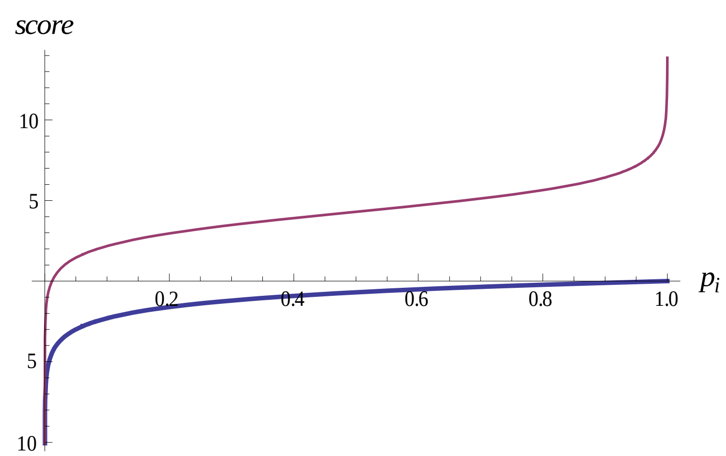
Figure 1

The Two Rival Probability Score Functions

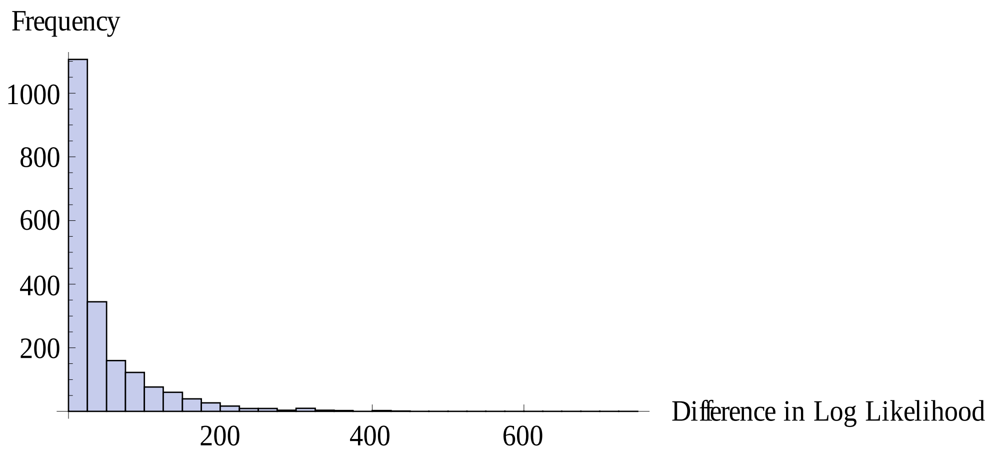
Log score (as in MLE) = thin line
Exponential score = thick line



Note how the exponential function rewards extreme probabilities when they are correct much more than the log score

Figure 2

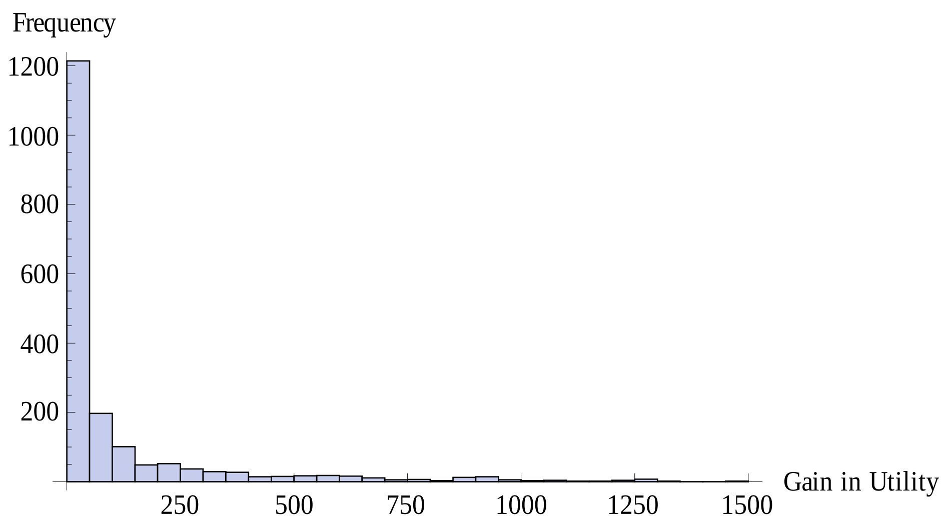
In-sample measure of $\boldsymbol{L}(\boldsymbol{Y} \mid \beta^{mle}) - \boldsymbol{L}(\boldsymbol{Y} \mid \beta^{\exp})$



Mean pr(bankruptcy) = 0.03195 = long run empirical frequency
2000 repeats

Figure 3

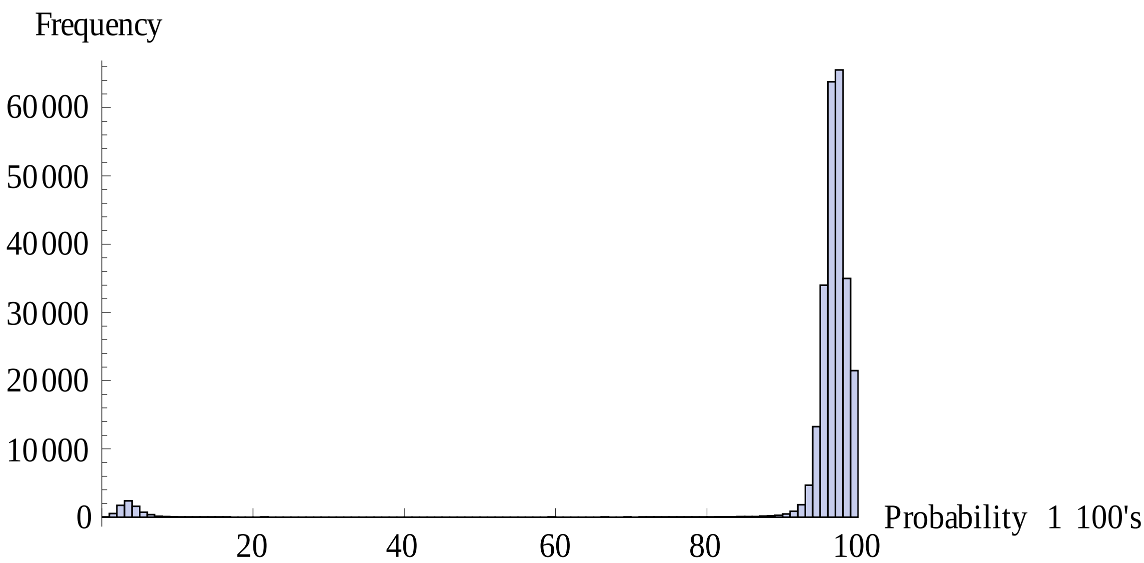
In-sample measure of $\boldsymbol{S}(\boldsymbol{Y} \mid \beta^{mle}) - \boldsymbol{S}(\boldsymbol{Y} \mid \beta^{\exp})$



Mean pr(bankruptcy) = 0.1067
2000 repeats

Figure 4

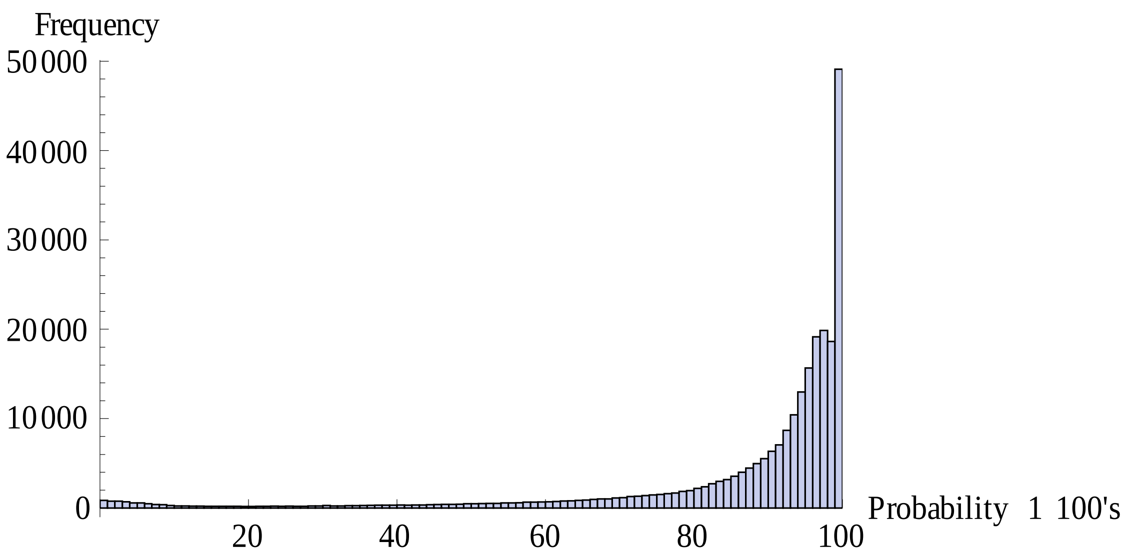
Distribution of $\boldsymbol{p}^{mle}$ (MLE probabilities)



Mean pr(bankruptcy) = 0.0314
500 repeats

Figure 5

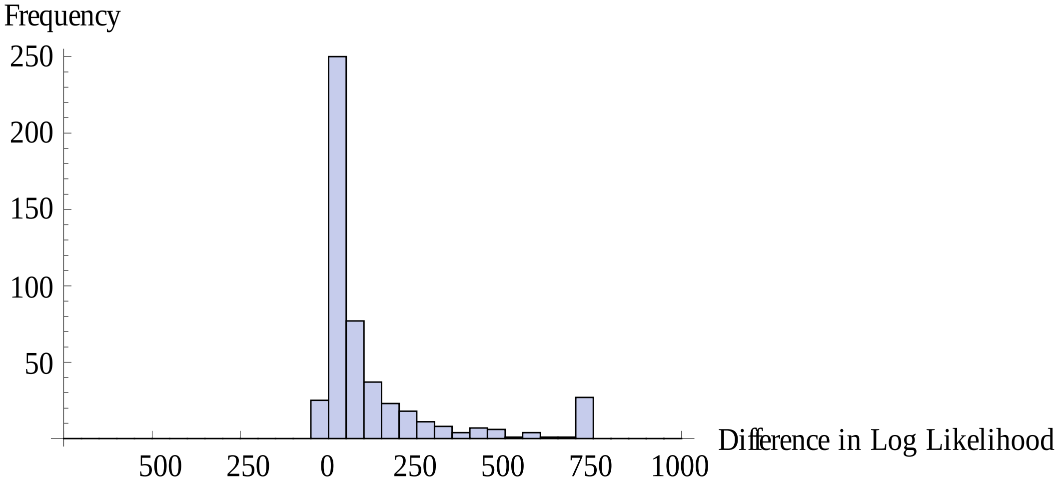
Distribution of $\boldsymbol{p}^{exp}$ (EXP probabilities)



Mean pr(bankruptcy) = 0.1061
500 repeats

Figure 6

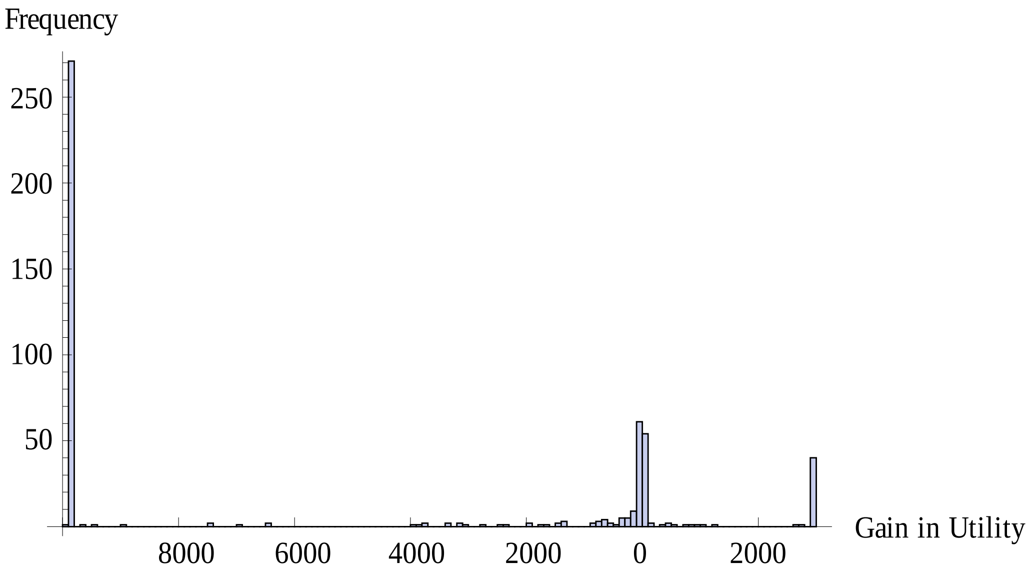
Out-of-sample measure of $\boldsymbol{S}(\boldsymbol{Y} \mid \beta^{mle}) - \boldsymbol{S}(\boldsymbol{Y} \mid \beta^{\exp})$



Mean pr(bankruptcy) = 0.034
500 repeats

Figure 7

Out-of-sample measure of $\boldsymbol{S}(\boldsymbol{Y} \mid \beta^{mle}) - \boldsymbol{S}(\boldsymbol{Y} \mid \beta^{\exp})$



Mean pr(bankruptcy) = 0.111
500 repeats

Only 24% of bootstrap repeats generate higher EU (out-of-sample) under exponential fitting than under MLE