

Cost Analysis & Assurance Service



SCAF CHALLENGE – *MOVING ON UP*

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Jim

- A pregnant wife
- An imminent future with multiple children
- A two bedroom, end of terrace house worth £215,000 in 2009
- A not very good mortgage



Initial Assumptions

• V



• H

• C



years starting 2017



- **Mandated Options**

1. **Buy a larger house**

- Buy a larger house
- Extend the existing

2. **Extend the existing house**

- **Our Additional Options**

- **TOO EXPENSIVE**
– Leave the wife

3. **Sell up and rent**

- Sell up and rent
- Build a new house

4. **Build a new house**

- Move to Tibet. Use one from 2, integrate into the local cash-free bartering system and never think about the concept of money again



Whole Estimating Approach

- WLC Model
- Master Data Assumptions List (MDAL)
- Cost Data Assumptions List (CDAL)
- Risk Register
- Combined Operational Effectiveness and Investment Appraisal (COEIA)



- **MDAL/CDAL**
 - Justification for estimate values
 - Evidence for scrutiny
- **Data Sources**
 - Sample sizes
 - Reliability of data
- **Data Normalisation**
 - Constant 2012 EC's – Removing inflation
 - Increases above or below overall inflation rate



Quantitative & Qualitative Measures

- Quantitative measures allow a single 'best' answer
- Qualitative measures are often as important to a decision as quantitative
- Qualitative measures are not necessarily rational – How do we account for prejudice, ignorance, superstition or stupidity?

EXAMPLE

For a Bugatti Veyron, the fastest production car in the world at the time, to be a 'best' option for –



This had to happen -



Estimating Techniques

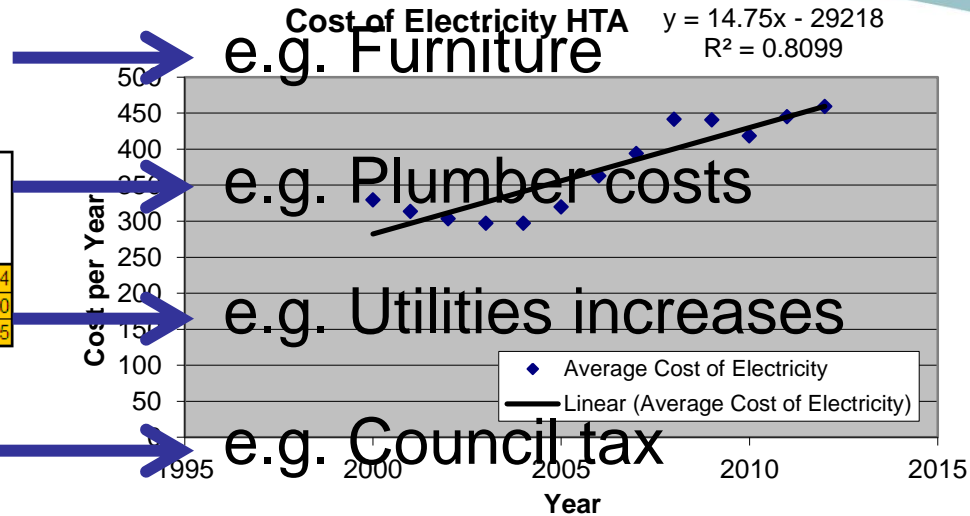
- Historic trend analysis

- Parametric estimating

- Three point estimating

- Correlation

	Min	ML	Max	Average increase over last 20yrs
B	0%	4%	10%	1.04
C	0%	4%	9%	0.00
D	0%	4%	10%	1.05
Average across Bands	0%	4%	10%	
Corrected for Constant 2012 Economic conditions	2.339%	1.488%	7.017%	



- Black box solutions

Simple Mortgage Calculator

This spreadsheet illustrates the use of either functions (Column D) or basic formulae (Column F).
Note cell names: move cursor over cells in columns C & F to see the formulae used.
Change blue figures only. Use "View, Zoom" to fit your screen. Years can include decimal, eg 10.5 for 10 years 6 months.

Initial Advance	#NAME?	
Debt at term end	£0	
Full term in years	25	yrs
Rest periods per annum	12	pa
Nominal interest rate pa	5.000	% pa
Payment per rest period	#NAME?	p rest
Payment per month	#NAME?	pm
Payment per annum	#NAME?	pa
APR (ignoring costs)	#NAME?	pa
After	5	yrs
Debt is	#NAME?	

Using Basic Formulae (see page 39 of Mortgages Exposed)

Click on or move to cell to see how the formulae are constructed

n = 300 total periods in term
i = 0.417% rate per rest period (as a fraction)
pmt = #NAME? per rest period
pmt pm = #NAME? per month
pmt pa = #NAME? per annum
(Normally quoted to 1 rounded decimal place)
k = 60 rest periods
Debt = #NAME? After 60 rest periods

Trend Analysis	House	Flat
Furnished	2	4
Unfurnished	7	1
Likelihood of Furnished	22.22%	80.00%

- Risk modeling
- Monte Carlo simulation

Validation and Verification

- Verification
- Validation
- Scoping the problem
- Black box solutions

The image shows a screenshot of a Microsoft Excel spreadsheet titled 'bad_modl.xls'. The spreadsheet has a menu bar (File, Edit, View, Insert, Format, Tools, Data, Window, Help) and a toolbar. The active cell is F13, and the formula bar shows 'fx'. The spreadsheet grid shows columns A, B, and C, and rows 1 through 8. Row 3, column C contains the date '31-Dec-95'. Row 6, column B contains the text 'LIBOR including MLAs' and 'Gilts Yield'. Below the spreadsheet, there are two images: on the left, a magnifying glass over a blue background with binary code, symbolizing investigation or verification; on the right, a 3D white figure holding a large orange checkmark, symbolizing success or validation.



Results

INTRO

DATA

ANALYSIS

EVALUATE

	50th Percentile Annual WLC Total (excludes Risk)	50th Percentile Risk
Buy 3 Bed	£19,388	£6,598
Buy 4 Bed	£23,258	£6,598
[Redacted]		



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Conclusion

INTRO

DATA

ANALYSIS

EVALUATE

- So, by considering effectiveness, the 'best' option
- is however, in line with the finest MOD traditions –

Move to Tibet

- Require

- Twins
- Wife
- Development agents



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- Estimates are only valid for the set of assumptions that they are based on
- Changes in requirements that invalidate assumptions, invalidate the estimates that are based on them.
- Volatility of major cost drivers may mean that changing the confidence interval alters the 'best' option.
- Qualitative measures are often as important to a decision as quantitative ones



Questions ?

