298
Oil & Gas	1,075	33	1,108
Media & Telecom	461	37	498
Metals & Mining	414	6	420
Chemicals Production	168	6	174
Other	110	20	130
Manufacturing	108	3	111
Transportation	97	13	110
Leisure & Recreation	69	19	88
Total	**6,153**	**1,806**	**7,959**

Source: Annual Global Project Finance Default and Recovery Study, December 2015

The Study data indicates that P3/PFI project execution was/is most widely used in Western Europe (1,287 projects or 71% of all P3) to primarily finance Infrastructure projects. Within Infrastructure, the subsectors represented are public buildings (42%), transportation (38%), infrastructure other (11%), water, waste & utilities (5%), ports & terminals (2%) and renewable energy (1%).

This Release is an abbreviated version of the more in-depth analyses S&P performs using the data provided by the S&P Consortium. Publication of certain details is withheld to maintain confidentiality of participants.

New P3/PFI Issuance

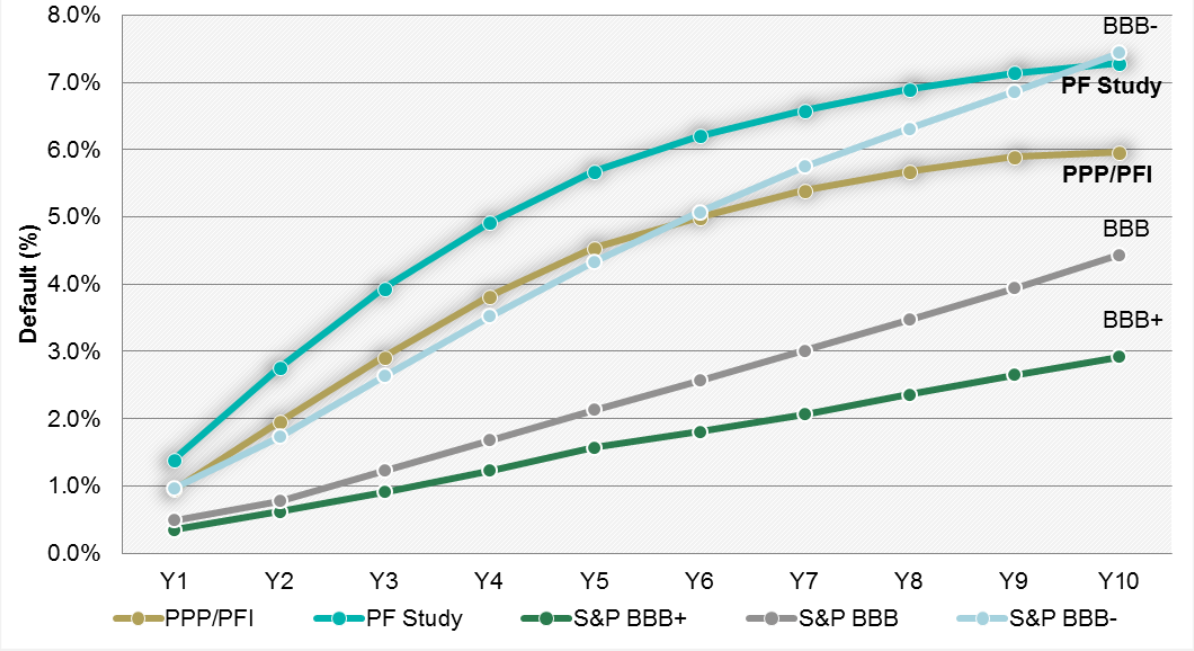
In 2014, there were 56 new projects using P3/PFI financing execution.

P3/PFI Default Rate Trends and Analysis

The PF Study includes 113 defaulted P3/PFI projects occurring from 1990 to 2014.

10-Year Cumulative Default Rate – P3/PFI Versus PF Study Versus S&P Rated Corporate Issuer
Exhibit 30 compares the 10-year cumulative default rate performance for P3/PFI projects against the 10-year cumulative default rates of the PF Study and against those for corporate bonds rated 'BBB+', 'BBB', and 'BBB-', based on origination year cohorts from 1988 to 2014.

Exhibit 30: 10-Year Cumulative Default Rate – P3/PFI Versus PF Study Versus S&P Rated Corporate Issuer (1988-2014)



Year	# Projects	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
1988	2	0	0	1	0	1	0	0	0	0	0
1989	3	0	1	0	1	0	0	0	0	0	0
1990	3	1	0	1	0	0	0	0	0	0	0
1991	4	0	1	0	0	0	0	0	0	0	0
1992	8	1	0	0	0	0	0	0	0	0	0
1993	12	0	0	0	0	0	0	0	0	0	0
1994	20	0	0	0	0	1	0	0	0	0	0
1995	28	0	0	0	1	1	0	0	0	0	0
1996	38	0	0	1	1	0	0	1	0	0	0
1997	65	0	2	1	0	1	1	1	0	0	0
1998	96	2	1	0	2	1	1	0	0	0	0
1999	143	1	0	2	1	1	0	0	0	0	0
2000	184	0	2	1	1	2	0	0	0	0	0
2001	245	2	2	1	2	0	0	0	0	0	0
2002	328	2	1	2	2	1	0	0	1	0	0
2003	387	1	3	2	2	2	0	1	0	0	1
2004	470	6	2	3	2	1	1	1	1	5	1
2005	580	2	3	3	1	3	1	2	5	2	0
2006	694	3	3	3	3	6	3	6	3	0	
2007	845	3	5	4	13	4	8	5	2		
2008	1028	5	11	20	11	12	8	4			
2009	976	12	21	12	14	10	5				
2010	1030	21	12	15	11	5					
2011	1027	12	15	11	6						
2012	1087	15	12	7							
2013	1107	13	7								
2014	1127	7									

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
P3/PFI	0.94%	1.94%	2.91%	3.81%	4.54%	4.99%	5.39%	5.68%	5.88%	**5.96%**
PF Study	1.39%	2.75%	3.93%	4.91%	5.67%	6.20%	6.58%	6.89%	7.14%	7.28%
S&P BBB+	0.35%	0.62%	0.91%	1.22%	1.57%	1.81%	2.06%	2.36%	2.65%	2.92%
S&P BBB	0.49%	0.78%	1.22%	1.68%	2.13%	2.57%	3.01%	3.48%	3.94%	4.44%
S&P BBB-	0.97%	1.73%	2.63%	3.52%	4.33%	5.07%	5.75%	6.31%	6.86%	7.44%

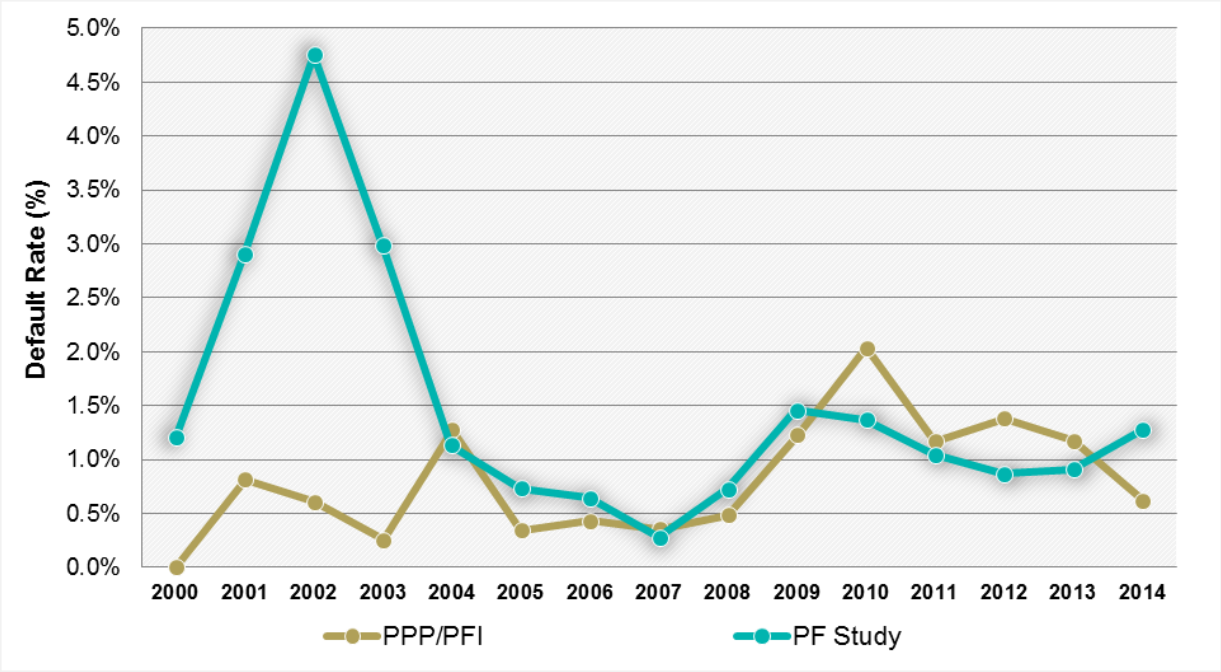
Source: S&P CreditPro®, Annual Global Project Finance Default and Recovery Study, December 2015

The 10-year cumulative default rate of P3/PFI projects at year 10 (6.0%) outperforms the PF Study rate (7.3%), at that point in time and is consistent with the 10-year cumulative default rate performance of corporate issuers rated between 'BBB' (4.4%) and 'BBB-' (7.4%). 23 out of 100 projects that received public rating are categorized as P3/PFI.

Annual Default Rate – P3/PFI versus PF Study

To identify cyclical downturns or particular periods of volatility, annual default rates for P3/PFI projects were compared against the annual default rate performance of projects in the overall PF Study for the period 2000 to 2014. The results are illustrated in Exhibit 31.

Exhibit 31: Annual Default Rate – P3/PFI versus PF Study (2000-2014)



Annual Default Rate	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
P3/PFI	0.00%	0.82%	0.61%	0.26%	1.28%	0.34%	0.43%	0.36%	0.49%	1.23%	**2.04%**	1.17%	1.38%	1.17%	0.62%	0.81%
PF Study	1.20%	2.90%	**4.75%**	2.99%	1.13%	0.73%	0.64%	0.28%	0.73%	1.46%	1.37%	1.05%	0.87%	0.91%	1.27%	1.49%

Source: Annual Global Project Finance Default and Recovery Study, December 2015

The P3/PFI annual default rate improved from 1.2% in 2013 to 0.6% in 2014. Over the last 15 years, P3/PFI the average annual default rate outperforms the overall PF Study by 0.7%.

From 2000, P3/PFI default performance was essentially stable, averaging 0.5% until 2009 when its annual default rate more than doubled reaching 1.2%, signaling the start of a stressed five year period from 2009 to 2013.

The majority of all P3 defaults occurring during this period are concentrated in infrastructure – particularly, toll-road transportation, public buildings, and ports & terminals segments. Likely impacted by the weakened global economy following the financial crisis, these projects' operations became particularly vulnerable to demand volatility, declines in usage/traffic volumes and revenues, and widespread cutbacks in government spending.

Not only were infrastructure projects exposed to market downturn volatility, but available phase data also indicates that 34% of infrastructure defaults occurred during construction, suggesting that costs overruns, technology and/or construction problems were also factors contributing to underperformance. The sector's average time to default was 5.4 years.

A significant proportion of defaults between 2009 and 2013 were concentrated in just five countries: Spain, the U.K., the U.S., Greece, and Portugal.

Moreover, while P3/PFI financing may include structural credit provisions or guarantees that may not be available to similar Non P3 deals, annual default rate data suggests that P3 execution does not shield a project from technology and construction delays, cyclical downturns periods or market volatility.

P3/PFI Recovery Rate Trends and Analysis

The PF Study includes 192 P3/PFI loans across 23 projects that have emerged from default and have been remediated between 1990 and 2009.

This release is an abbreviated version of the more in-depth analyses S&P performs using the data provided by the S&P Consortium. Publication of certain details is withheld to maintain confidentiality of participants.

P3/PFI average loss severity rates were lower than non-P3 projects across all resolution strategies -- some by as much as 20% on a discounted basis.

6 ECA Facility Support Performance Overview

Fifty-one (51) project loans receive support from ECAs. Exhibit 32 summarizes the average discounted recovery rate and the corresponding number of loans by region and industry.

The average discounted recovery rate for ECA projects was 79.6%; while slightly higher than the PF Study (77.2%), it was lower than the P3/PFI rate (84.3%).

The Power sector had the highest number of instruments with ECA facility support (61%). Regionally, the majority of loans were in Asia Pacific (78%).

Exhibit 32: Recovery Rate and Number of Tranches for Projects with ECA Facilities

Region	Power		Media & Telecom		Chemicals Production		Manufacturing		Infrastructure		Leisure & Recreation		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Asia Pacific	26	82.9%	2	73.0%	5	99.0%	4	75.6%	2	52.9%	1	76.0%	40	82.0%
Latin America	2	77.9%	2	70.6%			1	81.1%					5	75.7%
North America	3	94.2%											3	94.2%
Africa & Middle East			2	14.8%									2	14.8%
Eastern Europe											1	90.1%	1	90.1%
Total	**31**	**83.7%**	**6**	**52.8%**	**5**	**99.0%**	**5**	**76.7%**	**2**	**52.9%**	**1**	**90.1%**	**51**	**79.6%**

Source: Annual Global Project Finance Default and Recovery Study, December 2015

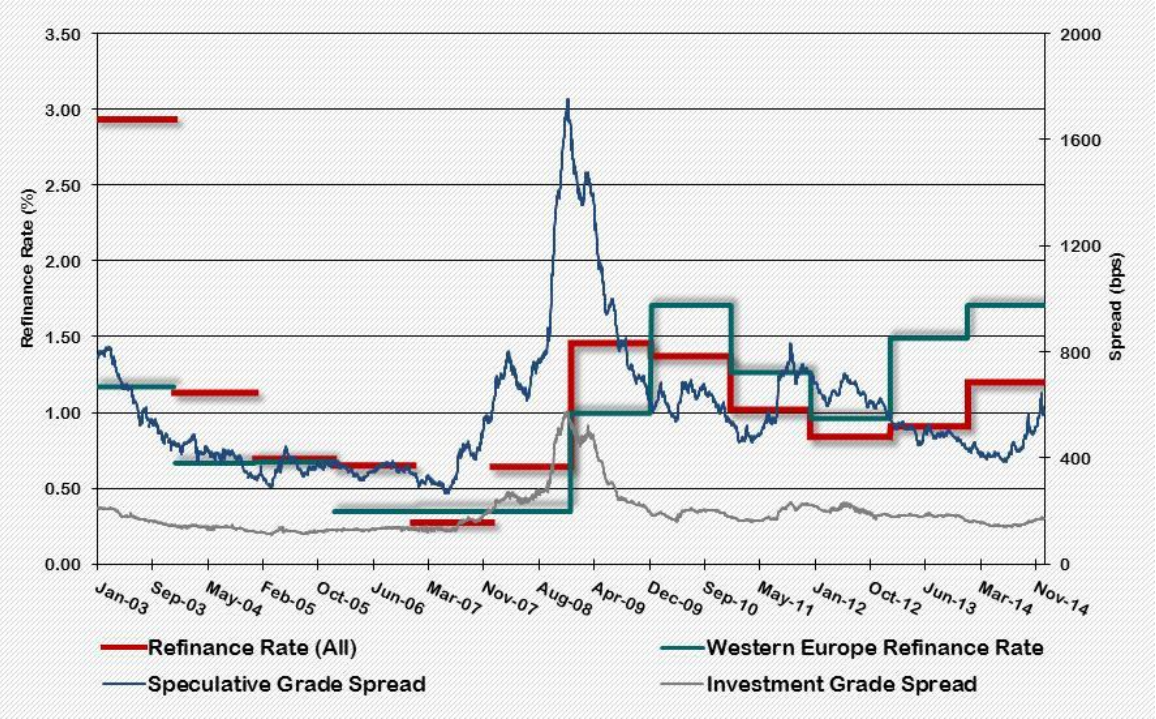
7 Annual Project Finance Refinance Rates

A project instrument payment can be reported as, “prepaid before maturity” when the loan may have been “refinanced.” Based on the Study data set, a refinance analysis (Exhibit 33) was performed correlating refinance rates with investment and non-investment grade spreads.

In 2014, Western Europe had the highest refinance rate with 1.71%, experiencing a 0.83% increase, whilst Asia-Pacific had the lowest rate at 0.25%.

Refinance rates peaked in 2003 coinciding with a period of narrow spreads across both investment and speculative grade bonds in the U.S. Since 2003, rates continued to drop until bottoming out in 2007 at 0.28%. During this period, investment grade and speculative grade spreads widened peaking in December 2008 at 578 bps and 1,754 bps, respectively

Exhibit 33: Annual Project Refinance Rate and Daily Credit Spreads



Source: S&P CreditPro®, Standard & Poor's Composite Credit Spreads

Exhibit 34 suggests that average annual refinance rates have a weak-to-moderate correlation with the annual average credit spreads. The correlation between the annual average refinance rates and the annual average investment grade spreads was 0.10 while the correlation between the annual average refinance rates and the annual average speculative grade spreads was 0.27.

In terms of differences by region, Africa & Middle East refinance rates had little relationship with average annual credit spreads suggested by a -0.22 and -0.15 correlation with investment grade and speculative grade spreads, respectively.

Exhibit 34: Correlation between Annual Project Refinance Rates and Credit Spreads by Region

													Correlation	
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Investment Grade	Speculative Grade
North America	6.80%	2.28%	0.76%	1.29%	0.00%	1.46%	4.13%	2.08%	1.18%	0.66%	0.43%	0.00%	0.3011	0.4398
Western Europe	1.18%	0.67%	0.69%	0.35%	0.37%	0.37%	1.00%	1.71%	1.27%	0.97%	1.49%	1.71%	-0.0263	0.0764
Asia Pacific	1.69%	0.40%	0.37%	0.72%	0.00%	0.30%	0.65%	0.00%	1.29%	0.62%	0.28%	0.25%	0.0334	0.1772
Africa & Middle East	1.65%	0.50%	0.44%	0.73%	0.00%	0.60%	0.00%	0.00%	0.00%	0.33%	0.33%	0.96%	-0.2227	-0.1469
Overall	2.94%	1.13%	0.69%	0.65%	0.28%	0.64%	1.46%	1.37%	1.02%	0.84%	0.91%	1.20%	0.1000	0.2710

Source: Annual Global Project Finance Default and Recovery Study, December 2015

8 Publicly Rated Project Finance Deals

In 2013, the PF Study started to collect and report project credit ratings information. There are 100 active projects in the study that are publicly rated.

Exhibit 35 shows the distribution of public-project ratings by industry and region. The majority of the deals are rated 'BBB' (49%), while others are distributed across other rating levels. Annual changes to public ratings will be tracked in future reports.

Exhibit 35: PF Study Projects with Public Ratings

	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	CCC+	Total	%
Industry															
Oil & Gas	8	1	4	2	1	2	9	1		3				31	31%
Infrastructure				3	6	10	4	2		2	1		1	29	29%
Power		1		1	4	6	4	3	1	2	1	5		28	28%
Transportation	2	1		1	1	1					1			7	7%
Media & Telecom								1		2	1			4	4%
Metals & Mining					1									1	1%
Industry Total	**10**	**3**	**4**	**7**	**13**	**19**	**17**	**7**	**1**	**9**	**4**	**5**	**1**	**100**	**100%**
Region															
Western Europe				3	8	12	4	4		4	4	1		40	40%
Oceania	8				1	4	9	1					1	24	24%
North America		1	1	3	3	1	4	2	1	4		1		21	21%
Africa & Middle East	2	2	3	1		1						3		12	12%
Latin America					1	1								2	2%
Eastern Europe										1				1	1%
Region Total	**10**	**3**	**4**	**7**	**13**	**19**	**17**	**7**	**1**	**9**	**4**	**5**	**1**	**100**	**100%**
%Rating Total	10%	3%	4%	7%	13%	19%	17%	7%	1%	9%	4%	5%	1%	100%	

Source: Annual Global Project Finance Default and Recovery Study, December 2015

Appendix

Definitions and Methodology

All points in time information for this Study is as of December 31, 2014.

This project finance default and recovery study uses the performance information of individual project finance debt issues provided by 35 lenders and investors participating (or have participated) in the S&P Project Finance Default and Recovery Consortium.

This Study analyzes the default and recovery performance of 7,959 project finance transactions originated between December 31, 1980 and December. 31, 2014. We categorize these project financings into one of 10 industry sectors: Power, Infrastructure, Oil & Gas, Media & Telecom, Metals & Mining, Chemicals Production, Leisure & Recreation, Transportation, Manufacturing, and Other. We also categorize the transactions into one of seven regions: Western Europe, North America, Asia Pacific, Africa & Middle East, Latin America, Oceania, and Eastern Europe.

The corporate data used in this Study includes all issuer credit ratings worldwide.

Static Pool Methodology

S&P Global Market Intelligence conducted this study on the basis of groupings called static pools, which we formed by grouping projects by performance status at the beginning of each year the study covered. We then follow each static pool from that point forward. Our analysis assigned all deals included in the study to one or more static pools. The pools are static in that their membership is constant, similar to a buy-and-hold portfolio.

When a project defaults, we assign that default back to all of the static pools to which the project belonged. S&P Global Market Intelligence's use of the static pool methodology is intended to mitigate certain issues that may arise in estimating default rates and allow calculations across multiple time horizons.

Annual Default Rate Calculation

Annual default rates were calculated for each static pool: first in units as percentages with respect to the number of projects in each category. Finally, these percentages were combined to obtain cumulative default rates for the annual periods the Study covered.

Marginal Default Rate Calculation

We define the percentage of projects that default in N^{th} year of performance history as the marginal default rate for that year.

Cumulative Average Default Rate Calculation

Cumulative default rates that average the experience of all static pools were determined by calculating marginal default rates, conditional on survival (survivors being non-defaulters) for each possible time horizon and for each static pool, weight-averaging the conditional marginal default rates, and accumulating the average conditional marginal default rates. Conditional default rates are calculated by dividing the number of projects in a static pool that default at a specific time horizon, by the number of projects that survived (did not default) to that point in time. Weights are

based on the number of projects in each static pool. Cumulative default rates are one minus the product of the proportion of survivors (non-defaulters).

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