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BOUNDED RATIONALITY, INFORMATION, LEGAL PROTECTION, AND NON-TRIVIAL CONTRACTUAL PROBLEMS: THEIR INFLUENCE ON INTERORGANIZATIONAL RELATIONS

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Comments are welcome!

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Table of Contents

Foreword and Acknowledgements

This paper is a much shortened version of a part of my Ph.D. dissertation. The dissertation is not finished, but a temporary version is available from the author upon request.

Many acknowledgements are in place, because many have supplied me with relevant literature, commented on my ideas of transaction cost economics, or on earlier working papers in which the ideas dealt with here were presented: Associate Prof. Jørgen Birk Mortensen, University of Copenhagen, Denmark; Prof. Dr. Richard Burton, Fuqua School of Business, Duke University, USA; M.Sc.(Econ.) Nicolai Juul Foss, Copenhagen School of Business, Denmark; Prof. Dr. Jürgen Hauschildt, Lehrstuhl für Organisation, Institut für Betriebswirtschaftslehre, Christian-Albrechts-Universität zu Kiel, Germany; Associate Prof. Christian Knudsen, Copenhagen School of Business, Denmark; Privatdozent für Volkwirtschaftslehre, Dr. rer.pol.habil. Harald Kunz, Universität des Saarlandes, Saarbrücken, Germany; Research assistant Matthis Leder, Lehrstuhl Professor Schmidtchen, Universität des Saarlandes, Saarbrücken, Germany; Prof. Reinhard Lund, University of Aalborg, Denmark; Prof. Børge Obel, University of Odense, Denmark; Prof. Dr. Rudolf Richter, Center for the Study of the New Institutional Economics, Universität des Saarlandes, Saarbrücken, Germany. None of them are, of course, responsible for any failures made.

1. Introduction

Important transactional relationships among economic actors are established by agreements and regulated by contracts. The contractual problems facing the economic actors differ considerably, however, over relationships. They are, to use a phrase familiar to organizational theorists, situation-dependent. Therefore, we should not be surprised to find that what is "ideal" contractual arrangements differs over relationships as well. It is the purpose of this study to investigate (a) these contractual problems and (b) how different contractual arrangements may remedy them.

The theoretical framework of the paper is that of transaction cost economics, especially the contributions by Oliver E. Williamson. In section 2, it is claimed that transaction cost economics consist of two large problem-"categories", and it is noted to which of these the paper is intended to contribute. In section 3, the definitions from transaction cost economics are given and, in some cases, discussed. In section 4, the mechanisms that may induce a participant in a contract to fulfill his obligations are discussed.

In section 5, sufficient conditions for a transactional relationship to constitute what is termed a non-trivial contractual problem (NTCP) are supplied. It is argued that two separate sets of sufficient conditions for NTCP can be found. They are used to distinguish between four different contractual problem situations.

In section 6, the notions of agreements and contracts are investigated. It is argued that two basic "dimensions" according to which contracts differs can be identified. This implies, of course, that we can distinguish between four basic types of contracts.

Finally, in section 7, it is argued that for each of the different contractual problem situations identified in section 5, there is a corresponding "basic" contract type from section 6 that "remedies" the problems of exactly that problem situation. It is emphasized, however, that the contractual problem situations do not constitute sufficient conditions neither for the "corresponding" contract type to be realized, nor for it to be beneficial.

2. Fundamental Problems of Transaction Cost Economics

The terms "transaction" and "transaction cost" are widely used in modern economics. They are central to several branches of the "new" institutional economics, especially the "property rights" tradition.[1] But the term "transaction cost economics" is usually reserved for contributions that attempts to develop the framework established by Coase (1937). The dominating figure in the field is Oliver E. Williamson, whose two books in this tradition, Williamson (1975) and (1985), became instant classics. This paper is a contribution to this tradition.[2]

The scope, and ambition, of transaction cost economics can be illustrated by a few quotations:

> "When we ask, "why do organizations exist," we usually mean to ask "why do bureaucratic organizations exist," and the answer is clear. Bureaucratic organizations exists because, under certain specifiable conditions, they are the most efficient means for an equitable mediation of transactions between parties. In a similar manner, market and clan form exist because each of them, under certain conditions, offers the lowest transactions cost" (Ouchi (1980), pp. 140).

> "The transaction-cost approach is based upon the premise that the existence of different organizational forms, whether they are markets, bureaucracies, or clans, is primarily determined by how efficiently each form can mediate exchange transactions between participants" (Leblebici (1985), pp. 98).

In order to build a theory or research program around these ideas that allows for empirical and other forms of testing, two fundamental categories of problems must be dealt with. The first of these may be expressed as follows:

(P1) Attempts to identify what is the most efficient contractual form, given the present "values" of some situational factors

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[1]For an overview of "new" institutionalism, and the way it differs from "old" institutitonalism, cf. Langlois (1986).

[2]The pioneering contriubutions (besides those mentioned already) are Williamson (1971), (1973), (1979), (1983), (1984), (1991); Ouchi (1980); Williamson & Ouchi (1981a), (1981b).

The other category of fundamental problems can be described in several ways, according to the interpretation of the quotations. The following formulation is my suggestion:

(P2) If a given situation, such as S_0, occur, then the actually existing contractual forms will, over time, converge towards the form that is efficient given S_0

There is a considerable difference between the explanatory potential, and the methods needed for investigations of, research problems relating to (P1) and (P2). (P1) is concerned with the identification of the efficient contractual forms, given particular values of a set of situational factors. Once the set of situational factors are identified, this effort does not require anything but analytical reasoning. The results of these considerations are, in principle, testable. But they do not say anything about the contractual forms we encounter in reality.

This is in marked contrast to considerations concerning (P2). The results here are not only testable in principle. They will imply propositions about the properties of actually existing contractual forms, or at least how they evolve over time.

Two aspects of the relationship between the topics of (P1)- and (P2)-themes should be noted. The first is that unless the topics dealt with in (P1) are adequately "solved", considerations concerning (P2) cannot be used to predict or explain anything. So, in order to make progress on (P2)-topics, (P1) must necessarily be dealt with. The second is that it is important to understand that the analyses relating to (P1) have, <u>in themselves</u>, absolutely nothing to say about the contractual or organizational forms that actually appears.[3] The relation between the two problem categories is "asymmetric" in the sense that one can deal with (P1)-topics without considering (P2)-topics, but not consider (P2)-topics without considering (P1)-topics.[4]

In this working paper, only topics relating to (P1) are considered.

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[3]That depends, of course, on the definition of efficiency relied on. If the notion of efficiency is, pr. definition, identical to "survival", the statement in the text is not true. But if efficiency is defined independently of survival, then the argument in the text holds.

[4]This does not mean, of course, that every contribution dealing with (P2)-topics should also contain explicit considerations on (P1)-topics.

3. Fundamental Definitions of Transaction Cost Economics[1]

In this section I shall present and discuss the "factors" that have been found to be of importance in the analyses of transaction cost economics pioneered by Ronald Coase, Oliver E. Williamson and William G. Ouchi. I shall further present some additional factors introduced for the analysis in this paper.

The factors can be grouped in two major categories, as relating to either general assumptions about human behavior and nature, or to what is considered interesting characteristics about the transactional relationship in question.

(1) Factors relating to assumptions about "human behavior"[2]
- Bounded rationality
- Opportunistic behavior

(2) Factors relating to the transactional relationship[3] in question:
- Transaction
- Transaction Cost
- Degree of Goal Incongruence
- Uncertainty/Complexity of the Transaction
- Degree of Transaction-specific Language Limitation
- Small-numbers condition
- Degree of Asset-specific Investments in the Transaction

Apart from these major categories four concepts that are harder to classify are introduced. They are

- Simple Contracts
- The Normal Legal System
- Market Failure
- Non-Trivial Contractual Problem

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[1]Cf. Koch (1992) for an extensive discussion of the definitions in this section.

[2]It is my conviction that a third factor relating to the behavior of economic actors, "Preference for Autonomy", must be introduced in order to gain a complete understanding of economic organization. But it is unimportant in this analysis.

[3]In Williamson (1975), where only some of these factors appeared, they were grouped under the heading "environmental factors". Cf. ibid, chap. 2.

We shall, in fact, start by defining these concepts. Later some additional factors ("intermediate" variables) will be introduced.

3.1. Simple Contract and Normal Legal System

A simple contract is a contract in which there is only one, unconditional, obligation for each participant, or an, unconditional, series of such obligations.

The normal legal system is the regulatory body that can impose sanctions on the parties to a transaction in order to force them to fulfill their obligations. In most "modern" societies, these functions are provided by the state.[4]

3.2. Market Failure and Non-Trivial Contractual Problem

The term "market failure" is used in many different senses in "orthodox" microeconomics. In Koch (1992), an extensive list is supplied. There can be no doubt that it is of central importance for the contributors to transaction cost economics also, but its exact definition is not quite clear. Some parts of the literature seems consistent with either one of the two following definitions:

(MF1) Market failure as the non-existence of an actual market relation between the parties to a certain transaction.

(MF2) Market failure as the existence of at least one possible way of "non-market" organization of the transaction that is "more efficient" than market form organization.

In Koch (1992), the two proposals for a definition of market failure are discussed in detail. Here, I shall go directly to the concept of a non-trivial contractual problem condition in stead.

A transaction between two parties represents a non-trivial contractual problem (NTCP) if and only if both of the following conditions are fulfilled:

(NTCP-1) At least one on the actors cannot rule out that there is a considerable "conflict of interest" between them as regards the execution of the transaction

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[4]But law, and a system of law enforcement, is possible without a state. According to Benson (1988), pp. 773, this is the case in "primitive" societies. According to Eggertsson (1990), pp. 59-60 and pp. 304-311, Iceland was, under the "Commonwealth" period (930-1262), characterized by the absence of a state. So the term "normal legal system" can refer a system of private law enforcement.

(NTCP-2) That actor is unable to specify a "simple" contract the execution of which can, without problems, and to the satisfaction of that actor, be "backed up" by the "normal legal system", should disagreements occur.

3.3. Assumptions/Factors relating to Human Behavior

It is assumed that human behavior is characterized by bounded rationality and an inclination towards opportunistic behavior.

3.3.1. Bounded Rationality[5]

Bounded rationality is explicitly defined, with a quotation from Simon's "Administrative Behavior"[6], as behavior that is "...intendedly rational, but only limitedly so..." (Williamson (1988), pp. 569). This manifestation of bounded rationality will be referred to as bounded rationality$_1$.

But the concept is sometimes used in a way that seems to "transcend" Simon's definition in "Administrative Behavior". Williamson claims that there is a language limitation condition[7], which has the effect of making some phenomena almost indescribable by oral or written communication. I shall refer to this form of bounded rationality as bounded rationality$_2$. It may be expected to vary considerably "over" individuals as well as "domains": The degree of it for a nuclear physicist concerning the subject of nuclear physics may be small, whereas it may be large for that same person as regards economic theory. When we deal with bounded rationality$_2$, it may refer both to an "outsider" (e.g., a judge or an arbitrator) to the transaction, as well as a participant in it.

3.3.2. Opportunistic Behavior

3.3.2.1. The Definition of Opportunistic Behavior

Opportunistic behavior is defined as

> "..self-interest seeking with guile" (Williamson (1985), pp. 47),

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[5]This factor appeared already in Williamson (1973), pp. 317.

[6]Cf. Simon (1947/1976).

[7]In Williamson (1975), the idea is attributed to the american institutionalist of the "traditional" persuasion John C. Commons (cf. Williamson (1975), pp. 24). In Williamson (1985), the language limitation condition is attributed to Michael Polanyi, presented in his book "Tacit Knowledge".

and it is characterized as follows:

> "More generally, opportunism refers to the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse" (Williamson (1985), pp. 47).

What interests us here is not so much that opportunistic behavior is "self-interest seeking with guile". What will be concentrated on is the willingness of the individual given to opportunistic behavior to indulge in actions that violates what is explicitly agreed upon in the contract, or what is in the spirit of the agreement between the parties to the transaction.

3.4. Transactions and Transaction Costs

3.4.1. Definition of Transactions

The transaction is defined as follows:

> "A transaction...may thus be said to occur when a good or service is transferred across a technologically separable surface" (Williamson (1981b), pp. 1544).

3.4.2. Dimension used to characterize Transactions and Transactional Relationships

For the purpose of transaction cost economics, transactions can be characterized by the following four dimensions:

(1) The degree of goal incongruence among the parties to the transaction
(2) The degree of uncertainty/complexity
(3) The degree of asset specificity of the investments that are needed to "carry through" the transaction[8]
(4) The frequency with which the transaction is conducted

I shall not be concerned with frequency in this paper.

3.4.2.1. The Degree of Goal Incongruence

The assumption of opportunistic behavior concerns an economic actor's inclination to behave selfish, and the means he are willing to use to obtain his ends. But the compatibility of the respective transaction partners' ends or goals is also of importance. This subject has been brought to bear most forcefully by Ouchi (1980), who pointed to a factor called goal incongruence.

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[8]Such as investments in special-purpose machinery.

It can be defined, for two persons, as the degree to which the fulfillment of one of the person's goals are compatible with the fulfillment of the other's goals.

3.4.2.2. Uncertainty, Complexity, and Language Limitations

3.4.2.2.1. Uncertainty/Complexity

I shall define uncertainty (for a given person) to be present when there is no knowledge of the probabilities as to the occurrence of particular, relevant states of nature, or when it is impossible to calculate them. This is the usual definition, following Frank Knight's famous distinction between "risk", situations where decisions are made in conditions of known probability distributions of outcomes, versus situations where such probabilities are not known, which Knight referred to as "uncertain".

I will include here situations in which the "state of the world" has already "occurred", but is, at the time of contract signing, unknown. Consider, e.g., the digging of a tunnel. Here it is unknown if, when/where, and to what extent, big stones will delay the work. But there is nothing "uncertain" about it in an objective sense: The stones are there already.

I shall define a system or a situation as complex (for a given person) if it is difficult (for the economic actor under consideration) to explain, or understand, or reliable predict, its "behavior" or other characteristics, even if there is no "genuine" uncertainty present. It is assumed, as in transaction cost economics generally, that uncertainty and complexity have identical implications.

3.4.2.2.2. Degree of Transaction-Specific Language Limitation

This factor designates the degree to which it is necessary to have access to a "special language" in order to understand what is taking place in the transaction. When there is a degree so high as to make the details of the transaction incommunicable to the "intelligent layman" (without direct education of him), that "intelligent layman" typically being a judge, I shall talk of a language-limitation condition (LLC) as being fulfilled.

3.4.2.3. Asset Specificity

The asset specificity dimension (ASI) of a transaction refer to the degree to which participation in a particular transaction necessitates investments specific to that transaction. It can be considered an "inverse" measure (in an ordinal sense) of the

flexibility these assets leave to their owner, provided that he wish to act optimal.

3.4.3. Transaction Cost

Williamson & Ouchi (1981) defines transaction costs as follows:

> "...costs can be split into two basic groups: production costs and transactions costs. In a very general way, transactions costs are the costs of running the economic system ...More generally, the analysis of transaction costs focuses attention on alternative means of contracting. A preoccupation with technology and steady-state production expenses gives way to the study of the comparative costs of planning, adapting, and monitoring task completion" (Williamson & Ouchi (1981), pp. 388; underlining indicates italic in original).

I shall not be further concerned with the definition of transaction costs, as they are not (explicitly) used in the analysis.

4. Protective Mechanisms in Contracting and Transacting

Economic actors should realize that there is always a possibility that their partners in transactional relationships, and their contract partners in general, will not keep their promises. In section 4, we shall consider the safeguards or protective mechanisms an economic actor may rely upon will "induce" his contract partners to fulfill their obligations.

4.1. The Process involved in making Contractual Arrangements

Prior to the execution of the transaction is a phase that culminates in the establishment of a contract between the participants.

The process taking place proceeds as follows: Firstly, a contract is "negotiated" prior to the execution of the transaction. Secondly, after the contract has been negotiated, it is "signed". Thirdly, after the contract is signed, it is executed. This process of contracting in relation to transactions does not, of course, differ from the process seen when contracts are made to regulate other business arrangements.

It is, of course, also possible that the parties cannot agree on the terms, in which case no contract is signed, and no transactional relationship is brought in existence. This does not preclude that the participants are already involved in a transaction with each other.

That the term "signed" is used does not necessarily mean that the participants put their name on a piece of paper. It refers to the acts, made by the participants, that they believe makes the contract legally binding.

It is important to note that not all contract clauses are legally binding. It cannot be assumed that the participants we consider are always able to distinguish between contract clauses that are legally binding and clauses that cannot be enforced.[1]

The moment of contract signing is the basis for distinguishing between ex ante and ex post events. After the contract is signed, the transaction is executed. An overview of the process is given in fig. 4.1:

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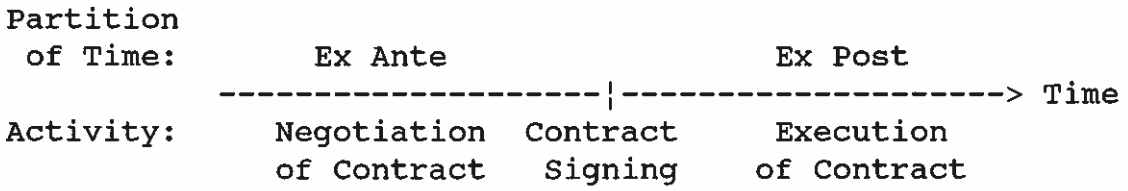
[1]Consequently, we applied the phrase "..that they believe makes.." in stead of "..that makes..".

Fig. 4.1. The Transactional Process



In what follows, I shall attempt to identify the decision premises of an economic actor to participate in a particular transactional relationship or not. Whenever reference is made to a particular transactional relationship, the criteria for "particularity" are the following:

(A) The character of the transaction(s) to be performed, such as having B digging a well for A
(B) The payment(s), if any, to be made. It is possible that no payments are made, if the transaction is a kind of barter
(C) The identity of the participants

If A considers entering a transactional relationship with B, the following must be of importance for him, in fact, "should" be part of the premises for his decision:

(I) How his situation will be if B does not keep his part of the contract/agreement
(II) His expectations as to whether B will keep his part of the contract/agreement

We shall, for the latter part of this section, disregard considerations relating to (I) in order to concentrate on (II). This is the topic of section 4.2.

4.2. Protective Mechanisms in Contractual Arrangements[2]

Consider the situation where two potential partners to a transactional relationship, A and B, negotiates a contract/agreement, and look at the prospects concerning fulfillment seen from A's point of view. The question is what determines A's expectations as to whether B will keep his part of the contract/agreement relating to the transactional relationship or not.

Before answering this problem, it should be noted that it does not seem to pose problems that deviates, in principle, from the

[2]In Koch (1992), the protective mechanisms are dealt with in greater detail.

problems concerning fulfillment of contracts/agreements in general. It would, at least, seem to cover the contractual relationships that are relevant in economic contexts in general, such as an agreement to increase profits in a oligopolistic market by increasing prices/reducing output. Hence, the formulations and examples given in this section relates to this more general problem.

Assume that B is able to fulfill his part of the contract. It would seem that A could rely on one or several of the 6 "protective mechanisms" (abbreviated as "PM") for securing that B fulfills his obligations according to the contract:

(PM1) He could rely upon the sanctions he could, himself, impose on B
(PM2) He could rely upon a low degree of goal incongruence between him and B
(PM3) He could rely on B's propensity to act "appropriate" according to the agreement
(PM4) He could rely on the coercive power of the legal system to assure that the contract will be fulfilled
(PM5) He could rely on a "reputation effect" whereby B's behavior is constrained by the fact that B will, in the future, have to take part in other transactional relationships
(PM6) He could rely on a wish on B's part to "preserve a good reputation" that is not motivated in considerations covered by (PM5). An example from another context is the wish, held by many kings and prominent politicians, to enter "history" as having this or that personal characteristic.

The list is probably not exhaustive in the sense that all the protective mechanisms that has been dealt with by sub-disciplines of the social sciences are mentioned.

In this paper, we shall primarily be concerned with the protection offered by the legal system, i.e., with (PM4).

5. Sufficient Conditions for Non-Trivial Contractual Problems

In this section, sufficient conditions for a transactional relationship to be a non-trivial contractual problem are presented. It is a much abbreviated version of chapter 5 and 6 in Koch (1992). Together, they ran to over 40 pages. Here, I shall only present the results and outline how they were obtained.

5.1. An Overview of the Argument

The purpose of this section is to find sufficient conditions for a transactional relationship to constitute a non-trivial contractual problem. Since we are dealing with transaction cost economics, the sufficient conditions should be expressed in terms of the "traditional" factors of that discipline.

This is done as follows: Firstly, we define a set of intermediate variables. Secondly, we consider a set of values of the intermediate variables. Whenever that set obtain those values, a set of statements, {(a),(b),(c),(d)} is true. Thirdly, we prove that this set is a set of sufficient and necessary conditions for a transactional relationship to be a non-trivial contractual problem. Fourthly, we demonstrate that the factors of "traditional" transaction cost economics can be combined so as to make two separate sets of sufficient conditions for the set of statements (a)-(d) to be true.[1] Finally, we can use these results to obtain two sets of sufficient conditions, in terms of the traditional transaction cost factors, for non-trivial contractual problems to appear.

5.2. Non-Trivial Contractual Problems in Terms of the Intermediate Variables

We defined a transaction as a non-trivial contractual problem if and only if both of the following conditions are fulfilled:

(NTCP-1) At least one on the actors cannot rule out that there is a considerable "conflict of interest" between them as regards the execution of the transaction

(NTCP-2) That actor is unable to specify a "simple" contract the execution of which can, without problems, and to the satisfaction of that actor, be "backed up" by the "normal legal system", should disagreements occur.

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[1] Neither of them are, however, necessary conditions.

We shall start our investigation by introducing a set of intermediate variables:

(I.V.1) A's "isolated" vulnerability to B's actions
(I.V.2) The degree to which the legal system is able to protect A's "justified" interests (i.e., his legitimate interests according to the agreement)
(I.V.3) How much A's interests differ from B's
(I.V.4) A's expectations as to whether B will try to use A's vulnerability, provided that there is any (cf.(I.V.1)), to gain advantages on A's behalf, or will not do so.

Except for (I.V.3), these variables are new to the literature.

5.2.1. Values for the Intermediate Variables Considered

I shall, for purposes of exposition, assume that each of the four intermediate variables can take only two values. Later, I shall argue that this is not a serious limitation, although we shall also be concerned with degrees of NTCP. What we are doing in this section can be thought of as considering situations with fairly high degrees of NTCP, as opposed to situations with no NTCP present.

We consider the following values for (I.V.1)-(I.V.4):

(I.V.1): A is vulnerable to B's actions
(I.V.2): The normal legal system cannot protect A against B if a simple contract is relied upon to regulate the transaction
(I.V.3): A's expects his interests to differ considerably from B's
(I.V.4): A expects that B might well take "non-appropriate actions" against A

When (I.V.1) takes on the mentioned value (the statement following the colon), we shall say that the statement (a) is true. Correspondingly for (I.V.2) and (b), (I.V.3) and (c), and (I.V.4) and (d). When (I.V.1) does not take this value, we say that (a) is false, or that ¬(a) is true, and the same for the other variables.[2]

5.2.2. The Results: Sufficient Conditions for Non-Triviality in Terms of the Intermediate Variables

It can be proven (cf. koch (1992) that

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[2]"¬" denotes the "non" symbol from symbolic logic.

(P5.2.3.1) If the set of statements {(a)-(d)} is true, then there is a non-trivial contractual problem

(P5.2.3.2) If there is a non-trivial contractual problem situation, then the set of statements {(a)-(d)} is true

5.3. The Traditional Factors of Transaction Cost Economics and the Intermediate Variables

5.3.1. Asset Specificity of Transaction-Specific Investments

If A could "withdraw" from the transaction with B, without losses, at t_1, and conduct the "optimal" transaction with an alternative partner, C, instead, then A's failure to specify the optimal way in which the transaction is to be carried out, given the state of the world realized at t_1, would mean nothing. The implication of this is that the costs of replacing B with a potential transaction partner C at t_1 must be considered.

If A's costs of conducting the transaction with C instead of B are the same, it would be possible to replace B with C (a possibility that will probably "discipline" B's behavior). But if A has, at t_1, already incurred some of the costs by conducting the transaction with B, and the "benefits" derived from these costs cannot be transferred to a "replacement" transaction with a third party, C, without losses, A is "locked" to B. And he is vulnerable to B's actions.

But this description is almost the definition of asset specific investments. So, vulnerability is implied by asset specificity; statement (a) is true.[3]

5.3.2. Bounded Rationality, Uncertainty-/Complexity, and Language Limitation Conditions

Even high degrees of asset specificity would be inconsequential for A if he was able to specify, in the contract, in a form intelligible to the normal legal system, the exact ways in which the transaction that is to be undertaken at t_1 were to be carried out. If he were able to do so, the transaction could be undertaken using a "simple" contract, since it would then be possible to use the normal legal system "against" B, should he not keep to

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[3]It is doubtful, however, that asset specific investments is a necessary condition for non-triviality. Cf. Koch (1992).

the letters of the deal.[4] Accepting this line of reasoning, it would seem that the following is decisive:

(1) A's capability to predict the state that actually occurs, or, alternatively, to specify what would be an acceptable contingent claims contract covering the possible contingent states in an (for A) acceptable manner.[5] We shall refer to this factor as "predictability"
(2) A's possibility of expressing, in writing, the actions to be carried out by B if he is to carry out the "optimal" transaction, in a way that is intelligible to the "intelligent layman". We shall refer to this factor as "expressibility"

Ad (1) This condition refer to the bounded rationality$_1$ on A's part A "coupled" with uncertainty/complexity
Ad (2) This condition relates to the possibility of informing "outsiders" to the transaction, via the content of a contract, in a way that permits them to enforce the execution of the contract to the satisfaction of both parties, should disagreements occur. For transactions coordinated by the market mechanism, the relevant outsiders" are the representatives of the normal legal system

If rationality was unbounded, none of these conditions would be of importance. Consequently, bounded rationality, in the form of bounded rationality$_1$ or bounded rationality$_2$, is an obvious candidate for being a necessary condition for non-trivial contractual problem. But note that they differ in that bounded rationality$_1$ relates to A himself, whereas bounded rationality$_2$ relates to the representatives of the normal legal system.

5.3.2.1. Bounded Rationality$_1$ and Uncertainty/Complexity

Whether a certain situation is "certain", or "risky", or "uncertain", reflects both the characteristics of the "environment" or "system" in which choice or action is to take place, as well as the cognitive characteristics of the individual making or performing it. This indicates that "the degree of rationality" and the choice situation of the individual are dependant factors.

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[4]Assuming that (1) B is able to fulfill it, and either that (2a) the sanctions of the normal legal system are severe enough to force B to fulfill his obligations, or (2b) that it is possible to compensate A, to A's satisfaction, out of B's assets.

[5]In the absence of a "language limitation condition".

If A was unboundedly rational, he would be able to predict how the transaction that is to be carried out should be[6] in order to be "optimal", and have that specification written in the contract.[7] Therefore, bounded rationality in some form or another is a necessary condition for lack of predictability. Compare this with the statement (b):

(b): The normal legal system cannot protect A against B if a simple contract is relied upon to regulate the transaction

If we assume that the conditions of bounded rationality$_1$ and uncertainty/complexity are simultaneously fulfilled, then statement (b) is true. That is, the simultaneous occurrence of these two factors are sufficient conditions for (b).

5.3.2.2. Bounded Rationality$_2$ and Language Limitation Conditions

Assume that the language limitation condition is operative (on A's part) concerning the activities B is to do to carry out the transaction to A's satisfaction. Assume, further, that bounded rationality$_2$ is characteristic for the (agents of the) normal legal system. Then it is impossible for A to describe, satisfactorily, in a simple contract enforceable by the legal system, what B is to do. Once more, this implies that (b) holds true. It seems, therefore, that the language limitation condition is a candidate for being part of a set of sufficient conditions for non-trivial contractual problem.

5.3.3. Goal Incongruence

It has already been noted that the truth of statement (c) implies, and is implied by, goal incongruence.

5.3.4. Possibility of Opportunistic Behavior

Assume that, according to A's beliefs, there is a possibility of opportunistic behavior on the side of part B. This is, of course, equivalent to saying that A expects that B might well be inclined to use an eventual vulnerability, on the side of part A, to A's disadvantage, if B finds this to be in his best interests. To assume a possibility of opportunistic behavior is, in other

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[6]There would, pr. definition, be no condition of uncertainty/complexity (UNC), but certainty, cf. the next note.

[7]Presuming that unbounded rationality means that there is no uncertainty, not even in the form of objectively known probability distributions. This seems to be in accordance with the definition of "unlimited" rationality in Simon (1947/1976).

words, a sufficient condition for "generating" doubt as to whether B will act appropriate, according to A's "legitimate" interests. This means, of course, that we have provided sufficient conditions for (d) to be true.

(d): A expects that B might well take "non-appropriate actions" against A

5.4. Sufficient Conditions for Non-Trivial Contractual Problems

As noted in 5.2.3, it can be proved that if the intermediate variables attain values so that the statements (a)-(d) are true, then we have a non-trivial contractual problem. So, in order to argue that a concrete situation represents such a condition, we argue that it implies that (a)-(d) are true.

Using the described approach in the following two sections, it shall be argued that the factors of transaction cost economics can be combined to provide two such sets of sufficient conditions.

5.4.1. Non-Triviality under Uncertainty-/Complexity-Conditions

Consider a transaction that is to be conducted under the following circumstances:

(C1) It requires a considerable degree of asset specific investments on A's part
(C2) Bounded rationality$_1$ and a condition of uncertainty/complexity are both operative on the side of part A
(C3) There is a considerable degree of goal incongruence (GI) between them
(C4) According to A's beliefs, there is a possibility of opportunistic behavior present on the side of part B

Let us consider the implications of these assumptions. (C1) corresponds to saying that A is vulnerable to B's actions. He cannot afford to ignore what it might be in B's best interests to do. This corresponds, of course, as we saw earlier in this chapter, to saying that (a) is fulfilled.

The implication of (C2) is that A is unable to formulate a, for A, "satisfactory" simple contract or, alternatively, a "satisfactory" contingent claims contract. The consequence is that the normal legal system cannot protect him. This implies that (b) is fulfilled.

(C3) states that should B "narrowly" follow his own interests, then, disregarding the contract/agreement with A, he will presumably act against A's interests. This should concern A, because, as we just saw, he is vulnerable to B's actions (condition (C1)), and the normal legal system cannot protect him (condition (C2)). This implies that (c) is true.

Finally, (C4) implies that B might very well try to use the situation to A's disadvantage[8], that is, (d) is true.

So we have shown that the assumptions (C1)-(C4) provide sufficient conditions for the statements {(a),(b),(c),(d)} to be true. Considering (P5.2.3.1), they are also a set of sufficient conditions for "generating" a non-trivial contractual problem.

5.4.2. Non-Triviality under Language Limitation Conditions

Assume that the set {(C1),(C3),(C4)} from section 5.4.1 are true, and the following condition is fulfilled:

(C2') Bounded rationality$_2$ and language limitation condition are both operative on the part of the normal legal system

(C1), (C3) and (C4) are to be interpreted as above. (C2') means that A cannot, in a way that is intelligible to the representatives of the normal legal system, specify exactly what it is he want B to do. This has the implication that the legal system is not able to protect him, because it cannot "see" whether B has fulfilled his obligations or not. The conclusion is that the (relevant) consequences of (C2') are the same as that of condition (C2), namely, that (b) is true. All in all, this assures that the set of statements {(a),(b),(c),(d)} is true.

The set of conditions (C1), (C2'), (C3) and (C4) is, accordingly, also a set of sufficient conditions for a non-trivial contractual problem to occur.

5.5. Contractual Problem Situations

Later, we shall use the following definitions:

- A transactional relationship fulfills an NTCP$_1$-condition if the set of conditions ((C1),(C2),(C3),(C4)) is true and (C2') is false.

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[8]Note that (C4) refer to A's beliefs about B, not the "true character" of B.

- A transactional relationship represents a $NTCP_{II}$-condition if the set of conditions ((C1),(C2'),(C3),(C4)) is true and (C2) is false.
- A $NTCP_{I+II}$-condition is fulfilled if the set of conditions ((C1),(C2),(C2'),(C3),(C4)) is true.
- Finally, a TCP (trivial contractual problem) is a situation where the set ((C1),((C2) V (C2')),(C3),(C4)) is false.

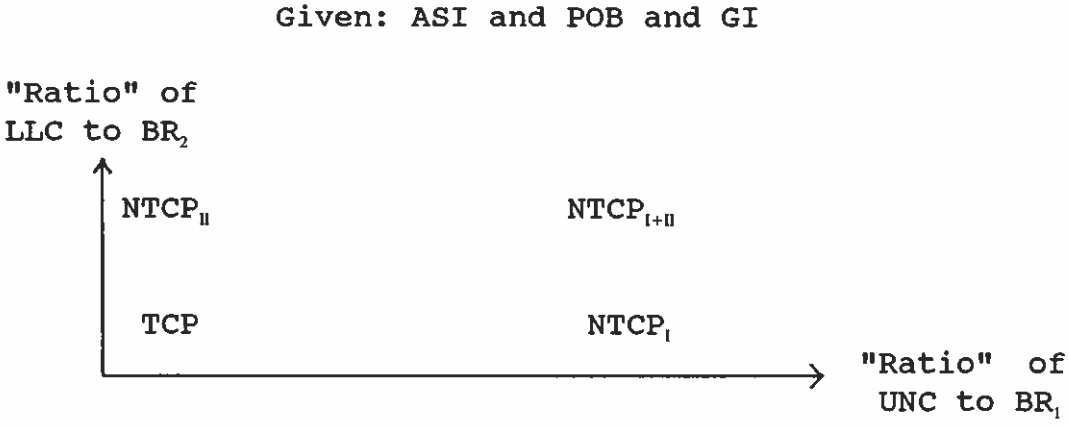
It is important to realize the difference between $NTCP_I$ and $NTCP_{II}$. The reason is that, although the effects (NTCP) are identical, the ways in which they can be "remedied" differ fundamentally.

5.6. A Categorization of Contractual Problem Situations

We shall now relax the assumption that there is either a condition of non-triviality or not, so that different degrees of non-triviality are allowed. We shall assume, however, that there is a demand for asset-specific investments, that there is a possibility of opportunistci behavior, and that there is goal incongruence.

Consider the relation between uncertainty/complexity and bounded $rationality_1$. What matter is the relative levels of them, the "ratio" (in an intuitive sense) between them. In section 5.3.2, we referred to this as "predictability". The same goes for language limitation and $bounded\ rationality_2$. In section 5.3.2, we referred to this factor as "expressibility". The results of the analysis are illustrated in fig. 5.1.

Fig. 5.1. An Overview of Contractual Problem Situations



ASI: Asset Specific Investments. GI: Goal Incongruence. POB: Possibility of Opportunistic Behavior. LLC: Language Limitation. UNC: Uncertainty/Complexity.

It should be stressed that fig. 5.1 is an illustration only, indicating the "direction" in which the conditions for a TCP is gradually transformed to an $NTCP_I$, an $NTCP_{II}$ etc. And the directions of the arrows also indicates the direction in which the severity of the respective NTCP-conditions increases.

6. Agreement, Contract, and Action

6.1. The Notion of Action

I shall use the term action to designate any behavior performed by the participants to a transactional relationship that is relevant to the execution of that transaction. It must be noted that what is "relevant" depends upon the preferences of the concerned actors. Since other actors' preferences are presumably known only to themselves, there may well be a "grey" area where the participants do not know whether the other is concerned with a certain aspect of their behavior.

6.2. Some Contractual Notions

I shall assume that agreements and contracts alike can be thought of as "containing" a finite number of statements outlining/describing the actions, or the characteristics of actions, to be performed by the participants. These actions are assigned to the parties to the transaction as obligations. No matter what other requirements should be included in order to speak of a contract, this demand for obligations of some forms must be met. For a secretary, something akin to "it is NN's duty to type letters and handle the internal distribution of mail received" could be included.

Williamson does not define the term "contract" explicitly. I propose to distinguish between two closely related concepts, agreement and contract, the latter being further "sub-divided" in two notions.

6.2.1. Agreements

An agreement is defined as a mutual understanding between the parties to a transaction of what the appropriate actions are, possibly in a contingency form (i.e., as specifying what each is to do under some specified circumstances relating to the transaction in question). The following characteristics should be noted as concerns the agreement:

(1) There may be some ambiguity on the exact content of the agreement
(2) At best, only the part of an agreement that is "contained" in a contract can be enforced by the normal legal system
(3) The agreement may be incomplete if some conditions of importance for the execution of the transaction(s) are not considered

6.2.2. Specified and Enforceable Contracts

As noted, I shall distinguish between two forms of contract. The first, the specified contract in relation to a certain transactional relationship is the content of the actual contract, what is explicitly agreed upon. It is the legal arrangement deliberately set up by the parties to the transaction in order to commit them to the fulfillment of their obligations according to the agreement. The specified contract may be the formulations actually put on paper and signed by the contracting parties. According to danish legislation, a contract need not be put on paper in order to be legally valid, though it may, in practice, be difficult to have the support of the legal system to ensure that the contract/agreement is fulfilled if it does not exist in written form.

The second contractual notion, the enforceable contract in relation to a transactional relationship, is the sum total of all the actions related to the transactional relationship in question that the participants can use the coercive power of the "normal legal system" to "persuade" or "force" each other to carry out/fulfill. The enforceable contract is, I submit, determined by the following four factors:

(a1) The agreement/specified contract between the parties
(a2) The legislation of the country
(a3) The way that legislation is interpreted and enforced by the normal legal system
(a4) The precedence that has developed at the court system independent of "law-making"

The parties to the transaction may well only know (a1). It is possible that even the full meaning of it is unknown to them, as this may require knowledge and understanding of the three other elements as well. It should be noted that the enforceable contract in relation to a transactional relationship may change, if the legal system itself undergoes changes, even though the agreement or the specified contract have not been changed. This follows directly from the "determinants", (a1)-(a4), of the enforceable contract.

There will normally be a difference between the specified contract and the enforceable contract relating to a certain transactional relation. The reason for this could be that specified contract contained clauses that was illegal, because one of the parties "fooled" the other into entering the transaction, or because the specified contract is so imprecisely formulated as to make it impossible to make a reasonable interpretation of

its content.[1] But the major reason is that a lot of stipulations are effective without being specified. A manager may not slab his secretary by the stipulations of the normal legal system, but that is probably not a part of very many (specified) contracts.

6.2.3. The "Existence" of the Contractual Notions

We defined "agreements" as relating to a mutual understanding between the parties. It does not have a separate physical existence, although it is conceivable (but very unlikely) that it is identical to the written contract in some cases.[2] The specified contract, however, may very well exist physically, e.g., in written form. The enforceable contract, however, is even more of a phantom than the agreement. The agreement exists in the minds of the participants. But the enforceable contract need not even exist in the minds of the participants or anyone else. This will be the case if the participants do not understand all judicial ramifications of the (specified) contract.

6.3. The Contents of Complete Contracts[3]

The purpose of the specified contract is to guard against the possibility of non-appropriate behavior, i.e., to avoid ex post actions violating the spirit of the agreement. I shall define a contract as complete if it contain the following three elements:

(CC1) It assigns the obligations concerning the relevant transaction(s) to each party.
(CC2) It allocates the power to decide whether the specified obligations are fulfilled or not.
(CC3) It delineates the sanctions to be carried out against the participants, should they violate their obligations.

Ad (CC1) These may include that it is one party's duty to obey instruction from the other party as to which of a spe-

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[1]In Masten (1988), a list of such reasons as has been found justified in american courtrooms is supplied. They will, of course, differ between countries.

[2]The more "primitive", in the sense of undeveloped, the legal system is, the greater is the likelihood that this will be the case.

[3]The term "complete" is very unfortunate, as it is sometimes used in another sense. But I have failed to come up with a better one.

cified class of action he is to carry out. This is referred to as the "zone of acceptance" in relation to employment contracts. Cf. Williamson (1985), pp. 218-219. More generally, we shall talk about hierarchical contracts when A possess the right to decide, after the contract is made (that is, to decide ex post), what B is to do[4]

Ad (CC2) This is so important as to warrant separate treatment. It is dealt with in section 6.4.

Complete contracts are called so because they contain anything that is necessary in order to regulate the transaction: What is to be done, who is to evaluate the adequacy of what has been done, and the sanctions to be used in case one of the participants, or both of them, has failed to meet his obligations.

6.3.1. A Digression on Incomplete Contracts

Consider, for a moment, the possibility that a contract does not contain any obligations at all for the participants. In the terminology of the last section, (CC1) is empty. In this case, there can be no contractual relationship. Note, however, that it is conceivable that (CC1) is given implicitly, by the terms used (e.g., if B is hired as a janitor).

Sometimes a contract does not specify (CC2) and (CC3). I shall term such contracts incomplete contracts. It should be noted, however, that the fact that the specified contract of a transactional relationship does not explicitly mention (CC2) and (CC3) does not mean that it is not determined who is to have "the power to decide whether the specific obligations are fulfilled or not". If that is not specified, that power rests in the hands of the "normal legal system". In this case, the power to decide the legal sanctions to be carried out in case of violation by one of the participants rests in the hands of the normal legal system also.[5]

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[4]Note that a contingent claims contract is not hierarchical in this sense, since the obligations in such contracts are contingent on "states of nature". Normally, A will not be able to influence which state of nature occurs.

[5]It should be noted that the character of a contract may sometimes determine who has the right to decide whether the obligations are fulfilled or not. As was noted above, Masten (1988) claim that this is the case for employment contracts. I shall not go into further details on this matter.

It is important to realize that even in non-equal contracting, the normal legal system may have a role to play. Firstly, there may be differences of opinion over "how far the non-equality goes". E.g., contracts amounting to slavery are not enforceable in "western" countries.[6] Secondly, sanctions are often administered by the normal legal system. If a person owes another money, the latter cannot himself legally take, out of the property of the first, what he considers suitable compensation for any missing payments. The normal legal system must be involved.

6.4. Equal and Non-Equal Contracts

Given that there are two parties, A and B, to a transaction, there are four qualitatively different possibilities as to who is to decide whether the specified obligations are fulfilled or not: It can rest in the hands of

(a) The normal legal system
(b) A specified or "created" third party
(c) A or B
(d) A and B in common

Ad (a) Here the two parties retain full autonomy, leaving the job of deciding whether the obligations are met or not to the normal legal system
Ad (b) Transaction governed under relational contracting are examples[7]
Ad (c) This represents the subordination of (a subset of) the transactor's autonomy to the other. The normal legal system (NLS) still has a role to play, namely, to ensure adherence to the contract, that is, to observe that the instructions of the party allocated authority is respected and carried out
Ad (d) I shall not consider this case here

I shall refer to a contract as equal if the authority to decide whether it is fulfilled or not rests in the hand of an external, neutral party (situation (a) or (b)). If that power rests in the hands of A or B, I shall refer to it as non-equal. An-

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[6]But in some third world countries, where slavery is officially prohibited, what is de facto slavery exist. One common example takes the form of people being forced to work for a certain employer as payments on their debts to him. In some countries, families have for generations lived under such conditions, because they "inherit" the debt of older family members as these die out.

[7]Cf. Williamson (1985), pp. 71-72.

other aspect of the term is its relation to the definition of hierarchy, a key term in transaction cost economics. This topic is dealt with in section 6.5. One aspect that is not investigated in this paper is that both A and B may be allocated the right to decide whether the contract is fulfilled or not for a "subset" of the obligations.[8]

6.4.1. The Implications of Non-Equality

What does non-equality imply for the relation between the parties to a transaction? Firstly, the term has meaning only in situations where the two contract partners are juristic persons. Secondly, non-equality does not exclude the decisions of the party vested with the power to decide whether fulfillment has occurred or not from the ultimate control of the normal legal system. If there were no such difference, the enforceable contract and the specified contract relating to a certain transactional relationship would be identical for non-equal contracts.

Rather, what it does do is to give an unequal burden of proof: If there is a conflict between the two parties as to whether a legally recognized obligation[9] is fulfilled or not, the burden of proof lies unilaterally on the shoulders of the party who is not vested "authority" in the above sense. According to Masten (1988), the employment relation is non-equal in this sense.

It should be noted that the existence of a non-equal contract between A and B does not necessarily say anything between their relative power.

6.5. "Integration" with Hierarchical Contracts

In this section, I shall discuss the relation between equality/non-equality and hierarchical contracts.

6.5.1. Hierarchical Contracts

In the first of his two pioneering contributions[10], "The Nature of the Firm", Coase argued that the main characteristic of the

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[8]Note that this is not the case outlined in (d).

[9]I.e., something included in the enforceable contract.

[10]That is, Coase (1937). The other is Coase (1960).

firm is the supersession of the price mechanism."[11] In fact, it is characterized as "the distinguishing mark of the firm", in opposition to the market, where the price mechanism is relied upon for coordination (cf. Coase (1937), pp. 387). "Inside" the firm, the major (at least the only mentioned) mechanism for coordinating the factors of production is the use of "orders".

Williamson argues that the employment relation can be described as follows:

> "The employment relation is, by design, an incomplete form of contracting. Flexibility is assured as the employee stands ready to accept authority regarding work assignments provided only that the behavior called for falls within the "zone of acceptance" of the contract" (Williamson (1985), pp. 218-219).[12]

In section 6.4, we introduced the notion of non-equal contracts, that is, the idea that in some contracts, the participants may not be equal in the sense that one of them may have the right to decide whether the other fulfilled his obligations according to the contract or not. This need not imply that the contract/agreement is, simultaneously, a contract of the form dealt with in the quotation.

6.5.2. Towards a Typology of Contractual Forms

The discussion till now points towards a categorization of contracts based upon the "dimensions" of hierarchy and equality.[13] If we, once more, rely upon a scale with only two possible values for each dimension, we have four "main types" of contracts. They are illustrated in fig. 6.1 below.

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[11]This is not an altogether satisfactory definition. Normally, governmental activity is also coordinated by "something else". Therefore, "firm" must be distinguished from "market" in another way. If one only thinks of the supersession of the price mechanism as a, instead of the, characteristic of the firm, one is on safer grounds.

[12]The term "incomplete" is used by Williamson in another sense than the one relied upon here.

[13]For more details, cf. Koch (1992).

Fig. 6.1. Contract Forms after Hierarchy-/Equality-Dimensions

		Hierarchical Dimension	
		Non-Hier.	Hier. Contr.
Equality Dimension ↓	Non-Equal	T_{II}	T_{I+II}
	Equal	T_0	T_I

Examples of T_0 are simple contracts and contingent claims contract. Examples of T_{I+II} are employment contracts in Denmark and USA. For some considerations concerning employments contracts, ownership, and processes in light of the contractual framework introduced here, cf. Koch (1992).

7. The Economic Importance of Contractual Arrangements

In this section, the relation between the contractual problems introduced in section 5, and the contractual forms from section 6, are considered.

7.1. The Trivial Contractual Problem

Consider the trivial contractual problem, i.e., situations where at least one of the following two statements are false:

(NTCP-1) At least one on the actors cannot rule out that there is a considerable "conflict of interest" between them as regards the execution of the transaction

(NTCP-2) That actor is unable to specify a "simple" contract the execution of which can, without problems, and to the satisfaction of that actor, be "backed up" by the "normal legal system", should disagreements occur.

In this situation, there is no reason to be dissatisfied with the protection offered by the normal legal system if a simple contract is relied upon. And a simple contract is, of course, one example of an equal, non-hierarchical contract.

7.2. $NTCP_1$ and Hierarchical Contracts

Consider a transaction that is to be conducted under the following circumstances:

(C1) It requires a considerable degree of asset specific investments (ASI) on A's part

(C2) Bounded $rationality_1$ and a condition of uncertainty/complexity (UNC) are both operative on the side of part A

(C3) There is a considerable degree of goal incongruence (GI) between them

(C4) According to A's beliefs, there is a possibility of opportunistic behavior (POB) present on the side of part B

In section 5, it was argued that (C1)-(C4) is a set of sufficient conditions for a transactional relationship to constitute a non-trivial contractual problem, because A's interests cannot, without problems, be protected by the normal legal system if the transaction is to be regulated by a simple contract. Assume that the following two conditions are fulfilled also:

(C5) The conditions of bounded rationality$_2$ (BR_2) and language limitation condition (LLC) are <u>not</u> simultaneously fulfilled on the part of the normal legal system (NLS)

(C6) It is possible for A to predict that, almost whatever happens, he would want B's behavior to be a member of a certain class of behavior, i.e., that he is able to state some "limits" inside which he feels certain that B's behavior should lie.

This is the situation termed $NTCP_1$ in section 5.5. The limits referred to in (C6) may be that B should be ready to perform "all reasonable secretarial duties" for A. (C5) implies that it is possible for the normal legal system to find out if B fulfill his commitments, according to the contract, or not. This means that, but for condition (C2), A could have relied on a simple contract. His problem is that he cannot predict what it is he wants B to do. But he <u>is</u>, however, able to state some "limits" inside which he would like B's behavior to lie, "almost no matter what happens" (cf. (C6)). The outlining of such limits are, of course, the content of a hierarchical contract.

Note that (C5) is a necessary condition for a hierarchical contract to be advantageous, from A's point of view, over a simple contract. If (C5) is not fulfilled, then the normal legal system will not be able to "see" if B's behavior is of a character that fulfills his obligations, according to the hierarchical contract, or not.

If A could persuade B to enter a contract of this kind, the non-triviality of the contractual problem would be alleviated, from A's point of view, since he could then rely on the legal system (cf. (C5)) if B should fail to carry out his obligations. All that is required is that A is capable of formulating a suitable "zone" inside which B's behavior should lie.

Whether such a contract will be a good solution for A depends on B's conditions for entering it. It is important to note the implications of this: We have not found sufficient conditions for hierarchical contracts to "emerge", or even to be beneficial. As regards predictions we can only say that, ceteris paribus, it is more probable that a hierarchical contract will emerge, the more "severe" the conditions referred to in (C2) are.

<u>7.2.1. Conditions of Risk but not Uncertainty/Complexity</u>

In economic theory, the standard approach to situations where the actors are not fully informed about future events is to

argue that in these situations, they make contingent claims contracts with each other. A contingent claims contract is a contract where the actions to be performed by the parties depends upon which of a number of listed contingencies actually occurs. It can be considered as a combination of simple contracts, only one of which is to be effectuated.

Assume that, for a given transactional relationship, there is only Knightian risk, but not uncertainty. Otherwise, the situation is identical to the one described in the preceding section. Would a contingent claims contract, one might ask, not be superior to a hierarchical contract in that case?

The answer is that this cannot be decided without closer knowledge of the situation. I shall only attempt to argue that under some circumstances, a hierarchical contract might be advantageous as compared to a contingent claims contract, since it seems obvious that the opposite is sometimes the case.

Assume that A and B makes such a contract with, say, five contingencies. In this case, A will have to decide what he would like B to do in five different situations. This represents a waste of resources, since, naturally, only one of these five contingencies (or some other, unforeseen) will be realized.[1] If these decisions represent non-negligible calculation costs, a hierarchical contract might save A money, time, or both as compared to a contingent claims contract.[2]

The implications of this result is more than a curiosity. It demonstrates that (C2) is not a necessary condition for a hierarchical contract to be beneficial for A as compared to a simple contract. It also demonstrates that a condition of "risk" is not, in itself, a sufficient condition for a contingent claims contract to be the best possibility.

7.2.2. Conclusions on $NTCP_1$ and Hierarchical Contracts

The economic importance of hierarchical contracts are that they, provided that (C5) and (C6) are true, can be used to "economize" on bounded $rationality_1$ on A's part in one of two ways:

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[1]Cf. Williamson (1975), pp. 25 for similar remarks.

[2]These are, of course, not sufficient conditions for a hierarchical contract to be realized.

(a) By postponing the point in time where A's decision as to exactly what B's behavior should be, has to be made
(b) By reducing the number of decisions A has to make as to what constitutes the "optimal" action[3] to be performed by B given the state of nature that occurs

It can be shown that, under normal circumstances, a non-equal contract cannot be used to remedy this problem.[4]

7.3. $NTCP_{II}$ and Non-Equal Contracts

Consider a transactional relationship between A and B under the following conditions:

(C1) It requires a considerable degree of asset specific investments (ASI) on A's part
(C2') Bounded $rationality_2$ and language limitation condition (LLC) are both operative on the part of the normal legal system (NLS)
(C3) There is a considerable degree of goal incongruence (GI) between them
(C4) According to A's beliefs, there is a possibility of opportunistic behavior (POB) present on the side of part B

It was argued in section 5 that this set of conditions is sufficient for generating an non-trivial contractual problem condition. Assume, further, that the following condition is fulfilled:

(C5') Bounded $rationality_1$ (BR_1) and a condition of uncertainty/complexity (UNC) are <u>not</u> both operative on the side of part A
(C6') It is possible for A to find out if B has fulfilled his part of the agreement or not[5]

This was the situation termed $NTCP_{II}$ in section 5.5. Note that (C5') is a necessary condition for a "pure" non-equal contract to be able to remedy A's problem. This is obvious, as it will

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[3]Optimal as seen from A's point of view.

[4]Cf. Koch (1992). There is, however, one exception, cf. ibid.

[5]This need not imply that there is <u>not</u> information asymmetry between them in the sense that A may not have access to exactly the same information as B. The condition only implies that A is in possession of adequate knowledge in order to judge the quality of B's work.

not help A that he can sanction B in case the latter does not behave according to the agreement, if he cannot find out what it is he would like B to do.

(C5′) implies that A is able to predict the actions he would like B to perform. Unfortunately, because of (C2′), he is unable to express the contract in a way that makes it possible for him to prove to the normal legal system that B has not fulfilled his responsibilities, should B fail to do so. It is clear that, if he could persuade B to enter a non-equal contract of a suitable specification, his problem would be remedied. Once again, whether this is a feasible "solution" depends upon what B wants in return for entering such a contract.

Note that (C2′) is a necessary condition for a non-equal contract to alleviate A's problems. If it is not fulfilled (is false), a simple contract would offer A the same degree of protection as would the non-equal contract.

The economic importance of non-equal contracting is that it economizes on A's cost of proving to the normal legal system that B violates the agreement. Assuming that B does violate the agreement, A does not have to prove this to a jury's satisfaction, but only to his own.[6] It must be emphasized, however, that the removal of "the burden of proof" from A's shoulder, even under ceteris paribus conditions[7], is only a necessary, but not a sufficient, condition, for this arrangement to be "better" seen from A's point of view. If he does not have access to effective sanctions, it will not make him better of.

Note that in case of $NTCP_{II}$, contingent claims contracting is no remedy. It is irrelevant to the problem. Likewise, it can be shown that, under "normal" circumstances, a hierarchical contract cannot be used to remedy this problem.[8]

7.4. $NTCP_{I+II}$ and Non-Equal, Hierarchical Contracts

It is obvious that an $NTCP_{I+II}$ situation can be remedied by a contract that is both non-equal and hierarchical. All in all, we have the combined typology over which contractual problem

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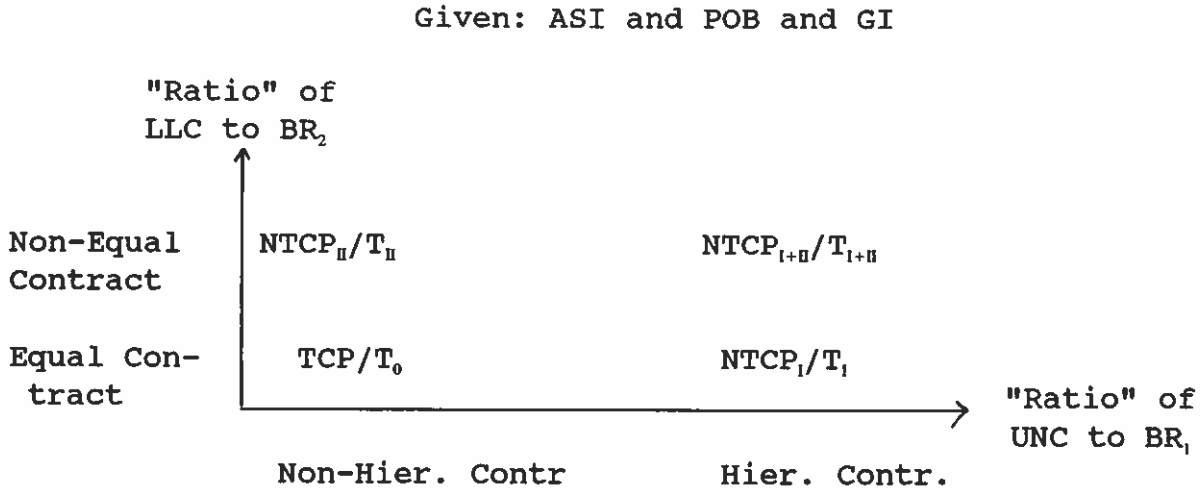
[6]One of the more obvious ways in which these situation differ is that A does not have to consider his own reliability as a witness. This would be necessary for a judge.

[7]The most important of which are A's obligations towards B.

[8]Cf. Koch (1992).

situations can be alleviated by which contractual form as illustrated in fig. 7.1:

Fig. 7.1. Combining Contractual Problems and Contractual Forms



ASI: Asset Specific Investments. GI: Goal Incongruence. POB: Possibility of Opportunistic Behavior. LLC: Language Limitation. UNC: Uncertainty/Complexity

It should, once again, be noted that the "problem situations" (TCP, $NTCP_I$, $NTCP_{II}$, and $NTCP_{I+II}$) do not, in themselves, provide sufficient conditions for these contractual forms to be "mutually beneficial". And they do not provide sufficient conditions for these contractual forms to occur, neither in the short nor in the long term.

8. Summary

Section 1 to 4 provided the background for the the main results of this paper. These main results appear in section 5, 6 and 7.

In section 5, it was argued that transaction cost economics has provided "factors" that can be combined into two sets of sufficient conditions for a transactional relationship to constitute a non-trivial contractual problem. This gave rise to a categorization into four qualitatively distinct categories of contractual problem situations. The result was illustrated in fig. 5.1.

In section 6, the notion of a contract was investigated. Two properties of contracts was investigated, both of which may be formulated as questions:

(Q1) Is it left to one of the participants to decide whether the terms of the contract are fulfilled or not?
(Q2) Has one of the participants the right to decide what the other is to do, inside some "limits of discretion", when the contract is to be executed?

If the answer to (Q1) is yes, the contract is said to be "non-equal", otherwise it is "equal". If the answer to (Q2) is yes, the contract is "hierarchical", otherwise it is non-hierarchical. So we have established a basis for distinguishing between four types of contracts: Equal and non-hierarchical; equal and hierarchical; non-equal and non-hierarchical; non-equal and hierarchical. The result is illustrated in fig. 6.1.

In section 7, it was argued that the three set of conditions sufficient conditions for a non-trivial contractual problem situation, as outlined in section 5, could be remedied by the contract types identified in section 6. This result was illustrated in fig. 7.1.

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