RARE: Case Study
Standardised infrastructure analysis

Presented by Rickard Wärnelid
London 9 July 2015
INTRODUCTION

How can we develop an ecosystem of financial models with the right level of standardisation in an organisation with ~300 models used on a daily basis for investment decisions worth USD 9bn and >10 model owners/users?

Case study: RARE Infrastructure
AGENDA

• Introduction
• Rare infrastructure
• Challenges
• Considerations
• Solution architecture
A BUSINESS CYCLE FROM A MODELLING PERSPECTIVE

New project/venture
- Board paper submission
- Business cases
- Equity investment

Decision process
- Valuation process
- Funding analysis
- Project finance structure
- PFI/758/P3 bid process

Decision
- Board paper submission
- Bid submission
- Financial close
- IPO
- Press release

Operations
- Construction reporting
- System integration
- Performance analysis
- Service contracts

Transaction & support services

High level analysis
- Strategic modelling
- Business modelling
- Funding analysis

Decision analysis
- Valuation models
- Project finance models
- Scenario/What-if models
- Negotiation models

Assurance
- Model audit
- Documentation review
- Scenario assurance

Reporting
- Operational analysis
- Forecasting
- Debt covenants
- Investor return analysis
- Treasury modelling

CORALITY TRAINING ACADEMY

Training Academy, financial modelling, valuations, project finance, LBO modelling, Excel, forecasting and VBA
Focus only on global listed infrastructure

Read More

Stable Returns
over the long-term, from our unique portfolio construction approach. Read more
RARE INFRASTRUCTURE

- Global listed infrastructure fund manager
- ~USD 9bn under management
- Industry focus: airports, gas, electricity, water and roads

Solid foundations: infrastructure duo takes consistency crown

Richard Elmslie
32/71 in Equity - Global Themes
(Performance over 3 years)
Average Total Return: 49.07%

Nick Langley
31/71 in Equity - Global Themes
(Performance over 3 years)
Average Total Return: 49.07%
PORTFOLIO ANALYSIS – TRADITIONAL APPROACH

- Models are ‘owned’ by Analysts with none or little insight from others
- Investment analysis is prepared with a manual intervention (read: Risk for error)
- Investment metrics not comparable across Analysts given different methodology
- Macro economic scenarios are not consistent and require manual work
- Version control is commonly completely missing

Industry challenge:
Complete lack of transparency in modelling

Rare decided to change all this in an industry leading initiative
CHALLENGE

• ~300 investment assets (and models) under analysis
• Consistent analysis across teams/individual Analysts
• Daily/weekly model update requirements
• Functional upgrades over time as the environment changes
• Highly customised model requirements for specific assets
CONSIDERATIONS

- Software vs. Excel
- Standard vs. flexibility
- Speed of analysis / updates
- Size of models (2,000-5,000 UF)
INDIVIDUAL ASSET MODEL - STRUCTURE

- Flexibility for specific asset calculations
- Standardised (but optional) elements

Val.Assumptions  →  Val.calcs  →  Investment committee

- 100% Standardisation
- Customisation through Assumptions only

One workbook
SCENARIO WORKFLOW – PORTFOLIO ANALYSIS

RARE Infrastructure: Case Study

Bloomberg

3 x Macro economic scenarios

VBA/Spider

300 x Models

VBA / Spider

Portfolio model(s)
WHAT’S A ‘SPIDER’?

- A standardised valuation template is integrated in all investment models (up to 300)
- A native workbook integration is used between operations and valuation for fast an enjoyable spreadsheet operations (i.e. they are both in one workbook)
- The spider works through the ‘live’ version of the investment models and ‘upgrades’ relevant sections to the latest version (through VBA)
- Integrity checks are critical for the success of the spider
SMART FINANCIAL MODELLING – 10 GUIDING PRINCIPLES

01 Adopt guidelines, not rules
02 Think about the end user
03 Focus on transparency
04 Keep it simple
05 Use an intuitive structure
06 Communicate a story
07 Incorporate powerful analysis
08 Build for the future
09 Keep the model neat
10 Make it easy to find errors
### Tax and Depreciation

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SL</td>
<td>40 Yr(s)</td>
<td>2.5%</td>
<td>0.6%</td>
<td>0.6%</td>
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<tr>
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<td>6.7%</td>
<td>1.7%</td>
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<tr>
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<td>10 Yr(s)</td>
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<td>2.5%</td>
<td>2.5%</td>
</tr>
<tr>
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<td>5 Yr(s)</td>
<td>20.0%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>SL</td>
<td>3 Yr(s)</td>
<td>33.3%</td>
<td>8.3%</td>
<td>8.3%</td>
</tr>
<tr>
<td>SL</td>
<td>5 Yr(s)</td>
<td>20.0%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>SL</td>
<td>40 Yr(s)</td>
<td>2.5%</td>
<td>0.6%</td>
<td>0.6%</td>
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</tbody>
</table>

#### Key Points
- Growth expenditure
- Maintenance expenditure
- Spare 3
- Spare 4
- Spare 5
- Financing fees
- All project trust

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RARE Infrastructure: Case Study

9 July 2015
### Scenario Analysis

Scenario analysis is the core functionality of a financial model. Using a structured approach our clients gain deep strategic insights which support a stronger decision process.

#### Sensitivities

<table>
<thead>
<tr>
<th>Traffic Base</th>
<th>CapEx Up</th>
<th>Traffic Growth Low</th>
<th>Toll Price Down</th>
<th>OpEx Up</th>
<th>Interest Rate Up</th>
<th>Inflation</th>
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<tr>
<td>1</td>
<td></td>
<td></td>
<td>5.00%</td>
<td>-</td>
<td>0.25%</td>
<td>1.00%</td>
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<tr>
<td>2</td>
<td></td>
<td></td>
<td>(0.20%)</td>
<td>-</td>
<td>5.00%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>(5.00%)</td>
<td>-</td>
<td>0.25%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>0.25%</td>
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</table>

**Flexibility:**

A Scenario Manager is put together to run scenario analysis.

#### DSCR vs LLCR

<table>
<thead>
<tr>
<th>Case</th>
<th>Min</th>
<th>Min Date</th>
<th>Average</th>
<th>Min</th>
<th>Min Date</th>
<th>@ COD</th>
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<tbody>
<tr>
<td>Traffic Base</td>
<td>1.20x</td>
<td>31-Dec-16</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-22</td>
<td>1.20x</td>
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<tr>
<td>CapEx Up</td>
<td>1.20x</td>
<td>31-Dec-20</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-22</td>
<td>1.20x</td>
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<tr>
<td>Traffic Growth</td>
<td>1.20x</td>
<td>31-Dec-16</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-22</td>
<td>1.20x</td>
</tr>
<tr>
<td>Toll Price Down</td>
<td>1.20x</td>
<td>31-Dec-16</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-22</td>
<td>1.20x</td>
</tr>
<tr>
<td>OpEx Up</td>
<td>1.20x</td>
<td>31-Dec-17</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-22</td>
<td>1.20x</td>
</tr>
<tr>
<td>Interest Rate Up</td>
<td>1.20x</td>
<td>31-Dec-08</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-19</td>
<td>1.20x</td>
</tr>
<tr>
<td>Inflation</td>
<td>1.20x</td>
<td>31-Dec-16</td>
<td>1.20x</td>
<td>1.20x</td>
<td>31-Dec-22</td>
<td>1.20x</td>
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A financial model needs to be a dynamic representation of future scenarios. Using fully dynamic timing calculations provide our clients with flexibility to analyse a broad range of outcomes.

### Timing

**Stage 1**

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<th>Quarterly</th>
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<td>Start Date</td>
<td>1-Jul-13</td>
<td>1-Mar-14</td>
</tr>
<tr>
<td>Duration</td>
<td>6 Mth(s)</td>
<td>9.00 Yr(s)</td>
</tr>
<tr>
<td>End Date</td>
<td>31-Dec-13</td>
<td>28-Feb-23</td>
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</table>

### Scenario: Base Case

<table>
<thead>
<tr>
<th></th>
<th>1-Jul-13</th>
<th>1-Aug-13</th>
<th>1-Sep-13</th>
<th>1-Oct-13</th>
<th>1-Nov-13</th>
<th>1-Dec-13</th>
<th>1-Jan-14</th>
<th>1-Feb-14</th>
<th>1-Mar-14</th>
<th>1-Jun-14</th>
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</thead>
<tbody>
<tr>
<td>Construction</td>
<td>31-Jul-13</td>
<td>31-Aug-13</td>
<td>30-Sep-13</td>
<td>31-Oct-13</td>
<td>30-Nov-13</td>
<td>31-Dec-13</td>
<td>31-Jan-14</td>
<td>28-Feb-14</td>
<td>31-May-14</td>
<td>31-Aug-14</td>
</tr>
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</table>
Our approach to financial modelling includes a continuous focus on functionality for flexible, structured and powerful analysis.

### Contracted volume

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank: Downside</td>
<td>Tonne</td>
<td>1,300</td>
<td>1,333</td>
<td>1,366</td>
<td>1,400</td>
<td>1,435</td>
<td>1,471</td>
<td>1,508</td>
<td>1,545</td>
<td>1,584</td>
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<tr>
<td>Bank Base</td>
<td>Tonne</td>
<td>1,450</td>
<td>1,486</td>
<td>1,523</td>
<td>1,561</td>
<td>1,601</td>
<td>1,641</td>
<td>1,682</td>
<td>1,724</td>
<td>1,767</td>
</tr>
<tr>
<td>Equity: Prospectus</td>
<td>Tonne</td>
<td>1,520</td>
<td>1,558</td>
<td>1,597</td>
<td>1,637</td>
<td>1,678</td>
<td>1,720</td>
<td>1,763</td>
<td>1,807</td>
<td>1,852</td>
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<tr>
<td>Equity: Upside</td>
<td>Tonne</td>
<td>1,750</td>
<td>1,794</td>
<td>1,839</td>
<td>1,885</td>
<td>1,932</td>
<td>1,980</td>
<td>2,029</td>
<td>2,080</td>
<td>2,132</td>
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<tr>
<td>Applied: Bank Base</td>
<td>Tonne</td>
<td>1,450</td>
<td>1,486</td>
<td>1,523</td>
<td>1,561</td>
<td>1,601</td>
<td>1,641</td>
<td>1,682</td>
<td>1,724</td>
<td>1,767</td>
</tr>
</tbody>
</table>

### Tariff

<table>
<thead>
<tr>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank: Downside</td>
<td>USD/Tonne</td>
<td>205</td>
<td>212</td>
<td>220</td>
<td>227</td>
<td>235</td>
<td>243</td>
<td>252</td>
<td>261</td>
<td>270</td>
</tr>
<tr>
<td>Bank Base</td>
<td>USD/Tonne</td>
<td>217</td>
<td>225</td>
<td>232</td>
<td>241</td>
<td>249</td>
<td>258</td>
<td>267</td>
<td>276</td>
<td>286</td>
</tr>
<tr>
<td>Equity: Prospectus</td>
<td>USD/Tonne</td>
<td>234</td>
<td>242</td>
<td>251</td>
<td>259</td>
<td>269</td>
<td>278</td>
<td>288</td>
<td>298</td>
<td>308</td>
</tr>
<tr>
<td>Equity: Upside</td>
<td>USD/Tonne</td>
<td>250</td>
<td>259</td>
<td>268</td>
<td>277</td>
<td>287</td>
<td>297</td>
<td>307</td>
<td>318</td>
<td>329</td>
</tr>
<tr>
<td>Applied: Bank Base</td>
<td>USD/Tonne</td>
<td>217</td>
<td>225</td>
<td>232</td>
<td>241</td>
<td>249</td>
<td>258</td>
<td>267</td>
<td>276</td>
<td>286</td>
</tr>
</tbody>
</table>
# INTEGRITY CHECKS / EXAMPLE

**Integrity checks**

*Fundamental tests built into the model that should never fail in a stable model*

<table>
<thead>
<tr>
<th>Source</th>
<th>Result</th>
<th>Outcome</th>
<th>Yes/No</th>
<th>Applied</th>
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</thead>
<tbody>
<tr>
<td>Balance sheet (m/q) 1</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Balance sheet (m/q) 2</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Balance sheet (a) 1</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Balance sheet (a) 2</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Detailed = annual</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Sources &amp; uses</td>
<td>12.00</td>
<td>Fail</td>
<td>Yes</td>
<td>Fail</td>
</tr>
<tr>
<td>Spare</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Macro to run</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Balance sheet: project trust</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
<tr>
<td>Balance sheet: asset trust</td>
<td>-</td>
<td>Ok</td>
<td>Yes</td>
<td>Ok</td>
</tr>
</tbody>
</table>

This case: Fail
All cases: Fail
LESSONS LEARNT

- Build a culture of model transparency
- Carefully assess the needs for flexibility and standardisation per module
- Focus on training and education to clearly demonstrate the benefits at all levels
- Automate as far as possible data imports, scenarios and data aggregation
- Built in a dynamic functionality for portfolio wide functionality updates
QUESTIONS?

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