

Abstract

A cardinal menu is a set of alternatives, together with a utility associated to each alternative. A stochastic choice rule assigns to each cardinal menu a distribution over the alternatives. We say that a rule is decomposable if, when presented with a menu that decomposes into separable dimensions, provides a prediction that can be decomposed along each dimension. Under mild assumptions we show that multinomial logit is the unique rule that is decomposable. The core of our proof is a theorem on the symmetries of the set of monic polynomials with non-negative coefficients: We characterize the functions from this set to itself that commute with multiplication and preserve the signs of the coefficients.