Theory of the Firm: Applications of Duality Theory

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This document is an extremely compressed summary of the most important results in the cited literature on microeconomic theory of the firm. It makes use of the following notation:

- $c$: cost function
- $c^{ind}$: indirect cost function
- $f$: (direct) production function
- $L$: input correspondence
- $L(x)$: input requirement set
- $L_\circ$: polar input correspondence
- $L_\circ(x)$: (reciprocally) polar set of $L(x)$
- $IL$: indirect input correspondence
- $IL_\circ$: indirect (reciprocally) polar input correspondence
- $P$: output correspondence
- $P(v)$: production possibility set
- $P^\circ$: polar output correspondence
- $P^\circ(v)$: polar set of $P(v)$
- $IP$: indirect output correspondence
- $IP^\circ$: indirect polar output correspondence
- $p$: vector of commodity prices
- $\mathcal{P} = \mathbb{R}_+^n$: set of non-negative output price vectors
- $q$: vector of input prices
- $\mathcal{Q} = \mathbb{R}_+^m$: set of non-negative input price vectors
- $r$: revenue function
- $r^{ind}$: indirect revenue function
- $t_I$: input distance function (gauge)
- $t_O$: output distance function (gauge)
- $v$: input vector
- $\mathcal{V} = \mathbb{R}_+^m$: set of feasible input vectors
x output vector
\[ \mathcal{X} = \mathbb{R}^n_+ \] set of feasible output vectors
z indirect production function
\[ z^o \] polar production function

Be aware that each result is based on certain regularity assumptions. Please refers to the subsequent references for an appropriate interpretation of the minimum and maximum problems.

Remark: relationships which are indicated by a question mark have not been found in the literature on duality theory. They are suspected to be true under certain regularity assumptions. However, the main argument follows from symmetry.

References


Overview

The files \texttt{duality2.ps} and \texttt{duality2.pdf} consists of one page. Its text height and width is 28x19 cm which corresponds to the german DIN A4 paper format.