

Additional notes for Lecture One.

THEOREM

DP \wedge TP \rightarrow WIP. [If I assert both DP and TP then I must assert the WIP]

PROOF.

Fix ξ and suppose $x, x' \in \mathcal{X}$ satisfy $f_x(x|\Omega) = f_x(x'|\Omega)$ as in the statement of the WIP

Let $g: \mathcal{X} \rightarrow \mathcal{X}$ be the function which switches x for x' but leaves all other elements unchanged. For $\tilde{x} \in \mathcal{X}$ then

$$g(\tilde{x}) = \begin{cases} x' & \text{if } \tilde{x} = x \quad (g(x) = x') \\ \tilde{x} & \text{if } \tilde{x} \neq x \end{cases}$$

$$\begin{aligned} E_v(\xi, x') &= E_v(\xi^g, x') \\ &= E_v(\xi^g, g(x)) \\ &= E_v(\xi, x) \end{aligned}$$

[ξ and ξ^g are the same experiment and so apply the DP].
[by the TP]

which gives the WIP.