

Final Report

Game Theory REU: May 29-July 20, 1990

Michael Maltenfort

PART I:

AN ALLOCATION METHOD FROM INDIVIDUAL COMPLAINT FUNCTIONS

0. Purpose

This paper defines an individual complaint function, which is a variant on nucleolus excess functions. By setting these to be equal (which is equivalent, as we shall see, to minimization), we find a class of allocation methods μ . This class of values is characterized by efficiency, symmetry, additivity, as well as an additional property, the inessential game property, which states that allocations will allocate $v(i)$ to player i on an inessential game. A few known values are in this class, including the Shapley value.

1. Definitions

A *cooperative game* we define to be a pair (N, v) . N is any finite set, usually $\{1, 2, \dots, n\}$,¹ whose elements are called *players*; v is a real valued function on all subsets $S \subseteq N$, which are referred to as *coalitions*, and v must satisfy $v(\emptyset) = 0$. An

¹Throughout, we will use n and s to indicate the cardinality of sets N and S respectively.

