

## Parameters:

$$b_z = 0 \quad b_3 = \frac{2}{3} \quad e_3 = \frac{1}{100000} \quad e_4 = \frac{1}{100000} \quad e_5 = \frac{1}{100000}$$

## Values of the Solution Variables:

$$a_1 f_2 = a_2 f_1 = 0.05079737$$

$$a_1 f_3 = a_2 f_3 = 0.06756534$$

$$a_3 f_1 = a_3 f_2 = 0.09153050$$

$$a_{12} = a_{21} = 0.23178182$$

$$a_{13} = a_{23} = 0.37583832$$

$$a_{31} = a_{32} = 0.40645201$$

$$a f_{12} = a f_{21} = 0.05717150$$

$$a f_{23} = a f_{13} = 0.37583832$$

$$a f_{32} = a f_{31} = 0.37454125$$

$$u_2 b_1 r_{23} = u_1 b_2 r_{13} = 0.36377224$$

$$u_1 b_2 r_{31} = u_2 b_1 r_{32} = 0.36377224$$

$$u_3 b_2 r_{31} = u_3 b_1 r_{32} = 0.27244676$$

$$u_1 b_3 r_{12} = u_2 b_3 r_{21} = 0.36377476$$

$$u_3 b_1 r_{23} = u_3 b_2 r_{13} = 0.27245019$$

$$u_2 b_3 r_{12} = u_1 b_3 r_{21} = 0.36377132$$

$$u_2 b_1 r_{23} = u_1 b_2 r_{13} = 0.36376368$$

$$u_3 b_2 r_{31} = u_3 b_1 r_{32} = 0.27244249$$

$$u_3 b_1 r_{23} = u_3 b_2 r_{13} = 0.27244249$$

$$u_1 b_3 r_{12} = u_2 b_3 r_{21} = 0.36376858$$

$$u_1 b_3 r_{21} = u_2 b_3 r_{12} = 0.36376470$$

$$u_2 b_1 r_{32} = u_1 b_2 r_{31} = 0.36376470$$

## Payoffs:

$$u_1 = 0.36376691 \approx \frac{4}{11}$$

$$u_2 = 0.36376691 \approx \frac{4}{11}$$

$$u_3 = 0.27244197 \approx \frac{3}{11}$$

$$\text{Shapley Value: } \left\{ \frac{4}{9}, \frac{4}{9}, \frac{1}{9} \right\}$$

$$\text{Nucleolus: } \left\{ \frac{5}{12}, \frac{5}{12}, \frac{1}{6} \right\}$$