Circular Economy : Core Model Specification

Abstract

1 Model Description

The mathematical description given here is assumed to be necessary and sufficient for any implementation of the model. [need to clarify possible implementation bias]

Let agents are N companies indexed by $1 \leq i \leq N$, that have a fixed spatial position $\vec{x}_i$. By-products are assumed to be described by a finite-dimensional random variable $\vec{y} \in \mathbb{R}^d$. Finite values are a reasonable domain for by-products characteristics as it allows to normalize along each axis and take $\vec{y} \in [0,1]^d$. Each company has a demand function and an offer function, which were used to establish links between pairs of companies (i.e. exchange of by-products). These function are defined in a simple manner by $\vec{D}_i(\vec{y}) = D_i^{(0)} \cdot \vec{d}_i(\vec{y})$ and $\vec{O}_i(\vec{y}) = O_i^{(0)} \cdot \vec{o}_i(\vec{y})$, where $\vec{d}_i$ and $\vec{o}_i$ are multivariate probability densities.

2 Architecture

Additional specification / architectural sketch

3 Statistical benchmarks

Systematic/statistical comparison of different implementation.