Abstract. We study a multimarginal optimal transportation problem in one dimension. For a symmetric, repulsive cost function, we show that given a minimizing transport plan, its symmetrization is induced by a cyclical map, and that the symmetric optimal plan is unique. The class of costs that we consider includes, in particular, the Coulomb cost, whose optimal transport problem is strictly related to the strong interaction limit of Density Functional Theory. In this last setting, our result justifies some qualitative properties of the potentials observed in numerical experiments.