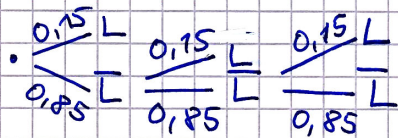


AP 2012 - SI

## Bernoulli (3/4)

1.1



$$P = P(\{L\}) + P(\{L\bar{L}\}) + P(\{\bar{L}\bar{L}L\}) =$$

$$= 0,15 + 0,15 \cdot 0,85 + 0,15^2 \cdot 0,85 = \underline{0,3859}$$

1.2

T: "linkshänder" mit  $p = 0,15$ ;  $n = 50$ 

$$P(E_a) = B(50; 0,15; 10) = 0,08899 \quad (\pi w)$$

$$P(E_b) = \sum_{i=8}^{12} B(50; 0,15; i) = P(8 \leq T \leq 12)$$

$$= P(T \leq 12) - P(T \leq 7)$$

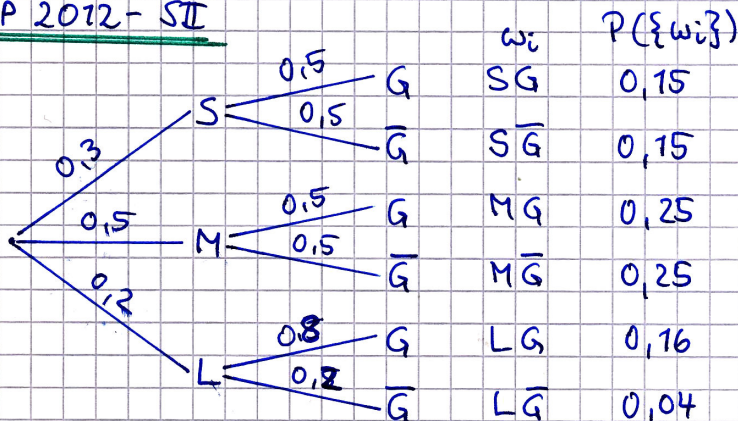
$$= \sum_{i=0}^{12} B(50; 0,15; i) - \sum_{i=0}^7 B(50; 0,15; i)$$

$$P(E_c) = \sum_{i=0}^{25} B(50; 0,15; i) \approx 1 \quad \underline{0,45119}$$

$$P(E_d) = 49 \cdot 0,15^2 \cdot 0,85^{48} = \underline{0,00045}$$

AP 2012 - SI

1.1



$$1.2 \quad E_1 = \{SG; S\bar{G}; MG; M\bar{G}\}; \quad E_2 = \{SG; MG; LG\}$$

$$E_3 = E_2 \cup \bar{E}_1 = \bar{E}_2 \cap \bar{E}_1 = \bar{E}_2 \cap E_1 = \{S\bar{G}; M\bar{G}\}$$

$$P(E_3) = 0,15 + 0,25 = \underline{0,40}$$

1.3

$$n = 20$$

$$P(E_4) = B(20; 0,50; 10) = \underline{0,17620} \quad (\pi w)$$

$$P(E_5) = \sum_{i=0}^{12} B(20; 0,3; i) - \sum_{i=0}^5 B(20; 0,3; i) = \underline{0,58235} \quad (\pi w)$$

$$P(E_6) = B(20; 0,16; 0) + B(20; 0,16; 1) + B(20; 0,16; 2)$$

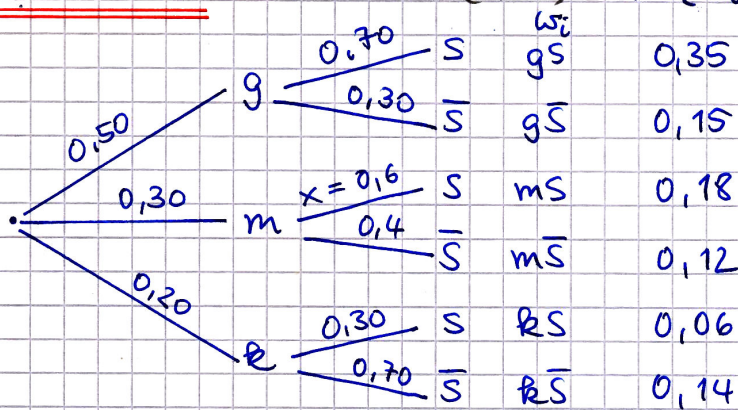
$$(\pi r) = 0,03059 + 0,11654 + 0,21087 = \underline{0,35800}$$

2010 - SI

Beroulli (4/4)

$P(\{\omega_i\})$

1.1



$$P(\{mS\}) = 0,18 \Rightarrow x \cdot 0,30 = 0,18 \Leftrightarrow x = \frac{0,18}{0,30} = 0,6$$

1.2

$$E_1 = \{gS; mS; kS\}$$

$$E_2 = \{mS; m\bar{S}; kS; k\bar{S}\}$$

$$P(E_1) = 0,35 + 0,18 + 0,06 = 0,59$$

$$P(E_2) = 1 - 0,35 - 0,15 = 0,50$$

$$E_1 \cap E_2 = \{mS; kS\}; P(E_1 \cap E_2) = 0,18 + 0,06 = 0,24$$

$$P(E_1) \cdot P(E_2) = 0,59 \cdot 0,50 = 0,295 \neq 0,24$$

$$P(E_1) \cdot P(E_2) \neq P(E_1 \cap E_2) \Rightarrow E_1 \text{ u. } E_2 \text{ stoch. abh.}$$

$$E_1 \cap E_2 \neq \{\} \Rightarrow \text{vereinbar}$$

1.3

$$n=30 \quad E_3: P = 0,30; P(E_3) = B(30; 0,30; 10) = 0,14156$$

$$E_4: P(E_4) = \sum_{i=0}^{15} B(30; 0,50; i) - \sum_{i=0}^8 B(30; 0,50; i) = 0,57223 - 0,00806 = 0,56417$$

$$E_5: P(E_5) = B(30; 0,14; 0) + B(30; 0,14; 1) = \binom{30}{0} \cdot 0,14^0 \cdot 0,86^{30} + \binom{30}{1} \cdot 0,14^1 \cdot 0,86^{29} = 1 \cdot 1 \cdot 0,86^{30} + 30 \cdot 0,14 \cdot 0,86^{29} = 0,01084 + 0,05293 = 0,06377$$

1.4

$$\text{Ein Zweig: } p = 0,15^3 \cdot 0,85^{17} = 0,000213$$

$$18 \text{ Zweige: } 18 \cdot 0,000213 = 0,003834$$