Complexity of Payment Network

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Abstract

A model is developed where subjects make their payments to one another using money, or through gross payment system. The paper studies how much money is necessary to settle all payments. Specifically, minimum amount is examined through a graph-theoretic problem we newly introduce, which we call minimum Payment Circulation Problem (min PCP). We identify network properties which help characterize min PCP. We show that graphs treated in Rotemberg(2011) are included as a special class in our analysis. Effects of local operations as well as semi-global operations are analyzed.

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