

REFLECTIONS ON THE “MORE LIKELY” APPROACH TO PROBABILITY ASSESSMENT

Warren R Hughes of HUGHES ECONOMICS (HE) – October 2025

INTRODUCTION

The basic procedure requires the decision-maker (DM) to first rank the events/scenarios etc. from least to most likely. Then, using a base of 1.0 for the least likely event, assess the gain in likelihood in percentage terms from the lesser likely event to the next in the ranking. For example, 25% or 50% as in 1.25 or 1.5 (a value necessarily greater or equal to 1.0). Then construct a compound index (base 1.0) for each event moving through the ranking by multiplying successive “more likely” values as in 1.0×1.25 or 1.25 etc. Normalizing these values yields the initial “ballpark” distribution. By using a pairwise range as in 2 – 3 times “more likely” (rather than a single value), three distributions (low, high, average) are produced for the DM to consider. This could help in finalizing probabilities showing sensitivity of probability to a change in the “more likely” values in either direction.

EXAMPLE CALCULATIONS

The table below illustrates the calculations involved for a three event problem. Equal likelihood would require 1.0 in the low and high pairwise range. The ratio B/A stands for the likelihood of event B over that of A.

CALCULATIONS FOR A 3-EVENT PROBLEM

Event or Scenario	Likelihood Ratio	Pairwise Range		Compound Likelihood		Probabilities			More Likely Value
		Low	High	Low	High	P(Low)	P(High)	P(Average)	
A	Base $\Rightarrow$ 1	1.00	1.00	1.00	1.00	0.18	0.11	0.15	Base $\Rightarrow$ 1
B	B/A	2.00	3.00	2.00	3.00	0.36	0.32	0.34	$0.34/0.15 = 2.27$
C	C/B	1.25	1.75	2.50	5.25	0.46	0.57	0.51	$0.51/0.34 = 1.50$
				5.50	9.25	1.00	1.00	1.00	

Event C has compound likelihoods of $1 \times 2 \times 1.25$ or 2.5 and $1 \times 3 \times 1.75$ or 5.25, respectively. To avoid any criticism of spurious accuracy, the DM could finalize a distribution for events A, B and C of 15%, 35% and 50% respectively, or possibly 15%, 30% and 55% if recent news increases the likelihood of the most likely event.

REFLECTIONS ON ASSESSING THE “MORE LIKELY” RANGES

Typically, possible events or scenarios will have similar likelihoods involving “more likely” assessments of slightly (1 – 1.25), moderately (1.25 – 1.75) and significantly (1.75 – 2) for the pairwise ranges. Larger gains in likelihood are easily accommodated within spreadsheets. One hint is the use of “benchmarks” to narrow pairwise ranges. Routine use of ranges such as 1 – 2, 2 – 3 etc. will be necessary at times. But the DM should consider carefully whether 1.0 or equally likely is in fact a possibility. If convinced that one event is definitely “more likely” than its predecessor event then using 1.1, 1.2 rather than 1.0 as the lower bound is suggested. Another common “benchmark” is twice as likely. But reflection by the DM could point to maybe not quite twice (as in 1.8 – 2.1) or maybe even greater than twice as likely (as in 1.9 – 2.25). Using these ranges for the C/B ratio above results in P(C) varying from 54% to 63%. Note that an accurate pairwise comparison the DM is very confident about can help to anchor the final distribution. Basic algebra may be necessary if the two events involved are non-adjacent.