Qual Practice: Predictit

Joseph

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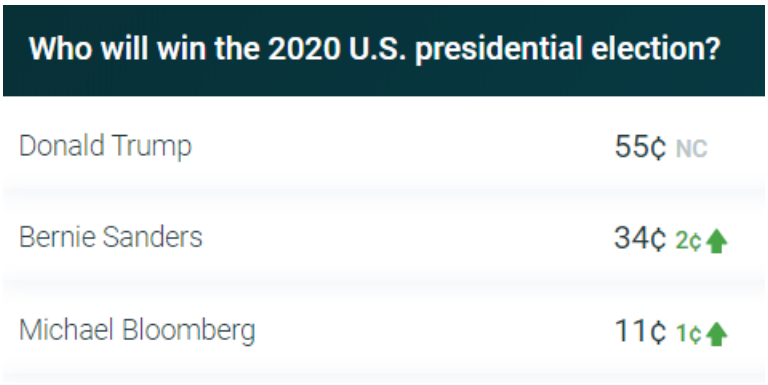
Consider the following prices for 3 assets, each of which pay out \$1 after the presidential election, only if the associated candidate wins:



Assume that asset prices are determined by the SDF of a representative investor whose utility is proportional to the log of their wealth.

Bernie Sanders will implement a 1-time lump-sum tax of 15% on wealth when elected, and that these tax revenues will not be rebated to the representative investor in any way.

No other policy of any candidate will affect the representative investors' wealth.

The asset prices represent risk-neutral probabilities.

1. Derive the natural probabilities $P\left(\text{Trump wins}\right)$, $P\left(\text{Sanders wins}\right)$, $P\left(\text{Bloomberg wins}\right)$.

2. Explain intuitively why the natural probability for Bernie Sanders is higher or lower than the risk-neutral probability (whichever it is).

3. The World Bank issues "Pandemic Bonds" which pay a high interest rate, but default in the case of a global pandemic, in which case they default, and the remaining principal is liquidated and used to fight the pandemic. Suppose Credit Default Swaps, which are traded securities that pay out if the underlying bond defaults, are issued and traded on WB Pandemic Bonds. From the price of the CDS one can easily infer the risk-neutral probability of a pandemic. Is the true probability of a pandemic likely to be higher or lower than the CDS-implied risk-neutral probability?