EconomicWeightsDescription

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Economic weights are factors to produce an aggregate genotype from multiple traits. There is one economical weight per involved trait. The economical weight per trait is the change in profit (Sfr.) per additional unit of the trait as mean in the population.

$$a = \frac{\Delta_p}{\Delta_\mu}$$

a is the economic value.

Δ is the difference of the underscore variable.

p is the profit in Sfr.

μ is the population mean in unit of trait.

Here the aggregate genotype consists of the traits carcass fat, carcass conformation and carcass weight. Consequently the three traits need an economical weight each. Also aggregate genotypes have to be computed for each breed and animal group separateley. As an example the economic values will appear for the most distinct breeds, Angus and Limousin and the group stirks.

Carcass fat

The trait carcass fat has the unit carcass fat class (see table???). Therefore the economical weight for carcass fat is the additional profit per unit of carcass fat class. I choose the unit Swiss Francs (Sfr.) per 0.1 carcass fat class for the economic value of carcass fat ($\Delta_\mu = 0.1$).

Δ_p in turn is

$$\Delta_p = r_1^T p - r_0^T p$$

r is the vector of population shares belonging to each carcass fat class.

p is the vector of price change per kg for each carcass fat class

T means, it is the transpose.

0 indicates the initial population.

1 indicates the population after the change in population mean of 0.1.

I know the initial distribution r_0 of the population over the carcass fat scores from the data of Qualitas AG. The distribution is discrete, which means I know the share of the population within each carcass fat class (see @ref(tab:InitialSharesCF)).

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Table 1: Population shares for each carcass fat class in Angus and Limousin calves and stirks (Kunz, 2018)

	Angus		Limousin	
class	calves	stirks	calves	stirks
1	0.0965764	0.0300543	0.1970509	0.0599657
2	0.3607563	0.1279745	0.4032172	0.2580804
3	0.4777721	0.5873337	0.3804290	0.5959545
4	0.0638733	0.2366123	0.0193029	0.0842599
5	0.0010220	0.0180251	0.0000000	0.0017395