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ABSTRACT

This paper considers “soft debt” as a social convention that facilitates long-term reciprocal relationships. A player is said to follow a soft debt strategy if his decisions depend on the entire history with his counterpart only through their accrued soft debt balance. Under discrete benefits, there exist equilibria in which the players keep reciprocating as long as the debt balance does not exceed a certain limit.

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1. Introduction

Social interactions are essential to our daily lives. Sharing of chores between household members, exchange of favors between friends or neighbors, and collaboration between colleagues are all part of the fundamental fabric that makes up societies. Without doubt, kindness, fairness, and other similar considerations play an important role in such human interactions¹; and, as developed by [Trivers \(1971\)](#) and [Axelrod and Hamilton \(1981\)](#), evolution provides a theoretical basis for reciprocal altruism. However, even purely self-interested actors can fruitfully engage in the exchange of favors.

[Neilson \(1999\)](#) – one of the first to model the exchange of favors – studies a repeated two-player game in which in each period one player needs a favor that the other player may grant at a cost. The role assignments of the players (who will need and who may grant a favor), and the sizes of the benefits and costs of favors are all randomly drawn at the beginning of each period. This randomness assumption captures an essential characteristic of favor trading that sets it apart from gift giving, where the giver decides when and how much to give. In favor trading, the need for a favor or for help is not always known in advance, as when a child becomes ill and one relies on neighbors for assistance, or when a sudden urgent deadline at work

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¹ See for example [Andreoni and Miller \(1993\)](#); [Fehr and Schmidt \(1999\)](#); [Fehr and Gächter \(2000\)](#); [Bowles and Gintis \(2002\)](#); [Andreoni and Miller, 1993](#) and the empirical evidence cited by them.

requires a colleague to step up and help out. Likewise, the benefits associated with being helped and the costs of providing help may vary from one instance to the next as opportunities and obligations change over time.

Neilson proposes a grim trigger strategy, whereby the player performs the favor if and only if both players have so far performed favors whenever the size of the benefit drawn falls within ranges predefined in the strategy. Two intriguing findings are that the efficient solution is impossible to obtain when some favors are exceptionally costly, and some inefficient favors may be granted to prevent a termination of the relationship.

Möbius (2001) considers a setting in which the sizes of the benefits and the costs of favors are fixed (so that granting any favor is efficient). But the helper may actually be unable to help, and this capability is his private information. This forecloses the possibility of using a grim trigger strategy that requires players distinguishing between genuine inability to help and defection. Setting aside the question of whether complete efficiency is theoretically attainable, Möbius shows that favor-trading can be maintained between two players with a simple rule under which players grant favors as long as the net balance of favors granted is below a certain number. Hauser and Hopenhayn (2010) call this the ‘simple chips mechanism,’ in which each favor granted is rewarded with a ‘chip,’ so that the balance of chips records the net number of favors granted.

We combine the two important aspects of the Neilson and Möbius models: that the benefits and costs of favors are stochastic; and that whether a player is able to render help at all is private information. We show that when the chips mechanism is extended to allow for more sophisticated (yet still intuitive) social accounting mechanisms, favor exchange between the players can be supported in general. We then give two specific examples to illustrate the general finding. Like Möbius (2001), the strategy we prescribe reflects the ‘give-and-take’ consideration within favor-trading relationships. In particular, the routine use of phrases such as “to owe,” “to be indebted to,” “to pay back,” or “personal capital” suggests that there is some form of informal debt accounting involved in non-market social activities. The notion of informal debt matches what the anthropologist Alan Fiske calls ‘Equality Matching,’ one of the four elementary forms of sociality he identifies based on evidence from ethnographic field work and experimental studies in various cultures. ‘Equality Matching’ is characterized by a “compliance to return a favor [...] to keep things balanced” (Fiske, 1992, pg. 695) and “entails some kind of additive tally of who owes what and who is entitled to what” (pg. 705).²

In keeping with the notion of a recipient becoming ‘indebted’ to a helper, we postulate ‘soft debt’ as a social accounting convention. Soft debt allows more flexible record keeping than simple chips mechanisms, with the idea being that whenever help is provided, a soft debt is (tacitly) accrued from the recipient to the provider by accounting for the benefits and the costs of the help provided. The soft debt is then added to the accumulated soft debt balance between them. The soft debt limit strategy that we present thus expands on the ‘chips mechanisms’ found in Möbius (2001) and many subsequent papers in this line. When both players follow ‘soft debt strategies,’ i.e., they base their interactions with one another on this balance, then their expected future values of the relationship also depend on the balance. The more one is owed, the more likely it is that one will be helped and, similarly, the more valuable a favor is, the higher is the expected future value of the relationship. This consideration creates intertemporal incentives that promote reciprocity in the form of soft transactions.

In addition to the randomness assumption, we include another feature that distinguishes favor trading from gifting. In our set-up, the potential recipient must solicit help before a favor is rendered. In other words, the recipient can choose to request help or not. This requirement makes intuitive sense, as most people think before soliciting or accepting favors from acquaintances as so-called ‘favors’ are not actually free.³ Moreover, it explicitly allows the recipient to weigh the cost of receiving a favor against the market option (if available). We determine the endogenous soft prices that players use in gauging whether to request or offer support in their interactions. In equilibrium, the recipient requests help whenever the soft price he faces is below the direct benefit he obtains from being supported; and the helper renders help (if capable) whenever the soft price she faces is above the cost of providing help. Thus, the recipient can compare the soft price against the market hard price (if available), and choose whichever price is lower. For instance, he can choose between asking a friend to help him move and hiring a mover.

As the equilibrium is self-enforcing, players are not expected to act on possible ‘defections,’ which would be difficult because a player cannot tell whether the counterpart is actually capable of providing help. The ‘punishment’ for not providing a favor is a lower chance of receiving a favor in the future or having smaller future favors granted. This is less extreme than the bang-bang nature of the grim trigger strategy, and hence may better capture the nature of actual long-term relationships.

Subsequent to the papers by Neilson and Möbius, there is a small but growing literature collectively known as ‘favor trading.’ Hauser and Hopenhayn (2010) extend the chips mechanism to show that higher payoffs can be achieved by relaxing the exchange rate between current and future favors and allowing the balance of favors to appreciate or depreciate. Independently, Abdulkadiroglu and Bagwell (2013) also find that a declining size of favors-owed can improve efficiency in their repeated trust games with private information. Nayyar (2009) presents a discrete time version of Hauser and Hopenhayn’s model and allows the opportunities to offer help to occur at different rates for the two players.

² The other three forms of sociality are ‘Market Pricing,’ which readily maps into market transactions, ‘Communal Sharing,’ which does not entail an expectation of reciprocity; and ‘Authority Ranking,’ in which interactions are based on social standing. Fiske (1992) was also cited in Abdulkadiroglu and Bagwell (2012). For examples and theoretical treatments of the interface between personal and market exchanges, see Yellen (1990); Kranton (1996) and Araujo (2004), and also Gneezy and Rustichini (2000) and Bénabou and Tirole (2006).

³ Interestingly, Henrich et al. (2001) find that in ultimatum games conducted in some small-scale societies offers even exceeding 50 percent were frequently rejected.

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