



A market for connections



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ABSTRACT

Government or company decisions on whom to hire or whom to give a contract are mostly delegated to politicians, public sector officials or human resource and procurement managers. Due to anti-corruption laws, agents cannot sell contracts that they are delegated to decide upon. Even if bribing is ruled out, those interested in the spoils may invest in a good relationship with the deciding agents in order to be remembered when the decision is made. In this paper, we analyze such markets for connections in the presence of convex costs of networking.

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1. Introduction

Government or company decisions on procurement and on whom to hire are mostly delegated to politicians, public sector officials or human resource and procurement managers, respectively. Politicians and public sector officials distribute government contracts and fill public sector jobs. Managers, acting for the part of their companies, are delegated to choose one among the best candidates for the job when recruiting personnel, accountants, consultants, or subcontractors. Such agents are in a position to distribute lucrative contracts. Yet, anti-corruption laws and best business practices forbid decision makers, civil servants or private sector managers alike, from privately selling the contracts or nominations and reaping gains for themselves. Although interested rent-seekers cannot buy a contract, it pays off to be on good terms with the decision maker: favors are passed to acquaintances only and therefore the rent-seeker needs a close connection with the decision maker to have a chance of being favored.

Keeping in touch is costly, however. It takes not only the rent-seeker's time and effort but also that of the decision maker. Why should the decision maker bother spending time with a rent-seeker? He or she must be compensated for doing so. The rent-seekers spend time with the decision makers by offering lunches and entertainment, and, in politics, by taking part in campaigns and fund-raising events to be remembered when rents are distributed. While each decision maker needs to be linked to only one of the

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rent-seekers for the rents to accrue, each individual rent-seeker gains by rubbing shoulders with several decision makers. As will be illustrated formally in the paper, this results in rent dissipation due to time-consuming network formation. Thus, the fact that projects generating rents cannot be legally sold can have excessive network formation as a side effect.

We present a stylized and static model of rent-seeking when rent-seekers do not pay directly for projects, but where rent-seekers pay for the access to the decision makers to be remembered at the time when the spoil is distributed. Intuitively, we show that such rent-seeking may result in excessive networking and thus generates inefficiencies in the unique (up to permutations) stable network when any search rationale of networking is ruled out. We show how the surplus accruing to decision makers and to rent-seekers depends on the value of rents and on the relative size of the two groups. We also study how the stable network is structured.

Since the seminal contribution of [Jackson and Wolinsky \(1996\)](#) on strategic networks by mutual consent, a whole literature studying networks as outcomes of economic decisions has emerged. We follow this literature by assuming that for a rent-seeker to receive a spoil from a decision maker, a connection must be established between the two. We allow for transfers being paid from rent-seekers to decision makers as a remuneration for keeping up the connection.² We assume that parties don't observe the link quantities of the agents they are connected to but they have correct conjectures on the link quantities in the stable network. There may be price discrimination ex-ante so that transfers paid for the links may differ across rent-seekers. Our main methodological contribution to the literature on networks by mutual consent is to show that, in our specific rent-seeking environment, the unique pair-wise stable network with transfers coincides with a network established by a Walrasian auctioneer who announces a unique and uniform market price for links. Thus, there is no price discrimination in the stable network and a Walrasian approach can be used to simplify the analysis to a great extent. To our knowledge, the current paper is the first to consider economic but non-strategic (Walrasian) network formation, which yet has a game-theoretic foundation. Crucial for this result is also the fact that agents on each side of the market are identical, that there are strictly increasing marginal linking costs, and that the decision makers cannot commit to any given link quantity. The latter assumption distinguishes the present paper from much of the other literature.

Our paper is related to [Kranton and Minehart \(2001\)](#) and [Marinucci and Vergote \(2011\)](#) who model economic interaction on an established network explicitly. They analyze strategic network formation followed by strategic trading and rent-seeking, respectively, on the thereby established platforms. Kranton and Minehart find that efficient networks are formed when the highest valuation buyers pay the social opportunity cost for the good. In our paper, inefficiencies are due to the feature that decision makers who distribute the spoils are prevented from charging the social opportunity cost due to the anti-corruption laws which prevent selling the good. The implied high rents for the rent-seekers invite an inefficiently large scale of networking. In both the abovementioned models, there is a constant cost of networking per each link whereas we assume convex linking costs to allow for increasing marginal opportunity cost of networking. Moreover, in the two mentioned models there are either only positive or both positive and negative externalities to having several agents connected with a given agent while in the present paper only negative externalities are present.

In a classical paper, [Aumann \(1964\)](#) pointed out that the core and the Walrasian equilibrium coincide when there are infinitely many agents on the market.³ The core requires stability⁴ with respect to deviations by any coalition of agents, including those where more than two agents jointly deviate. In our model, we have an equivalence of the Walrasian equilibrium and the pair-wise stable network even if we only have finitely many agents.⁵ Of course, the setups are rather different. The classical equivalence of the core and the Walrasian equilibrium is established in a pure exchange economy without trading costs, with no limitations on trade and no externalities. In our framework, instead, link formation is costly and anti-corruption laws forbid selling nominations, linking has negative externalities on rent-seekers, and decision makers cannot commit to sell a given number of links. This latter is the crucial difference with respect to [Kranton and Minehart \(2001\)](#) and [Jackson and van den Nouweland \(2005\)](#) where networks are efficient. In our setup agents end up dissipating rent due to excessive network formation.⁶ The results of [Bloch and Jackson \(2007\)](#) suggest that the inefficiency can be overcome by letting rent-seekers pay side-payments to each other to provide incentives for limiting network formation. We assume that links cannot be observed and that there can be no legally binding contracts to restrict link formation, ruling out the remedy that Bloch and Jackson suggest.

Our analysis has common features with also another strand of literature, that on rent-seeking and lobbying contests ([Tullock, 1967, 1980](#); [Hillman and Katz, 1984](#); [Bernheim and Whinston, 1986](#); [Grossman and Helpman, 1994](#); see [Konrad \(2009\)](#) for a comprehensive survey and [Long \(2013\)](#) for a recent overview) which gains important insights into how lobbying may affect policy making. These models are similar to our model in that rent-seekers actively influence the decision makers' decisions on how to distribute rents. Yet, there are some differences. In our model, links are endogenous, requiring mutual consent. Moreover, the links are costly not only for the lobbying side but also for the decision makers. Payments are made in exchange for establishing links. In the rent-seeking and lobbying literature, the links are given at the outset, and payments are viewed as bids for rents to be distributed. The only previous contribution that endogenizes the relationship between decision makers and lobbyists is [Felli and Merlo \(2006\)](#). Our approach is complementary to theirs. Whereas they analyze ideological lobbying, we analyze lobbying on non-ideological spoils. Furthermore, [Felli and Merlo \(2006\)](#) assume that the links are costless whereas we assume that creating and maintaining links are costly. Our extension to allow endogenous network formation complements other recent extensions to contests literature, like

² The extent of the transfer cannot influence the probability of receiving the spoil, since anti-corruption laws are binding.

³ See also [Shubik \(1959\)](#) and [Debreu and Scarf \(1963\)](#) who point out that the core converges to the Walrasian equilibrium when the number of agents tends to infinity. [McKenzie \(1955\)](#) and [Arrow and Hahn \(1971\)](#) establish the existence of the Walrasian equilibrium in an economy with externalities.

⁴ An allocation is stable if no deviating coalition can reach a higher utility.

⁵ The equivalence holds also for pairwise Nash stability. See [Bloch and Jackson \(2006\)](#).

⁶ Due to the symmetry assumption, we are abstracting from the motivation in finding best matching group of agents on the other side, only the number of agents and the price of a match matter.

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