

$$\begin{aligned}
O_{11} &= H_1 + H_4 - H_5 + H_7 \\
&= [(M_{11} + M_{22}) \cdot (N_{11} + N_{22})] + [M_{22} \cdot (N_{21} - N_{11})] - H_5 + H_7 \\
&= [M_{11}N_{11} + M_{11}N_{22} + M_{22}N_{11} + M_{22}N_{22}] + [M_{22}N_{21} - M_{22}N_{11}] - H_5 + H_7 \\
&= M_{11}N_{11} + M_{11}N_{22} + M_{22}N_{21} + 2 - [M_{11}N_{22} + M_{12}N_{22}] + H_7 \\
&= M_{11}N_{11} + 2(M_{22}N_{22}) - M_{12}N_{22} + [(M_{12} - M_{22}) \cdot (N_{21} + N_{22})] \\
&= M_{11}N_{11} + 2(M_{22}N_{22}) - M_{12}N_{22} + [M_{12}N_{21} + M_{12}N_{22} - M_{22}N_{21} - M_{22}N_{22}] \\
&= M_{11}N_{11} + M_{22}N_{22} + M_{12}N_{21} - M_{22}N_{21}
\end{aligned}$$

$$\begin{aligned}
O_{12} &= H_3 + H_5 \\
&= [M_{11} \cdot (N_{12} - N_{22})] + [(M_{11} + M_{12}) \cdot N_{22}] \\
&= M_{11}N_{12} - M_{11}N_{22} + M_{11}N_{22} + M_{12}N_{22} \\
&= M_{11}N_{12} + M_{12}N_{22} = \text{Var } 1(O_{12})
\end{aligned}$$

$$\begin{aligned}
O_{21} &= H_2 + H_4 \\
&= (M_{21} + M_{22}) \cdot N_{11} + [M_{22} \cdot (N_{21} - N_{11})] \\
&= M_{21}N_{11} + M_{22}N_{11} + [M_{22}N_{21} - M_{22}N_{11}] \\
&= M_{21}N_{11} + M_{22}N_{21} = \text{Var } 1(O_{21})
\end{aligned}$$

$$\begin{aligned}
O_{22} &= H_1 - H_2 + H_3 + H_6 \\
&= (M_{11} + M_{22}) \cdot (N_{11} + N_{22}) - [M_{21}N_{11} + M_{22}N_{11}] + M_{11}N_{12} - M_{11}N_{22} + H_6 \\
&= M_{11}N_{11} + M_{11}N_{22} + M_{22}N_{11} + M_{22}N_{22} - M_{21}N_{11} - M_{22}N_{11} + M_{11}N_{12} - M_{11}N_{22} + H_6 \\
&= M_{11}N_{11} + M_{22}N_{22} - M_{21}N_{11} + M_{11}N_{12} + [(M_{21} - M_{11}) \cdot (N_{11} + N_{12})] \\
&= M_{11}N_{11} + M_{22}N_{22} - M_{21}N_{11} + M_{11}N_{12} + [M_{21}N_{11} + M_{21}N_{12} - M_{11}N_{11} - M_{11}N_{12}] \\
&= M_{22}N_{22} + M_{21}N_{12} = \text{Var } 1(O_{22})
\end{aligned}$$

$$O_{11} = H_1 + H_4 - H_5 + H_7$$

$$= M_{11}N_{11} + M_{11}N_{22} + \cancel{M_{22}N_{11}} + M_{22}N_{22} + M_{22}N_{21} - \cancel{M_{22}N_{11}} + H_5 + H_7$$

$$= M_{11}N_{11} + \cancel{M_{11}N_{22}} + M_{22}N_{22} + M_{22}N_{21} - \cancel{M_{11}N_{22}} - M_{12}N_{22} + H_7$$

$$= M_{11}N_{11} + \cancel{M_{22}N_{22}} + \cancel{M_{22}N_{21}} - \cancel{M_{12}N_{22}} + M_{12}N_{21} + \cancel{M_{12}N_{22}} - \cancel{M_{22}N_{21}}$$

$$= M_{11}N_{11} + M_{12}N_{21} = \text{Var } 1(O_{11})$$