

Implementation of Benders Decomposition

1

Here we implement **Benders decomposition method** [1] on a supply-chain problem. There are some suppliers and some distribution center that have to satisfy the demand of a district and we need to minimize the cost by determining the material flow from suppliers to factory and from factory to distribution centers. This would be a *Mixed Integer Programming* problem and as the dimension grows the complexity of the problem grows exponentially. We use Benders method to decompose the problem into a more simple sub problem and then we gradually move to the original problem. The Original problem and the one with Benders are available in GAMS.

References

- [1] J. F. Benders, , *Partitioning procedures for solving mixed-variables programming problems*, (Numerische Mathematik 4 (1962), 238–252).