## Title: Convex duality in stochastic optimization and mathematical finance

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Abstract: We introduce a convex optimization model that unifies many well-known duality frameworks from operations research and mathematical finance. The unification allows the extension of some useful techniques from these two fields to a much wider class of problems. In particular, combining certain finite-dimensional techniques from convex analysis with measure theoretic techniques from mathematical finance, we are able to close the duality gap in some situations where traditional topological arguments fail. The framework is illustrated by deriving the Dalang-Morton-Willinger theorem and other well-known duality results from mathematical finance.