FFI Forsvarets forskningsinstitutt

Norwegian Defence Research Establishment

SCAF 2014 Cost Estimating Challenge

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Our team

Andreas

Kjetil

Tobias

Anita

Elisabeth

Master in Business and Economics

Master in Business and Economics

Master in Economics

Master in Business and Economics

Master in Economics

The Challenge: «Moving overseas»

Meet the family

Moving
- Shipping
- Storage
- Insurance
- Electrical supplies

Housing
- Sales costs
- Temporary house
- Closing cost when buying house
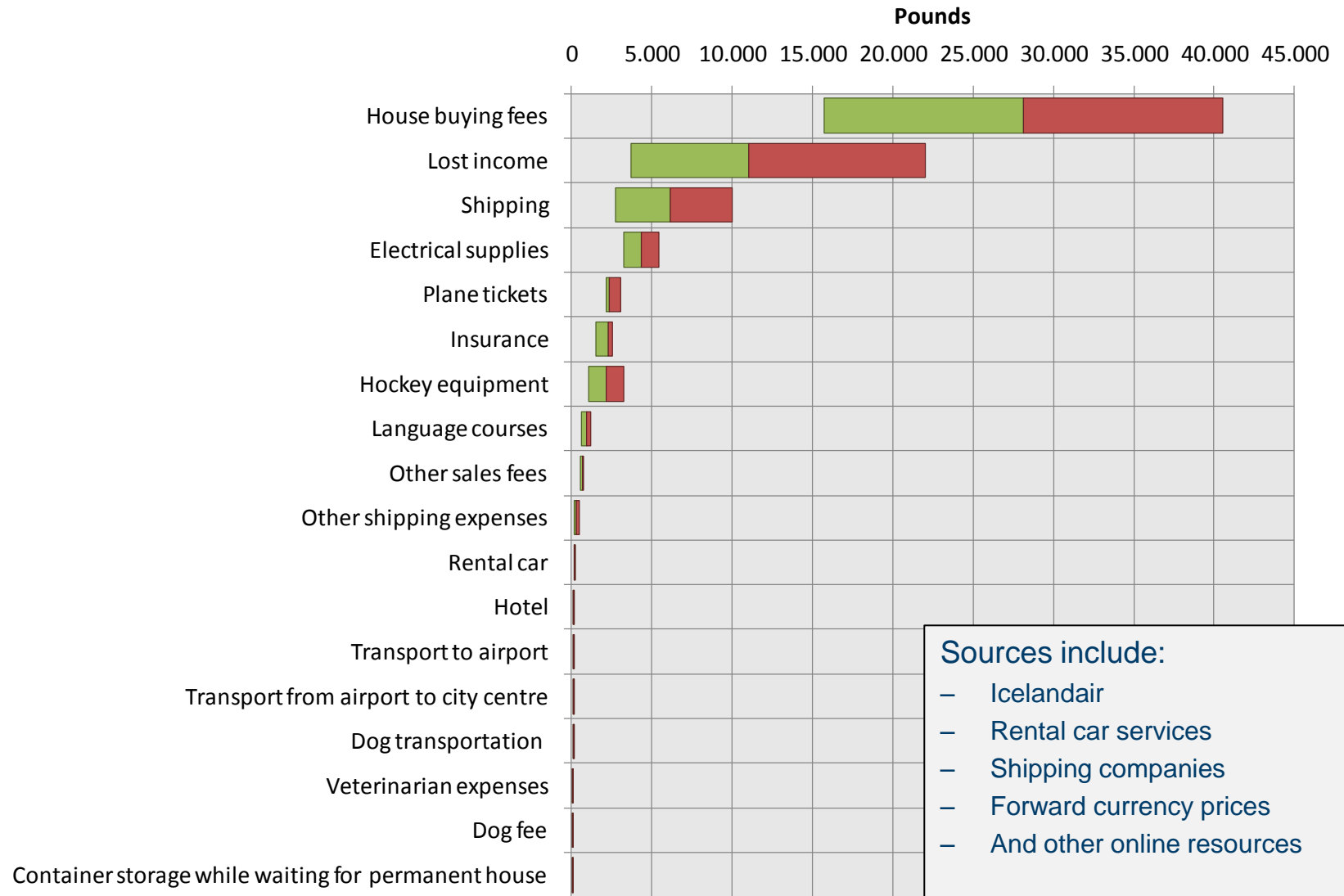- Land transfer costs
- Other sales fees

Other costs
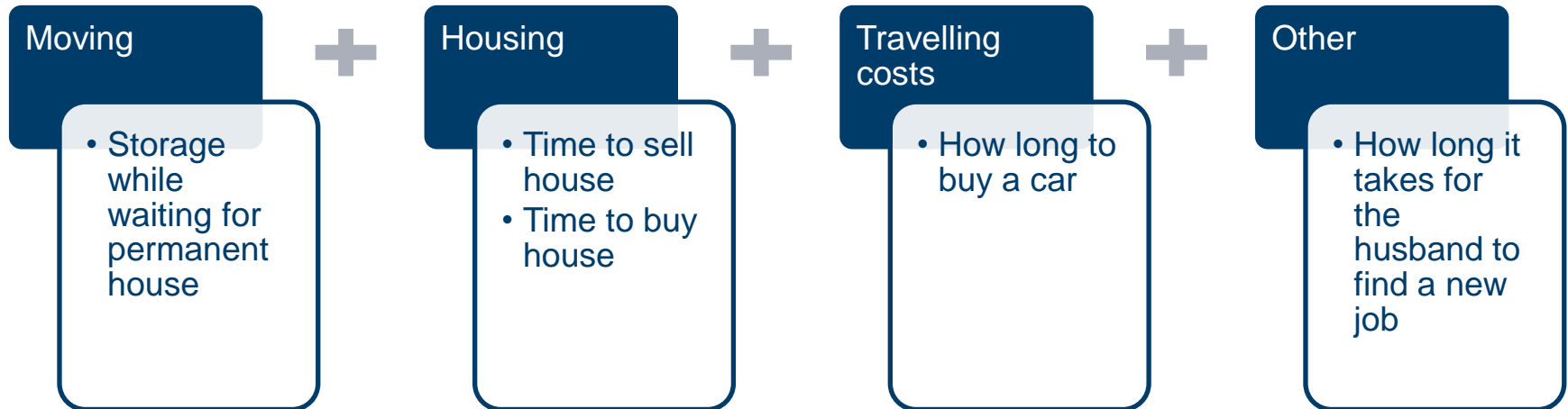- Husband's lost income
- Language courses
- Hockey equipment
- Immigration fees

Travelling
- Transport to airport
- Plane tickets
- Dog transportation
- Transport from airport to city centre
- Rental car

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Pounds

Category	
House buying fees	
Lost income	
Shipping	
Electrical supplies	
Plane tickets	
Insurance	
Hockey equipment	
Language courses	
Other sales fees	
Other shipping expenses	
Rental car	
Hotel	
Transport to airport	
Transport from airport to city centre	
Dog transportation	
Veterinarian expenses	
Dog fee	
Container storage while waiting for permanent house	

Axis: 0, 5.000, 10.000, 15.000, 20.000, 25.000, 30.000, 35.000, 40.000, 45.000

Sources include:
– Icelandair
– Rental car services
– Shipping companies
– Forward currency prices
– And other online resources

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Time uncertainties

Moving
- Storage while waiting for permanent house

+

Housing
- Time to sell house
- Time to buy house

+

Travelling costs
- How long to buy a car

+

Other
- How long it takes for the husband to find a new job

Primary estimation approach

- Guesstimate *best, most likely* and *worst* values
  - Fit normal distribution on basis of these
- Four levels of uncertainties:
  - Price
  - Currency
  - Time
  - Special housing uncertainties (percentage)
- Assume normally distributed and independent costs
  - Easy to do calculations with
  - No better available information regarding cost distribution
  - "Good enough"
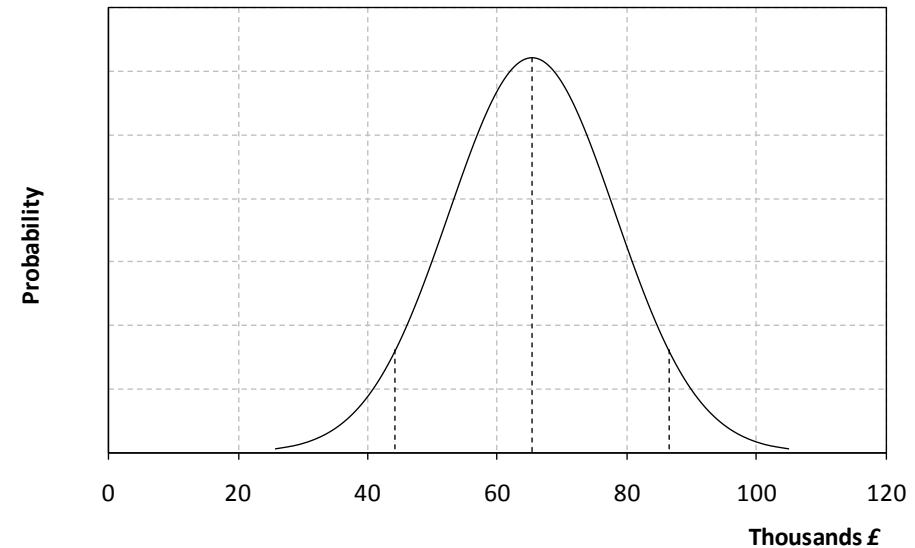- Simplification: assume the product of two normally distributed variables is also normally distributed
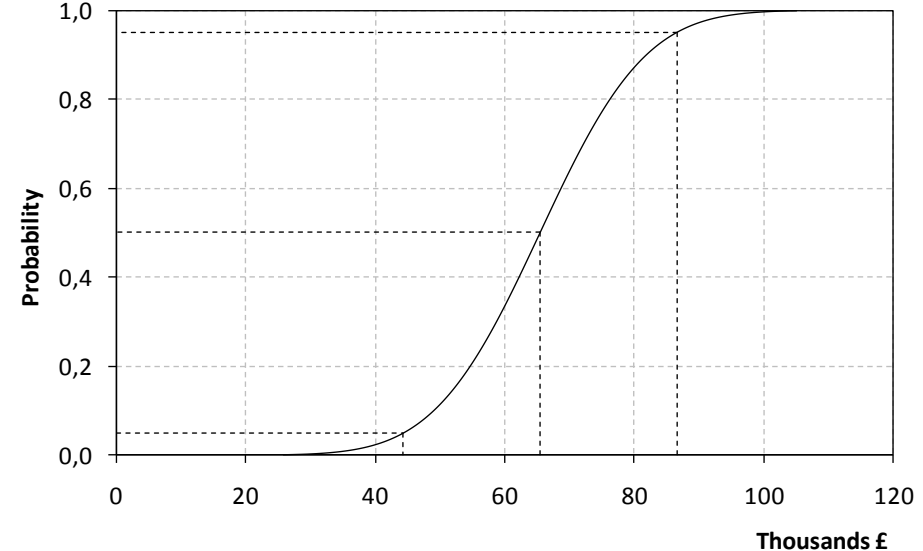
Results

90 % confidence interval:

Low	Most likely	High
44.000	65.000	87.000

- What should we require to cover uncertainties?
  - Depends on the agreement
  - If we are to cover the uncertainty P85 (£ 79.000)

PDF

Probability

Thousands £

CDF

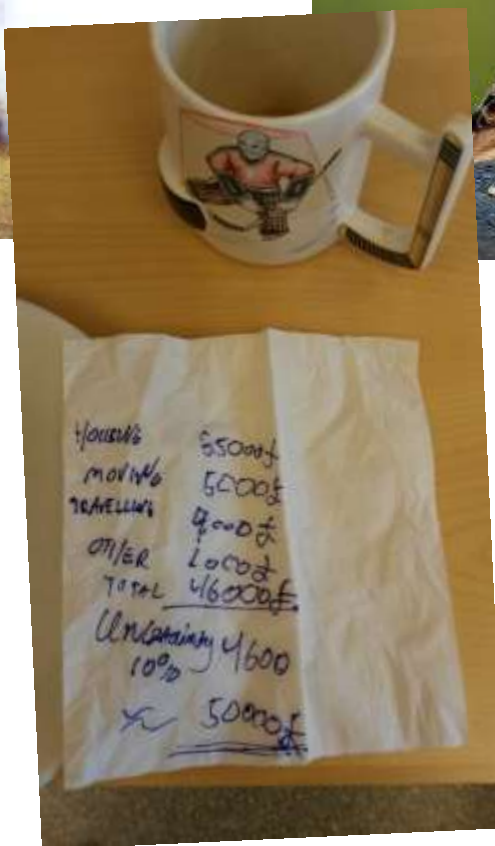
Probability

Thousands £

Secondary approach: simulation

- We considered using simulation to calculate the uncertainties.

- This method was abandoned because it was quite time consuming, and the extra value was considered to be quite small.

Alternative approach

Conclusion and lessons learnt

- Our estimates predicts a cost interval of £ 45 to £ 85 thousand.
- Using a simpler approach gives an estimate of £ 50 thousand
- The process gives valuable discussions and insights
  - Input
  - Method
  - Results
  - Teamwork