



ABSTRACT

Paper title: Arrows Impossibility Theorem and the Management of Joint-Use Infrastructure

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Abstract:

In many instances, infrastructure, particularly transport infrastructure, is owned or managed jointly. Even where it is owned by a single party, third party access regimes provide quasi-management rights to parties other than the owners of the infrastructure. Various parties utilising a piece of infrastructure have different preferences as to how it should be used, and how investment should proceed. Arrow's (1950) Impossibility Theorem suggests that in instances where heterogenous individuals have different preferences, maximising group outcomes is impossible, unless one of a set of four simple axioms is relaxed. Arrow's theorem provides a useful framework within which to examine joint infrastructure use; just as in social welfare maximisation situations, the owners and operators of joint infrastructure relax one of Arrow's axioms in order to effect joint management. This paper provides anecdotal examples of relaxation of the different axioms. It also presents empirical evidence as to the size of the consequences of relaxing the axiom most commonly relaxed, that of Pareto optimality, or efficiency.