

# Economists find in large groups, money facilitates cooperation

27 August 2013, by Marcia Malory



(Phys.org) —Early human societies consisted of small, tight-knit groups of individuals who knew each other. Members probably cooperated with one another based on prior experience and the expectation that individual beneficiaries of generosity would reciprocate. However, large, modern societies depend on transactions between strangers who may have no further contact after the transaction finishes. According to research by Gabriele Camera of the Economic Science Institute at Chapman University in Orange, California and his colleagues, money allows members of a large group to maintain trust when interacting with strangers, and therefore facilitates cooperation in modern societies. The study appears in the *Proceedings of the National Academy of Sciences*.

It's relatively easy to decide whether you should cooperate with someone you already know. Have they proved trustworthy before? If you do them a favor, are they likely to do something for you in the future? In early hunter-gatherer societies, where everyone knew everyone else, determining when to cooperate and when to refuse probably wasn't very difficult.

Today, however, we interact frequently with strangers. For society to run smoothly, we must cooperate with people we've never met before and may never see again.

To find out whether [money](#) makes people in large societies more likely to cooperate, Camera's team designed a helping game, dividing subjects into pairs consisting of a "consumer" and a "producer." The consumer had the opportunity to help the producer, for a small cost.

The researchers placed the subjects in groups of 2, 4, 8 and 32. When there were more than two people in a group, partners were unable to identify each other. As group size increased, the probability that current partners would be partners in the future, with an opportunity for reciprocation, decreased. Cooperation also decreased as group size increased.

In a later version of the game, the team gave subjects the opportunity to exchange tokens, which acted as an analog for money. A consumer could give a producer a token in exchange for help. This time, cooperation rates stayed the same, regardless of group size.

The researchers suggest that money provides stability as societies evolve and grow larger. It allows trust to exist in transactions between people who do not know each other. People trust that a stranger with money is less likely to try to get something for nothing than a stranger without money is.

Introducing money to a society does seem to incur a social cost. When tokens were included in the experiment, producers could either help in exchange for a token or help unconditionally, as a gift. Almost no gift-giving occurred at all. In comparison, earlier, when no tokens were available, all exchanges had been unconditional. Adding tokens caused the norm of monetary

exchange to replace the norm of voluntary cooperation.

**More information:** Money and trust among strangers, *PNAS*, Published online before print August 26, 2013, [DOI: 10.1073/pnas.1301888110](https://doi.org/10.1073/pnas.1301888110)

### **Abstract**

What makes money essential for the functioning of modern society? Through an experiment, we present evidence for the existence of a relevant behavioral dimension in addition to the standard theoretical arguments. Subjects faced repeated opportunities to help an anonymous counterpart who changed over time. Cooperation required trusting that help given to a stranger today would be returned by a stranger in the future. Cooperation levels declined when going from small to large groups of strangers, even if monitoring and payoffs from cooperation were invariant to group size. We then introduced intrinsically worthless tokens. Tokens endogenously became money: subjects took to reward help with a token and to demand a token in exchange for help. Subjects trusted that strangers would return help for a token. Cooperation levels remained stable as the groups grew larger. In all conditions, full cooperation was possible through a social norm of decentralized enforcement, without using tokens. This turned out to be especially demanding in large groups. Lack of trust among strangers thus made money behaviorally essential. To explain these results, we developed an evolutionary model. When behavior in society is heterogeneous, cooperation collapses without tokens. In contrast, the use of tokens makes cooperation evolutionarily stable.

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APA citation: Economists find in large groups, money facilitates cooperation (2013, August 27) retrieved 20 May 2019 from <https://phys.org/news/2013-08-economists-large-groups-money-cooperation.html>

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