Linear programming notes

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Contents

Abstract

This document contains notes about Linear programming.

1 Supply chain model

Let be define a simplified supply chain model as a system that produces products with a chain of product transformations performed by producers.

Let be

$$A = a_1 \dots a_n$$

the set of producer types and

$$B = b_1 \dots b_n$$

the set of product types.

For each producer type i let be

$$N_i,\ i \in A$$

the number of producers of that type.

The system is constrained by some rules:

1. the producer can perform only transformations matching the producer type.
2. the producer can perform only a single transformation for the its duration.

For each product i let define the production rule

$$R_i = (P_i, V_i, Q_i, T_i, C_{i,i})$$

with

- the producer,
- the value of product
- the quantity of outcome in duration interval
- the duration interval
- the quantity of product j consumed to produce the product i in duration interval.