

Deal or no deal? The effect of alcohol drinking on bargaining[☆]Pak Hung Au^a, Jipeng Zhang^{b,*}^a Division of Economics, Nanyang Technological University, Singapore^b The Research Institute of Economics and Management, Southwestern University of Finance and Economics, China

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ABSTRACT

Alcohol drinking during business negotiation is a very common practice, particularly in some East Asian countries. Does alcohol consumption affect negotiator's strategy and consequently the outcome of the negotiation? If so, what is the mechanism through which alcohol impacts negotiator's behavior? We investigate the effect of a moderate amount of alcohol on negotiation using controlled experiments. Subjects are randomly matched into pairs to play a bargaining game with adverse selection. In the game, each subject is given a private endowment. The total endowment is scaled up and shared equally between the pair provided that they agree to collaborate. It is found that a moderate amount of alcohol consumption increases subjects' willingness to collaborate, thus improving their average payoff. We find that alcohol consumption increases neither subjects' preference for risk nor altruism. A possible explanation for the increase in the likelihood of collaboration is that subjects under the influence of alcohol are more "cursed" in the sense of [Eyster and Rabin \(2005\)](#), which is supported by the estimation results of a structural model of quantal response equilibrium.

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Kissinger: I think if we drink enough Mao Tai (a famous Chinese liquor with high alcohol content) we can solve anything.

Deng: Then when I go back to China, I must increase production of it.

(From a conversation between former Chinese leader Xiaoping Deng and Henry Kissinger, former Secretary of State, April 14, 1974, *The Kissinger Transcripts*.)

1. Introduction

Alcohol consumption has at least a history of 10,000 years ([Gatety, 2008](#)). In many cultures around the world, drinking is an important part of social life, and is believed to be an essential element of building personal relationships. Drinking is also

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a common business practice in negotiations in many countries, especially in East Asia. For example, in China, negotiations often begins after rounds of toasts. In Japan, significant business meetings are frequently preceded by hours of whiskey, at which point drinking becomes more of a duty than pleasure. Korea is well-known for its aggressive drinking culture: refusing to drink without an obvious excuse can be considered rude and insulting, leading to a breakdown in negotiation. Heavy alcohol consumption is also common in Russia and Scandinavia (Schweitzer and Kerr, 2000). Given that the harmful effect of drinking on immediate decision-making and long-term health is well understood, it is puzzling that aggressive drinking is so prevalent in the business world. In this paper, we use the formal approach of controlled experiments to shed light on this puzzling observation. Our study investigates the effect of alcohol consumption on the negotiation behaviors and outcomes. We are particularly interested in the mechanisms through which alcohol generates its effects. Our findings are potentially useful for the design of guidelines for drinking in business negotiations. To the best of our knowledge, this is the first study to investigate the behavioral foundation of the effect of drinking alcohol on strategic behaviors, and our approach and findings can provide insights on other economic issues related to drinking.

In our experiment, two subjects are matched randomly to play a simple bargaining game with incomplete information. Each subject receives an endowment independently and uniformly drawn between 1 and 10. After privately learning their respective endowments, each subject simultaneously decides whether to participate in a joint project. If both of them participate, the joint project is implemented. In this case, each subject is entitled to half of the project's payoff, which scales up the sum of their respective endowments. If anyone of them decides not to participate, then the joint project is not started and each subject keeps their respective endowments. The game played here captures some essential features of real-world bargaining. First, each party has private knowledge on her contribution to the collaboration. In our game, the endowment can be interpreted as the party's quality or ability. Second, a party is uncertain about the potential contribution of the business partner. Third, a party can partially infer the partner's private information from the action taken/offer made.

The strategic consideration in the bargaining game is as follows: as each player is sharing her endowment with her partner if the joint project is started, she participates if and only if her endowment is relatively small. If she expects her partner to undergo the same reasoning, the fact that her partner is willing to participate is a "bad news": her gain from sharing the partner's endowment is likely to be small. As a result, she participates only if her own endowment is very low. Therefore, the bargaining game is one of a two-sided lemons problem: only "lemons" take part in the joint project. In our theoretical analysis, we show that the game admits a unique Bayesian Nash equilibrium (BNE) in which each player follows a symmetric cutoff strategy: she participates if and only if her endowment is below a certain threshold.

An extensive psychology literature documents that alcohol intoxication impairs the drinker's information processing ability. The survey by Steele and Josephs (1990) concludes that alcohol intoxication (i) consistently restricts the range of cues that we can perceive in a situation; and (ii) reduces our ability to process and extract meaning from the cues and information we do perceive. Specifically, alcohol intoxication restricts our ability to abstract and conceptualize (e.g., Tarter et al., 1971), the ability to use several cues at the same time (Moskowitz and DePry, 1968), as well as the cognitive elaboration needed to encode meaning from incoming information (Birnbaum et al., 1980). In short, when we are drunk, we are worse at paying attention to and learning from the information available to us.

Based on these findings in psychology, we hypothesize that alcohol consumption reduces our ability to extract information content from the actions of other players in a strategic interaction. The notion of cursed equilibrium proposed by Eyster and Rabin (2005) provides an appropriate theoretical framework for our study. Specifically, their solution concept generalizes BNE by taking into account that each player may not fully recognize the information content contained in other players' action. Each cursed equilibrium is characterized by a cursedness parameter χ , which describes the extent to which players under-estimate the connection between their partners' equilibrium action and information. If $\chi = 0$, we are back to BNE; if $\chi = 1$, each player entirely ignores the correlation between the partner's action and information: the equilibrium is said to be fully cursed. In the language of the cursed equilibrium, our hypothesis is that alcohol consumption increases the value of χ in the subsequent play of the game.

In our theoretical analysis, we show that in the bargaining game, the equilibrium cutoff is increasing in χ : the more cursed the players are, the more willing they are to participate. The reason is quite intuitive. Recall participation in the joint project indicates a low endowment. A "cursed" player does not fully appreciate this connection, and interprets the partner's participation decision too favorably. As a result, she is more willing to participate herself. Our hypothesis therefore implies that if the bargaining game is played under the influence of alcohol, subjects would adopt a higher cutoff strategy, and the joint project is more likely to be started. Furthermore, in the bargaining game, subjects' belief plays a crucial role in determining her strategy and consequently the bargaining outcome. Specifically, if a subject believes that alcohol consumption can alleviate the lemons problem by making her partner more inclined to join the project, then the subject is more inclined to join herself, even if she is NOT intoxicated. This consideration leads to the hypothesis of a positive placebo effect of alcohol consumption on facilitating bargaining.

In order to test these hypotheses, we adopt a between-subject experiment design and run three treatments distinguished by the drink offered and the information given before the bargaining game begins. In the *Nonalcohol treatment*, each subject is asked to drink a glass of nonalcoholic beer, without being explicitly told whether the drink is alcoholic or nonalcoholic. In the *Alcohol treatment*, each subject is asked to drink a glass of alcoholic beer, without being explicitly told whether the drink is alcoholic or nonalcoholic neither. In the *Nonalcohol-Announced treatment*, each subject is asked to drink a glass of nonalcoholic beer, and is told explicitly the drink is nonalcoholic. The only difference between Nonalcohol treatment and Alcohol treatment is the existence of alcohol in the drink, and the comparison of these two treatments identifies the *alcohol*

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