



## CFADS & DSCR DYNAMIC GRAPH –

### CFADS / DSCR Dynamic Graph – Useful Tool for Debt Sizing and Credit Analysis

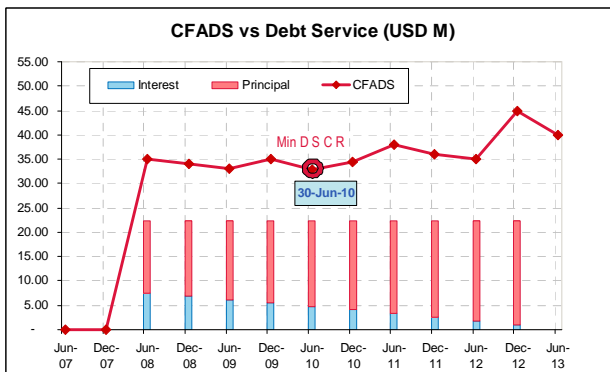
In this article, we introduce how to use a dynamic graph of CFADS/DSCR as a useful tool for debt sculpting/sizing and credit analysis, particularly in project financings.

In Project Finance, Cashflow Available for Debt Service (CFADS) is analysed by project lenders (financiers) to determine debt sizes and repayment criteria. With CFADS larger than Debt Service, it is clear that there is a buffer in the project to protect the lenders from adverse scenarios.

CFADS also drives the calculation of the debt metrics, including the most common Debt Service Coverage Ratio (DSCR). A DSCR of less than one means that the CFADS are not strong enough to support the level of debt.

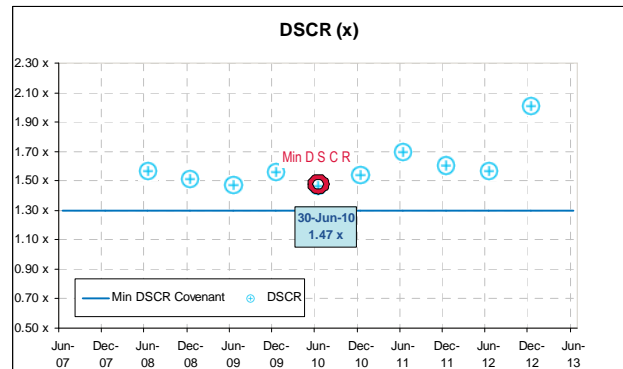
### CFADS / DSCR Dynamic Graph

This example shows the debt repaid as an Annuity ("Credit Foncier"). The principal and interest together sum up to an equal amount each period, with more principal repaid in the later periods since the interest component decreases in line with the debt balance.



Screenshot #1: Graph of CFADS vs Debt Service

The first graph above illustrates the proportions of CFADS compared with Total Debt Service. In addition, it also highlights the period when the CFADS is the weakest which, in this example, is shown as "Min DSCR at 30-Jun-10".



Screenshot #2: Graph of DSCR's relative to Term Sheet covenant

The second graph shows the DSCR's relative to the Term Sheet DSCR Covenant of 1.30x. In addition, this graph also shows the period of minimum DSCR, ie "Min DSCR of 1.47x on repayment date of 30-Jun-10".

"Dynamic graphs can be a very useful tool for project financiers particularly in the "debt sizing" or "credit analysis / assessment". Advanced debt analysis techniques are covered and discussed in our Debt Modelling Masterclass."

Nick Crawley, Managing Director  
Navigator Project Finance

### Application of the Dynamic Graph in the Project Finance analysis

The above graphs dynamically highlight the period when the minimum DSCR occurs, which is an important tool when the project finance lenders perform the following

#### Sculpting Debt Repayments

The above charts highlight the weakest DSCR and will thus assist lenders in debt sculpting to ensure that lower principal repayment is applied in a period with lower CFADS

#### Structuring the Grace Period

Grace Period is the number of periods where there is no obligation to repay the principal. The above charts also assist the lenders to determine the Grace Period, which is particularly common in projects where there is a ramp-up phase, such as toll roads and infrastructure projects



## Scenarios and Sensitivity Testing

As graphs are dynamic, they will always highlight the minimum DSCR when the lenders perform testing of Scenarios and Sensitivities.

The chart can be copied and pasted to the credit papers or Information Memorandum to illustrate the results under various scenarios.

## How to Create the Graph?

Below are the suggested steps to create the graph. The two graphs illustrated above can be plotted using the data as shown in the table.

Period Start	Jan-08	Jul-08	Jan-09	Jul-09	Jan-10	Jul-10
Period End	Jun-08	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10
Construction Operations						
<b>DSCR</b>						
<u>Numerator</u>						
CFADS	35.00	34.00	33.00	35.00	32.80	34.50
<u>Denominator</u>						
Interest	7.47	6.93	6.18	5.60	4.82	4.16
Principal	14.89	15.48	16.17	16.80	17.53	18.23
Total Debt Service	22.36	22.41	22.34	22.40	22.35	22.39
<b>DSCR</b>	1.57 x	1.52 x	1.48 x	1.56 x	1.47 x	1.54 x

Screenshot #3: Data to create Graph

The two graphs illustrated above can be plotted using the data as shown in the table.

### Step 1: Create the dynamic "Min DSCR" Object

First, create the desired objects and text (using the varieties of auto shapes/text box from Drawing toolbar in Excel). Then select the objects you want to group (hold down SHIFT while you select each group) and click Draw – Group on the Drawing toolbar.



Screenshot #4: Example of "Min DSCR" object

#### Public Courses by Navigator Project Finance

- Project Finance Modelling (A)
- Project Finance Modelling (B)
- Debt Modelling Masterclass
- VBA for Financiers

### Step 2: Create the Dynamic Series

This is created by identifying the period when the minimum DSCR occurs. The formula for "CFADS for Min DSCR" is:

"If Flag for Minimum = 1, then the cell is equal to the CFADS, or else equal to any negative number"

Following the same logic, the formula for "Min DSCR" is:

"If Flag for Minimum = 1, then the cell is equal to the DSCR, or else equal to any negative number"

Period Start	Jan-08	Jul-08	Jan-09	Jul-09	Jan-10	Jul-10
Period End	Jun-08	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10
Construction Operations						
<b>DSCR</b>	1.57 x	1.52 x	1.48 x	1.56 x	1.47 x	1.54 x
Flag for Minimum						
<b>Graphs</b>						
CFADS when Min DSCR	(10.00)	(10.00)	(10.00)	(10.00)	32.80	(10.00)
Min DSCR	-10.00 x	-10.00 x	-10.00 x	-10.00 x	1.47 x	-10.00 x
Min DSCR Covenant	1.30 x	1.30 x	1.30 x	1.30 x	1.30 x	1.30 x

Screenshot #5: Calculation to identify period of minimum DSCR

### Step 3: Add Dynamic Series to the Graph

The "CFADS for Min DSCR" series is added to the first graph and the "Min DSCR" series is added to the second graph. The Chart Type used for the dynamic series is Line with Markers. It is important to set the Minimum Scale for the Format Axis in the graphs to be at least "zero" because it is not needed to show the negative numbers in the above table.

### Step 4: Replace the Markers with "Min DSCR" Object

The last step is to replace the Markers with the previously created "Min DSCR" object and remove the line on the dynamic series. To replace the Markers, copy the "Min DSCR" object, then select the Markers on the graph and paste the object. To remove the line, double-click the dynamic series on the graph, then select Patterns – Line – None Optionally, data label could be added to the dynamic series to highlight when the minimum DSCR occurs and/or what the minimum DSCR is. This can easily be done by double-clicking the dynamic series on the graph, then select Data Labels – Category Name or Value

"Our Graphing Workshop is a great way to quickly improve your team's graphing techniques. The course can be presented to your team anywhere in the world."

Nick Crawley, Managing Director  
Navigator Project Finance

## About Navigator Project Finance

Founded in 2004, Navigator Project Finance Pty Ltd (Navigator) is the project finance modelling expert. Headquartered in Sydney, Australia, Navigator is raising the global benchmark in financial modelling services to the project finance sector. Navigator designs and constructs financial models for complex project financings, offers training courses throughout the Middle East, Asia and Europe, and conducts independent model reviews of project finance transaction models. Navigator delivers fast, flexible and rigorously-tested project finance services that provide unparalleled transparency and ease of use.

Customers include market leaders such as Deutsche Bank, ANZ Investment Bank, Bovis Lend Lease, Oxiana, Mirvac Property, Westpac and the Commonwealth Bank of Australia, together with leaders from the finance, mining, property, utilities, banking, chemical and infrastructure sectors.

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