Tournament Rewards and Heavy Tails

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Abstract

Heavy-tailed fluctuations are common in many environments, such as sales of creative and innovative products or the financial sector. We study how the presence of heavy tails in the distribution of shocks affects the optimal allocation of prizes in rank-order tournaments. While a winner-take-all prize schedule maximizes aggregate effort for light-tailed shocks, prize sharing becomes optimal when shocks acquire heavy tails, increasingly so following a skewness order. Extreme prize sharing – rewarding all ranks but the very last – is optimal when shocks have a decreasing failure rate, such as power laws. Hence, under heavy-tailed uncertainty, typically associated with strong inequality in the distribution of gains, providing incentives and reducing inequality go hand in hand.

Keywords: heavy tails, power law, tournament, optimal allocation of prizes, failure rate

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