

Haucap, Justus; Herr, Annika; Frank, Björn

Working Paper

In vino veritas: Theory and evidence on social drinking

DICE Discussion Paper, No. 37

Provided in Cooperation with:

Düsseldorf Institute for Competition Economics (DICE)

Suggested Citation: Haucap, Justus; Herr, Annika; Frank, Björn (2011) : In vino veritas: Theory and evidence on social drinking, DICE Discussion Paper, No. 37, ISBN 978-3-86304-036-9, Düsseldorf Institute for Competition Economics (DICE), Düsseldorf

This Version is available at:

<http://hdl.handle.net/10419/51562>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

DISCUSSION PAPER

No 37

In Vino Veritas: Theory and Evidence on Social Drinking

Justus Haucap,
Annika Herr,
Björn Frank

November 2011

IMPRINT

DICE DISCUSSION PAPER

Published by

Heinrich-Heine-Universität Düsseldorf, Department of Economics, Düsseldorf Institute for Competition Economics (DICE), Universitätsstraße 1, 40225 Düsseldorf, Germany

Editor:

Prof. Dr. Hans-Theo Normann

Düsseldorf Institute for Competition Economics (DICE)

Phone: +49(0) 211-81-15125, e-mail: normann@dice.uni-duesseldorf.de

DICE DISCUSSION PAPER

All rights reserved. Düsseldorf, Germany, 2011

ISSN 2190-9938 (online) – ISBN 978-3-86304-036-9

The working papers published in the Series constitute work in progress circulated to stimulate discussion and critical comments. Views expressed represent exclusively the authors' own opinions and do not necessarily reflect those of the editor.

In Vino Veritas: Theory and Evidence on Social Drinking

Justus Haucap*, Annika Herr
DICE, Heinrich-Heine-University of Duesseldorf

Björn Frank University of Kassel

November 2011

Abstract

It is a persistent phenomenon in many societies that a large proportion of alcohol consumption takes place in company of other people. While the phenomenon of social or public drinking is well discussed in disciplines as social psychology and anthropology, economists have paid little attention to the social environment of alcohol consumption. This paper tries to close this gap and explains social drinking as a trust facilitating device. Since alcohol consumption tends to make some people (unwillingly) tell the truth, social drinking can eventually serve as a signaling device in social contact games. Empirical support is obtained from a cross-country analysis of trust and a newly developed index of moderate alcohol consumption.

social and public drinking, alcohol consumption, social contact games, trust, signaling

JEL: C 72, D71, L14

*Address for Correspondence: Düsseldorf Institute for Competition Economics (DICE), Heinrich-Heine-Universität Düsseldorf, Universitätsstr. 1, 40225 Düsseldorf, Germany. Fax: +49-211-8115499, Emails: haucap@dice.hhu.de, herr@dice.hhu.de, frank@uni-kassel.de.

"Beau didn't like Glen much at all, couldn't, he admitted, since he never trusted a man who didn't drink." (Dorothy Allison, 1992)

1 Introduction

A large proportion of alcohol consumption takes place in social environments such as bars, pubs or on parties, or, more generally, in company of other people. Many people rather consume alcoholic beverages in company than alone. While the empirical phenomenon of social or public drinking is discussed by social psychologists (see, e.g., Vogel-Sprott, 1992; Hennessy and Saltz, 1993, or, Sykes et al., 1993) as well as anthropologists (see, e.g., Pittman and Snyder, 1962, and Douglas, 1987), economists have only paid little attention to it only until recently. This paper closes the gap of a theoretical underpinning of the recent empirical results and offers a rational choice explanation for social drinking.

Whereas alcoholism has been empirically detected to lead to poor labor market outcomes (MacDonald and Shields, 2004; Jones and Richmond, 2006; Johansson et al., 2007) recent studies in economics show that moderate drinking may increase wages (compare MacDonald and Shields (2001) for England, Buonanno and Vanin (2007) for Italy, Ormerod and Wiltshire (2009) for UK, and Peters and Stringham (2006) for USA). In Japan, the results can be confirmed for males (Sato and Ohkusa, 2003). With Russian data, Tekin (2002) shows that the often detected inverted U-shaped relation between alcohol consumption and individual wages does not hold when using models accounting for unobserved heterogeneity. Furthermore, then, the relation between alcohol consumption and wages of females becomes negative. Ziebarth und Grabka (2009) use the German Socioeconomic Panel (GSOEP) and differentiate between the drinking occasion and the type of drinks. They show that the positive effect of social drinking does not only differ by the amount of consumption but also by the choice of drink. Drinking cocktails is associated with the highest increase in income for individuals living in urban areas whereas in rural areas beer consumption has the highest statistical effect. Underlying reasons may be that social capital is increased through engagement in social networks which can be supported by drinking together. Bray (2005) models the positive effect of moderate alcohol consumption through the formation of human capital which, however, suffers from heavy drinking. Ziebarth and Grabka (2009) conclude that moderate drinking - being a social norm in Western cultures - may enhance social skills and lead to a greater efficiency in the production of human capital. Ioannides and Loury (2004) and Montgomery (1991) state that social skills and

the ability for networking determine wages to a high degree.

In contrast to the theory of rational addiction, as developed by Stigler and Becker (1977) and Becker and Murphy (1988), we do not focus on possible intertemporal effects of alcohol consumption and the "risk" of becoming addicted, but on the social context in which alcohol consumption takes place. Hence, this paper is strongly related to the work of Becker (1991) who studies social determinants of demand. Becker's models starts from the assumption that individuals receive utility from the very fact that they are consuming certain goods together with certain other individuals. However, a remaining question is: Which goods can be predicted to be preferably consumed in company and which are rather consumed in private? Why are alcoholic beverages of all goods so commonly consumed in public?

To provide at least a partial answer to this question, this paper will take a different approach towards the social consumption of alcohol. In contrast to the work cited above we neither assume that economic agents receive any direct utility from the consumption of alcohol nor is it assumed that individuals receive direct utility from consuming it together with other people. Instead, we focus on the peculiar property of alcohol that its consumption makes some people (unwillingly) tell the truth. Basically, we proceed from insights of the ancient Romans: *In Vino Veritas*.

To be more precise, it is assumed that the population consists of two types of individuals, "high" and "low". These notions can have different meanings, e.g. they can describe a person's productivity level or his willingness to cooperate. These individuals can carry out a social interaction from which they receive utility. The utility derived from this social interaction depends on the individual's own type as well as her partner's type. In this sense, the model is similar to the "dating" and "social contact games" analyzed by Pesendorfer (1995) and Bagwell and Bernheim (1996). However, the signaling mechanism analyzed is quite different. While Pesendorfer and Bagwell and Bernheim consider models in which consumers can signal their wealth or their potential payoffs from matching by conspicuously consuming expensive or fashionable commodities, we consider a different signaling mechanism: By drinking alcoholic beverages, individuals take the risk of revealing their true type. Depending on payoffs and the distribution of types within the population, the resulting equilibrium might be pooling or separating. Especially if individuals face capital constraints and cannot borrow against future payoffs, "social drinking" might be an important signaling and trust facilitating device. From a welfare economic perspective social drinking might be a superior signaling mechanism compared to conspicuous consumption activities because it is a rather nondissipative signal if the (social) costs of alcohol consumption are low.

2 The Model

2.1 A Basic Model of Social Interaction

Suppose that there are two types of individuals, L and H , both of which receive utility from some basic social interaction. An individual's utility is dependent not only on her own type, but on the partner's type as well as. The payoffs may be depicted by the following matrix where the first figure represents Row's payoff and the second figure the payoff of Column:

	H	L
H	(α, α)	(γ, β)
L	(β, γ)	(δ, δ)

Table 1: Payoff matrix of social interaction when the population consists of different types.

Hence, an individual of type L receives a utility of β when interacting with an individual of type H and so on. Let us also assume that $\alpha > \beta > \delta > \gamma$. Furthermore, we assume that individuals can decide to stay alone (i.e., not to interact), the utility of which is $\omega > \gamma$ for both types. For the sake of simplicity suppose that $\omega = \delta$. Moreover, we assume that an individual's type is private information. That means, an individual's own type is only known to the individual himself; potential partners cannot detect an individual's type *ex ante*. Finally, let the probability distribution over the two types be given by $(p, L; (1 - p), H)$ and assume that the population is sufficiently large so that every single individual is small in relation to the overall population. Now the agents can decide whether to stay alone or to be randomly matched, i.e. to interact without drinking. Then, an individual of type H will choose to interact if her expected payoff, E_H , exceeds ω , i.e.

$$E_H = (1 - p)\alpha + p\gamma \geq \omega \quad (1)$$

Similarly, an individual of type L will interact if

$$E_L = (1 - p)\beta + p\delta \geq \omega \quad (2)$$

Let us assume that the prior probability distribution $(p, L; (1 - p), H)$ induces sufficiently optimistic beliefs, so that both types choose to interact. In this case, total welfare is given by

$$W = N[(1 - p)E_H + pE_L] \quad (3)$$

where N is the size of the population and E_i the expected utility for an individual of type i with $i \in \{L, H\}$ as given by (1) and (2). In a world of complete information or fully trustworthy individuals, however, total welfare would be given by

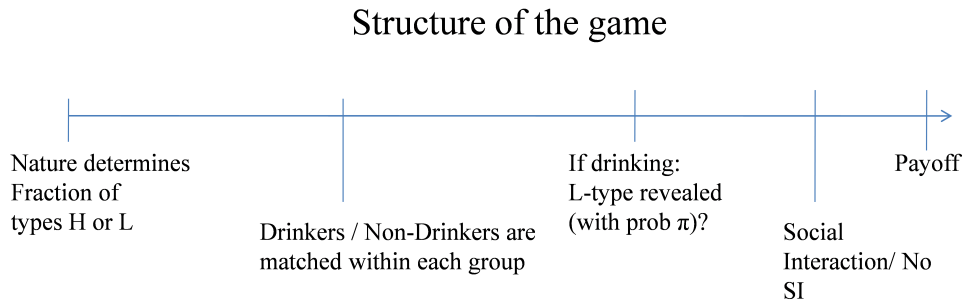
$$W^* = N[(1 - p)\alpha + p\delta] \quad (4)$$

Thus, the welfare loss due to people's dishonesty is given by

$$WL \equiv W^* - W = Np(1 - p)(\alpha - \beta + \delta - \gamma) \quad (5)$$

2.2 Social Interactions after Social Drinking

Now, let us slightly change the game and suppose that individuals can go out for a drink before interacting. The following figure shows the full timing of the game.



As the ancient Roman proverb "In Vino Veritas" tells us, people tend to tell the truth when drinking. Therefore, let us assume that every individual reveals his true type with probability π when drinking and that π is not type dependent. However, people also incur costs of drinking, denoted by D .¹ Furthermore, let $d \in \{0, 1\}$ stand for the individual decision whether or not to engage in social drinking, and let $d = 1$ denote a positive engagement. Finally, let s_i denote the fraction of the population that is of type i and socially drinking where $s_H \in [0, 1 - p]$ and $s_L \in [0, p]$. Accordingly, the fraction of the population not engaging in social drinking is given by $1 - s_H - s_L$ where

¹The figure D is assumed to include all costs of drinking, including possible external costs as well as the risk of becoming addicted. If we assume that individuals directly receive utility from alcohol consumption, D might be interpreted as the difference between the costs of drinking and the utility received. Hence, D can take positive as well as negative values.

$1 - p - s_H$ are of type H and $p - s_L$ of type L . For reasons of simplicity, the equilibrium values of s_L and s_H will be assumed to be common knowledge.

We consider a matching technology that is quite similar to the one proposed by Pesendorfer (1995). If an individual is the only one of the population to go out for a drink he is matched to someone who does not drink. In addition, we assume that there is always a small (measure-zero) group of low types who do not drink to assure that there is always a match for each consumer. Furthermore, the matching technology has the following properties:

- (a) If $s_H + s_L > 0$, then the probability of being matched with an individual of type i when engaging in social drinking is given by $s_i/(s_H + s_L)$ for $i \in \{L, H\}$
- (b) If $s_H + s_L = 1$, then a consumer who is not going out for a drink will meet a low type with probability 1. He thus prefers to stay alone and receives a payoff of ω .
- (c) If $s_H + s_L = 0$, then the probability of meeting a high type for a consumer who drinks alone before the meeting is equal to the probability of meeting a high type when not drinking.

Let us now analyze the decision problem the two types of individuals face. Each agent basically has to decide whether or not to engage in social drinking and, in any case, whether or not to interact with each other afterwards. First, consider the decision of a type- H individual: For an individual of type H it does not matter whether she reveals her type or not; true revelation only makes the interaction with her more desirable, but does not do any harm to her. Independent from whether or not she truthfully reveals her type, her payoff will be the same. What matters for her is the case in which a potential partner truthfully reveals that he is of type L . In this case, a type- H individual would refrain from interacting and retreat to the outside option of staying alone. Hence, for a type- H individual the expected payoff of drinking before potentially interacting is given by:

$$E_H^D = \frac{s_H}{s_H + s_L} \alpha + \frac{s_L}{s_H + s_L} (\pi \omega + (1 - \pi) \gamma) - D \quad (6)$$

Accordingly, her expected payoff of not drinking before interacting can be written as

$$E_N^{ND} = \frac{1 - p - s_H}{1 - s_H - s_L} \alpha + \frac{p - s_L}{1 - s_H - s_L} \gamma \quad (7)$$

Notice at this point that E_H^D is increasing in s_H and decreasing in s_L while

the opposite is true for E_H^{ND} . Furthermore, E_H^D exceeds E_H^{ND} if

$$\frac{p - s_L/(s_H + s_L)}{1 - s_H - s_L}(\alpha - \gamma) - \frac{s_L\pi}{s_H + s_L}(\omega - \gamma) \geq D \quad (8)$$

Condition (8) is the incentive compatibility constraint for a type- H individual to engage in social drinking. If condition (8) is met, type- H individuals will prefer going out for a drink before the social interaction over meeting without having consumed alcohol together before. However, for social drinking to occur its payoff also has to exceed the payoff of staying alone. That means, E_H^D has to exceed ω . Therefore, the participation constraint for social drinking before the meeting can be rewritten as

$$\frac{s_H}{s_H + s_L}(\alpha - \omega) \geq \frac{s_L}{s_H + s_L}(\omega - \gamma)(1 - \pi) + D \quad (9)$$

Similarly, one can easily formulate a participation constraint for "blind dates", i.e. social interaction without social drinking.

Now, let us have a look on type- L individuals. For an individual of type L it is rather unimportant whether or not a potential partner reveals his type. Even if the partner reveals his true type as L , the best choice for a type- L individual is still "interaction" due to assumption that $\omega = \delta$. For an individual of type L the risk of drinking rather lies in the fact that she might reveal her true type so that type- H individuals will refrain from interacting with her. Hence, if she happens to reveal her type, the payoff will be $\omega = \delta$, independent of the drinking partner's type.

The expected payoff from social drinking can be written as

$$E_L^D = \frac{s_H}{s_H + s_L}(\pi\omega + (1 - \pi)\beta) + \frac{s_L}{s_H + s_L}\omega - D \quad (10)$$

while her expected payoff of not drinking is given by

$$E_L^{ND} = \frac{1 - p - s_H}{1 - s_H - s_L}\beta + \frac{p - s_L}{1 - s_H - s_L}\omega \quad (11)$$

Comparing these two figures we see that an individual of type L finds it attractive to engage in social drinking if

$$\frac{p - s_L/(s_H + s_L)}{1 - s_H - s_L}(\beta - \omega) - \frac{s_H\pi}{s_H + s_L}(\beta - \omega) \geq D \quad (12)$$

The participation constraint for social drinking for a type- L individual demands that E_L^D exceeds ω and can be rewritten as:

$$\frac{s_H}{s_H + s_L}(\beta - \omega)(1 - \pi) \geq D \quad (13)$$

Proceeding from condition (12) and (13) let us state the following

Lemma 1 *If $s_H = 0$ and $(D \geq 0)$, an individual of type L will never find it attractive to drink (independent of the value of s_L).*

Having explored the individuals' incentives to engage in social drinking, let us examine some possible equilibria. For this purpose, let us specify individual beliefs about a potential partner's type as $b(i|d)$ where i represents the type with $i \in \{L, H\}$, and $d \in \{0, 1\}$ is the drinking decision of the potential partner.

Since games with asymmetric information are almost always characterized by multiple equilibria, let us restrict ourselves to what we think are the three focal equilibria: A teetotaler economy in which no individual consumes alcoholic beverages, a mixed economy in which one group of individual engages in social drinking while the other remains abstinent, and a boozier economy in which all individuals engage in social drinking.

Consider first a pooling equilibrium in which both types remain teetotaler, i.e. $s_L = 0$ and $s_H = 0$. From Lemma 1 it follows immediately that, given $s_H = 0$, a type L 's best response is to remain abstinent as well. Given $s_L = 0$, a type- H 's payoff from social drinking is $\omega - D$ for $s_H = 0$ (always being matched to an L -type and thus staying at home) and $\alpha - D$ for $s_H > 0$ (always meeting another H -type). Accordingly, the expected payoff from not drinking is $E_H = (1 - p)\alpha + p\gamma$ as given by (1) for $s_H = 0$ and $((1 - p - s_H)\alpha + p\gamma)/(1 - s_H)$ as given by (7) for $s_H > 0$. Hence, we can formulate

Proposition 2 *Given Equation (1) holds with $E_H = (1 - p)\alpha + p\gamma \geq \omega$, there exists a Nash Equilibrium in which both types of individuals interact without social drinking ($s_L = 0$, $s_H = 0$) and $b(i = H|\forall d) = 1 - p$.*

Proof. Given $s_H = 0$ and $b(H|\forall d) = 1 - p$, an individual of type L will never find it optimal to engage in social drinking as stated by Lemma 1. Hence, all type- L individuals will refrain from social drinking, i.e. $s_L = 0$.² Given $s_L = 0$ and $s_H = 0$ social drinking is not attractive for a type- H individual either. Since $(1 - p)\alpha + p\gamma \geq \omega \geq \omega - D$, type- H individuals will interact without social drinking, so that $s_H = 0$. ■

Obviously, total welfare in a pooling equilibrium without social drinking is given by (3) as before. However, a pooling equilibrium in which both types remain teetotaler is not a "sensible" equilibrium and inherently unstable if $D \leq (\alpha - \omega)$. In this case, type- H individuals could do better if only sufficiently many of them became social drinker. The reasoning behind this is the following: As can be seen by condition (8), given $s_L = 0$ and $s_H > 0$,

²Since we assumed that $\delta = \omega$, a type- L individual is at best indifferent between not drinking and staying alone

E_H^{ND} only exceeds E_H^D if $p(\alpha - \gamma) \leq D(1 - s_H)$. Let us assume that there are values of $s_H \in [0, 1 - p]$ meeting this constraint. However, if there also exist values of s_H for which $p(\alpha - \gamma) \geq D(1 - s_H)$ holds, a type- H individual would be better off with social drinking before interacting. Moreover, $D \leq (\alpha - \omega)$ implies $D < (\alpha - \gamma)$. Under the circumstances described, this means that there exists some $s_H^* < (1 - p)$ for which $p(\alpha - \gamma) = D(1 - s_H^*)$. Furthermore, as long as $s_L = 0$, type H 's incentive to engage in social drinking is increasing in s_H since E_N^{ND} is decreasing in s_H . Hence, once s_H exceeds s_H^* a kind of bandwagon effect arises since every type- H individual prefers to engage in social drinking, *ceteris paribus*. Proceeding from these considerations let us state

Proposition 3 *There exists a Nash Equilibrium in which individuals of type H engage in social drinking while type- L individuals interact without social drinking ($s_L = 0$, $s_H = 1 - p$) and in which $b(i = H|d = 1) = 1$ and $b(i = L|d = 0) = 1$, if $(\alpha - \omega) \geq D \geq (1 - \pi)(\beta - \omega)$.*

Proof. Given $s_L = 0$ and $s_H = 1 - p$, the payoff from social drinking for a type- H individual is given by $\alpha - D$, while the payoff from not drinking is γ . Since we assumed that $\gamma < \omega$, type H 's incentive compatibility constraint holds automatically if her participation constraint for social drinking is met. The latter is secured by the first part of the inequality given in Proposition 2, i.e. $(\alpha - \omega) \geq D$. Furthermore, as mentioned before, a type- L individual is at best indifferent between not drinking and staying alone. Her incentive compatibility condition for not drinking is fulfilled by the second part of the inequality given above, i.e. $D \geq (1 - \pi)(\beta - \omega)$. ■

In a separating equilibrium, social drinking perfectly signals an individual's type. While type- L individuals remain teetotaler, type- H individuals engage in social drinking. Total welfare is then given by

$$W^{DS} = N[(1 - p)(\alpha - D) + p\delta] \quad (14)$$

That means, compared to a pooling equilibrium without social drinking welfare increases if $W^{DS} - W \geq 0$, or

$$p(\alpha - \beta + \delta - \gamma) \geq D \quad (15)$$

That means that the separating equilibrium will be welfare increasing compared to a society of teetotalers if the group of L -type individuals is sufficiently big and the costs of drinking D (including reductions in productivity) are small. Finally, let us consider a boozier economy in which all individuals engage in social drinking, i.e. ($s_L = p, s_H = 1 - p$). Due to property

(b) of the matching technology, the incentive compatibility constraint for social drinking resembles the participation constraint in this case, and we can concentrate on conditions (9) and (13) and state

Proposition 4 *If $(1-p)(\alpha-\omega) - p(1-\pi)(\omega-\gamma) \geq D$ and $(1-p)(1-\pi)(\beta-\omega) \geq D$, then there exists a Nash Equilibrium in which all individuals engage in social drinking ($s_L = p$, $s_H = 1-p$) and where $b(i = H|d = 1) = 1-p$ and $b(i = L|d = 0) = 1$.*

Proof. Given $s_L = p$ and $s_H = 1-p$, the payoff from social drinking for a type- H individual is given by $E_H^{DP} = E_H + p\pi(\omega - \gamma) - D$, while the payoff from not drinking is ω because of property (b) of the matching technology. The first inequality of Proposition 3 ensures that $E_H^{DP} \geq \omega$ (compare Equation (9)). Similarly, the payoff for a type- L individual is given by $E_L^{DP} = E_L - (1-p)\pi(\beta - \omega) - D$. The second inequality in the assumptions of Proposition 2 states that $E_L^{DP} \geq \omega$ (compare Equation (13)). Hence, both types of individuals will go out drinking before an interaction.

■

In this "boozer economy" all individuals go out drinking, so that welfare is given by

$$W^{DP} = W + N(1-p)p\pi[(\omega - \gamma) - (\beta - \omega)] - ND \quad (16)$$

That means, compared to a pooling equilibrium without social drinking, welfare increases if $W^{DP} - W \geq 0$, or

$$(1-p)p\pi[(\omega - \gamma) - (\beta - \gamma)] \geq D, \quad (17)$$

i.e. a boozer economy is preferred in societies where H and L -types occur in similar size, the costs of drinking (e.g. due to lower productivity) are low, and the probability of revelation is high. However, a pooling equilibrium in which all individuals go out drinking is only stable if drinking is an enjoyable activity in itself. If, however, drinking is costly as we have assumed, then the equilibrium is inherently unstable. If all type- L individuals go out for a drink, type- H individuals can distinguish themselves by not going out. However, as s_H becomes smaller it becomes also less attractive for type- L individuals to engage in social drinking. Finally, as s_H approaches zero, type- L individuals will switch to non-drinking behavior as stated in Lemma 1. As stated earlier, other equilibria might exist as is almost always true in games of incomplete information. Depending on payoffs and players' beliefs, there might also be a pooling equilibrium in which some fraction of both types engages in social drinking. However, we think that the general mechanism is clear and that

the value added by exploring innumerable equilibria is rather low, especially in the light of the next section, which shows that separating equilibrium is consistent with empirical evidence.

3 Empirical Evidence

As discussed in the introduction, a fair number of empirical studies have revealed a positive correlation between moderate drinking and individual wages. However, most of these empirical studies have explained their findings somewhat ad hoc as some sort of social capital formation (e.g., Bray, 2005, Ziebarth and Grabka, 2009), and none has offered a clear rational choice perspective why social drinking may be beneficial for individuals. That is, the underlying mechanism has not been subject to the analysis, but rather simply assumed to exist somehow.

Put differently, the empirical results have come without a convincing theoretical explanation. Here is the one that our signaling model suggests: Social drinking helps to reveal the other person's type. It thus reduces the likelihood of frustrations that arise from trusting people who later turn out to be untrustworthy. A history of successful cooperation and good matches (H-types finding H-type-partners) reinforce the feeling that others can be trusted.

We test the hypothesis that alcohol consumption and trust correlate directly, using international cross-section data. Trust is measured as the percentage of people answering, when asked "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" with "Most people can be trusted" (the only alternative being "Can't be too careful"); unweighted mean = 27%. The data stem from the World Value Survey 2005-2007.³

Trust increases significantly with alcohol consumption, see column 1 of Table 2. Here, alcohol consumption is defined as $\text{Alc_Con} = \text{Total recorded alcohol consumption per capita (over 15 years of age) in liters of pure alcohol, 2000/2001, and taken from WHO (2004, Table 3, pp.11-12)}$. However, this result is unimpressive with a coefficient of determination (R^2) of 0.07. A first indication why this may be the case is suggested by column 2. Trust decreases with the mortality rate per 100,000 for liver cirrhosis (liv_cirr),⁴ which is a reasonable proxy for problematic alcohol consumption. Indeed, as soon as alcohol intake is so intense that hangovers and blackouts occur, our model predicts that the benefits of social drinking begin to disappear. While

³Source: <http://www.worldvaluessurvey.org/>, retrieved on 3 May 2010.

⁴As found in WHO (2004, Table 21, pp. 56-58) for the most recent year available then.

hangovers simply increase the expected costs of drinking (D), a blackout implies that people cannot recall whether or not a partner has revealed his true type, i.e. a blackout can be viewed as analogous to a reduction in π . Increases in the probability of a hangover as well as in the probability of a blackout decrease the likelihood of a separating equilibrium as measured by the possible range of payoffs enabling a separating equilibrium. Obviously, the likelihood of a boozier equilibrium is reduced as well. Hence, we need to measure moderate alcohol consumption.

Table 2: OLS regression results. Dependent variable: Trust

	(1)	(2)	(3)	(4)
Alc_Con	1.158** (2.01)			
liv_cirr		-0.571** (2.62)		
Alc_Con/liv_cirr			13.488*** (4.82)	
Alc_Con/(liv_cirr*abstain)				171.695*** (5.69)
Constant	20.076*** (4.93)	38.437*** (8.95)	16.042*** (4.19)	17.602*** (5.12)
R ²	0.07	0.20	0.45	0.57
N	53	30	30	26
Relative Increase in Trust	6.70	n/a	7.30	2.96

(t-statistics in brackets) **: significant at 5 % level ***: significant at 1 % level

A first attempt is to divide per capital alcohol consumption by the liver cirrhosis mortality rate. This "index of moderate alcohol consumption" alone explains 45 percent of the variance in trust, see column 3 of Table 2. Next, we further refine the index and include the rate of abstainers⁵ as well: For a given per capital alcohol consumption, the higher the rate of abstainers, the less "moderate" is the average consumption of those who do drink. Thus dividing per capital alcohol consumption by liver cirrhosis mortality rate *and* the rate of abstainers gives the index of moderate alcohol consumption used in column (4), explaining 57 percent of the variance in trust.⁶

⁵Abstainers = Rate of last year abstainers among the adult population, taken from WHO (2004, Table 6, pp.24-26).

⁶We are aware that unobserved factors (e.g., security enforcement, average income, economic culture) may be correlated both with trust and with the constructed outcome which could be accounted for by analyzing a panel data set. However, even if the reasons for drinking may differ, the pair-wise correlation between trust and alcohol consumption remains substantial.

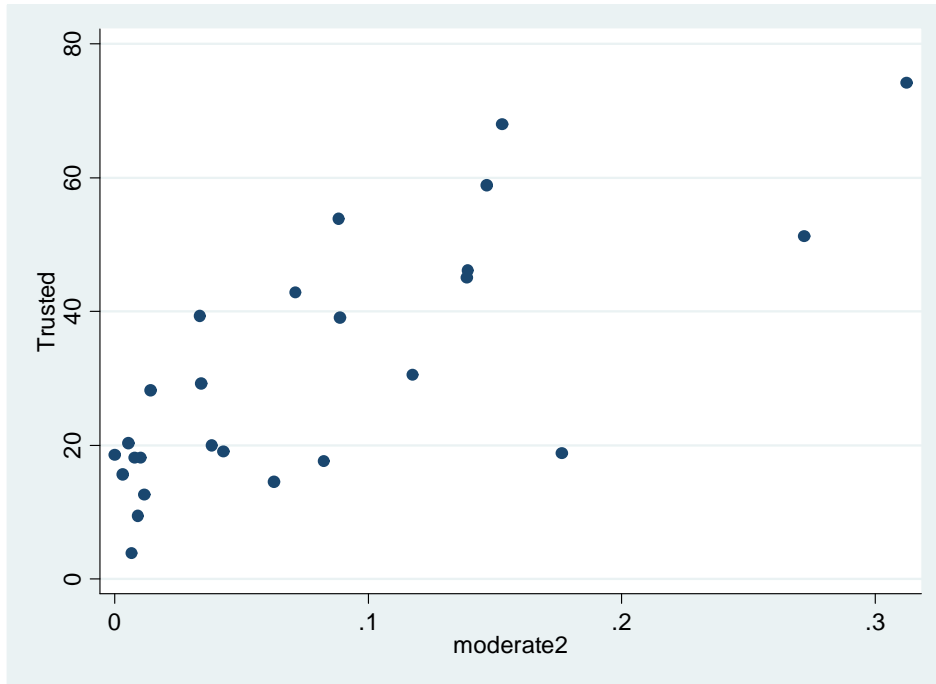


Figure 1: Trust and Alcohol Consumption in 26 Countries

Estimating equation (1) using the subsample of the 26 countries which enter regression (4), R^2 increases to 0.1053, while the coefficient of Alc_Con becomes insignificant ($t = 1.68$, $p = 0.106$). Hence the difference between (1) and the other regressions is not due to a sample composition effect.

The last row indicates the increase in trust, when alcohol consumption increases by 10%, but at constant liver cirrhosis rates and constant abstainer levels, at sample averages.

Summing up, the empirical evidence provided is consistent with the signaling model proposed in this paper. The model's implications are much closer to anthropology than to social psychology since anthropology - in sharp contrast to social psychology - does not view social and public drinking as a social problem, but simply as a persistent phenomenon. As anthropologists such as Douglas (1987) report, from primitive societies to the modern business world, many people rather tend to drink together than alone. Fellow workers, business partners and friends often tend to get together for a drink. The idea that social drinking serves as a trust facilitating device helps to understand why social or public drinking is such a widespread and persistent phenomenon in many societies.

4 Conclusion

This paper has endeavored to offer a rational choice explanation for the empirical phenomenon of social drinking. If alcohol consumption makes people reveal their true type with some positive probability, social drinking might be an efficient signaling mechanism and might be interpreted as a trust facilitating device. This is the case if the share of less productive or less trustworthy individuals is sufficiently big and the costs of drinking (including reductions in productivity) are sufficiently small. Moreover, even pooling equilibria with social drinking might be efficient in a second-best sense. The idea that social drinking serves as a trust facilitating device is directly supported by empirical evidence (section 3) and helps to explain why social or public drinking is such a widespread phenomenon in many societies. As anthropologists report, from primitive societies to the modern business world, many people rather tend to drink together than alone (Douglas, 1987). Fellow workers, business partners and friends often tend to get together for a drink. Drinking songs and chants may even reinforce this pattern. Hence, in its implications the model developed here is much closer to anthropology than to social psychology since anthropology - in sharp contrast to social psychology - does not view social and public drinking as a social problem, but simply as a persistent phenomenon (Douglas, 1987). It might even suggest an explanation for phenomena observed in more or less "dry" societies, say in Arab countries or China, where family or "Guanxi" networks, respectively, are of particular importance because the mechanism of social drinking is not available.

Of course, the model presented here can only offer a partial picture and should be viewed as complementary to the existing theories of rational addiction and social influences on demand. However, we hope that it might stimulate further research to combine these two existing strands of consumer theory as well as the recent advances in endogenizing social determinants of demand.

Finally, we think that the model might be interpreted in a more general sense. Basically, any activity that reveals an actor's type with a certain probability can be viewed through the lens of this model. To give an example, the employment of external auditing firms might be interpreted in this way. If there are different types of firms and external auditing firms reveal a firm's type with some probability, the employment of external auditing services might serve as a signal for a firm's type to potential business partners, shareholders or even consumers.

5 References

- Allison, D. (1992). *Bastard out of Carolina*, Plume/Penguin: New York.
- Bagwell, L.S. and B.D. Bernheim (1996). Veblen Effects in a Theory of Conspicuous Consumption, *American Economic Review* 86: 349-373.
- Becker, G.S. (1991). A Note on Restaurant Pricing and Other Examples of Social Influences on Price, *Journal of Political Economy* 99: 1109-1116.
- Becker, G.S. and K.M. Murphy (1988). A Theory of Rational Addiction, *Journal of Political Economy* 96: 675-700.
- Becker, G.S. and K.M. Murphy (1993). The World of Veblen Revisited: Social Consumption, High Prices, and Excess Quality, mimeo, University of Chicago.
- Buonanno, P. and P. Vanin (2007). Bowling Alone, Drinking Together, "Marco Fanno" Working Papers No. 55.
- Bray, J. (2005). Alcohol Use, Human Capital and Wages, *Journal of Labor Economics* 23: 279-312.
- Douglas, M., ed. (1987). *Constructive Drinking: Perspectives on Drink from Anthropology*. Cambridge University Press: Cambridge.
- Hennessy, M. and R.F. Saltz (1993). Modeling Social Influences on Public Drinking, *Journal of Studies on Alcohol*. 54: 139-145.
- Ioannides, Y., L. Loury (2004). Job Information Networks, Neighborhood Effects, and Inequality, *Journal of Economic Literature*. 42: 1056-1093.
- Johansson E., Alho H., Kiiskinen, U. and K. Poikolainen (2007). The Association of Alcohol Dependency with Employment Probability: Evidence from the Population Survey "Health 2000" in Finland, *Health Economics*. 16: 739-754.
- Jones, A.S. and D.W. Richmond (2006). Causal Effects of Alcoholism on Earnings: Estimates from the NLSY, *Health Economics*. 15: 849-871.

- MacDonald, Z. and M. Shields (2004). Does Problem Drinking Affect Employment? Evidence from England, *Health Economics*. 13: 139-155.
- MacDonald, Z. and M. Shields (2001). The Impact of Alcohol Consumption on Occupational Attainment in England, *Economica*. 58: 427-453.
- Montgomery, J (1991). Social Networks and Labor Market Outcomes: Toward an Economic Analysis, *American Economic Review*. 81: 1408-1418.
- Ormerod, P. and G. Wiltshire (2009). "Binge" drinking in the UK: a social network phenomenon, *Mind and Society*. 8: 135-152.
- Peters, B.L. and E. Stringham (2006). No Booze? You may lose: Why Drinkers Earn More Money Than Nondrinkers, *Journal of Labor Research*. 3: 411-421.
- Pesendorfer, W. (1995). Design Innovation and Fashion Cycles, *American Economic Review*. 85: 771-792.
- Pittman, D.J. and C.S. Snyder (1962). Society, Culture, and Drinking Patterns. John Wiley & Sons: New York.
- Sato, M. and Y. Ohkusa (2003). An Empirical Study of Alcoholic Consumption and Labor Productivity in Japan, The Institute of Social and Economic Research Osaka University, Discussion Paper 581.
- Stigler, G. and G.S. Becker (1977). De Gustibus Non Est Disputandum, *American Economic Review*. 67: 76-90.
- Sykes, R.E., R.D. Rowley and J.M. Schaefer (1993). The Influence of Time, Gender and Group Size on Heavy Drinking in Public Bars, *Journal of Studies on Alcohol*. 54: 133-138.
- Tekin, E. (2002). Employment Wages, and Alcohol Consumption in Russia: Evidence from Panel Data, IZA Discussion Paper No. 432.
- Vogel-Sprott, M. (1992). *Alcohol Tolerance and Social Drinking: Learning the Consequences*. Guilford Press: New York.
- WHO (2004). Global Status Report on Alcohol 2004, Geneva: World Health Organization Department of Mental Health and Substance Abuse

Ziebarth, N.R. and M.M. Grabka (2009). In Vino Pecunia? The Association between Beverage-Specific Drinking Behavior and Wages, *Journal of Labor Research*. 3: 219-244.

PREVIOUS DISCUSSION PAPERS

- 37 Haucap, Justus, Herr, Annika and Frank, Björn, In Vino Veritas: Theory and Evidence on Social Drinking, November 2011.
- 36 Barth, Anne-Kathrin and Graf, Julia, Irrationality Rings! – Experimental Evidence on Mobile Tariff Choices, November 2011.
- 35 Jeitschko, Thomas D. and Normann, Hans-Theo, Signaling in Deterministic and Stochastic Settings, November 2011.
- 34 Christin, Céquence, Nicolai, Jean-Philippe and Pouyet, Jerome, The Role of Abatement Technologies for Allocating Free Allowances, October 2011.
- 33 Keser, Claudia, Suleymanova, Irina and Wey, Christian, Technology Adoption in Markets with Network Effects: Theory and Experimental Evidence, October 2011.
- 32 Catik, A. Nazif and Karaçuka, Mehmet, The Bank Lending Channel in Turkey: Has it Changed after the Low Inflation Regime?, September 2011.
Forthcoming in: Applied Economics Letters.
- 31 Hauck, Achim, Neyer, Ulrike and Vieten, Thomas, Reestablishing Stability and Avoiding a Credit Crunch: Comparing Different Bad Bank Schemes, August 2011.
- 30 Suleymanova, Irina and Wey, Christian, Bertrand Competition in Markets with Network Effects and Switching Costs, August 2011.
Published in: B.E. Journal of Economic Analysis & Policy, 11 (2011), Article 56.
- 29 Stühmeier, Torben, Access Regulation with Asymmetric Termination Costs, July 2011.
- 28 Dewenter, Ralf, Haucap, Justus and Wenzel, Tobias, On File Sharing with Indirect Network Effects Between Concert Ticket Sales and Music Recordings, July 2011.
- 27 Von Schlippenbach, Vanessa and Wey, Christian, One-Stop Shopping Behavior, Buyer Power, and Upstream Merger Incentives, June 2011.
- 26 Balsmeier, Benjamin, Buchwald, Achim and Peters, Heiko, Outside Board Memberships of CEOs: Expertise or Entrenchment?, June 2011.
- 25 Clougherty, Joseph A. and Duso, Tomaso, Using Rival Effects to Identify Synergies and Improve Merger Typologies, June 2011.
Published in: Strategic Organization, 9 (2011), pp. 310-335.
- 24 Heinz, Matthias, Juranek, Steffen and Rau, Holger A., Do Women Behave More Reciprocally than Men? Gender Differences in Real Effort Dictator Games, June 2011.
Forthcoming in: Journal of Economic Behavior and Organization.
- 23 Sapi, Geza and Suleymanova, Irina, Technology Licensing by Advertising Supported Media Platforms: An Application to Internet Search Engines, June 2011.
Published in: B. E. Journal of Economic Analysis & Policy, 11 (2011), Article 37.
- 22 Buccirosi, Paolo, Ciari, Lorenzo, Duso, Tomaso, Spagnolo Giancarlo and Vitale, Cristiana, Competition Policy and Productivity Growth: An Empirical Assessment, May 2011.

- 21 Karaçuka, Mehmet and Catik, A. Nazif, A Spatial Approach to Measure Productivity Spillovers of Foreign Affiliated Firms in Turkish Manufacturing Industries, May 2011. Forthcoming in: The Journal of Developing Areas.
- 20 Catik, A. Nazif and Karaçuka, Mehmet, A Comparative Analysis of Alternative Univariate Time Series Models in Forecasting Turkish Inflation, May 2011. Forthcoming in: Journal of Business Economics and Management.
- 19 Normann, Hans-Theo and Wallace, Brian, The Impact of the Termination Rule on Cooperation in a Prisoner's Dilemma Experiment, May 2011. Forthcoming in: International Journal of Game Theory.
- 18 Baake, Pio and von Schlippenbach, Vanessa, Distortions in Vertical Relations, April 2011. Published in: Journal of Economics, 103 (2011), pp. 149-169.
- 17 Haucap, Justus and Schwalbe, Ulrich, Economic Principles of State Aid Control, April 2011. Forthcoming in: F. Montag & F. J. Säcker (eds.), European State Aid Law: Article by Article Commentary, Beck: München 2012.
- 16 Haucap, Justus and Heimeshoff, Ulrich, Consumer Behavior towards On-net/Off-net Price Differentiation, January 2011. Published in: Telecommunication Policy, 35 (2011), pp. 325-332.
- 15 Duso, Tomaso, Gugler, Klaus, Yurtoglu, Burcin B., How Effective is European Merger Control? January 2011. Published in: European Economic Review, 55 (2011), pp. 980-1006.
- 14 Haigner, Stefan D., Jenewein, Stefan, Müller, Hans Christian and Wakolbinger, Florian, The First shall be Last: Serial Position Effects in the Case Contestants evaluate Each Other, December 2010. Published in: Economics Bulletin, 30 (2010), pp. 3170-3176.
- 13 Suleymanova, Irina and Wey, Christian, On the Role of Consumer Expectations in Markets with Network Effects, November 2010 (first version July 2010). Forthcoming in: Journal of Economics.
- 12 Haucap, Justus, Heimeshoff, Ulrich and Karaçuka, Mehmet, Competition in the Turkish Mobile Telecommunications Market: Price Elasticities and Network Substitution, November 2010. Published in: Telecommunications Policy, 35 (2011), pp. 202-210.
- 11 Dewenter, Ralf, Haucap, Justus and Wenzel, Tobias, Semi-Collusion in Media Markets, November 2010. Published in: International Review of Law and Economics, 31 (2011), pp. 92-98.
- 10 Dewenter, Ralf and Kruse, Jörn, Calling Party Pays or Receiving Party Pays? The Diffusion of Mobile Telephony with Endogenous Regulation, October 2010. Published in: Information Economics and Policy, 23 (2011), pp. 107-117.
- 09 Hauck, Achim and Neyer, Ulrike, The Euro Area Interbank Market and the Liquidity Management of the Eurosystem in the Financial Crisis, September 2010.
- 08 Haucap, Justus, Heimeshoff, Ulrich and Luis Manuel Schultz, Legal and Illegal Cartels in Germany between 1958 and 2004, September 2010. Published in: H. J. Ramser & M. Stadler (eds.), Marktmacht. Wirtschaftswissenschaftliches Seminar Ottobeuren, Volume 39, Mohr Siebeck: Tübingen 2010, pp. 71-94.

- 07 Herr, Annika, Quality and Welfare in a Mixed Duopoly with Regulated Prices: The Case of a Public and a Private Hospital, September 2010.
Published in: German Economic Review, 12 (2011), pp. 422-437.
- 06 Blanco, Mariana, Engelmann, Dirk and Normann, Hans-Theo, A Within-Subject Analysis of Other-Regarding Preferences, September 2010.
Published in: Games and Economic Behavior, 72 (2011), pp. 321-338.
- 05 Normann, Hans-Theo, Vertical Mergers, Foreclosure and Raising Rivals' Costs – Experimental Evidence, September 2010.
Published in: The Journal of Industrial Economics, 59 (2011), pp. 506-527.
- 04 Gu, Yiquan and Wenzel, Tobias, Transparency, Price-Dependent Demand and Product Variety, September 2010.
Published in: Economics Letters, 110 (2011), pp. 216-219.
- 03 Wenzel, Tobias, Deregulation of Shopping Hours: The Impact on Independent Retailers and Chain Stores, September 2010.
Published in: Scandinavian Journal of Economics, 113 (2011), pp. 145-166.
- 02 Stühmeier, Torben and Wenzel, Tobias, Getting Beer During Commercials: Adverse Effects of Ad-Avoidance, September 2010.
Published in: Information Economics and Policy, 23 (2011), pp. 98-106.
- 01 Inderst, Roman and Wey, Christian, Countervailing Power and Dynamic Efficiency, September 2010.
Published in: Journal of the European Economic Association, 9 (2011), pp. 702-720.

Heinrich-Heine-University of Düsseldorf

**Düsseldorf Institute for
Competition Economics (DICE)**

Universitätsstraße 1_ 40225 Düsseldorf
www.dice.uni-duesseldorf.de