

## **Resource allocation with uncertain needs**

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Resource allocation in the face of uncertain needs is common in real life. There is a rapidly growing literature on resource allocation under uncertainty in practical fields such as emergency control, project management, and network design (e.g., Johansson and Sternad (2005), Rawls and Turnquist (2010), Turnquist and Nozick (2003), Wex, Schryen, and Neumann (2012)). However, very few papers have addressed the problem from a normative perspective.

On the other hand, how to divide a resource among agents who have conflicting claims on the resource has been extensively studied since O'Neill (1982). A variety of division rules have been proposed and axiomatically characterized. However, the studies are largely limited to situations with deterministic claims. Little has been done regarding situations in which agents have uncertain needs so that their claims are uncertain.

In this talk, based on Xue (2018 a,b) and Long, Sethuraman, and Xue (2019), I will introduce desirable axioms for resource allocation with uncertain needs. Some are new to the uncertain context and some are extended from the deterministic fair allocation literature. I will discuss the implications of these axioms on division rules.