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Trade, Trust And The Territoriality Of The Law

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TRADE, TRUST AND THE TERRITORIALITY OF THE LAW*

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Center for the Study of Law and Economics
Discussion Paper 9705

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*„A healthy economy presupposes the rule of law:
taxes are paid, but services are rendered; contracts
are honoured and a stable environment is provided.
But law, order and trust at best are local growths and
do not flower as well in an international setting.“
(Shubik 1983: 110)*

Abstract

In this paper we analyze whether trust can overcome the contractual hazards caused by the territoriality of law, how effective trust is and what the impact is on the sequential structure of trade. The paper contributes to the New Institutional Economics of International Transactions (NIEIT).

Keywords: contractual hazard, territoriality of law, bounded rationality, trust game

JEL-Classification: C 72, K 12

Encyclopedia of Law and Economics: 9600, 0550

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I. INTRODUCTION

The theory of international trade is dominated by a model presupposing a legal order that is perfect in its specifications and controllability, binding for all economic agents, no matter their nationality. World order appears to be cosmopolitan, as defined by Kant (see Kant 1923). An international private law community such as this, however, does not exist. In fact, there is a territoriality of law, leading to problems largely neglected in the traditional theory of international trade. They are at the heart of what has been called the New Institutional Economics of International Transactions (NIEIT) (see Schmidtchen/Schmidt-Trenz 1989, 1990; Schmidt-Trenz 1990).¹

There are five themes recurring throughout the economics of international trade: the pattern of trade (What goods do countries trade? With whom do countries trade? How much do countries trade?), the gains from trade, protectionism and international policy coordination.

Although in practice trade - whether national or international - is based on contracts questions of international contracting were put into the background by the traditional economics of international trade. Following the general equilibrium approach it is interested in the allocation of factors of production and the exchange of goods. As Pomery put it „Walrasian price-coordination has dominated the traditional literature ...“ (Pomery 1984: 425.)

It must be conceded that traditional international economics realized that there are additional risks in doing international business. However as Pomery stated, „uncertainty is imposed, as a model-exogenous datum, on preferences, technology or endowments“ (Pomery 1984: 420). For example in Helpman it is treated in the form of random shocks that originate from various sources (see Helpman 1985:72).

Each nation state has its own private law. Enforcement or the application of the law is territorially defined, which confronts international transactions with contractual hazards not known in the domestic arena. For example, it might be difficult for a foreigner to get a court judgement in a country or a court judgment of country A is difficult to enforce in country B. Thus territoriality of law creates a new form of uncertainty which has been labeled constitutional uncertainty.

The central questions of the paper are, whether trust can overcome the contractual hazards caused by the territoriality of law, how effective trust is and what the impact is on the sequential structure of trade. The analysis is very much in the spirit of New Institutional Economics (NIE), in fact it aims at contributing to New Institutional Economics of

¹ Yarbrough/Yarbrough used to call this approach Strategic Organizational Approach to International Trade (see Yarbrough/Yarbrough 1992).

International Transactions (NIEIT). NIE is basically a theory of contracting, regarding the transactions, rather than a good or service as the basic unit of research (Williamson 1986: 151). The focus is on contractual hazards in terms of shirking, non-performance, hold-ups, attempts to appropriate quasi-rents originated by bounded rationality, opportunism, asset specificity and uncertainty (Williamson 1985).² Because of imperfect legal enforcement special emphasis is put on private ordering, a term which stands for means of self-help and agreement on rules for settling disputes that could otherwise be brought to court (see Eisenberg 1976; Galanter 1981: 8, 23; Williamson 1984: 208).

As Yarbrough/Yarbrough (1994) point out, the economics of contracting in the style of NIE has been concerned from the beginning with a lacuna in traditional economics - the prevailing attitude of ignoring the costs of organizing the economic activities required to capture the gains from trade. However, somewhat surprisingly NIE itself has not fully recognized the gains from trade it could reap by going international. There are some attempts to study international issues within a framework of NIE (see Greif/Milgrom/Weingast 1990; Yarbrough/Yarbrough 1992, 1994; Greif 1993; Clay 1997; Schmidt-Trenz/Schmidtchen 1991; Schmidtchen/Schmidt-Trenz 1990), but we do not have a full-fledged theory, yet. Greif et.al. deal with the role of institutions, in particular the law merchant and private judges, for restoring the effectiveness of a reputation system in the time of revival of trade in Europe during the early middle ages. But they do not formally model the link to international trade. Yarbrough/Yarbrough (1992) used what they labeled the strategic organizational approach to international organization to explain international trade institutions. In their 1994 article they follow Coase's original analysis of the firm and explore changes in the boundaries of nations with special focus on the contractual aspects of national unifications and dissolutions. But again, there is no formal model of international trade. Greif (1993) deals with the problem of contract enforceability in medieval times whereas Clay (1997) examines the private order institution that facilitated intermerchant trade during the 1830's and 1840's in Mexican California. But there again is no formal model linking private ordering institutions with international trade.

Schmidt-Trenz/Schmidtchen (1991) analyzed means of private ordering facilitating private international trade in the shadow of the territoriality of the law. Schmidtchen/Schmidt-Trenz (1990) delivers a theory of optimal legal areas. Both papers model international trade. But

² NIE accepts the economizing orientation of traditional economics, but „(a) is more microanalytic; (b) is more self-conscious about its behavioral assumptions; (c) introduces and develops the economic importance of asset specificity; (d) relies more on comparative institutional analysis; ... (f) places greater weight on the ex post institutions of contract, with special emphasis on private ordering (as compared with court ordering)“ (Williamson 1986: 163).

they do not discuss the trust issue. In the literature on international public debt contractual issues also play a prominent role (see for example Bulow/Rogoff, 1989), but the parties involved are nation states. In contrast, this paper is concerned with transactions among private firms. Finally, the literature on country risk should be mentioned (see Herring 1983). However, this literature is mainly concerned with the risk of getting international investments expropriated by foreign governments (see particularly Eaton/Gersovitz 1983).³

The paper is organized as follows:

Section II describes the territoriality of law and outlines our concept of constitutional uncertainty in international trade. In a sense this section focuses the features that characterizes a transaction as an international one.

In section III international transactions are modeled as a sequential game based on the theory of comparative advantage. In this main part of the paper we outline our concept of trust and derive several propositions. Firstly, it is shown how traditional theory would approach the problem. Secondly, we implement a refined matching technology that allows us to deal with the likelihood of trusting at international transactions.

Section IV deals with trade and trust. Based on the propositions, two issues are dealt with: the likelihood of trade and the sequential structure of trade. Finally, we indicate briefly how the model could be applied to the analysis of real world problems.

Section V concludes the paper with some further reflections.

II. TERRITORIALITY OF THE LAW

To demonstrate the special coordination problems arising from the territoriality of the law consider the following example: In the autumn of 1981, a Cairo-based company agreed to purchase a number of second-hand vehicles from a Belgian exporter. He introduced a German supplier, who received a Letter of Credit and made out a Bill of Lading on the form of a bankrupt Middle eastern shipping company. These documents were presented to a bank in Zurich and immediate payment was made. However, the cars never arrived ... (ICC 1986: 6).

³ „First, classifying investments [transactions] by countries is useful in identifying a group of investments that are likely to have similar characteristics. The second reason derives from the existence of nation states. All investments within a single country share the characteristics of falling within the same governments jurisdiction.“ (Eaton/Gersovitz 1983: 76.)

Actually, things were much more complex; legal battles blazed. As several legal orders were involved, it was unclear which law was appropriate.

The example shows that economic transactions do not always take place as smoothly as is generally assumed in the pure theory of international trade. Contracts do not work out „all by themselves“. Economic theory should recognize that sometimes people set out deliberately to cheat or exploit each other.

Taking the territoriality of law and enforcement as given, one might conclude that international trade, at least when activities are asynchronous, as they usually are, does not come about at all. No international dealer can be sure to get a return for that which he has given up in advance. It seems as if there were almost no sanctions to ensure the success of such transactions. That raises the question: how is it that private international trade does take place in spite of these unfavorable conditions?

The answer is that the rise of international trade is not so much owing to the influence of consciously cooperating governments - international constitutional policy (see Schmidtchen/Schmidt-Trenz 1990a; Schmidt-Trenz 1990: 188) - leading to some sort of world-wide „legal centralism“ (see Galanter 1981).⁴ It is rather thanks to spontaneous forces that an almost complete self-regulation of this area of economic life has resulted, based upon „private ordering“. The large number of institutions spontaneously created „by the economy“ gives ample witness to this development. The evolution of the *Lex Mercatoria*, the Incoterms and the information services provided by the International Chamber of Commerce (ICC) may serve as evidence here. Berman (1983), Trakman (1983) and Benson (1989) give further examples.⁵

⁴ This term reflects „the view that the justice to which we seek access is a product that is produced - or at least distributed - exclusively by the state.“ Williamson describes the views of „legal centralism“ as follows: „Most studies of exchange assume that there are efficacious rules of law regarding contract disputes and that these are applied by the courts in an informed, sophisticated, and low cost way“ (Williamson 1984: 208).

⁵ With the exception of the theory of multinational firms the orthodox theory of international trade has widely neglected that institutions matter (see also Yarbrough/Yarbrough 1992: 122 ff.). An elementary legal order is implied in the models, but it is not the subject of analysis. It is exogenously given. Most of the literature is concerned with the movement of goods across borders. Boulding stated many years ago: „The economist's focus of interest ... lies in the world of commodities and not in the world of men“ (Boulding 1958: 33). A serious analysis of the international *transaction* as the elementary unit of economic research is still missing, so that the traditional theory of international trade can duly be spoken of as an „astronomy of the movement of goods“.

The fruitfulness of this approach is not disputed here. But there are costs to it (see Williamson 1984: 208). The Law and Economics of private ordering has been pushed into the background because the analysis is facilitated by the assumption of perfect legal centralism. A division of labor has developed. Economists have

This distinction between „private ordering“ on the one hand and „legal centralism“ on the other is crucial, although any real order usually rests upon some mixture of both. In private international trade, this mixture tends towards private ordering. Private ordering is not further discussed in this paper (see for an extensive treatment Schmidt-Trenz/Schmidtchen 1991). Instead we want to explore the potential of a third option for facilitating international trade in the presence of contractual hazards, namely trust. Whereas both court ordering and private ordering work by changing the payoffs of the trading game, such that it is in the self-interest of the parties to do what they promised to do, trust as we conceptualize it *does not* change the basic payoffs of the trading game. The reason for conceptualizing trust this way is in our view that nobody needs to trust somebody if he knows that it is utility maximizing for the other party to stick to its promise. By the same token trust plays no role in a super game if honoring a contract is utility maximizing.

III. TRUST AND INTERNATIONAL TRANSACTIONS

1. The ‘internationality’ of a transaction

The possibility and necessity to develop a New Institutional Economics of International Transactions as an special discipline depends on the question whether there are significant differences between national and international transactions. Obviously, the dividing line between internal transactions, that means national transactions, and external transactions, that means international transactions, exactly matches the dividing line between markets and hierarchies. Therefore the "market vs. hierarchy" paradigm (see Williamson 1985) can be applied. Note however, that hierarchy refers to the protective state as a command system of social control, and market means the area, where different protective states as hierarchical firms coordinate their activities.

Each protective state can be considered as being founded by a constitutional contract with fixes

(1) the mutual behavioral limits (cease-fire treaty)⁶

been preoccupied with the benefits of specialization and exchange, while legal scholars have been focusing the contractual ramifications. The New Institutional Economics of International Transactions can be judged an attempt to reduce these costs.

⁶ Buchanan (1975: 59) explains: The contract is one of bilateral exchange“. The contract contains restrictions on behavior, which are agreed upon voluntarily. Rights and duties are defined for the first time. Activities can now be judged as lawful or unlawful.

- (2) the property rights on goods
- (3) the process of legal enforcement
- (4) the procedural rules governing the productive state
(providing other public goods than that of private law)
especially the kind of majority rule.

Each state works like a firm, organized in four divisions: government, legislation, police and courts. What matters from the institutional point of view is the production and enforcement of law. In Kronman's terms: The firm produces possessive and transactional security (Kronman 1985).

While for domestic, internal transactions one monopolist, the protective state, has the function to make and enforce law, international, external transactions establish contact with a multitude of legal systems and with the monopoly of power claimed by each state within its boundaries.

Given a multipolar system of protective states organized around the principle of the territoriality of law each protective state can only ensure the possessive security of its clients within its territory; but it cannot ensure transactional security beyond state borders.

Furthermore, while the legal rules of each protective state can be judged - at least in principle - as unequivocal, we find a serious "impossibility of rights" in the international arena. Collisions of norms and gaps between different norm systems appear, an accord in court decisions is often coincidental, and the assistance of the judicial and penal institutions in foreign countries is not at all a matter of course. The territoriality of law results in a *specific* kind of attenuation of property rights⁷ and the emergence of a special kind of risk, that has been called constitutional uncertainty in international transactions (Schmidt-Trenz/Schmidtchen 1991). This kind of uncertainty gives rise to coordination problems of a special kind reflected in corresponding transaction costs.

Our conclusion is, that at international transactions the contract underlying legal system is of minor importance. This reflection is settled in a pivotal assumption for this paper: At international transactions there are no means to enforce contracts.

⁷ Furubotn and Pejovich (1974: 4) speak of „attenuation“ whenever there are „limitations on the owner's rights to change the form, place or substance of an asset, and to transfer all of his rights in it to others at a mutually acceptable price.“

2. The international trust game

Let v^* , σ^* , ε^* , o^* denote the optimal number of members of a protective state, the optimal degree of specification of the property rights, the optimal degree of enforcement of the property rights and the optimal enforcement technology, respectively.⁸ Consider a world consisting of two optimal protective states $(v^*, \sigma^*, \varepsilon^*, o^*)_h$, with $h = I, J$.

In international trade, i.e. agent i and agent j are non compatriots, the problem of the territoriality of the law arise. There is no international legal authority that sanctions the breach of contracts perfectly. For our purposes it is useful to assume that there are no sanctions at all. In this section we analyze a two-stage sequential trading game where risk-neutral agent i and agent j are playing a game with incomplete information.

Agent i is member of the (finite) set of agents $I = [i_1, i_2, \dots, i_n]$ (e.g., all agents of the home country), agent j is member of the (finite) set of agents $J = [j_1, j_2, \dots, j_n]$ (e.g., all agents of a foreign country). Members of I have a comparative advantage in the production of good X , whereas members of J have a comparative advantage in the production of good Y . The central question arising from this is: will agent i and agent j exchange goods? Or: will they trade? Or: will they honor a contract on the exchange of the goods?

Figure 1 shows the structure of the international trust game.

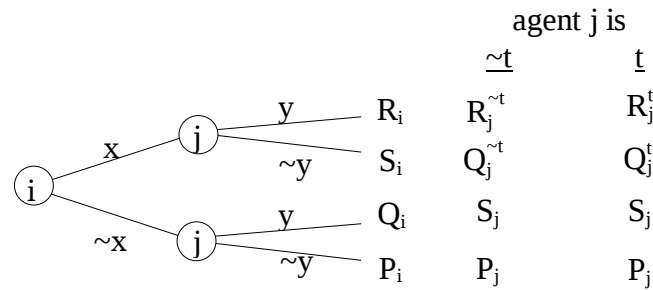


Figure 1 : The international trust game

At the first stage agent i must decide whether to deliver to agent j a good X or not. His decision to deliver, is denoted x and the opposite decision not to deliver, is denoted $\sim x$. At the second stage agent j may fulfill his part of the contract by cooperating or not. The decision of agent j to cooperate is denoted y and the opposite decision to take advantage of agent i is denoted $\sim y$.

⁸ The optimality conditions are derived in the theory of optimum legal areas (see Schmidtchen/Schmidt-Trenz 1990; Schmidt-Trenz 1990: 203-221). The theory is an outgrowth of the economic theory of clubs (see Sandler/Tschirhart 1980: 1481-1521).

Let $U_k(z_i, z_j)$ denote agent k 's (for $k=i, j$) payoff depending on the decisions of agents i and j , denoted z_i and z_j respectively. The following payoff combinations for agent i are implied:

$$U_i(x, y) = R_i; U_i(x, \sim y) = S_i; U_i(\sim x, y) = Q_i; U_i(\sim x, \sim y) = P_i$$

Suppose, agent i 's payoff ranking is as follows:

$$Q_i > R_i > P_i > S_i \quad (1)$$

We assume, that set J is build up of members j , that differ in a crucial aspect, they are t -type or $\sim t$ -type. The difference is that t -type j 's prefer the cooperative outcome (x, y) to the exploitation of agent i 's delivering whereas $\sim t$ -type j s prefer the exploitation of agent i $(x, \sim y)$.⁹ We assign all t -type members a non-empty subset of J : J^t and all $\sim t$ -type members the subset $J^{\sim t}$.

Formally, the payoff for an agent j conditional on his type is denoted with:

$$U_j(x, y|\tau) = R_j^\tau; U_j(x, \sim y|\tau) = Q_j^\tau; U_j(\sim x, y|\tau) = S_j^\tau; U_j(\sim x, \sim y|\tau) = P_j^\tau \quad \text{for } \tau = t, \sim t$$

Since all $j \in J^t$ prefer the cooperative outcome to the exploitation of agent i , all $j \in J^t$ have the following payoff ranking:

$$R_j^t > Q_j^t > P_j^t > S_j^t \quad (2a)$$

On the other hand all members of the subset $J^{\sim t}$ of J are opportunistic, i.e., they choose not to fulfill the contract if agent i has delivered X . We have to assume:

$$Q_j^{\sim t} > R_j^{\sim t} > P_j^{\sim t} > S_j^{\sim t} \quad (2b)$$

This payoff rankings lead us to a definition of 'trustworthiness'. We speak of a 'trustworthy' agent j if he chooses y whenever agent i has chosen x (all $j \in J^t$). Conversely, a 'non-trustworthy' or 'opportunistic' agent j is one who always chooses $\sim y$, if agent i chooses x (all $j \in J^{\sim t}$).

We interpret agent i 's decision to deliver as 'trust' following James Coleman's (1990) basic outlines for an analysis of trust. He treats trust in social actions as a subclass of risk. Trust

⁹ This is plausible because of several factors. First, an agent could feel pride if he does not be opportunistic, or put differently, he has scruples to break his word, because of social, religious and moral factors. Second, the mutual cooperation in this game may have an impact on future profit opportunities, such that the agents assign honoring the contract a greater value than the pure cooperation payoff of this game. If they behave opportunistically they may lose future profit opportunities. Cheating in this situation could therefore impede contracts in the future and therefore profits. We are not talking about a super-game, which has to be modeled, but about the expectation of the possibility of a super-game. For ease of exposition, this expectation can be reflected in the payoff ranking of a one-shot game.

exists in the context of human activity, while risk also includes events caused by nature. A social relation that presupposes trust exists when one actor has to decide whether to engage in an action in which the outcome depends on the performance of the other actor. A decision problem arises because one party has to invest resources in the other party and receives a return not at once.

The trust game reflects this requests, since it depends on the performance of agent j if agent i looses or gains by delivering X . Hence, the human component of the definition is fulfilled.

There are two components that are necessary to speak in the international game of 'risk'. First, there are non-trustworthy agents j preferring to exploit agent i after his delivering, since, if all agents j would prefer to honor the contract it would not be risky for agent i to deliver. Second, agent i must be assumed to be unable to distinguish t -type from $\sim t$ -type agent js .

In this section we propose that agent i does not know and has no expectations of which type the specific agent j is, he is confronted with.¹⁰ If agent i would know exactly that agent j is non-trustworthy the equilibrium of the game would be $(\sim x, \sim y)$. If agent i would know that agent j is trustworthy, the equilibrium of the game would be (x, y) . For an agent i not having this information it is risky to deliver.

Therefore, our assumptions imply both components of 'trust', hence we interpret the action x as 'trust'.

To facilitate further analysis we turn this game with incomplete information into a game with imperfect information.

Let probability π denote the objective probability of meeting an agent j , member of set J^t . Thus, $\pi = \text{prob}(z_j = y \mid z_i = x)$ is in turn the conditional probability that a randomly chosen member of J will choose to reciprocate after agent i 's delivering. Thus agent i has probability π of being better off from delivering X and probability $(1 - \pi)$ of being worse off. This leads us to

Proposition 1

In a territorially splitted world composed of individuals without detection skills trust at international transaction will occur exactly if

$$1 > \frac{1 - \pi}{\pi} \frac{(S_i - P_i)}{(R_i - P_i)} \quad (3a)$$

¹⁰ We assume that agent i does not try to distinguish the two types. In the following section we will give reason for another perspective of human behavior, i.e. we will assume the agents to have detection skills used to distinguish t type from $\sim t$ -type js .

By defining $T_i = (1-\pi)(S_i-P_i)/[\pi(R_i-P_i)]$ we can reduce (3a) to

$$1 > T_i \quad (3b)$$

Proof:

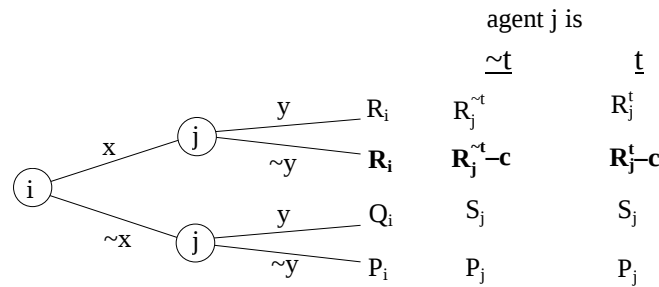
Agent i 's expected value of trusting is $E_i(x) = \pi R_i + (1-\pi)S_i$. His expected value of non trusting is $E_i(\sim x) = P_i$. Agent i prefers to trust if $E_i(x) > E_i(\sim x)$. Rearranging this condition results in (3a).

Term (3) states that there exists a threshold-value T_i depending on fundamental transaction factors that must lie below 1 for an agent without detection skills to trust in an international transaction.¹¹

¹¹ At this point it is useful to outline the central difference between an international and a national transaction. The latter could be specified as follows: agents i and j are citizens of the same protective state, that is of A or B. Following our arguments intra national transactions are controlled by the protective state and the non honoring of contracts is sanctioned.

For ease of exposition assume the sanction to be as follows: an agent j that do not deliver Y after agent i having delivered X is forced to fulfill the contract. In addition, agent j has to pay an additional sum $c > 0$ to the legal authorities.

This changes the international trust game into the national transaction game, depicted in the following Figure.



The national transaction game

The only thing having changed comparing Figure 1 with Figure 2 are the agent's payoffs after $(x, \sim y)$: Agent i 's payoff is R_i , since he receives good Y after the legal authorities having intervened. The payoff for all $j \in J^{\sim t}$ is now $R_j^{\sim t} - c$ and all $j \in J^t$ receive $R_j^t - c$. This payoffs cause, that (x, y) is the equilibrium of the national trading game, irrespectively of agent j 's type.

Formally, the probability that a randomly chosen member of set J decides to reciprocate equals in our example 1. We can state that members of set J will honor the contract with probability π due to their basic/anarchic predisposition to fulfill contracts and they will honor contracts with probability $(1-\pi)$ because of the sanctions that are imposed by the protective state.

In this context there remains nothing that allows us to speak of trust. The human component of the definition of trust may be fulfilled, since the outcome of the game depends on the performance of the agents, but the

3. The international trust game with individual detection skills

a) A new factor: Detection skills

In this section, we argue that it is not only probability π that determines the individual decision to trust in the sequential game. We propose that individuals have skills at distinguishing 'good' from 'bad' trade partners. These skills could be personally associated to a specific individual and are therefore subjective.

We presume, that probability π has to be interpreted as objective probability of meeting a trustworthy j , since it is comparatively easy to observe these numbers. The information about π is independent of the agent's internal expectation formation and decision-mechanisms that actually generate their outwardly observed actions.

We think, that an internal expectation formation is of major importance. This is, agent i knows the probability of meeting trustworthy agents π , but in addition may try to determinate whether the particular agent j encountered is in fact trustworthy or not. This expectation formation is based on signals emitted by agent j .

Let us give an example: agent j shows agent i some letters from former customers to prove that he has reputation to lose; or in the contract bargaining agent i can try to derive from j 's body language or outfit whether j is trustworthy or not. Letters, body language and outfit are signals.

The problem for agent i is to interpret these signals correctly. It seems clear that the more complex the situation is the more difficult it is to interpret the signals. It is, for example more difficult for agent i to check the moral background of his adversary than to check the validity of the letters.

Forecasting j 's actual performance involves some kind of „internal“ cognitive processing of „externally“ observable signals. We call this process „internal“ or „endogenous“ messages.

We define two possible realizations for the endogenous signal. Denote with θ the endogenous message 'j is trustworthy' and with $\sim\theta$ the message 'j is not trustworthy'. We suppose, agent i knows that he can make mistakes in producing the messages θ or $\sim\theta$. Like in statistics there are two types of mistakes: First, agent i may forecast that j is trustworthy (i.e., a member of J^t), but j is not trustworthy (i.e. a member of J^f) and second, i may forecast that j is not trustworthy, while j is trustworthy.

transaction is undertaken without any risk for agent i because of the perfect enforcement technology of the protective state.

Agent i 's skill at „detecting“ or distinguishing trustworthy from non trustworthy agents is represented by the probability of either correctly or mistakenly trusting agent j conditional on whether the specific agent j encountered is really trustworthy or not. In particular let,

$$r = \text{prob}(\theta | j \in J^t); (1-r) = \text{prob}(\sim\theta | j \in J^t) \quad (4a)$$

$$w = \text{prob}(\theta | j \in J^{\sim t}); (1-w) = \text{prob}(\sim\theta | j \in J^{\sim t}) \quad (4b)$$

Probability r represents the chance of „rightly forecasting agent j being trustworthy“, if j is really trustworthy. $(1-r)$ is the probability of „mistakenly forecasting agent j being not trustworthy“. Probability w is the chance of „wrongly forecasting agent j being trustworthy“ while j is not trustworthy and $(1-w)$ is the probability of „rightly forecasting agent j being not trustworthy“. Thus, $(1-r)$ and w are the probabilities of making mistakes. *Perfect* detection (of whether agent j is actually trustworthy) corresponds to the limiting extreme where $r=1$ and $w=0$; so that the ratio r/w is infinite. All other possibilities represent imperfect detection where $r < 1$ and $w > 0$; so the ratio of r/w is finite.

In the following we will speak of imperfect detection skills if $r \neq w$.

Agent i 's structure of information is depicted in **Figure 2**.

1. Realisation of agent j 's type

2. Creation of information

3. Reception of internal message

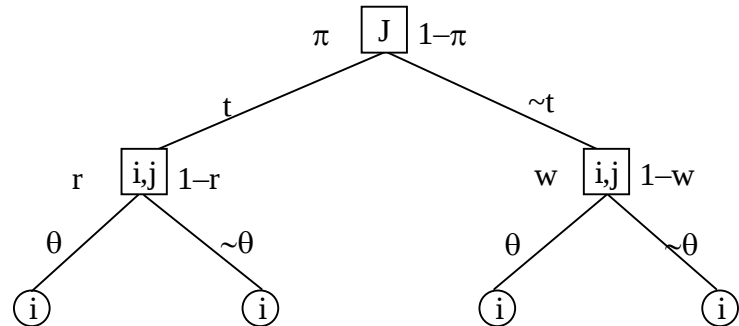


Figure 2: Structure of information

At the first stage the objective distribution of the feature is represented.

The second stage represents the creation process of this signals. Trustworthy j s emit signals of trustworthiness, agent i tries to detect them and produces finally the internal message. This internal message is correlated with the feature to indicate, here agent j 's type. The correlation may be imperfect, such that signals are emitted without the feature being present and vice versa.

At stage 3 agent i receives the internal message θ or $\sim\theta$. This message, joint with the known probabilities could be used for further decisions.

b) Reaction to signals

Using bayesian updating it is possible to calculate the probability of meeting a trustworthy agent j after having received the internal message θ , denoted μ , and the probability of meeting a trustworthy j after having received the internal message $\sim\theta$, denoted v . It is:

$$\mu = \text{prob}(j \in J^t | \theta) = r\pi / [r\pi + w(1-\pi)] \quad \text{and}$$

$$v = \text{prob}(j \in J^t | \sim\theta) = (1-r)\pi / [(1-r)\pi + (1-w)(1-\pi)]$$

Using this information we derive:

Proposition 2

Given π , r , w , R_i , Q_i , S_i , P_i agent i invests in agent j , i.e. he trusts and chooses action x instead of $\sim x$, if and only if

1. agent i receives an internal message θ and

$$\frac{r}{w} > \frac{1-\pi}{\pi} \frac{(S_i - P_i)}{(R_i - P_i)} \quad (5a)$$

$$\Leftrightarrow r/w > T_i \quad (5b)$$

2. agent i receives the internal message $\sim\theta$ and

$$\frac{1-r}{1-w} > \frac{1-\pi}{\pi} \frac{(S_i - P_i)}{(R_i - P_i)} = T_i \quad (6)$$

Proof:

In both cases action $\sim x$ has the value P_i : $E(\sim x) = P_i$.

If agent i receives the internal message θ his posterior beliefs are $(\mu, 1-\mu)$. In this case the expected value of action x is: $E(x|\theta) = \mu R_i + (1-\mu) S_i = \mu(R_i - P_i) + (1-\mu)(P_i - S_i) + P_i$. After substituting μ is this higher than $E(\sim x|\theta) = P_i$ if (5) is fulfilled.

If agent i receives the internal message $\sim\theta$ his posterior beliefs are $(v, 1-v)$. In this case the expected value of action x is: $E(x|\sim\theta) = v R_i + (1-v) S_i = v(R_i - P_i) + (1-v)(P_i - S_i) + P_i$. After substituting v is this higher than $E(\sim x|\sim\theta) = P_i$ if (6) is fulfilled. Q.e.d.

Condition (5) reflect different aspects of the decision to trust. The ratio r/w is determined by the ability to distinguish between trustworthy and opportunistic adversaries, when getting an endogenous message indicating the trustworthiness of the adversary. It is the personal factor of a transaction and we interpret therefore r/w as ‘quality of the endogenous message θ ’. On the other side, the threshold-value T_i is determined by transactional factors and environmental

factors associated to a given contract. The transactional factors are determined by the properties specific to the transaction and of the losses ($S_i - P_i$) and gains ($R_i - P_i$). Every potential transaction is accompanied by a specific profit and loss structure. In addition, transactions are influenced by environmental factors, such as the institutional setting. The pivotal environmental factor is probability π .¹² Notice, that T_i is by definition greater 0, since $P_i > S_i$ and $R_i > P_i$. If T_i would be smaller than 0 the agent would never have to bear a loss, and it is not reasonable to speak of trust.

The ratio $(1-r)/(1-w)$ in Condition (6) reflects analogously the detection skills, when getting an endogenous message indicating the non-trustworthiness of the adversary. We interpret this ratio as ‘quality of the endogenous message $\sim\theta$ ’; the lower $(1-r)/(1-w)$ the better is the quality of the message $\sim\theta$. For an agent to rely on $\sim\theta$, that is not to trust after receiving a message indicating the non trustworthiness of an adversary, the quality term must lie below the threshold-value T_i .

c) Ex ante optimal strategies

The relevant parameters knows agent i *before* meeting a specific agent j , i.e. before receiving any message. He decides ex-ante, how to react to signals and if it is worthy to react to signals. We propose, that he decides to choose one of the following strategies:

- he decides to fulfill the contract always independently of the received signal, that is, he will always trust. We call this strategy CC, the reaction profile is: choose x after θ ($x|\theta$) and choose x after $\sim\theta$ ($x|\sim\theta$).
- he trusts never independently of the received signal. We call this strategy DD, the reaction profile is: choose $\sim x$ after θ ($\sim x|\theta$) and choose x after $\sim\theta$ ($\sim x|\sim\theta$).
- he trusts if and only if he receives the endogenous message θ . We call this strategy CD, the reaction profile is: choose x after θ ($x|\theta$) and choose $\sim x$ after $\sim\theta$ ($\sim x|\sim\theta$).
- he trusts if and only if he receives the endogenous message $\sim\theta$. We call this strategy DC, the reaction profile is: choose $\sim x$ after θ ($\sim x|\theta$) and choose x after $\sim\theta$ ($x|\sim\theta$).

If agent i chooses strategy CC his decision - to trust - is not conditional to the available information on a specific agent j , the agent will not try to detect the type of the specific agent j encountered. We will see, that for choosing CC a small threshold-value T_i is of major importance. T_i may be small if agent i has much to gain and little to loose by trusting or if in

¹² This may change considering legal enforcement of contracts. We guess that such an environmental factor would change both probability π and the loss-gain-relation of a transaction.

the set J trustworthy agents prevail, i.e. probability π is high. If agent i chooses CC we can speak of 'unconditional trust' in agent j or of 'trust in the whole set J '.

By choosing strategy DD agent i never trusts a member of set J . We can speak of 'mistrust in set J '.

In the case that the third strategy is chosen, i.e. CD, the agent undertakes an additional cognitive process and tries to distinguish trustworthy from non trustworthy agent js . Never the less he predetermines his later reaction, since he decides to trust after receiving message θ . We could speak of 'conditional trust', since for the agent to trust, it is necessary that he gets some specific information that the partner encountered is trustworthy. This concept of trust is only applicable to specific agent js .

The same holds for the choice of strategy DC: agent i predetermines his later reaction in a way that he trusts if and only if he receives an endogenous message indicating the non-trustworthiness of an agent j . This may appear a little bit 'strange', but we will see that agents using DC reinterpret endogenously $\sim\theta$ as signal for trustworthiness.

Figure 3 shows the decision-situation, in which agent i has to decide if to trust.

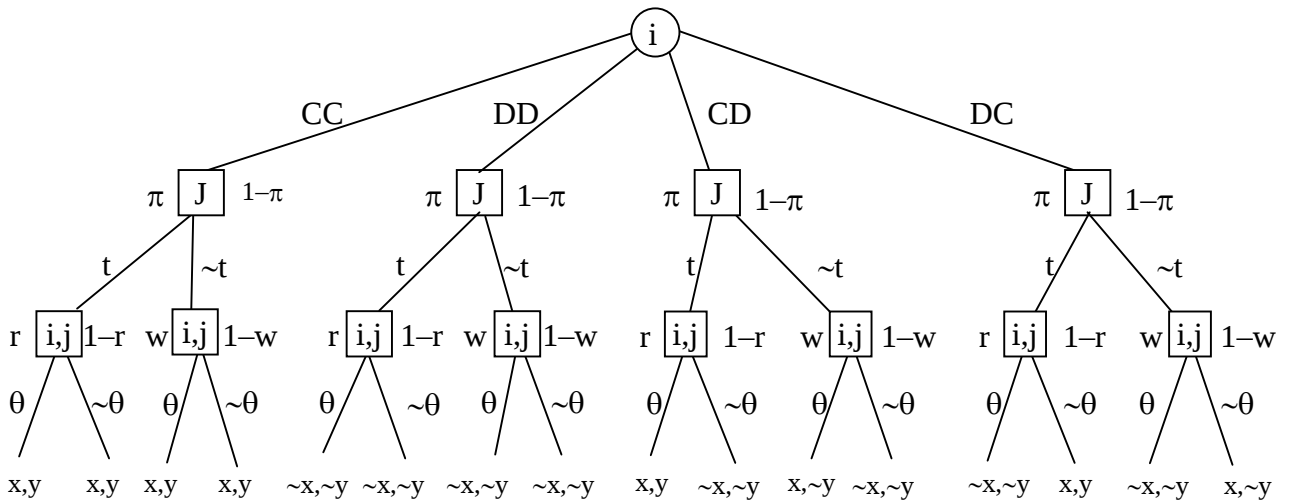


Figure 3: The choice of the optimal strategy

First, agent i decides on the strategy to choose. The second and the third stage reflects agent i 's structure of information, composed by the objective probability of meeting trustworthy js and agent i 's own detection skills (cp. annotations to Figure 2). In the last row of the figure we present the results of the international trust game that are determined by the chosen strategy, the realization of agent j 's type and the emitted endogenous message.

Pivotal for choosing the optimal strategy is their expected value. We define agent i 's expected value of strategy s as $E_i(s)$. We summarize strategies, action profiles and expected values in Table 1.

Table 1: Feasible strategies, their action-profiles and their expected values		
Strategy	=action-profile	Expected value
CC	$x \theta$ and $x \sim\theta$	$E_i(CC) = \pi R_i + (1-\pi) S_i$
DD	$\sim x \theta$ and $\sim x \sim\theta$	$E_i(DD) = P_i$
CD	$x \theta$ and $\sim x \sim\theta$	$E_i(CD) = \pi [r R_i + (1-r) P_i] + (1-\pi) [w S_i + (1-w) P_i]$
DC	$\sim x \theta$ and $x \sim\theta$	$E_i(DC) = \pi [(1-r) R_i + r P_i] + (1-\pi) [(1-w) S_i + w P_i]$

Using Proposition 2 we can derive the central proposition of our paper

Proposition 3

A decision-maker having imperfect detection skills chooses in a risky situation strategy

- CC, if and only if $r/w > T$ and $(1-r)/(1-w) > T$
- DD, if and only if $r/w \leq T$ and $(1-r)/(1-w) \leq T$
- CD, if and only if $r/w > T$ and $(1-r)/(1-w) \leq T$
- DC, if and only if $r/w \leq T$ and $(1-r)/(1-w) > T$

Proof:

The proof results from the application of Proposition 2 to the definition of the strategies.

Agents using DD or CC choose ex-ante not to use any further information concerning the type of a specific adversary. This reflects the insight of the agents, that they are relatively bad in detecting signals, they know that they could make errors. They follow their strategy until either their detection skills have improved or the environment has changed.

Agents using CD or DC have sufficiently good detection skills to make their decision conditional on the received endogenous message. In which manner they respond to the message depends on probabilities r and w . The following implication allows us to draw some further conclusions.

Implication 1

1. If $r > w$, strategy DC is never chosen.
2. If $r < w$, strategy CD is never chosen
3. If $r = w$, neither strategy CD nor strategy DC is chosen.

Proof:

1. The assumption $r > w$ implies $r/w > 1$ and $(1-r)/(1-w) < 1$. There exists no value of T_i that is simultaneously higher and smaller than 1. Therefore strategy DC is not chosen.
 2. The assumption $r < w$ implies $r/w < 1$ and $(1-r)/(1-w) > 1$. There exists no value of T_i that is simultaneously higher and smaller than 1. Therefore strategy CD is not chosen.
 3. The assumption $r = w$ implies $r/w = 1$ and $(1-r)/(1-w) = 1$.
 - i) There exists no value of T_i that is simultaneously smaller and higher or equal to 1. Therefore strategy CD is not chosen.
 - ii) There exists no value of T_i that is simultaneously higher and smaller or equal to 1. Therefore strategy DC is not chosen.
- Q.e.d.

The results of Proposition 3 and Implication 1 are summarized in Figure 4.

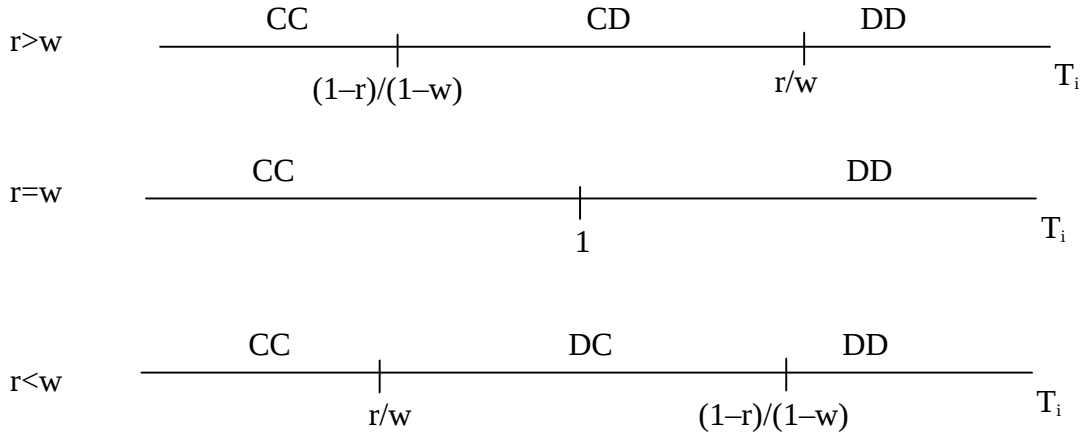


Figure 4: Optimal choice of strategies

If $r > w$ the agent could choose between strategies CC, CD and DD. It depends on the environment-value T_i , which one is optimal. If T_i is high, there exists the danger of losing very much by trusting, even if a message θ for trustworthiness is received. Therefore the agent is forced to have very high detection skills to trust conditional a specific j (strategy CD). If not, he prefers never to trust (DD). If T_i is very low, there exists another danger of losing by a conditional reaction, namely the danger of losing gains. Again the agent must have high detection skills to undertake the risk of losing (choice of CD). High skills at detecting non-trustworthy j s are represented by a low value of $(1-r)/(1-w)$. If $(1-r)/(1-w)$ is not low enough, agent i prefers always to trust (CC).

If r equals w , agent i has no detection skills at all. In this case it is obvious that a reaction to messages cannot improve his decision situation. He will choose therefore one of the two

unconditional strategies CC or DD. This reflects the result of Proposition 1 and implies that it is only the environment that determinates agent i 's decision to trust.

If r is smaller than w , one can interpret the results analogously to the case $r > w$. Remember that with $r < w$, the agent knows that if his adversary is a trustworthy one, it is more probable to receive a message $\sim\theta$ than a message θ . Considering this in his decision, he reacts as if $\sim\theta$ would be a signal for trustworthiness, i.e. he reinterprets endogenously the semantical content of the endogenous message.

This leads to the conclusion, that the semantical content (i.e. j is supposed to be trustworthy) of a message urges from the relation between the observable property (e.g. the red face) and the feature to indicate (i.e. the trustworthiness of agent j).

To simplify further analysis we assume in the following $r \geq w$.

4. The Likelihood of trusting

Following Proposition 3, an individual who faces the trust problem, will select one of the three strategies (CC), (CD) or (DD), if we assume $r \geq w$. Denote with a_i the likelihood that the specific agent i decides to trust. The following states for each strategy the corresponding likelihood of trusting.

$$a_i = \begin{cases} 1 & \text{for } T_i \leq (1-r)/(1-w) \\ \pi r + (1-\pi)w & \text{for } (1-r)/(1-w) < T_i < (r/w) \\ 0 & \text{for } T_i \geq r/w \end{cases} \quad \begin{matrix} (7a) \\ (7b) \\ (7c) \end{matrix}$$

Term (7a) represents the trusting likelihood of an agent i , choosing strategy (CC). The likelihood of this agent incurring trust is 1.

On the other hand, condition (7b) implies that agent i chooses the contingent strategy (CD), which means that this agent will trust conditional on receiving the message θ . Therefore the likelihood of this agent incurring trust is $\pi r + (1-\pi)w$. The value of a_i is greater than 0 but smaller than 1.

Finally, (7c) implies, that agent i chooses strategy (DD). This agent's likelihood of trusting equals 0.

A pivotal conclusion of equation (7) is drawn in Implication 2, that states a necessary condition for imperfect agents incurring trust.

Implication 2

Individuals with non negative detection skills, i.e. $r \geq w$, will trust only if

$$\frac{r}{w} > \frac{1-\pi}{\pi} \frac{(S_i - P_i)}{(R_i - P_i)} = T_i$$

$\Leftrightarrow$

$$r/w > T_i$$

Proof:

Equation (7a) states that the likelihood of trusting equals 0 for all $r/w \leq T_i$. Therefore a necessary condition for an agent to incur trust is $r/w > T_i$.

It is important to notice, that Implication 2 reflects only an conclusion of Proposition 2, under the restriction that $r \geq w$. It states a necessary condition for cooperation and not a sufficient one, since given strategy (CD) is chosen the trust decision depends on the nature of the endogenous message. Implication 2 has the same form as the „reliability condition“ first published by Heiner [1983]. It can thus be interpreted as a reliability condition governing the behavior of agents whose detection ability is imperfect. Such agents are called „imperfect“, because their ability to distinguish more preferred from less preferred decisions is imperfect (in this case whether trusting agent j is more or less preferred). Imperfect agents will benefit from trying to distinguish trustworthy from opportunistic agents if and only if Implication 2 is satisfied. Otherwise they are better off not trusting other agents.

The ratio r/w represents the statistical „odds“ of rightly trusting agent j . For example, $r/w = 10$ implies the odds of rightly trusting agent j are 10-to-1; which means agent i is 10-times more likely to rightly trust than wrongly trust agent j . Perfect trusting represents the limiting case where the odds of rightly trusting are infinite ($r/w = \infty$). All other cases represent imperfect trusting, where the odds of rightly trusting are finite.

Implication 2 indicates that that kind of private ordering which we have called trust can overcome the problems created by constitutional uncertainty in international trade. In a similar way the workability of other kinds of private ordering could be analyzed. (Question: Are there any costs associated with trust in comparison to other kinds of private ordering?)

If Implication 2 is not met, international trade fails and the parties must forego added value. This added value foregone represents the costs of relying on trust to overcome international anarchy.

IV. TRUST AND TRADE

Using the international trust game of the last section we will now try to analyze the likelihood that trade takes place. We propose, that this likelihood is not equivalent to the likelihood of trusting since in a transaction it is a priori not determined who has to be the first mover and who is the second mover. This decision lies usually in the hands of the contracting agents. Given this assumption we propose that international trade will occur if at least one of the (potentially) contracting parties trusts the other. To analyze the international trade game we have to refine our model setting.

1. Some Definitions

Let (r_i/w_i) denote the detection skill of agent i when trading with agents of county J and analogously let (r_j/w_j) denote the detection skill of agent j when trading with agents of country I .

Furthermore let $T_i = (P_i - S_i)/(R_i - P_i)[(1 - \pi_i)/\pi_i]$ denote the threshold-value for cooperation of agent i with an agent j and let π_i be the reciprocating probability of agent j . Substituting subscripts j for i delivers the corresponding terms for agent j .

Our starting point is the likelihood of trusting, that was analyzed in section III.4 What has been done for agent i as first mover concerning his likelihood of trusting can be done in a similar way for agent j . Agent j 's probability of trusting in case he is the first mover looks as follows:

$$a_j = \begin{cases} 1 & \text{for } T_j \leq (1 - r_j)/(1 - w_j) \\ \pi_j r_j + (1 - \pi_j) w_j & \text{for } (1 - r_j)/(1 - w_j) < T_j < (r_j/w_j) \\ 0 & \text{for } T_j \geq r_j/w_j \end{cases} \quad \begin{matrix} (8a) \\ (8b) \\ (8c) \end{matrix}$$

Substituting indices j for i we get the corresponding definition for agent i 's likelihood of trusting.

High probabilities of trusting are therefore determined by:

1. a low loss-gain-relation for the trusting agent ¹³

¹³ This factor lies partly in the hand of the contracting agents and is partly determined by the total cooperation rent.

2. high reciprocating probabilities, inherent to transactions, where opportunistic behavior is rare. 1) and 2) result in low T-values¹⁴

good detection skills, especially at transactions where opportunistic behavior is frequent.

2. The likelihood of trade

To calculate the likelihood of trade we will draw upon the trusting likelihood of agent i and of agent j , that are given by (7) and (8). These probabilities determine the probability contracts are concluded with i respectively j being the first mover. The reason is that the second mover always accepts a contract, but the first mover will do so only if he trusts. Thus the probability of trusting defines the short side of the amount of transactions. Therefore, the likelihood of trade depends on the respective likelihoods of trusting the other agent, i.e. on a_i and a_j

We assume that a transaction will be undertaken, if at least one agent trusts, i.e. accepts to be the first mover. This implies, that in this paper we do not focus on the probability of trusting and *reciprocating*, which would represent the likelihood for two-sided trade, but on the likelihood that one of the dealers trusts. Never the less, we define with A the likelihood of trade, since if even there exists a risk of opportunistic behavior, at least a one-sided international exchange of goods occurs. We propose the following trade-trust function:

$$A(a_i, a_j) = a_i a_j + (1 - a_i) a_j + (1 - a_j) a_i \quad (9)$$

This function has, in our view, some desirable and plausible features:

- i) if one of the agent's likelihood of trusting equals 1, the likelihood of trade is likewise 1;
- ii) if none of the agent's likelihood of trusting equals 1, the likelihood of trade is smaller than 1;
- iii) if one agent has a positive likelihood of trusting and the other not, the likelihood of trusting is in turn the likelihood of trade;
- iv) if none of the agents has a positive likelihood of trusting, there will be no trade and finally
- v) the higher the likelihoods of trusting (a_i, a_j) are, the higher is the likelihood of trade, i.e.

$$\delta A / \delta a_i = 1 - a_j \geq 0 \quad (10a)$$

$$\text{and} \quad \delta A / \delta a_j = 1 - a_i \geq 0. \quad (10b)$$

Table 2 gives an overview on the different possible constellations.

¹⁴ 1) and 2) could be secured by a good legal order

Table 2: Likelihood of trade for different likelihoods of trusting			
i/j	(8a): $a_j = 1$	(8b): $0 < a_j < 1$	(8c): $a_j = 0$
(7a): $a_i = 1$	$A = 1$	$A = 1$	$A = 1$
(7b): $0 < a_i < 1$	$A = 1$	$A = a_i a_j + (1 - a_i) a_j + (1 - a_j) a_i [< 1]$	$A = a_i$
(7c): $a_i = 0$	$A = 1$	$A = a_j$	$A = 0$

The resulting likelihoods of trade have to be interpreted in the following way:

- If agent i is in row (7a) (i.e. i uses strategy (CC)) or agent j is in column (8a) (i.e. j uses (CC)) trade will take place, i.e. $A = 1$.
- If agent i is in row (7b), that is i uses strategy (CD) and agent j is in column (8c), i.e. agent j will always choose (DD), then the likelihood of trusting of agent i is, in turn, the likelihood of trade. The same holds for agent j , if agent i is in row (7c) and agent j is in column (8b).
- If agent i is in row (7c) and agent j is in column (8c) none of the two agents trusts, i.e. there will be no trade at all, i.e. $A = 0$.
- If agent j is in column (8b), i.e. uses strategy (CD) and agent i is in row (7b), i.e. uses (CD) the likelihood of trade is to be calculated by applying equation (9). It is obvious that it is not sure that trade will take place, since there is a positive probability for both agents to receive endogenous messages, that indicate the non-trustworthiness of the adversary.

3. The sequential structure of trade

In this section our main purpose is to determine the influence of trust on the sequential structure of a transaction, i.e. who will be the first mover, *if* trade takes place.

Denote with f_i and f_j the likelihoods that agent i respectively agent j moves first. To keep the matters simple we propose an f -function, that is able to met the following requirements:

- i) the higher one agent's likelihood of trusting is, the higher is c.p. his likelihood of being the first mover
- ii) the higher the other's agent's likelihood of trusting is, the lower is c.p. the first agent's likelihood of being the first mover.

iii) the sum of the agent's likelihood of being the first mover add up to one.

We assume that the likelihood of being the first mover could be calculated in the following way:

$$f_i = a_i / (a_i + a_j) \quad (11)$$

and
$$f_j = a_j / (a_i + a_j) \quad (12)$$

The partial derivatives of (11) and (12) are as follows:

$$\partial f_i / \partial a_i > 0 \quad \text{for all } a_i + a_j > 0 \quad (13)$$

and
$$\partial f_i / \partial a_j < 0 \quad \text{for all } a_i + a_j > 0 \quad (14)$$

and
$$\partial f_j / \partial a_j > 0 \quad \text{for all } a_i + a_j > 0 \quad (15)$$

and
$$\partial f_j / \partial a_i < 0 \quad \text{for all } a_i + a_j > 0 \quad (16)$$

In Table 3 the likelihood of being the first mover, if trade takes place is summarized:

Table 3: Likelihood of being the first mover if trade takes place			
i/j	(8a): $a_j = 1$	(8b): $0 < a_j < 1$	(8c): $a_j = 0$
(7a): $a_i = 1$	$f_i = 0,5$ $f_j = 0,5$	$f_i = 1/(1+a_j)$ $f_j = a_j/(1+a_j)$	$f_i = 1$ $f_j = 0$
(7b): $0 < a_i < 1$	$f_i = a_i/(a_i+1)$ $f_j = 1/(a_i+1)$	$f_i = a_i/(a_i+a_j)$ $f_j = a_j/(a_i+a_j)$	$f_i = 1$ $f_j = 0$
(7c): $a_i = 0$	$f_i = 0$ $f_j = 1$	$f_i = 0$ $f_j = 1$	not defined

The resulting likelihoods have to be interpreted in the following way:

- If agent i is in row (7a) and agent j is in column (8a) (i.e. both agents use (CC) the likelihood of being the first movers equals for both agents $\frac{1}{2}$.¹⁵

¹⁵ This situation is kind of reference point, since both agents trust. This is as if the contract would be perfectly enforceable and in this situation it is a-priori not predictable who will move first. For ease of exposition we have chosen a reference value of $\frac{1}{2}$.

- If agent i is in row (7a) or (7b), and agent j is in column (8c), i.e. it is only agent i that is able to trust, then agent i 's likelihood of being the first mover equals 1. (Analogously: j in (8a) or (8b) and i in (7c)).
- If agent i is in row (7a) or (7b), and agent j is in column (8a) or (8b) both agents may trust, and both have therefore a positive likelihood of being the first mover at an international transaction.
- If agent i is in column (7c) and agent j is in column (8c), none of the agents trust and the probability of trade equal 0. Therefore it is senseless to speak of a likelihood of being the first mover if trade takes place.

4. Implications for real world problems - the enlargement of the EU

In this section we want to outline the relevance of our theoretical concept by applying it to the enlargement discussion in the European Union.

Our model allows us to draw some conclusions on the pre-conditions for a high level of international trade. First remember, that the more the agents trust each other, the higher is the amount of international trade. High probabilities of mutual trusting are determined by low T-values and/or good detection skills.

Our model forecasts for prevailing trade between western and eastern European countries a comparatively low trade level, since it is not too speculative to prognose that

- i) Western European's detection skills are lower when trading with a Bulgarian than when trading with another western European and vice versa.
- ii) The reciprocating probability is lower at these transactions, more transactions fail, because of a low trading volume (the opportunism gains of model-agent- j are high compared to lost gains in the future). Perhaps also the moral barrier against opportunistic behavior is lower. Russians may excuse their non trustworthiness with historical unfairnesses (Colonialism; western imperialism), western Europeans may be racists.¹⁶
- iii) This implies, that the first-moving-agent's loss-gain-relation must be comparatively high. Since this relation is partly a result of transactional factors and is determined by potential cooperation rents contractual bargaining may fail.

Conclusion 1: The level of trade between EU and EEC is low.

¹⁶ Again, there may be in addition differences in the enforceability of the contract underlying legal order. We will propose in another paper, that intra-EU trade is better secured by the legal order than trade between EU and EEC.

In addition, the analysis of the influence of trust on the likelihood of being the first mover may allow us to say something on the distribution of cooperation rents if trade takes place. First, suppose, that generally the eastern dealer has a high likelihood of trusting compared to the western agent. This may be a result of the fact that the eastern firms are relatively young, resulting in a comparatively low level of reputation to lose, or that the eastern Europeans expect the western European court system to be fair against them, whereas the western European dealers expect eastern European courts to be unfair. This implies, that eastern Europeans think that western Europeans have a high reciprocating probability π whereas western European may think that the eastern probability is low.

This is, the eastern dealer may have to move first at international transactions (e.g. pre-payment of goods), if trade takes place. Thus, eastern European countries have to invest in western countries.

This implies, following our model, that the eastern agent is more frequently in a strategically bad position, since it is possible to exploit first moving agents by opportunistic behavior, whereas it is impossible to exploit second movers. This results in higher expected cooperation rents for western dealers than if the contracts would be perfectly enforceable.

In other words, if eastern dealers have as a group a higher addiction to opportunistic behavior, they are rarely identified as trustworthy, resulting in a low likelihood of trusting of western agents dealers, resulting in a low western dealers first moving likelihood. Therefore the likelihood that a western dealer exploits an eastern dealer may be higher than vice versa.

The fact that it is the eastern world that has to invest in the western world may lead to an additional restriction to the amount of trade. The eastern countries consist generally of 'poor' dealers that may have problems in pre-financing international transactions, resulting in less trade.

Now, what would happen if the international legal environment changes? Suppose, for instance, that the countries (western and eastern) agree on a 'good' international contract enforcement system. This 'good' system may be a result of the accedence of EEC to the EU. The countries which want to access the EU are forced to accept the European Law system, where the Brussels Convention of 1968 is especially relevant for our purposes. This convention embodies citizens of the EU with the right to sue in case of non fulfillment of a contract. In addition it sets up generally valid procedural rules for legal processes, the recognition and the enforcement of judgments. We suppose that this changes the expectations of eastern and western European dealers such that they think that contracts are better enforceable.

In an environment where originally eastern European's likelihood of trusting is high compared to the western's, the Enlargement of the EU would imply, that:

- i) the likelihood of trusting at international transactions of both eastern dealers and western dealers increases (higher π s, lower loss-gain-relation $\Rightarrow$ lower T s). This increases the amount of trade between EU and EEC.
- ii) Especially western dealer's trusting likelihood may increase, i.e. their first-moving likelihood increases and thus the pre-financing problem of international trade is less severe.
- iii) Western dealer's increased trusting likelihood is a condition for eastern dealers to receive a greater share of the trade gains.

This leads us to state an a little bit surprising proposition:

- It is especially the eastern world that is interested in a better enforceability of international contracts, i.e. a 'good' international legal order and
- The enlargement of the EU has for western countries ambiguous effects; there exists a certain trade-off between a higher amount of EU-EEC-trade and a reduced share of the average trade gains.

V. CONCLUSION

The paper has shown that trust in principle can overcome contractual hazards caused by the territoriality of law. In addition our model could be used to identify the factors determining the sequential structure of trade. This might be helpful for understanding contracting in international trade.

However, there are costs associated with relying on trust. If the reliability condition is not met, international trade fails and the parties must forego added value.

We did not deal with the question, whether and how far the territoriality of law as such can be overcome. In this respect international constitutional policy is pertinent.

Two types of International Constitutional Policy can be identified: Unilateral and multilateral policy.

One kind of unilateral international constitutional policy consists in the establishment of conflict-of-law-rules. The other type of unilateral international constitutional policy is based on the threat by one protective state, leading to a reaction of the other protective state which reduces constitutional uncertainty, for example by the way of the adaptation of the law or the enforcement procedure.

Multilateral international constitutional policy aims at the harmonization of law. This goal can be reached by means of mergers and international contracts among protective states.

Proponents of multilateral international constitutional policy often do not realize that there are several possibilities of accomplishing the task of law enforcement. Two of them are (1) that enforcement is linked to a certain territory (principle of territoriality) and (2) that enforcement is linked to citizenship.

The first alternative is a "strategy to control people and things by controlling area" (Sack [1986]:5). The second alternative, however, makes it clear that protection by a nation's law can also be linked very well to the person as such (which manifests itself in the form of national citizenship), and be independently determined by that person's present place of residence.

It should be stressed that NIEIT does not see itself as a competitor to or a substitute for traditional theory of international trade, rather it is a complementary endeavor, taking up problems traditional theory had put into the background in order to do its work properly.

However there are some new insights from NIEIT which might question some generally held views in international economics.

For example, there is a generally held view, that in the absence of protectionism perfect competition would result in an optimal division of labor and efficient amount and structure of trade. In other words the first theorem of welfare economics would apply. Our theory would suggest that free trade is a necessary but not a sufficient condition for all gains from trade being exhausted. Territoriality of law has nothing to do with protectionism, but nevertheless it might create a barrier to trade resulting in some gains from trade not being exploited.

Territoriality of law as a form of organizing social relations will be preferred, if it saves transaction costs - especially supervision and communication costs.

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