Funding Public Projects:
A Case for the Nash Product Rule[*]

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Abstract. We study a mechanism design problem where a community of agents wishes to fund public projects via voluntary monetary contributions by the community members. This serves as a model for public expenditure without an exogenously available budget, such as participatory budgeting or voluntary tax programs, as well as donor coordination when interpreting charities as public projects and donations as contributions. Our aim is to identify a mutually beneficial distribution of the individual contributions. In the preference aggregation problem that we study, agents with linear utility functions over projects report the amount of their contributions, and the mechanism determines a socially optimal distribution of the money. We identify a specific mechanism—the Nash product rule—which picks the distribution that maximizes the product of the agents' utilities weighted by their contributions. This rule arises naturally from a simple, dynamic procedure. The Nash product rule is Pareto efficient, and we prove that it satisfies attractive incentive properties: it spends each agent's contribution only on projects the agent finds acceptable, and agents are strongly incentivized to participate. We also derive impossibility theorems that show that strengthened versions of these two axioms are incompatible with Pareto efficiency.

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