

**EC-OECD Seminar Series on Designing better
economic development policies for regions and cities**



Contract as reference points:

**A new approach to
contracting and implications
for relationships among
levels of government**

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■ Background information

This paper was prepared as a background document to the OECD-European Commission Seminar on “***Multi-level governance for regional economic development***” held on 23 January 2017 at the OECD Headquarters in Paris, France. It sets a basis for reflection and discussion.

■ About the Project

This seminar is part of a five-part seminar series in the context of an EC-OECD project “Designing better economic development policies for regions and cities”. Other sessions in the series addressed the use of: contracts for flexibility/adaptability, performance indicators, financial instruments, and insights from behavioural science. The outcome of the seminars supports the work of the Regional Development Policy Committee and its mandate to promote the design and implementation of policies that are adapted to the relevant territorial scales or geographies, and that focus on the main factors that sustain the competitive advantages of regions and cities. The seminars also support the Directorate-General for Regional and Urban Policy (DG REGIO) of the European Commission in the preparation of the impact assessment for the post-2020 legislative proposals and to support broader discussion with stakeholders on the future direction of the delivery mechanisms of regional policy.



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Introduction: A new approach to reading contracts across levels of government

This paper draws on recent developments in contract theory, initiated by a paper by Hart and Moore published in 2008 in the *Quarterly Journal of Economics*, and explores how it can be used to better analyse the contractual relationships among levels of government. The theory focuses on the issues raised by the *ex post* adaptation, interpretation and renegotiation of these contracts, which can be driven either by the need to adapt to contingencies or by exogenous shocks, such as major changes in the macroeconomic or political contexts.

The contractual approach to the relationships among levels of government

Capacity building and investment in large infrastructures require time, and therefore long-term policies and related commitments are necessary when several (levels of) government are involved. At the same time, policies need to be flexible and adaptable enough to address significant changes in the economic environment and challenges such as climate change, migration and demographic change, which in some cases are not foreseeable. There is, therefore, a trade-off between long-term programmes for economic development which provide certainty for the private and public sectors, and indeed for citizens, and the need to address new priorities and innovate within public policies. In the context of relationships among levels of government, this trade-off translates into a rigidity vs. flexibility tradeoff of the arrangement between levels of government.

The OECD (2007) defines contracts as arrangements that reorganise rights and duties between higher and lower levels of government without modifying the constitution and that let the parties agree on shared objectives and their mutual obligations in terms of:

- **authority:** an assignment of rights of decision among the parties, which might include negotiation procedures
- **mutual duties:** a distribution of contributions, including funding, human capital and assets
- **enforcement:** mechanisms that guarantee the correct implementation of each party's engagement and solve disputes.

These arrangements are necessary to govern co-operation among levels of governments and to manage co-ordination in a context of complexity, uncertainty, medium-/long-term divergence of interests, and asymmetries of information between the different actors involved (Charbit and Romano, 2017).

Previous analyses have shown that, in this context, the insights derived from the economics of contracts might be useful for understanding the main drivers of the principle of contractualisation/management of co-operation among levels of government.

Three main approaches of contracting have been proposed (see Box 3):

1. The Incentive Theory, also known as the principal-agent approach, focuses on information asymmetries between the parties and details how incentives schemes allow them to be fixed. However, the design of these schemes necessitates a perfect knowledge *ex ante* of the structure of the issues to be fixed *ex post*. This theory has therefore nothing to say on how to adapt to unforeseen contingencies. *Ex post* adaptation is outside of its scope.
2. The Incomplete Contract Theory, also known as the property rights approach, highlights that the design of a contractual agreement is constrained by the capability of the third party responsible for its enforcement. As some important dimensions of the exchange/co-operation between the parties is non-verifiable – i.e. non-observable by this external guarantor of the contract – these variables are not contractible. The theory explores then how allocating decision/control rights to one of the parties allows the party to adapt to contingencies *ex post* by deciding the level of provision of the non-contractible variables. It points out, however, that this always leads to suboptimal incentives for the other party, which makes the resulting contract necessary only in specific circumstances. Moreover, the theory does not analyse how the granted decision rights impact on the incentives of the party to optimally adapt in case of significant/qualitative changes in the environment.
3. The Transaction Cost approach considers that the contracting parties do not have sufficient knowledge and information to design good *ex ante* incentive schemes. It also considers that the enforcement institutions are imperfect, so that parties do not always comply with their contractual obligations. Devolution of authority to one of the contracting parties is understood in this context as a way to manage *ex post* adaptation and to ensure enforcement. However, the theory does not consider the limits of authority and implicitly assumes that the holder of monitoring rights can fully control the behaviour of the other agent *ex post*.

A theory focused on ex post adaptations in contractual relationships

The Contract as Reference Points Theory (from now on CRPT) proposes a new approach to contracting based on the idea that a contract cannot guarantee *ex post* the behaviours of the parties. The bottom line of the theory is as follows. Parties to a contract promise to deliver something at a future time. When the time to deliver comes, parties can either deliver basic/perfunctory contributions, which stick to the letter of the contract and is henceforth verifiable by a third party, or deliver an exemplary/consummate performance that corresponds to the spirit of the contract, but is unverifiable by a third party. The idea is that there are always some dimensions of a contribution to a transaction that are difficult to assess in terms of quality, meeting expectations of the other party, timeliness, due diligence, etc.

Parties to a contract expect from the other party the provision of an exemplary/consummate performance – in line with the “spirit” of a co-operative relationship

– while they can only contract for basic/perfunctory performance. When, for whatever reason, a party (he) considers he got less than the exemplary performance he felt entitled to get, he feels aggrieved and might retaliate by not meeting the expectations of the other party (she). The first party (he) then delivers a basic performance — a behaviour qualified as “shading” in the theory —, which will lead the other party (she) to feel aggrieved in turn and then could renege in providing exemplary/consummate performance. Thus, delivering a basic contribution, even if it is aligned with the terms of the contract, might lead to *ex post* conflict or to underperformance by both parties, which, in turn, results in deadweight losses.

To summarize, if parties feel that they have not received what they are entitled to, they will be aggrieved and engage in counterproductive *ex post* behaviour (qualified as shading). The fundamental insight of the CRPT approach is that, in contrast to the previous approach of contracting, a contract cannot control *ex post* the behaviours of the parties. Henceforth, it might be useless to attempt to design either a sophisticated contractual arrangement that would endeavour to foresee response to any contingency, or a highly flexible contract that would grant authority to one of the parties when future adjustments will be needed because these contracts could be subject to divergence of interpretations, yielding aggrievement and shading. The theory therefore calls for contracts that are less subject to interpretation and manipulability than the usual recommendations drawn from past theories. Everything being equal, more rigid or shorter term contracts should be preferred. This means that new arrangements should be negotiated when adaptation is needed.

Contracting has a cost for the parties involved in the agreement. Since each party reserves means to the realisation of the forecasted operations, he/she loses capabilities of optimally adjusting *ex post* (both within and outside the contractual relationship). In return, each party expects not only credibility of the contractual agreement, but also commitment by the other party to do his/her best to guarantee an *ex post* return on the freedom of choice that has been sacrificed *ex ante*. Therefore, a contract has expectations about the other party’s behaviour. This is why the “spirit” of mutual commitments matters.

The behavioural insights at the origin of the theory insist therefore upon an essential dimension of contractual agreements: their legitimacy.

- First, the theory insists on the necessary legitimacy of the initial contracting conditions. In the context of a competitive market, this implies that fair competitive conditions prevail. In the case of contracts among governments, this depends upon the fairness of the negotiation context. Both parties should have access to the same information and the negotiation process should guarantee balance between the parties.
- Second, the theory highlights the role of the necessary legitimacy of any process of adaptation of the agreement to unforeseen contingencies. The mechanisms triggering adaptation as well as any process of revision should not be manipulatable by the parties to avoid aggrievement and shading.

Translating the theory into a relevant analysis for public policies

The reasons why the CRPT approach to contracting is relevant in the context of co-operation among (levels of) government(s) are:

- First, it fits with the self-enforcement context of the relations among levels of government. Indeed, there is no fully independent powerful third party responsible for enforcement, which makes the “spirit” of the contracting process essential for the performance of the contract. A contract should therefore be self-enforcing and should be designed so as to avoid soured relationships among the parties.
- Second, the theory focuses on the factors that make contractual commitments credible and strong. This is in line with the idea that it is essential to design contracts to avoid aggrievement, and the associated costs of haggling, persuading or disputing, in a context where there are no exit options for both parties, meaning that disputes might be quite damaging in the short and long run.
- Third, the theory focuses on the processes and procedures of legitimisation of agreement. This is essential in the political context since decision makers are themselves submitted to checks and are accountable for the decision they take.
- Fourth, it highlights a stability vs. flexibility trade-off when contractual adaptations are needed. This is relevant in the context of implementation of policies characterised by exogenous and radical shocks necessitating adaptations.

Overall the CRPT yields several essential outcomes that are relevant for contracting among levels of government:

- Independent agencies aimed at facilitating and overseeing negotiation and revision of contracts between (levels of) government(s) would be vectors of legitimacy of these agreements, as well as of the assessment and transparency of public policy.
- If uncertainty and *ex post* adjustments are expected, there should be a preference for short-term commitments. That said, these commitments could be renewable to limit the cost of renegotiations; i.e. renegotiations would only occur when significant adjustments are needed.
- Renegotiation processes should be non-manipulatable. This translates into provisions implementing automated renegotiations (beyond thresholds and ceiling limits) or clauses establishing that renegotiations should be decided by a trusted third party. Such mechanisms should be preferred to any provision allowing one of the parties to call for renegotiation, notwithstanding clauses granting a unilateral right of adapting or interpreting mutual duties.
- Decision rights should be granted to one of the parties only in very specific situations in which this party – either the central government or the local

one – cares much more than the other about the way a public good is provided. In other circumstances, and in particular when the mode of provision yields a distributive issue between the central and the local government, discretion in the adaptation of the contractual commitment should be avoided.

- Contracting among levels of government should be envisaged in the long-term perspective of building trust. The propensity of the other party to being aggrieved should therefore be considered by both levels of government. In the long run, trust allows mutually beneficial adjustments. In the short run, unilateral decisions to adapt to circumstances might generate distrust and underperformance, which can incur both short- and long-term costs.

Finally, it might also be pointed out that these conclusions partly depend upon the (societal and institutional) context in which these contractual relationships take place. Societies in which mutual trust is more widespread rely less on contractual terms, which facilitates informal mutual adaptations to changes and external shocks.

Box 1. Why the Contract as Reference Points Theory is relevant for both transactional and relational contracts

Through its analysis of contracting across levels of government, the OECD (2007) highlighted that it is useful to contrast transactional and relational contracting. A transactional contract tends to be a “complete” agreement in which the reciprocal duties of the parties are established in advance, while a relational contract establishes a governance framework to take decisions in the future about the actual rights and duties of the parties.

A transactional perspective is relevant in cases of shorter/simpler relationships, especially when one of the parties expects from the other the delivery of a good or a service in exchange for payment, e.g. a grant. When there are complex mutual provisions by the two parties, when they face uncertainties that do not allow the precise establishment of mutual requirements *ex ante*, when they are interdependent in the sense that the quality of either provision should be mutually adjusted, then a relational perspective is more appropriate.

On first examination, the CRPT addresses the transactional perspective in contracting since one of the conclusions of the theory is that, in many settings, it is better to write simple, rigid contracts, and to renegotiate in cases of significant change in the environment. Moreover, the theory relies on theoretical models that describe a very simple “transaction” between a buyer and a seller who take decisions about price and quantity (or quality considered in a single dimension; e.g. low vs. high).

While relevant for the analysis of transactional contracts, the theory is also useful to understand relational contracting. The core issue addressed by the theory concerns indeed the fundamental trade-offs it highlights between rigidity, aimed at protecting the parties – against each other’s “opportunistic” behaviours and against external risks – and flexibility that allows to adapt to new conditions. The theory highlights that flexibility has a cost, and that therefore there are trade-offs in terms of both cost and risks when adopting a more flexible contract, whether it is transactional or relational.

A typical flexible transactional contract is based on contingent clauses, renegotiation mechanisms, etc. A typical relational contract, while by definition, is more flexible than a transactional contract, can either implement a lot of mutual commitments (as default quantity and quality to be exchanged, restricted spans of renegotiation, etc.) or be very loose and implement only a mechanism to negotiate *ex post*. A (more) rigid relational contract is precise about the purpose of the co-operation and is flexible about implementation.

An extremely flexible contract would typically allow renegotiating even the purpose and the objective of the relationship *ex post*. As pointed out by the CRPT, this could be suboptimal (discussions on these issues are proposed later in this paper). A contract being rigid as regards its purpose but flexible regarding its implementation would be most preferable, when transactional contracting is non-implementable, and more relational contracting is requested. In other cases, a rigid contract, whose revision should be based either on some form of indexing or on an assessment of contractual performance by a third party, should be settled.

Exploring the theory to examine its policy outcomes

To grasp how this new approach to contracting might be useful in understanding contracting among (levels of) government(s) it is important to highlight two elements.

- First, the CRPT was not initially developed to analyse contracts among levels of government. As with other contractual approaches in economics, the purpose of this theory is to analyse the relationship between two agents – typically a buyer and a seller – and to understand how they design a

contract to govern their relation. All economic approaches to contracting attempt to understand why, even in very standard cases of a commercial transaction, a party might get rights to control the action of the other (or the distribution of the outcome of the joint action) in some circumstances and why, therefore, the contract is not simply about setting a price and a quantity of exchange for a specified good or service to be delivered. So, the reasoning departs from a simple commercial transaction. Its insights may, however, be relevant to explain more complex transactions. In addition, like other contract theories, the CRPT refers to transactions among agents that contract on an equal footing. Applying this theory to the analysis of relationships among entities that are partly mutually dependent (in the sense that the relationship between levels of government is endogenous from a political standpoint since it is based upon mutual recognition of sovereignty between the two levels) requires therefore some additional effort of interpretation.

- Second, the CRPT is still developing. Compared to other branches of contract theories, it is relatively new and all the facets and consequences of the behavioural assumptions at the core of the theory have not yet been explored. Applying this theory to the relationship among levels of governments could contribute to the development and refinement of the approach but at this point efforts in this direction will remain essentially speculative in the sense that they will not be based on in-depth case studies but rather on interpretation of the current state of applied knowledge.

To examine the lessons to be learnt from this new analytical framework, we start by providing the reader with the most substantial insights from the theory, which also leads us to discuss how this theory articulates with the other economic approaches to contracting. We then discuss to what extent this approach of contractual relationship is relevant for the analysis of contracting among public entities. Then we propose lessons that can be derived by policy makers both for contract design and management of adaptations when needed. These elements are summarised in a general conclusion.

In the annex, we dig deeper in the analysis by explaining an intuitive version of the canonical model proposed by Hart and Moore in 2008. This is necessary to grasp the essence of the reasoning behind this novel approach of contracting and also to introduce the lessons to be drawn from the various analytical developments that have been proposed by Hart and several co-authors since 2008. We then survey the small experimental literature derived from these analytical developments.

The theory and its essential takeaways for the understanding of contracting

A series of recent papers develops the notion that *ex ante* contracts serve as reference points for *ex post* trade (see Hart and Moore [2008]; Hart [2009]; Hart and Holmström [2010]). The idea is that an initial contract circumscribes what parties feel entitled to but may not pin down a unique “fair” outcome. In the

simplest version, each trading party has a self-serving bias that leads him/her to hope for the most favourable outcome permitted by the contract. In flexible contracts that allow for multiple outcomes, parties to a contract typically have different favourite outcomes so that misaligned reference points emerge. Although the parties will end up compromising, if they feel that they have not received what they are entitled to, they will be aggrieved and engage in counterproductive *ex post* behaviour (qualified as shading). A rigid contract avoids this situation by limiting the number of outcomes and thereby aligning reference points. The downside of rigidity is that the terms cannot be adjusted to the realised state of the world, which can lead to *ex post* inefficiency. The theory implies that there is a trade-off between contractual rigidity and flexibility.

To allow the reader to better understand how this approach of contracting sheds new light on contract design and parties' behaviours, we successively discuss to what extent this approach differs from previous ones : reviewing its main assumptions; discussing its concepts and line of reasoning; and highlighting four key takeaways from the CRPT.

Box 2. Oliver Hart's contributions to the economics of contract

The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2016 was jointly awarded to Oliver Hart and Bengt Holmström “for their contributions to contract theory” (see Box 3). Oliver Hart is the recognised father of the “incomplete contract theory”, which attempts to explain why authority relationships might emerge among agents that are *a priori* on the same footing and why, therefore, organisations are an alternative to markets in a market economy. It explains how rights of control/decision should be distributed among the parties when it is impossible to contract on all relevant dimensions of the relationship. The incomplete contract theory is both a complement and an alternative to the transaction cost economics – initially established by Oliver Williamson, who was awarded with the Nobel Prize in Economics in 2009 – that proposes an alternative approach to the same questions of the nature of the authority and market modes of governance. Williamson insists on the costs of haggling *ex ante* and *ex post* among the parties, when they face complex and ambiguous situations or when they make investments that are specific to the relationship.

In recent years, however, Oliver Hart initiated a third research strand to explore the same type of question and qualified it as “contracts as reference points”. This new approach is based on behavioural insights while transaction cost economics is mainly founded on empirical observations, and the incomplete contract theory on theoretical developments (based on rational choice). These behavioural insights are linked both to a renewed interpretation of the vast applied literature on contracting that highlights a set of stylised facts that are difficult to explain within the frameworks of both the transaction cost economics and the incomplete contract theory. In more recent years, they have been enriched by experimental results.

The CRPT in the light of alternative contract theories

The theory departs from the previous literature on contracting in that it focuses on parties' expectations about the outcome of a contract rather than on their incentives to provide performance.

- In the incentive/principal-agent theory, it is assumed that these incentives can be completely designed *ex ante* so that the (complete) contract

monitors precisely both parties' behaviours in all possible states of the world. The central issue is to deal with the information asymmetries between the parties and, indeed, between them and the entity responsible for the enforcement of the agreement. No *ex post* adaptation is needed, and the theory has nothing to say about it. If for various reasons a contract is no longer relevant, it should be voided and replaced by a completely new contract. This might lead to compensations in favour of the loser, which is not an issue since the third party responsible for enforcement can access all the relevant information to compute gains and losses as well as identify deviations from the contract and the party liable for deviating.

- The incomplete contract/property right literature focuses on the incentives to invest in non-contractible investments that impact on contractual performance. Parties can, however, design a contract *ex ante* that gives optimal incentives to both parties to invest (given the sensitivity of the collective result to their respective investments). Once the uncertainty about these investments is resolved, the parties can adapt the conditions of exchange to the situation they are facing. However, there is a hold-up problem: as a consequence of a *de facto* renegotiation of their conditions of exchange, each party shares some of the fruits of its initial investments with the other party. Anticipating this, each party under-invests. In that approach, all the future adaptations are, in fact, anticipated at the contract design stage, which makes it of little relevance to analyse *ex post* contractual adaptation and renegotiation. The *ex ante* contract monitors *ex post* behaviours.
- In the transaction cost approach, behaviours are also monitored from the beginning, but either by writing a complete contract when it is feasible or by delegating authority to the parties or to a third party when it is too costly to write and implement a complete contract. Both the costs of contracting and of haggling (*ex ante* and *ex post*) over the distribution of surplus are the main drivers of the trade-off between complete and incomplete contracting. However, neither the distribution of the surplus, nor its impact on the behaviours of the parties is considered. Also, the appropriate choice of a governance structure *ex ante* (e.g. market vs. hierarchy) solves *a priori* the issue of *ex post* adaptation. Thus, the theory finds it difficult to argue for alternative design of the renegotiation mechanisms of a contract.

The main theoretical insights of the Contract as Reference Points Theory

Retaliations when the outcomes of a contract do not meet the parties' expectations

The basis of the CRPT was proposed in Hart and Moore (2008). It explains in what sense a contract provides a reference point for the parties' trading relationship: more precisely for their feelings of entitlement. Each party to a contract has the discretion to provide "perfunctory" (basic) or "consummate" (exemplary) performance. This is a significant departure from the standard approach

of contracting in economics that usually assumes that trade is perfectly enforceable *ex post* (e.g. by a court of law). Hart and Moore assume that only perfunctory performance can be enforced: consummate performance is always discretionary.

What determines whether a party provides consummate performance? The authors appeal to the behavioural economics literature. It is assumed that a party is roughly indifferent between providing perfunctory and consummate performance; consummate performance costs only slightly more or may even be slightly more pleasurable. A party will provide consummate performance if he is “well treated” but not if he is “badly treated” (negative reciprocity). The precise assumption made in Hart and Moore (2008) is that each party feels entitled to the best outcome consistent with the contract and “shades” on consummate performance in proportion to the amount he/she feels aggrieved. A party who is shortchanged thus shades on performance, which causes a deadweight loss.

One way the parties can reduce this deadweight loss is for them to write an *ex ante* contract that pins down future outcomes very precisely and that therefore leaves little room for disagreement and aggrievement. The drawback of such a contract is that it does not allow the parties to adjust the outcome to the state of the world. Hart and Moore (2008) thus study the trade-off between rigidity and flexibility. This analysis provides a basis for long-term contracting in the absence of non-contractible relationship-specific investments.

Box 3. Alternative contract theories

A **contract** is a mutual agreement between two parties established to organise co-ordination at a later date. Contracts can range from a simple one-shot transfer of property for a good to long-term co-operative relationship. Such an agreement is necessary because there is always a delay between the moment parties agree on the decision to exchange or provide a service and the date of delivery, and the date of the settlement of the transaction, for instance through a payment. As a consequence, parties might have different preferences/interests before and after a deal is agreed upon, which yields mutual risks of non-compliance and henceforth of co-ordination failure. Contract theories focus on how the design of contract can prevent or mitigate these co-ordination risks due to the misalignment of contracting practices incentives between *ex ante* and *ex post* contracting.

There are four main theories/approach of contract in economics. Historically, the incentive theory (also qualified as the principal-agent theory) and the transaction cost economics were the first to develop by the mid-1970s. Then, the incomplete contract (also qualified as the property right) approach developed from the late 1980s. The last family of model – the contract as reference point – was initiated in 2008 by Oliver Hart, who also initiated the incomplete contract theory 20 years before.

The primary objective of the **incentive theory/principal-agent approach** was to understand how key economic variables – namely price and quantities – are established in a currently decentralised economy in which there is no intermediary (as the Walras’ auctioneer) to organise and govern markets. Hence, this theory relies on hypotheses that are very close to the Walras-Arrow-Debreu framework (costless decision, i.e. perfect rationality, and availability of all the relevant information, including on the future to allow maximisation of benefits/costs), but focuses on the fact that in a truly decentralised economy, agents have access to different information sets and that they might attempt to use their information advantage to draw benefits. Hence, the theory

focuses on how agents attempt to resolve information asymmetries and how incentives systems are drawn to allow revelation of meaningful information for the other party and/or to force the informed party to act in the interest of the other. In this framework, an external mechanism allows a perfect enforcement of the agreement. As a result, all the co-ordination issues are solved *ex ante* before the contract is signed and the question of *ex post* adaptation is irrelevant. There is no uncertainty about the future since all the relevant dimensions of the future relationship can be known (and their economic consequences computed) *ex ante*.

In contrast, **transaction cost economics** established itself as an alternative to mainstream economics and was founded on the idea that the analysis of real world problems requested more realistic assumptions. In particular, the theory supposes that contracts are costly to establish because agents have limited capacity to write complete contracts and enforcement by courts is imperfect and costly. Hence, the analysis focuses on how economic agents in the real world solve contracting problems of all kinds. The theory points out that incompleteness of contract results in a need to take *ex post* decisions, and henceforth to distribute decision rights to the parties. Also, transaction cost economics highlights that contracts should be self-enforceable by including contractual breach penalties, acting to encourage parties to comply *ex post* with their *ex ante* commitment. Self-enforcement can also mean that one of the parties has the authority to supervise and possibly “punish” the other *ex post*. Hence transaction cost economics illustrates how authority relationships can emerge in a market economy. One of the conclusions of the theory, however, is that co-ordination among economic agents can never allow the full realisation of the potential economic outcomes. Each contracting regime has drawbacks and the issue is to try to align the contract design with aspects related to co-ordination to minimise the drawbacks, i.e. the transaction costs. In that perspective, a hierarchical mode of co-ordination is the best way to adapt each party’s provision to a very uncertain future. However, the drawback is that one of the parties will have little incentive to do its best and resources will therefore be lost by the other party in its attempt to monitor the other.

The **incomplete contract theory** developed in an attempt to build a theory of hierarchical relationship without relying on the bounded rationality hypothesis. The framework departs from the incentive theory in that it does not focus on information asymmetry (between parties), but on the imperfections in the institutional system aimed at making a contract enforceable, which results in the notion of unverifiability, which makes some key variables non-contractible. The theory, then, focuses on the incentives the parties may implement to provide the right level of non-contractible variables. The basic scheme relies on guaranteeing to one of the parties a minimum level of remuneration so as to provide it with some certainty, and to let the other decide of *ex post* adaptations, becoming at the same time the residual claimant of the benefits of the transaction, which should give it the right incentive to take the best decisions. These mechanisms, however, present drawbacks since the parties should share part of the benefits generated by their decision, which result in suboptimal incentives to provide. In this framework, the structure of the co-ordination issue is known *ex ante* by perfectly rational agents who can therefore anticipate all the consequences of the contractual arrangements. The structure of the arrangement has no reason to be modified *ex post*, while the level of activity of both parties should be adapted to *ex ante* predictable situations they face.

The **contract as reference point approach** is developed to a certain extent in the line of the incomplete contract theory as it also starts from a similar hypothesis in terms of rationality of the parties, absence of information asymmetries, and imperfection of external enforcement. It focuses, however, on the potential cost of *ex post* adaptation of a contractual arrangement to new circumstances, even if it is done within the boundaries of a contract by highlighting the propensity of parties to disagree on the way to interpret the requested adaptation, and henceforth of the costs of resulting conflicts. The theory focuses therefore on the *ex post* behaviours that might be difficult to control *ex ante*, even by fully rational agents.

Shading: Verifiable instead of non-verifiable performance when dissatisfaction occurs

To better understand the fundamental insights, it is useful to relate the ideas developed in Hart and Moore (2008) to incomplete contract theory. A typical model in that literature goes as follows. A buyer and seller meet initially. Because the future is hard to anticipate, they write an incomplete contract. As time passes and uncertainty is resolved, the parties can and do renegotiate their contract, in a Coasian fashion, to generate an *ex post* efficient outcome. However, as a consequence of this renegotiation, each party shares some of the benefits of prior (non-contractible) relationship-specific investments with the other party. Recognising this, each party underinvests *ex ante*, which results in a lower/second-best level of performance.

Hart and Moore (2008) depart from the existing literature in two key ways. First, they drop the assumption made in almost all of the literature that *ex post* trade is perfectly contractible. Instead, they suppose that trade is only partially contractible. Specifically, they distinguish between perfunctory performance and consummate performance, that is, performance within the letter of the contract and performance within the spirit of the contract. Perfunctory performance can be judicially enforced whereas consummate performance cannot.

Second, they introduce some important behavioural elements. They suppose that a party is happy to provide consummate performance if it feels that it is getting what it is entitled to, but will withhold some part of consummate performance if it is shortchanged; they refer to this as “shading.” An important assumption they are making is that a party’s sense of entitlement is determined by the contract they had written. This is the sense in which a contract is a “reference point.”

The benefits (and costs) of contractual rigidity

A flexible contract has the advantage that parties can adjust the outcome to the state of the world, but the disadvantage is that any outcome selected will typically cause at least one party to feel aggrieved and shortchanged, which leads to a loss of surplus from shading. An optimal contract trades off these two effects. This theory explains not only why parties will write somewhat rigid contracts, but also the nature of the rigidity. In short, a contract that sets the most sensitive dimensions of the exchange in advance eliminates *ex post* arguments (about interpretation of the situation in which the parties are) and aggrievement, and hence both parties will be willing to provide consummate performance, which reduces the related deadweight losses to zero, and may allow achievement of the first-best in some circumstances. Generally speaking, the parties are more likely to put restrictions on variables over which there is an extreme conflict of interest, such as price – i.e. a variable on which there is clearly a zero-sum game – than on variables over which conflict is less extreme, such as the nature or characteristics of the good to be traded.

Allocating authority/decision rights

Hart (2009) relies on the same model to analyse how decision rights should be allocated in the context of a relationship between a buyer (e.g. a party that expects the provision of a given service) and a seller (e.g. a party that would provide the service). He highlights that vertical integration by the buyer B might be good if the production method matters more to B than to the seller S (while outsourcing is preferable if the production method matters more to S than to B). Indeed, if the production method matters more to B than to S, it is efficient that B chooses it. Moreover, and related, S's grievance will be low because S does not care that much. The model also suggests that “outsourcing” is likely to be efficient when a detailed contract can be written on the nature of the good to be delivered, since in this case B's value will be pretty insensitive to the choice of production method while S's cost may not be. In contrast, if a detailed contract is hard to write and B's value is very sensitive to the details of production, then in-house production may be better.

Four essential takeaways of the theory

1. Centrality of the “fundamental transformation”

Contracts as a reference of fairness for the parties

Hart and Moore (2008) argue that it is the combination of *ex ante* competition and *ex post* lock-in – what Oliver E. Williamson (1985) calls the “fundamental transformation” – that makes an initial contract a useful and salient reference point. The point is that a contract actually ties the hands of parties *ex post* as long as it is considered relevant and legitimate. Indeed, the parties can always shade on performance/act non-cooperatively *ex post*. The relevancy and legitimacy are based on the conditions under which the contract was negotiated. Hart and his co-authors insist in their models and experiments on the idea that a competitive market provides the parties with an anonymous and efficient mechanism to reveal the true values and costs; hence the “legitimacy” of the initial agreement. It is established on the basis of objective, relevant and non-manipulable information; and reflects balances between needs expressed by the demand and capabilities/capacities on the supply side. It is relevant in the sense- that it provides both parties with security of trade in the future.

Contractual commitments as a source of security, with opportunity costs

In addition, the initial contract is useful since it allows the parties to “reserve” capacities/capabilities for the transaction, allowing parties to efficiently perform at the time it is needed. However, this “reservation” aspect of the contract has a cost since *ex post* the parties are less flexible both between each other, and *vis-à-vis* all external options in terms of trade. This *ex post* mutual dependence is the *raison d'être* of the initial commitment and the cause of the limitations it imposes in *ex post* adjustment to the new state of the world. This explains why the parties rationally support the *ex post* expectations on trade within the contract, and care about the mechanisms, if any, to adapt them to new conditions if necessary.

In this analytical framework, therefore, the fundamental transformation is not linked, as in Williamson, to specific investments. It is intrinsic to any contract, and it is the essence of contracting. This leads to the second set of takeaways: the centrality of the legitimacy of processes to establish and revise contracts.

2. *Legitimacy of initial design and ex post adaptations*

What is put forward in the analysis is the sensitivity of the parties to the conditions in which a contract is both established and revised.

Fairness at the negotiation stage

As stated above, negotiation among equals, i.e. parties benefiting from outside options and not submitted to liquidity/survival constraints, on a competitive market is one of the way to establish the legitimacy – that is, the relevancy, usefulness and fairness – of the initial agreement. However, there are other potential vectors of legitimacy. Indeed, the issue is to avoid the abuses of dominant position and the biases in matters of information asymmetries, even if for various reasons the conditions of a competitive market are not met. Thus, the procedure of negotiation might compensate. For instance, it is central to guarantee equity among parties. In the case of monopoly or monopsony, the counterparts should be backed-up and supported, for instance, by independent arbitrators supervising the negotiation, by the ability to join forces to rebalance the relationship (while it might lead to a bilateral monopoly triggering collusion against third parties as the final users or citizens), by providing the weak part with assistance and expertise (such as those that could be provided by independent agencies or by consulting firms). In the same spirit, information should be as shared and as complete as possible at the negotiation stage. Typically, for instance, contracting arrangements in similar situations should be made available to the negotiating parties to allow benchmarking. Of course, all possible relevant information to better grasp costs and values, and trends and risks for their future evolutions, should also be collected and shared among the parties. Again, institutional arrangements and procedure can help at this point. Typically, “independent observatories” and systematic mandatory reporting would be useful.

Neutrality of the revision/adaptation process

The second condition for the legitimacy and usefulness of an initial agreement is the condition under which it is revisable. The less manipulable it is, the less open it is to *ex post* haggling and aggrievement, which both result in deadweight losses and reduced credibility. This is the core of the flexibility-rigidity trade-off. Rigidity makes contractual protection credible, at the cost of poor performance when the environment is volatile. In case of repeated interactions, rigidity is desirable since parties would benefit from middle- to long-term mutual commitment to avoid permanent and costly negotiations. There is also assurance of the availability of resources to perform the transaction (either to secure the reservation of production capabilities or to develop them; i.e. invest). Thus, the implementation of mechanisms aiming at allowing adaptation is requested.

However, both the theory and experimental evidences highlight that the more it is based on external non-manipulable factors or independent actors, the less aggrievement there is, and therefore the more legitimacy. The important point here is that it is not the adjustment which matters, but the way it is decided. To put it another way, one party can accept losing value and even a share of the surplus without feeling aggrieved if it is neutrally managed either by an automatic mechanism (as indexation will do) or by an external and neutral arbitrator (as an English trustee). Thus, while *ex ante* the distribution of cost and benefits should be agreed upon by the parties, the latter should not have a say *ex post* since any decision may be considered unfair because biased by the lock-in generated by the contract, even when made within the contractual boundaries. Non-manipulability of the mechanism and externality of both the information and of the agents involved matter more than anything else. It is important to point out that experimental results show that when a contract allows one of the parties to decide, aggrievement occurs even if this party adopts co-operative behaviour and takes decisions favourable to the other party to send signals of fairness. Fairness is thus not sufficient and independence seems to matter more.

3. Monetary vs. qualitative uncertainty

The theory also puts forward the idea that the best response to the challenges of *ex post* adaptation depends on whether contracting parties face uncertainty about the monetary value of their contribution, i.e. the level of costs and values, or about its quality. In the first case, parties are facing a distribution challenge, in the sense that the way they decide how to split costs and benefits among them impacts upon the generated wealth. In the second case, they face an allocative challenge since the way they decide on economic value and quantity impacts upon the generated welfare. In the second case they manipulate two variables, price and quality, whereas in the first they manipulate only one: price.

Rigidity as the best response to distribution challenges

In cases of uncertainty about value and cost only (which means that agreement on quality can be established *ex ante*, not that this is a transaction on a simple good or service), contingent contracts that would allow *ex post* adaptation to uncertainty are implementable if and only if the variables on which contingency is established are not manipulable by the parties and cannot be subjectively interpreted (i.e. there is no ambiguity). Of course, in addition, they should be relevant in the context of the transaction, that is, correlated to the cost and values for the parties. That said, such a contract does not fully guarantee against aggrievement, since aggrievement is determined by the best outcome expected by the parties, independently of the context they face (that is among all the contingencies present in the contract). In concrete terms, it means that the parties must implement a price range that does not allow optimal adaptation, or accept the risk of shading. Taken to its limit, a rigid contract avoids shading. The optimal contract design obviously depends upon the characteristics of the situation. The

more uncertainty and the higher impact of shading that exist, the more rigid the contract should be.

Discretion to adapt when pure allocative challenges

In case of uncertainty about the quality, the optimal contact is rigid for the variables on which there are only distributive issues/zero-sum game – in the theory the price – but flexible on *ex post* adaptation of quality if there is a significant asymmetry in sensitivity to quality among the parties. Typically, a right to adapt the quality (in the framework of a pre-established set) should be granted to the party to whom it matters more. Such a contract is relevant only if uncertainty is moderate and if the cost of shading is also limited. If the parties are equally sensitive to quality, and if uncertainty is moderate, then a rigid contract is the best option. If uncertainty is high, last-minute negotiations are better but the probability is then high to miss opportunities of trade/wealth creation.

4. Property rights channelling co-operation

Lastly, the CRPT sheds a new light on the role of ownership/property rights on assets. In both the transaction cost literature and the incomplete contract approach, the focus is on the distribution of rights of decision among the parties. The idea is that their primary role is to secure investments when necessary, that is, when investment specific to the relationship (i.e. not re-deployable in alternative trade) has to be made by one of the parties. In that case, authority should be transferred to the party that could be held up by the other. Both the size of payoffs (in the transaction cost literature) and the sensitivity of payoffs to investments (in the property rights literature) are the drivers of the distribution of property rights understood as the right to decide what the other party should provide (in Transaction Costs Economics) or how to share the surplus (in the Incomplete Contract Theory).

Property of assets to reduce the other party's propensity to hold-up the surplus...

Hart insists on the idea that the distribution of property rights on assets plays another role: impacting on outside options of players, and therefore on the likelihood they can be held up by the other party. Hold-up happens when parties can unilaterally play on some non-contractible dimensions of their contribution to a given transaction, to benefit from a favourable renegotiation of the condition of exchange. Typically, a party (P) could be held up if the state of the world is very favourable to P *ex post* much beyond what was expected (for instance P derives much higher value from trade or incurs much lower cost). The other party, then, is incited to extort P's share of the unexpected rent, which will lead to either underperformance of the held-up party, who is likely to retaliate against the non-cooperative attitude of the opportunistic party (O), or to break-up the relationship, allowing P to exploit its outside options. Incentives to hold-up are therefore bounded by the comparative benefits for the victim of the hold-up to perform the transaction while being held up, and the value from the outside option. In this context, ownership of the assets involved in the transaction (owner will be able to

use those assets for alternative transactions) increases the value of her outside option whilst limiting the extraction capability of the other party. Moreover, ownership of assets is a mechanism that indexes the value of the exit option to the level of the rent generated by the state of the world. Hence, when incentives to extort surplus rise as a consequence of an increasing surplus, the level of protection of the potential victim rises as well.

Thus, the distribution of property rights upon assets, whether they are tangible, intangible, or human capital, is a tool to impact upon the parties' willingness to keep co-operating within the contractual relationship and therefore avoid hold-up and shading. Moreover, Hart highlights that the two parties can benefit from attribution of property rights. The logic is to grant the parties with property rights of the assets that are idiosyncratic to them, which means they are relevant for their business, and not for the business of the other part. Thus, the logic is inverted compared to the logic of the manipulation of hostages often found in the literature, and in particular in the transaction cost approach. In the latter, assets ownership should go to the party that could be expropriated by the opportunistic behaviour of the other. It is a dissuasion tool. Here the logic is to enhance the bargaining power of the parties, which might benefit from windfall profit due to a change in the environment, in order to discourage hold-up, as hold-up risks destroying the co-operative spirit between both parties. The manipulation of asset ownership is then understood as a tool aimed at maintaining the incentives of the parties to co-operate, which can lead to distribution of property rights to both parties if they could benefit from windfall profits due to potential changes in the environment.

...that can, however, reduce incentives to invest

In case idiosyncratic investments by one party have to be encouraged, because the collective outcome would be greatly improved by these investments, the will to protect the other party against the potential opportunism of the investor goes against the incentive to stimulate investments. In such cases, it might be relevant to not protect the second party through property right manipulation, even if there is uncertainty on her payoff. *In fine*, the optimal distribution of property rights depends upon each party's payoffs uncertainty given a change in the environment and upon the sensitivity of the collective wealth to each of the parties' investments and of the respective magnitude of the two effects.

Relevance of the CRPT to analyse contracting among levels of government

A quite generic theoretical framework...

We now explore why the approach and its essential takeaways are relevant for understanding the contractual relationship among levels of government. At first sight, indeed, this very abstract vision of contracts applies well to trade among two firms or two individuals. Moreover, the only examples that are referred to by the authors of the various contributions to the theory quote essentially trade between individuals (and most often hiring labour) and the only empirical

evidence relies on experiments ran with university students playing games about hiring the service of another party.

... fitting to the analysis of contracting between two mutually dependent parties...

At the same time, the purpose is clearly to shed new light on a principal-agent relationship where a principal (referred in the models as a buyer) contracts to procure a service or a good provided by an agent (referred in the models/experiments as a seller). The theory insists on the fact that both parties' behaviours impact upon the efficient outcome of the relationship while these behaviours matter for the efficiency of joint action, while there are non-contractible dimensions of these actions and while there are uncertainties about the optimal adaptation of both parties to external conditions that might impact *ex post* on their respective first best.

...that might be applied to contracts among levels of government

Because it is very generic and abstract, this setting clearly fits with the type of problem of contracting between a higher level of government and a subnational one, especially in the case where the higher level of government is considered as a principal because it contracts with the subnational government for the provision of a given policy (or a component of a given policy) promoted by the higher level. Both sovereign entities can indeed renege *ex post* on their co-operative spirit, and they can even consider not complying with the letter of the initial contract and prefer to pay damages but stop execution in order to perform alternative policies in case significant changes occurred that lead at least one of the parties to consider dedicating its means and efforts to “outside options” that are more politically/economically relevant given the new circumstances: a major political crisis or a severe economic depression and its consequences in terms of fiscal constraint.

The four specificities of contracts among levels of government

Of course, then, the relationship between two levels of government differs in many ways of the situation dealt with in the canonical models and experiments. First, the two parties are in a bilateral monopoly relationship. Second, it is not an inter-individual relationship, but a relationship between two (complex) organisations. The behavioural assumptions on which the theory is based might not apply. Third, these organisations are driven by political goals rather than by the search for economic efficiency. And so forth. The following sections explain to what extent and under what conditions the CRPT brings useful insight to the analysis of contracts across levels of government:

- Contracts among (levels of) government(s) should be self-enforceable.
- Policy makers care about the spirit of contractual relationships and henceforth are led to retaliate in case they feel the other party is not co-operative.

- The institutions and procedures in the frame of which the contract is established impact on its legitimacy and therefore on its credibility and finally on its ability to guarantee a successful co-operation.
- While flexibility might be needed, it has a cost, and especially in the long run when the search for immediate adjustment destroys the co-operative capability in the long run. Avoiding the negative consequences of contractual flexibility and ambiguity is thus essential for steering the relationship between governments.

The logic of self-enforcing agreements

One of the specificities of a contract among levels of government is that it is between two sovereigns, which limits the ability of a third party to enforce them. Of course, administrative and constitutional courts exist, but their actual enforcement capabilities are severely limited; including because their capability to operate is in last resort depending upon the higher level of government. This is, therefore, a typical situation where the credibility of bilateral commitments is based on self-enforcement: the parties should write contracts that they will have interest to comply with *ex post* without being forced by a third party to do so, even if a third party can be called upon to help the parties to manage their agreements.

Considering the bounded enforcement capability of third parties

Self-enforcing agreements are key in several contractual approaches. The point was initially made by Oliver Williamson, who insisted on the idea that, even for commercial transactions, courts are often poor enforcers since they take time to document cases, might make mistakes (that justify appeal systems which increase the duration of a decision) and cannot always have their own decisions enforced because enforcement is costly and hence bounded, and because players have many strategies to bypass the enforcement capabilities of the judicial system (e.g. convicted people/organisations can move outside of the jurisdiction). Thus, even in countries with reasonable public and judicial institutions, economic agents have incentives to design agreements that are (at least partly) self-enforcing. Hart's approach to contracting clearly fits with such approaches in which the parties contract while anticipating the limited enforcement capabilities of courts. Courts, however, play a role since a contract makes sense only when external enforcement is at play.

The limitation of enforcement capabilities is traditionally explained by two main factors: first, the cost of exercising punishments; second, the limited information and cognitive capabilities of third parties, like judges. These two dimensions are discussed below.

The costs of complying vs. renegotiating vs. breaching

In the case of relations across levels of governments it is obvious that punishment is limited, not only by cost, but also by constitutional/political boundaries. Sovereigns can be submitted to checks and balances, but the very

principle of sovereignty limits *de facto* the range of applicable punishments. In any case, as private contractors consider the costs of enforcement, parties to a contract between governments always consider the benefit/cost to exploit any outside option to the benefit/cost to execute the arrangement as it was originally established, and to the benefit/cost of renegotiating in some way this arrangement. When they design an arrangement, they must anticipate the respective cost of the three options, and eventually manipulate them *ex ante* to make sure that in the future the parties would have interest in sticking to the initial agreement. At least they have to consider the benefits and costs of all alternatives: parties complying with the agreement, parties agreeing on a new agreement (i.e. continuing to co-operate, while renegotiating the conditions), or parties stopping to co-operate (either because one party does not accept the terms of a potentially renegotiated contract or because there is no longer interest on either side in co-operating on the considered issue).

Cognitive limitations of contract guarantors as the source of aggrievement and shading

While their enforcement capabilities are bounded, judges and courts are useful because a contract makes sense only if there is a third party to assess the existence of a mutual commitment and to assess whether the parties fulfill their mutual obligations. If such an independent third party does not exist, then contracts are useless since *ex post* this would be always the party with the highest bargaining power – either because it has more valuable outside options or because is more capable of exercising violence as a last resort – that would unilaterally decide what should be done by both parties, making the initial agreement void, and therefore useless *ex ante*. Thus, courts and judges matter because they contribute to the credibility of the mutual commitment. However, it might be the case that either they cannot get all the relevant information to assess whether parties comply with their commitments, or they do not have the right expertise to interpret this information. Of course, judges can request information from the parties, manage investigations and benefit from interpretation by experts, but all these strategies result in costs that limit the actual ability of a third party to oversee the behaviours of contracting parties. Thus, these parties can shade on their contractual obligations, since the third party responsible for assessing compliance will be unable to check some dimensions of their actions. When they write a contract, parties should anticipate this by avoiding contracting on variables that are relevant for their transactions but costly to observe by a third party – qualified in the theory as unverifiable variables. The CRPT relies in particular on the idea that the second limitation of contractual enforcement matters a lot for the understanding of contracts. It explains that the theory focuses on the distinction between the spirit of the contract (that requests consummate/ non-verifiable performance) and the letter of the contract (which implements perfunctory/ verifiable performance). Such a distinction allows focusing on situations where (consummate) performance that can never be judicially enforced matters for the performance of a relationship.

Sources of inverifiability in co-operative relationships between levels of government

There are many possible interpretations of the difference between consummate and perfunctory performance, and some of them apply particularly well to contracts among levels of government. First is the idea of the spirit of contracting. Contracts are a way to establish co-operation among parties. This is especially needed when they join their actions in complex projects which are difficult to fully describe *ex ante* and which several relevant dimensions might be revealed *ex post*. Mutually beneficial adjustments/development will therefore be requested *ex post*. The contract design should care about not implementing provisions that could lead to an extinction of the co-operative spirit among the parties. Second, and more straightforward, is the idea that there are relevant dimensions of a complex transaction – and policy implementations are complex issues – that are hardly describable and measurable, then hardly verifiable and contractible. Third is the idea that there might exist sophisticated forms of opportunism by which one of the parties tries to renegotiate *ex post* the splitting of the burden (or of the benefits) of a transaction for fear of providing verifiable rather than requested level of performance; i.e. work to rule. Typically, this might occur in relations among governments and the theory deals with this type of sophisticated strategy by also considering its effect through the idea of soured relationship: i.e. the non-cooperative compliance to an agreement that results in poor performance. Clearly relations among governments can encompass this type of cynical non-cooperative co-operation.

Behavioural assumptions: Aggrievement and shading

Expectations of fairness

This leads to revisit the behavioural assumptions at the root of the theory. The fundamental idea is that parties take their mutual commitment seriously. If they do not get what they expect from the contract, they feel aggrieved and shade/underperform, which results in lower collective outcome/inefficiencies. The important point is that aggrievement can occur even if what the parties get remains within the boundaries of the formal contract. Dissatisfaction is not anchored in any form of irrationality. It is linked to two logics. The first one is that reserving/dedicating capabilities to perform the transaction, and *a fortiori* investing to manage it, is costly and therefore requests protection against the risk of *ex post* exit of the relationship by one of the parties due to changing conditions that makes alternative options of trade more profitable. The second one is linked to social norms of fairness. In most societies, even with variations, norms of fairness are deeply anchored in the education and in the culture, in particular to promote co-operation among individuals. Co-operative behaviours are supported and rewarded, while non-cooperation has a bad name and can be punished in many ways, starting by ostracisation (e.g. Binmore [2010]). In any case, individuals tend to punish uncooperative behaviour and this happens in contractual relationships as well as when one party thinks that the other tends to be non-cooperative. This is

clearly highlighted by the experimental results obtained by Fehr, Hart and Zehnder [2009, 2011, 2015]. However, to what extent this applies to relationships among governments which could be seen, at first sight, as rational and cold players, who should therefore act as the homo-oeconomicus of the standard economic/game theory approach and consider that once sunk costs have been lost, it is rational to restart the relationship from scratch and negotiate to optimally adapt to the situation (since past behaviours are not predictors and should not be the driver of future behaviours). There are two levels of responses to that feeling of inadaptation of behavioural assumptions to relationships among public authorities.

Why policy makers might care about contractual terms?

First, it can be argued that aggrievement and relations against uncooperative/unfair behaviours are particularly relevant to characterise the behaviours of governments/political decision makers. The latter are usually involved in long-term repeated interactions among each other and used to the dynamic of coalitions and alliances. It is well known, including by practitioners, that tit-for-tat strategies – i.e. being co-operative and punishing non-cooperative behaviour when it arises incidentally, and becoming uncooperative with parties that are repeatedly non-cooperative – are in this context dominant strategies (see Axelrod [1984]). Thus, the propensity to retaliate against non-cooperative behaviours that is observed by behavioural economists among individuals is probably also quite relevant to describe relationships among governments and their leaders. In addition, as pointed out by Spiller and various co-authors (e.g. Spiller [2008], Spiller & Moszoro [1984]), policy makers' decisions are scrutinised by the public opinion and political opponents. This leads them to highlight the notion of third-party opportunism. It describes the idea that there are players in social systems that might be interested in the failure of decision makers, which impacts on contracting behaviours. Political opponents, in particular, check if decision makers deviate from the rules, including the contracts they signed (with private firms, with other governments, etc.) to criticise them if these deviations could seem suboptimal, unfair or simply illegitimate. Anticipating this, political decision makers have strong incentives to stick to the content of the agreement and avoid (even efficient) adaptions/renegotiations in order to limit the risk of losing political support. Thus, both higher levels of government as well as subnational ones could take the contractual expectations seriously and react negatively if they are not reached; which is precisely the behaviour considered by the CRP literature.

Shading as a general approach for the cost of flexibility

Second, as argued by Hart, shading can have different interpretations. In reality, it is a way to take into consideration the cost of flexibility in the various models. Of course, as already argued, flexibility can induce aggrievement and retaliation in the form of costly underperformance. However, flexibility can also result in efforts of persuasion to convince the other that the proposed interpretation

of the contract is relevant, or that the intended adaptation is fair, etc. Moreover, flexibility can result in haggling. Also, contractual flexibility can open the door to complex strategies of influence, since decisions have to be taken *ex post*, necessitating access to information by the decision maker(s). Another perspective is open when one considers rent-seeking behaviours. Especially in the political and administrative spheres, all kinds of interest groups and private interests can attempt to exploit contractual flexibility to benefit from rents.

Thus, the general insight carried by the theoretical approach proposed by Hart that triggers a flexibility-rigidity trade-off seems of particular relevance to analyse contracting among (levels of) government.

Institutions and procedures

Relationships among (levels of) government, while among sovereigns, are highly “regulated” by all kinds of procedural rules that *de facto* bind freedom of contracting and limit contract enforceability. A theory relying on the assumptions that, *ex ante*, parties are totally free to negotiate a contract (in a competitive context) outside from any type of hierarchical relations could therefore be considered as irrelevant to understand what is going on when governments are negotiating contracts. In addition, a theory that builds models assuming that parties’ feelings about their entitlement are controlled entirely by the contracts they have written could also be considered as a bad candidate to explain relationships among entities whose entitlements are influenced by many other considerations, such as the constitutional order, the balance among political coalitions, the various pressures of the public opinion, etc. Again, there are two “levels” of replies to this type of considerations.

Fairness of the initial contracting conditions...

First, the contracts as reference points approach precisely considers the role of the environment in which the parties interact. In particular, the importance of the conditions in which the initial contract is agreed upon are at the core of its legitimacy and its role as reference points (see above). Moreover, developments consider the role of external reference point (see annex) and highlight how external reference points, as the contracts governing the same type of transactions, might impact on parties’ expectations about the fairness of the contract, the need for adaptation, the possibly more efficient solutions to their transactional or relational challenge. Again, the models are generic enough to apply to the specific case of arrangements among entities contracting in an institutional context. It is simply a question of “calibrating” the models to take into account the specificities of each situation.

...and its translation in terms of contracting between governments

However, and this is the second line of reply, the fact that the theory is quite precise about the conditions in which a (self-enforcing) contract can optimally respond to the co-ordination challenges between two parties, allows these models to be interpreted. As pointed out above, when the conditions in which a contract is

established and potentially revised are not those of a perfectly competitive market, then the institutional setting should be designed to allow the establishment of legitimate contracts (among levels of government) and to revise them if needed. This triggers recommendations in terms of the optimal setting to establish efficient and efficiently managed contractual agreements. It also allows understanding why in some institutional settings, a contractual agreement would not result into the expected outcome. Take the example of the public debt crisis. Agreement among governments were made in the absence of transparency, of public release of the relevant information, and were characterised by strong asymmetries among the parties around the table, etc. Thus, and independently of the substance of these agreements, most of the conditions for the settlement of a self-enforcing agreement were not met and many parties (as well as the public opinion who might influence them or be instrumentalised) do not trust the agreement and therefore are locked into a stable non-cooperative equilibrium.

Centrality of the stability/flexibility trade-offs

Thus, despite the very abstract nature of this approach, we believe it helps to understand contacts among levels of government and to propose innovative ways to address the stability/flexibility trade-offs specific to this context. Indeed, the objective of the theory is fundamentally to understand the issue of *ex post* adaptation of contractual commitments. The theory highlights that contracts inevitably establish reference points that impact upon parties' expectations and their behaviours. To a large extent this is exactly the challenge raised nowadays in the EU and in many countries throughout the world because, on the one hand, policies of contracting among levels of governments have been developing everywhere as they were vectors of objectivisation/rationalisation/ modernisation of governance in decentralised contexts and, on the other hand, most countries' multi-level policies have been strongly impacted by the necessity to deal with major shocks with the financial crisis, then the public debt crisis, not speaking of the consequences of the international disorder of other global issues. The CRP approach focuses to a large extent on the question of optimal contract design and revision given various factors, which include the magnitude of shocks, the volatility of the environment, the degree of divergence of interest among the parties, and points out that in any event a contract, while allowing *ex post* adaptations, including breaking off relations, influences the room for maneuver of the parties.

Also, the theory allows dealing with the various types of contractual agreements that are usually contracted among levels of government. Take the example of the recognised differences between transactional and relational contracts between central and local governments. They correspond to the relationships analysed by the theory as dealing essentially with uncertainty on monetary values and on quality respectively.

Lessons for contractual design

On the basis of the analysis developed above on the main takeaways of the literature on the contract as reference points, and of the conditions to apply them to the analysis of contracting among level of governments, the following principles can be highlighted:

- Independent agencies might be needed to guarantee the legitimacy and the adaptations of contractual agreements.
- Contracts could be shorter than the expected duration of a project/co-operation. A series of successive contracts can indeed allow mutual commitments to be reset.
- Renewable contracts are a way to reduce the costs of renegotiation when a series of contracts is needed.
- When necessary, renegotiations should always be yielded, and steered by a mechanism independent of the parties.
- Decision rights should be granted to one of the parties when the considered decisions have low distributive effects only. The central government should consider the complementarity/substitutability of the contributions of local governments to a policy to decide whether it is appropriate to be granted with these decision rights.
- Granting property rights on the assets resulting from the co-operative process between levels of governments can be a way to control the propensity to co-operate, and henceforth to avoid shading.
- The cumulative perspective should always be considered when attempting to adapt to new circumstances. Explicitly complying with the spirit of the agreement will facilitate renegotiation and co-operation in the long run.

Recognising and establishing the legitimacy of contractual agreements: Toward independent agencies overseeing the contractual process

Contractual agreements can result in harsh constraints for (one of) the parties and quite unequal distribution of the surplus that is generated, as long as they are considered legitimate by the parties. The conditions in which a contract is initially settled are key. The negotiation of the initial contract requests equal footing in bargaining capabilities and as much informational transparency as possible. These elements could result in the establishment of independent third parties – independent agencies or regulators – responsible:

- First, for the collection and publication of information which is relevant for the *ex post* assessment of contractual performance and for grounding potential indexation (e.g. information about market price of relevant technologies, service provision, etc.). This should come with systematic and mandatory reporting both on contractual arrangement and contractual performance by public authorities, both higher and subnational levels.

- Second, for the supervision of the negotiation process. Negotiation of contracts should be made under the scrutiny of a *de facto* regulator of contractual practices among levels of government that should have the ability, and even obligation, to publish an opinion on the process of negotiation. This opinion could trigger the provision of assistance to a party that would be in a weak position, especially in terms of information/competence. Of course, such a third party would not alone be able to rebalance the bargaining power between the two entities, but the publication of its opinion would be a way to limit the ability of a dominant party to exploit its dominant position, especially because of the potential impact in terms of reputation of unfair behaviour in the political game and in the public opinion.

In the context of contracts among level of governments, and given its role, it is obvious that such an agency should be independent from the central government. Typically it should be built on the model of independent regulators relied upon to regulate competition and industries, and also the relationship between the government and private operators (as in the case of the provision and exploitation of public infrastructure).

While it might at first appear as a reduction of the sovereignty of the contracting parties, it is a necessary condition to ensure the credibility and the legitimacy of the initial contract, which is itself a necessary condition to guarantee the performativity of that contract, and its “revisability” *ex post*, if it needs to be adapted to unanticipated shocks or evolutions.

Contract duration: Regular renewal rather than long-term commitments

The theory clearly calls for adapting contractual arrangements to uncertainty by shortening their duration. Short-term commitments mean, in fact, frequent renegotiation, and while renegotiations can be harsh and costly, they are preferable to adaptation within the contract that bound the capabilities of adaption – since the parties rely on the contract as a reference point – and this results in shading in addition to poor adaptation to the new state of the play. In case of a high level of uncertainty/volatile environment, long-term commitments are justified only when incentives to invest in specific assets are necessary, while they are difficult to manipulate in the context of shading.

As pointed out below, the drawback of short-term arrangements (i.e. the cost of renegotiation) can be partly mitigated by the conditions in which a contract is renewed.

Renewable contracts: Mitigating the cost of renegotiations

A way to mitigate both the rigidity of long-term contracts and the cost of frequent negotiations of short-term contracts is to renew relatively short-term arrangements. The conditions in which the contract is renewed matter, because they impact on the actual flexibility of the initial arrangement that remains the

central reference point. Halonen-Akatwijuka and Hart (2015) highlight a continuum in terms of increasing flexibility:

- Starting by long-term agreement.
- Followed by short-term, renewable-for-cause contracts: that is, contracts that are automatically renewed unless one of the parties calls for a non-renewal (in the initial conditions) and justifies his/her claim. The claim should be addressed to both the third party overseeing the performance of the agreement and to the other party; which can then go to the court if the motivations for the claim of rupture seem weak/irrelevant.
- Then by renewable contracts: i.e. contracts that continue if both parties agree, while the terms under which the contract is renewed are specified in advance; which means they are either the same or revised automatically according to various possible principles (e.g. indexation, benchmarking, etc.).
- Ending with continuing contracts; that is, contracts that are renegotiated between the parties only on the dimension that the party considered necessary to change. Consequently, the initial contract remains a strong reference point.

These alternative mechanisms provide the contracting parties with tools to subtly/optimally manage the flexibility/rigidity trade-off, by allowing adaptation while controlling the cost of renegotiation and the level of aggrievement. They can therefore adapt to the actual degree of uncertainty of each relationship.

Revision: Preventing the manipulability of renegotiation

The complementary strategy to impact upon the flexibility/rigidity trade-off is to allow renegotiation of a rigid contract. Indeed, the theory highlights that in case parties anticipate the need for future adaptation because there is volatility, neither the multiplication of contingent obligations to adapt to the maximum number of possible circumstances calling for adaptation nor the implementation of unilateral decision rights allowing a party to redefine contractual obligations (of course in a range of contractually agreed upon possibilities) are optimal strategies in the context of aggrievement and shading. Contingent contracts trigger conflicts of interpretation. Unilateral decision by one of the parties raises suspicion by the other party. In such a context, a rigid contract that is revisable can achieve the benefits of flexibility without incurring its costs.

As pointed out above, a first strategy to design a revisable contract is to play on its duration. *De facto*, short-term contracts allow renegotiation while avoiding the counterproductive consequences of contractual flexibility (i.e. shading, low credibility, etc.).

Automated renegotiation

Second, the contract can implement a mechanism automating its renegotiation when needed because the contractual terms lead the parties to underperform. The

decision to renegotiate should not be in the hands of the contracting parties, since any unilateral decision could be considered as unfair or uncooperative, and a collective decision could lead to costly haggling (especially if parties have a self-serving bias). Indexation is most often a poor solution since it is often difficult to identify a relevant basis for indexation that would not be manipulable by the parties.¹ However the definition of thresholds and ceilings of some key variables for the performance of the relationship is an efficient way to automatically trigger renegotiation and is a good way to compromise between contract rigidity and flexibility.

Oversight by independent third parties...

Third, the contract can rely on a third, independent party either to trigger renegotiation or to take unilateral decisions on contracting obligations when the obligations deviate too significantly from what would be optimal. Here again, the existence of an independent “regulator” could be justified.

...which might be useless in trust-based societies

Lastly, the parties can negotiate and implement a formal renegotiation mechanism at their discretion in the contract. The one and only condition for this mechanism to be workable is that the parties should trust each other, either because they have a long experience of co-operation together, or because they are embedded in social networks guaranteeing/favouring co-operative relations. These conditions are very rare in relationships among governments. However, there are clearly differences in terms of the dynamics of political life between trust-based societies and those that are characterised by mistrust.

Decision rights

The bottom line is that when shading is possible a contract should leave as little discretion as possible to the parties, because a co-operative spirit is necessary *ex post* since many sensitive dimensions of the relationship are not contractible (typically because mutual adjustments will be needed, which are too complex to describe and depend on too many factors), and when aggrievement is potentially high since the parties are highly sensitive to compliance with provisions agreed *ex ante*; either because this is a sensitive issue due to its impact either on costs or (economic or political) benefits, or because it is submitted to unfriendly scrutiny by third parties. However, when there are asymmetries on shading and aggrievement, it might be relevant to grant one of the parties with decision rights to optimise adaptation. This might occur when parties do not face a distributive issue (since the zero-sum game structure of the problem is likely to generate aggrievement), but rather allocative issues; that is, when *ex post* adaptation can greatly impact upon the welfare produced, because improving the quality will help to better meet needs, without a great impact on costs.

Authority to one of the parties only if adaptations are expected to yield a very significant impact on the outcome

The driver of the implementation of an authority provision in favour of one of the two parties should clearly be the asymmetry in the matter of aggrievement: when one party cares much more than the other about the quality of the service/good provided, then it must be able to decide the quality *ex post*. It is relevant if and only if the decision on the quality of what is provided does not negatively impact on the overall performance of the transaction. More generally, it should not be linked to a principle of revision of the other dimensions of the deal; typically, the commitments made by the other party.

For instance, if the central government is very sensitive about issues it considers to be relevant from a sovereignty (or more broadly from a political) perspective, but contracts with a local government the implementation of a policy that relies partly on the means of the local government, it should keep control of the way the policy is provided if it requests future adaptation. Let's take the example of public security; the central government might think it should be exclusively provided by civil servants, while the precise way they will operate will request future adaptation because security crises are difficult to foresee. It should therefore keep control of the way the local security forces will be mobilised in the future. In contrast, if the cost of provision is more important than the way it is produced – e.g. by civil servants vs. private contractors – then the central government should leave a lot of discretion to the local government and only establish objectives in terms of level and cost of provision of a given public policy/goods.

Considering the complementarity/substitutability among contributions to the public good provision

To make the right choice, the central government should take into consideration the nature of the policy/public good, as well as the different capabilities of the local governments, since determining their costs and the ability to take the right decision about implementation request both knowledge and administrative capabilities. It might also be important to consider the so-called aggregation technology for the considered public good/policy. The notion of “aggregation technology” was initially introduced by Hirschleifer (1983) and Cornes and Sandler (1984) to highlight that individual (in our case, local) contribution to the provision of a public good (in our case a national policy) does not necessarily impact in the same way for all types of public goods. With summation goods, each unit contributed to the public good adds identically and cumulatively to the overall level of the good available. This is, for instance, the case for contributions to reducing CO₂ emissions. Since individual contributions are substitutes for each other it is essential to get the contribution of the largest possible contributors; i.e. the large polluters in our example. Neither unanimity nor majority are required to ensure minimal provision of the good. This is obviously not the case when dealing with weakest-link public goods, where the smallest contribution fixes the quantity of the public good available for the entire

group, as in security control. In such cases, unanimity is required while at the same time each decision maker has a strong incentive to contribute since free-riding could be costly if it is observable by the other providers involved. In case of best-shot public goods – for which the overall level of the good is determined by the largest individual provision, as it is the case for innovation policy where the essential challenge is to make sure that the most likely to innovate are facilitated and incited to do so. Of course there is a wide set of intermediary cases, such as weighted-sum public goods (where different contributions can have different impacts, as in the case of investments in transportation infrastructures since geography makes some regions and cities – typically hubs – more central for the overall impact of the investments); or threshold public goods (where there are local benefits to the provision of a public good, while much lower than the aggregate benefits at the national level, which results in a suboptimal level of provision). Aggregation technology reflects then the sensitivity of a national policy to the quality of the local provision. The central government should certainly be cautious about granting freedom of adaptation to local governments in case of weakest link or threshold public good, while choices are clearly more open in case of summation or best-shot goods.

Ownership, knowledge and the propensity to remain co-operative

The CRP approach highlights the role of the “co-operative spirit” in a contractual relationship and the role of the distribution of property rights in maintaining it/enlarging the span of co-operation. In short, parties should be less likely to initiate opportunistic renegotiation – that is, a renegotiation aiming at modifying the distribution of the surplus between the two parties, while the realised distribution remains what could have been anticipated *ex ante* and is not linked to any substantial difference of provision of inputs by both parties – if the potential victim(s) of the blackmail benefit(s) from favourable exit options. In the case of contracts among level of governments, the exit is certainly not contracting with another partner, but should be understood as the political and economic outcome of discontinuing to co-operate on a given project/policy.

Each government should consider this issue *ex ante*, since it impacts *ex post* on both the incentives of each party to engage in opportunistic renegotiation and (in consequence) on the spirit of the relationship. It might be the case that the incentives of both parties are well-aligned, in which case opportunistic actions are very unlikely to occur. However, there are several situations in which the central and the local governments could have diverging interests, especially when the political benefits of their co-operation are unevenly distributed. In such a case, the government that gets more political benefits from the joint policy could be blackmailed by the other *ex post*, resulting into counterproductive shading.

Granting property rights to the level of government benefiting from the greater political benefits

At the opposite of the common wisdom, the party likely to draw more (political) benefits from the co-operation should be granted with some form of

protection *ex ante*. As the theory points out, this is where property rights distribution can be useful. In the case of transportation policy, for instance, it might be relevant to consider granting the local government a large share of the property rights on infrastructure for local transportation, beyond their share in the investments, for that purpose. It must be pointed out that the necessity to protect parties against future blackmail is linked to uncertainty about the future benefits one of the parties could unexpectedly draw from the relationship. Even when the economic costs and benefits can be well anticipated, political games often result in unexpected political outcomes; precisely because policy makers play on citizens' feelings and emotions. Thus, the protection of parties thanks to the granting of property rights over the assets and the outcome derived of their co-ordination seems to be highly relevant in the case of relationships among governments. Since both parties are likely to engage in opportunistic renegotiation *ex post* given the randomness of the attribution of political credit by voters to local or central governments, both should benefit from protection. As pointed out in the theoretical developments, in such a setting, each party should own the assets that are the more idiosyncratic/relevant to its business/policy credit. To follow up on the case of infrastructure, those of "national interest" would be best in the hands of the central government, while those dedicated to local services should be owned by the local government, even if all these infrastructures have a hybrid nature and are jointly funded.

Preferring investments in redeployable assets

That said, what the CRPT highlights is that what matters is not the ownership of assets per se, but the level of outside options of the party that could be blackmailed. Other levers can be manipulated to impact upon the cost of breaching the co-operation (redeployability of the means engaged, value of outside options). An important issue here is to consider the nature of the resources that are mobilised/invested by each party. Most non-specialised investments – e.g. office buildings, general purpose administrative labour – are easy to redeploy in alternative policies by contrast with investments in highly specialised (physical and human) capital. Co-operating on policies that do not request investments in highly specialised assets, or choosing to ground a relationship on non-specialised investments while developing the general capability of the (local) government, is a relevant way to initiate co-operation without fearing the development of non-cooperative behaviours.

The case of non-contractible efforts/investments

That said, it is not always possible to develop policies on non-specialised/flexible investments and the analytical framework of the CRPT insists on the fact that distributed ownership is not always optimal since enhancing the outside option of one party increases its ability to blackmail the other and might have a negative impact on the incentives to invest in assets specific to a transaction/policy by the other party. Thus, if significant non-contractible investments should be made by one of the parties, it is better not to share property

rights upon the resulting assets. For instance, despite joint investments in physical infrastructure, if the performance of a local infrastructure is strongly dependent on implementation and maintenance operations that are sensitive to the efforts of the local government (because they depend on local conditions/capabilities), then it is better to incentivise it by granting the local authorities with the ownership of the built infrastructure, even if it is infrastructure that is relevant for the central government's political objectives.

Considering the long-term and cumulative perspective

The last set of lessons to be drawn from the CRP perspective draws specifically from the behavioural insight of the experiments developed to explore the theory more in-depth. Indeed, Fehr, Hart and Zehnder have shown that parties of a contract are particularly sensitive to the signals of non-cooperation sent by the other party, while they are less sensitive to signals of co-operation. Indeed, in a context of renegotiation, they retaliate strongly against what they consider as opportunistic renegotiations, while they do not respond positively to the non-binding signals of co-operation sent in the context of an informal agreement. This is obviously in line with the perspective of the rigidity/flexibility dilemma resulting from the reference point perspective; i.e. parties' expectations resulting from a contractual relationship. It is therefore essential to situate each contract in a more dynamic perspective, when relevant. In the case of a contract among levels of government, there are two dynamics to consider.

Repeated contracting to build mutual trust

First is the dynamic of the co-operation among the two governments itself. It is clear from the theory that while a contract may be a reference point, other elements of a relationship or of its environment may serve as reference points too. In particular, past experience may be relied upon by each party to assess each others' propensity to co-operate. Because contracting among levels of governments is structurally a repeated game, building a mutual experience of co-operation through a co-operative attitude in the management of each contract is potentially of high value since in the long-term it should result in signing less detailed contracts, allowing for more flexibility thanks to a climate of mutual trust and confidence. That perspective should be essential for each party in the daily management of each contract, even if it might lead to non-optimal adaptation in the short run.

Building a win-win atmosphere

Second, the most generic way of envisaging how the perspective of a relationship might influence the propensity to remain co-operative is to take into account the long-term perspective of empowerment by both sides. A local government that understands that a continuing relationship will empower it will lower its propensity to shade. A central government that understands that a continuing relationship will allow it to reinforce its implementation capability in the long run will also reduce its propensity to shade. The issue then is clearly to maintain these

perspectives in the long run, and the understanding by both parties of the interests of the other party. Otherwise, in situation of tension (lower value than expected, higher costs incurred, external shocks to absorb), either party could interpret any attempt to renegotiate an agreement as a (tentative) opportunistic renegotiation.

Assessing performance and reporting

In both cases, these elements call for a systematic reporting and publication of the performance of the contractual relationship among levels of governments, including the way adaptations have been managed to allow the parties, but also third parties and the public opinion, to better understand the general perspective in which these contractual relationships are embedded.

Conclusion

Expectations matter for contractual performance

The contract as reference points approach highlights that the parties to a contract have expectations about the outcome of a contract, and that these expectations matter more than their objective incentives to provide performance as previous theory did. It impacts on the expected behaviours of parties *ex post* when the contract is operated, and even more so when it is revised. In a sense, it focuses on the very consequence of uncertainty on the outcome of contractual relationships, while previous analyses did assume that contractual provisions can fix *ex ante* most issues raised by *ex post* uncertainty. Hence the focus on the *ex post* dynamics triggered by the *ex ante* arrangement.

Playing on the spirit of the contract rather than on its letter to retaliate

The spirit of the analysis is that parties may be disappointed by what they get compared to what they expected (aggrievement) and that they can retaliate by providing less than what they promised (shading), by playing on the spirit and not on the letter of the contract. Consequently, one party (she) might hold-up the other party (he) which, in turn will not get what he expected. The reason why the first party (she) shades is that she interprets the fact that she did not get what she expected because the other party took uncooperative actions. In such context, a rigid contract that would deliver a low outcome for a given party given some unpleasant external conditions would not lead to shading, while a contract that would open the door to adaptation to these unpleasant conditions but based on a decision taken by one of the parties would potentially yield shading.

Avoiding unilateral decisions to adapt the mutual commitments

Ex post interventions by one party in the redefinition of the other's provision should therefore be considered with attention. It can happen both when the contract is performed as it was initially settled or when it is renegotiated because external conditions make it too inadequate to the environment.

The very specific conditions in which contractual flexibility is to be preferred

At the stage of the performance of the contract, it is always better to avoid unilateral decisions by one of the two parties and to write contingent contracts based on subjective contingencies. However, if the room for maneuver for shading is low — because it is easy to describe and verify the actual commitments of each party, and because the potential shading does not impact much on the performance of the contract (i.e. has a low cost) — and if one of the parties cares a lot more about a dimension of the performance of the other that has a low distributive impact (i.e. it has a low impact on the other party's costs), then a contract might grant discretion to the party who cares about, for instance, quality. Thus, flexibility can be implemented in the contract if very specific conditions are met.

The benefits of rigidity

However, at the stage of contracting, parties must always keep in mind that it could be preferable to sign a more rigid/less adaptable contract to be renegotiated in case it becomes no longer relevant. Too flexible/open a contract could indeed lead to significant aggrievement *ex post* that is difficult to manage because loose contractual obligations bound renegotiation capabilities. Moreover, when a given contract comes to an end or should be renegotiated because it no longer fits with the environment, the negotiation to renew it might not be so costly if there were not any major deviations from the initial contract. There was therefore no conflict, resulting in mutual trust about the co-operative spirit of the other party, which yields a climate of fair repeated negotiations.

Channeling renegotiations

At the stage of the revision of a contract, the issue is to avoid the potential the feeling of one party that it is being held up by the other . Thus, triggering renegotiation should as much as possible be based on automatic/external mechanisms to avoid the suspicion that one party is manipulating the contract mechanisms in its favour. Second, once the renegotiation occurs, procedures and the potential intervention of an independent, competent and trusted third party should guarantee that the parties are renegotiating on an equal footing and that no one is taking advantage of a dominant position.

Short-termism in transactional contracting

The theory applies both to the case of transactional and relational contracting. When it is easier to describe each party's provisions and when the horizon of the relations is shorter, then the theory clearly calls for shorter term arrangements, especially in a period of high uncertainty. The frequent renegotiation of contracts at the renewal stage will yield costs that should be inferior to the cost of uncooperative behaviours in longer term arrangements (of course if shading is possible).

Renegotiations in relational contracting

When the horizon is longer and the parties' provision are difficult to forecast *ex ante* because parties are co-operating on a complex evolutionary project, then the focus should be on the conditions in which the objective of the co-operation could be revised.² Fundamentally the theory insists on the fact that it cannot be revised unilaterally by one of the parties – e.g. the higher level of government – for fear of destroying the co-operative spirit. This calls for the signature of less flexible relational contracts, implementing, for instance, some rigidities and renegotiation provisions to allow to “objectively/neutrally” end up with a contract and renegotiate a new arrangement from scratch. In the same spirit, shorter term relational contracts (e.g. medium term rather than long term) allow reconsidering the relationship from time to time, permitting adaptions without the fear of raising aggrievement.

The key role of independent third parties

Of course, as pointed out by the standard approach to relational contracting, mechanisms of exchange of information among the two parties could also be useful to align their respective visions on the dynamic of the environment. However, the results of experiments managed by behavioural economists highlight that the exchange of information among the parties has a lower impact on mutual trust (and therefore potential aggrievement) than the provision of “external” reference points by independent third parties or the environment; simply because the parties feel that the information in the latter case is less manipulable than in the former case. Thus, the more reliance on independent regulators, on peers to practice benchmarking, on international organisations, on non-governmental organisations, the better the guarantee of efficient *ex post* adaptations between parties, either in the framework of a contract or at the renegotiation stage.

Deepening knowledge on public contractors' behaviours

As pointed out in the introduction, however, the theory is still developing and needs to be adapted/calibrated to result in clearer recommendations for policy makers. Its conclusions crucially depend upon the behavioural assumptions in matters of aggrievement (i.e. its magnitude), shading (i.e. the propensity to retaliate and be harmful to the relationship), and also regarding how parties envisage the legitimacy of contractual arrangements and therefore built expectations about their outcome. While this paper highlights that there are good reasons to think that all of these elements matter in the case of relationships among levels of government, the size of the effects and the precise identification of the conditions triggering them still have to be measured. This certainly calls for future research and impact analysis. In the meantime, decision makers should keep in mind this issue of credibility of mutual commitment and how inefficient *ex post* adaptation mechanisms could destroy it, to the cost of the effectiveness and efficiency of arrangements.

Notes

1. Indexation on observable variables related to the transaction triggers incentive/revelation issues.
2. The standard approach to relational contracting focuses on the mechanism allowing trust and mutual capacities to be built to allow adaptation to the evolution of the project that cannot be fully described/decided *ex ante*. It, however, assumes that the main objective – e.g. building an efficient infrastructure and the capabilities to manage it – is clear and would not change *ex post*. The CRPT insists on the idea that, if in the framework of a relationship between two levels of government the objective is unilaterally changed – e.g. shifting from investments in public equipment project to more immediate social infrastructures – this might result in significant aggrievement which will not be manageable by the contractual mechanisms aimed at allowing the mutual adjustment of means, not of ends.

Annex A. **Glossary**

Aggrievement: Disappointment experienced by a party to a contract when it does not get the expected outcome from the performance of the contract. Aggrievement refers to the loss in expected gains/adaptation to the needs. See also shading.

Asset specificity: see specific investment.

Asymmetric information: see observability/information symmetry.

Consummate performance: see perfunctory vs. consummate performance.

Contractible/uncontractible variable: see verifiability/unverifiability.

Contingent contract: a contract that specifies what the obligations of both parties are given (different events/state of the world) a change in circumstances/environment.

Flexible/rigid contract: a flexible contract allows parties to adapt to future contingencies, whereas a rigid contract specifies *ex ante* what future provisions should be.

Hold-up: characterises in a contractual relationship any action that allows a party to capture part of the surplus in its favour, playing on the fact that the other party might experience higher costs if he does not accept that capture.

Idiosyncrasy/idiosyncratic asset: an asset is idiosyncratic to a party if it increases the productivity/economic value of the other assets owned by this party. Idiosyncrasy refers therefore to a party, not to a relationship (see specific investment).

Observability/information symmetry: a variable is observable when the two parties to a contract can, in a cost-free way, get the relevant information about it. When information is unobservable to a party, the party can attempt to implement a revelation mechanism to try to fix the issue. A revelation mechanism relies on incentives/conditional payments to reveal the truth. Such mechanisms propose to the informed party a larger share of the surplus if it tells the truth – e.g. about its efforts, its costs, etc. – than if it does not reveal information or lies.

Perfunctory vs. consummate performance (of contractual obligations): this distinction reflects the difference between the verifiable and the non-verifiable (while useful) contractual obligations. The letter of a contract implements perfunctory/verifiable performance, while the spirit of the contract call for consummate/non-verifiable performance that is essential to the successful performance of the relationship (i.e. co-operative behaviour).

Principal-agent relationship: describes a relationship where a principal (which can be also referred as a buyer) contracts to get a service or a good provided by an agent (also referred to a seller). [Not to be confused with the principal-agent theory, which refers to a situation in which the principal-agent relationship is characterised by an asymmetry of information where the agent knows variables that are relevant for but unknown by the principal. This is therefore equivalent to the more generic designation of incentive theory].

Shading: retaliation exercised by a party that does not get what it expected from the other in the framework of a contract. These retaliations do not, however, breach the letter of the contract. By extension, shading refers to the cost incurred by the parties to prevent retaliation, such as the cost of convincing the other party of the mutual benefits of adjusting to new circumstances. See also aggrievement.

Specific investment: an investment is specific to a transaction when it is costly to re-deploy the related assets to manage a transaction with another party. Asset specificity refers therefore to a bilateral relationship between two agents.

Verifiability/unverifiability: information or a variable relevant for a bilateral relationship is verifiable when it can be observed without any bias or doubt and in a cost-free way by a third party responsible for supervising/reporting on the relationship between the parties. When a variable is unverifiable, parties cannot contract on it, even if both of them can observe it (there is no information asymmetry).

Annex B.

A brief review of the literature on contracts as reference points

The contract as reference points theory proposes a new approach to contracting based on the idea that a contract yields expectations by the parties that feel entitled to get some return from it. When, for some reason, the expectations of one of the parties are not met, the party feels aggrieved and might retaliate by not meeting the expectations of the other party. This might either lead to *ex post* conflict or underperformance, which results in deadweight losses. These behavioural insights renew several dimensions of the analysis of contracting.

To review the related literature, we start by explaining an intuitive version of the canonical model proposed by Hart and Moore in 2008. This is necessary to grasp the essence of the reasoning behind this novel approach of contracting, and also to then introduce the lessons to be drawn from the various analytics developments that have been proposed by Hart and several co-authors since 2008. Indeed, the CRPT sheds new light on many issues as the reliance on indexation provision to adapt to evolutions in the environment, to the distribution of ownership on the assets involved in/resulting from the transaction, to the management of incentives to make non-contractible investments, to the writing of incomplete contracts (that avoid mentioning foreseeable contingency), etc. This is done in the second section. The following section surveys the main results from the “applied” literature based on experiments. Indeed, beyond confirming the main insights of the theory, experimental results allow better understanding how the context of contracting and the initial agreement impact on the behaviour of contracting parties, and therefore how contractual mechanisms should be designed and/or are influenced by contextual elements.

The canonical model proposed by Oliver Hart and John Moore in 2008

To capture the potential conflict between two parties in a contract as simply as possible, Hart and Moore (2008) suppose that two parties, a buyer (B) and a seller (S) sign a contract at date 0 about a good/service, a widget, to be delivered at date 1 at price p . The point is that some uncertainty may arise between date 0 and date 1 so that the value of the widget for the buyer v , and its cost for the seller c are characterised by some uncertainty.



A first best contingent contract would be implementable if there no ambiguity existed *ex post* about the situation the parties are facing and if their respective contribution to the collective outcome were verifiable by a third party guaranteeing the agreement. However, if there are margins of interpretations about the situation then the parties may feel entitled to an outcome that is not the one they will actually get. Hence, they would feel aggrieved and would underperform; which would reduce their contribution to the collective outcome by a factor θ . θ is thus a parameter indicating the magnitude of shading. It translates the level of aggrievement (e.g. the difference between the expected price and the proposed price) into a lower contribution (which decreases the contribution to the surplus from a θ factor).¹

In such a situation, a date 0 contract that would fix a price p in advance would achieve the first-best. Indeed, each party feels entitled to the best outcome permitted by the contract. However, a party does not feel entitled to more than this best outcome. So, for example, if at date 0 the parties sign a contract that specifies just one outcome, then each party will feel that he is getting exactly what he is entitled to if that outcome occurs. Getting less than what he is entitled to would cause aggrievement and would lead to retaliation and “shading”; that is, stinting on consummate performance. Thus, the approach proposed by Hart and Moore (2008) highlights that a rigid contract that would not allow revision *ex post* (at date 1) given the circumstances would lead to a better performance than a contingent contract, because the latter would open the door to aggrievement and shading. This is, however, linked to three sets of conditions.

First, as pointed out above, the actual contribution of both parties are not contractible *ex ante*, because they are not verifiable by a third party (i.e. shading is possible). Thus, “coasian” renegotiation is not achievable.

Second, despite the fact that contributions are not contractible, contracts create mutual obligations to which the parties feel entitled. Why does a date 0 contract that fixes p avoid aggrievement, whereas a date 1 contract that fixes p does not? According to Hart and Moore, this is due to the fact that at date 0 parties negotiate an agreement on an equal footing if the market is competitive. The outcome of their negotiation is therefore considered as legitimate. When *ex post* renegotiation occurs, the parties are no longer in a situation where all outside options are available. They are bound by their *ex ante* commitment to trade with each other. Thus, a “fundamental transformation” occurred (to rely on the analysis proposed by Williamson) and each of the parties may consider that the renegotiation does not provide them with the outcome they deserve given the fact that the *ex ante* commitment deprives it from some opportunities *ex post*. For these reasons, since

the date 0 market is more competitive than the date 1 market, it provides a relatively objective measure of what B and S bring to the relationship and what they should get in return. They therefore feel entitled to this legitimate feedback.

Third, a simple contract² fixing a price *ex ante* is a solution to the problem if and only if very specific conditions are met. That is, if: 1) only the value v of the buyer can vary between date 0 and 1; 2) or only c varies; or 3) the smallest possible value v for B is at least as great as the largest possible level of cost c for the seller. In this case indeed, a simple contract establishing a fixed price p would allow *ex post* trade in any situation without generating aggrievement and shading since the two parties would not have to expect anything else than the price specified in the contract. If only v varies, parties should choose a simple contract with $p = c$. If only c varies, they have to choose a simple contract with $p = v$. If (3) holds, they can choose a simple contract with p between the smallest v and largest c .

This first-best is no longer achievable if either: 1) v and c are uncertain; or 2) the nature of the good (the widget) is uncertain. Let us discuss these two cases.

Uncertain value and costs

The parties write an “agreement to agree” at date 0: they intend to use the date 0 agreement (about p) as a framework for future negotiation, but for some reason are not yet ready to sign a binding contract. The usual legal presumption is that either party can opt out of such an agreement if future negotiations fail.

One way to introduce flexibility is to suppose that the contract specifies a no-trade price p_0 and an interval of trading prices $[p, \bar{p}]$. Suppose for simplicity that B chooses the trade price at date 1. In other words, trade occurs if and only if B can find a price in the range $[p, \bar{p}]$ such that the parties want to trade (B will choose the lowest such price).

The trade-off is clear. A large interval $[p, \bar{p}]$ makes it more likely that trade will occur if $v \geq c$. (If $p = -\infty, \bar{p} = \infty$, the trading rule becomes the first-best one: $q = 1 \Leftrightarrow v \geq c$.) However, it also increases expected shading costs.

To better understand how alternative contracts could work, let’s take an example as proposed by Hart and Moore. There are three possible states of the world at date 1 – s1, s2 and s3 – and the distribution of value and cost is as it is given in Table A.1.

Table A.1. **Distribution of value and cost**

States of the world → ↓ Value and costs	s1	s2	s3
v	9	20	20
c	0	10	0

To clarify the conditions in which a contract is able achieve the first-best, let’s consider first a situation in which the probability of occurrence of s3 is 0. Then,

only s_1 and s_2 are possible. Conditions 1, 2 and 3 are no longer met so that a simple contract is no longer available. That said, if there are only two states of the world in which either v and c are both low (s_1) or they are both high (s_2). A contract that specifies an interval of trading prices $[9, 10]$ ($\underline{p} = 9, \bar{p} = 10$), with B choosing the price, does achieve the first-best.

To see why, note that in s_1 B will choose $p = 9$ because this is the lowest available price. S will not be aggrieved because even if S could choose the price, she would not pick a price above 9, given that this would cause B not to trade. In s_2 B picks $p = 10$ because this is the lowest price consistent with S being willing to trade. S is again not aggrieved because she couldn't hope for a higher price than 10, given that 10 is the highest available price. Thus, the contract, $\underline{p} = 9, \bar{p} = 10$ achieves trade in both states without any shading.

If s_3 is possible then the first-best guaranteeing no shading is no longer available. There are three possible candidates for a second-best optimal contract:

$$a. \underline{p} = \bar{p} = 9.$$

This contract yields trade in s_1 and s_3 but not in s_2 . Since there is nothing to argue about – the price is fixed at 9 – there is no shading. Total surplus is given by $W_a = 9\pi_1 + 20\pi_3$, where π_1, π_3 are the probabilities of s_1, s_3 , respectively.

$$b. \underline{p} = \bar{p} = 10.$$

This contract yields trade in s_2 and s_3 but not in s_1 . Because there is nothing to argue about – the price is fixed at 10 – there is no shading. Total surplus is given by $W_b = 10\pi_2 + 20\pi_3$, where π_2 is the probability of s_2 .

$$c. \underline{p} = 9, \bar{p} = 10.$$

This contract yields trade in all three states, but there is aggregate aggrievement of 1 in s_3 . Total surplus is given by $W_c = 9\pi_1 + 10\pi_2 + (20 - \theta)\pi_3$.

Obviously, which of these contracts is optimal depends on the probabilities π_1, π_2, π_3 and θ . Contract (a) is optimal if π_2 is small, contract (b) is optimal if π_1 is small and contract (c) is optimal if π_3 or θ is small.

Note that if the state were verifiable, it would be easy to achieve the first-best. For example, a contract that would specify $p = 9$ in s_1 and s_3 and $p = 10$ in s_2 would do the job since in each state there would be nothing to argue about. Call this contract (d).

Suppose now that the state of the world is not verifiable by a third party, but is observable by both parties. As in a Maskin mechanism, each party has to report the state of the world at date 1.³ If they agree, the price is as in contract (d). If they disagree, however, something unpleasant happens. The problem is that in s_3 , S would like B to play the mechanism as if it were s_2 , and will be aggrieved by 1 if B refuses to go along with this. On the other hand, B will be aggrieved by 1 if S refuses to play the mechanism as if it were s_3 . Either way, aggregate aggrievement in s_3 is 1, which yields total surplus equal to W_c , as in contract (c).

The general point is that aggrievement is determined by the entire set of terminal nodes of a mechanism, not just the equilibrium ones.

Why can agreements between two parties who will both learn the state of the world not be made contingent? In principle, one could imagine B and S having the following conversation at date 0 about contract (c). B could tell S that he will pay 9 at date 1 in all circumstances unless S will not trade at this price, in which case B will raise the price to 10. B could explain to S that she should not feel aggrieved in s3 when B does not raise the price to 10, because B said that he would stick with 9. To put it a little more formally, a contract that would make price a function of an observable but unverifiable variable reflecting S's cost should not cause aggrievement, because both parties would observe the state of the world and can see whether the other party is sticking to the contract.

State-contingent agreements are more problematic if the state in question is a (more) subjective value-cost pair. Subjectivity opens the door to differing interpretations. For example, between dates 0 and 1, S may convince herself that her skills or (unmodeled) actions contribute greatly to the trading opportunity at date 1, hence to the value of trade for B. S may feel that she deserves to be rewarded for this (self-serving biases may be at work). Whatever speech B has made at date 0, B can, if he so chooses, recognise S's contribution by raising the price to 10 (if $v = 20$); which is consistent with the contract. In other words, B can pretend that S's cost is 10 even if it is not. If B refuses to recognise S's contribution and offers only 9, the assumption is that S will take this to be an ungenerous act and will respond by shading.

Thus a state-contingent contract is implementable and efficient if and only if it can be indexed on a variable that is not subject to interpretations and that is not manipulable by the parties.

Uncertain nature of the good

Another example is useful to describe what is going on when there is uncertainty about the nature of the good. Suppose that B is arranging an evening with friends and wants S to perform music. The nature of the music may depend on eventualities that will occur between dates 0 and 1, for example, who is coming to the evening, and what music S is rehearsing for other performances. To make matters as simple as possible, let's assume that there are two types of music/composers that might be efficient for S to play: Bach and Shostakovich. Δ is the level of aggrievement experienced by B if the composer who is played is not its first-best given the nature of the audience once all his guests are confirmed. δ is the level of aggrievement experienced by S if the music he has to play is not its first-best given what he rehearsed before the concert. Each composer can take one of two value-cost combinations, given by (v, c) and $(v - \Delta, c - \delta)$, respectively, where $v > v - \Delta > c > c - \delta$; that is, the value-cost supports of the composers overlap. (Everything is measured in money terms.) In other words, a composer can be "high-value-high cost" or "low-value-low cost." The probability that Bach is

“high-value-high cost” and Shostakovich is “low-value-low cost” is the same as the probability of the reverse.

Aggriement can obviously also occur about pricing as in the preceding example. Price has, however, no allocative role – its choice is a zero-sum game – and so, in order to avoid aggriement, it is better to fix it in advance. Music does serve an allocative role since it yield value and cost for the parties. It thus makes sense to leave it open; that is to let B choose the music in function of the preferences of his guests, or S choose it in function of its training.

There are four natural candidates for an optimal contract:

- a) No contract, that is both parties negotiate only when B knows exactly who is coming to his evening while S trained given all the other possibilities of contracting with other potential concert organisers. The risk is high that S is no longer available for B, or that he is unable to reply to the demand by B. So, the benefit of trade can be lost with a positive probability.
- b) A contract that fixes the price and lets B choose the composer. Thus B will hire S’s musical services for the evening, with the understanding that B will tell S what to play, then S is working for B.⁴
- c) A contract that fixes the price and lets S choose the composer. Then B engages S to provide an evening of music, with the details of the programme left up to S, then S is an independent contractor.
- d) A contract that fixes the price and composer. This rigid contract does not allow *ex post* adaptation either to B’s and S’s evolving preferences and constraints, while of course it will not yield any aggriement. However, both parties have a risk to deal at, respectively, “low value” and “high cost”.

When θ is small, if B cares more about the composer, that is, $\Delta > \delta$, then contract b/employment is better (if $\delta \approx 0$, a b/employment contract achieves approximately the first-best); whereas if S cares more about the composer, that is, $\Delta < \delta$, then c/independent contracting is better (if $\Delta \approx 0$, c/independent contracting achieves approximately the first-best). In both cases, it is optimal for the parties to fix the price in advance.

A virtue of this model is that it can explain why, given $\theta > 0$, the b/employment contract is uniquely optimal when $\Delta > \delta$ and θ is small; why c/independent contracting is uniquely optimal when $\Delta < \delta$ and θ is small; and why in all the cases considered in this section it makes sense (in the absence of systematic cost differences across composers or tasks) for the parties to fix the price *ex ante*, that is, to take price off the table.

External reference point

So far we have assumed that a prior contract is the only reference point for the transaction at date 1. In this section we relax this assumption. This allows better understanding the role of “external reference points” – that is, of conditions in which similar transactions are governed – and of the contract itself in this context

– that is, comparing the situation in which no contract is signed and a situation in which a revisable/renegotiable contract is signed.

It is not difficult to think of situations where parties look outside a contract to determine whether they are being treated fairly. A familiar case is where someone is hired as an employee at a particular wage, and sometime later someone else with comparable or even inferior skills is hired by the same employer at a higher wage, perhaps because market conditions have changed. The first person will almost certainly feel unhappy about this even though his or her wage was determined fairly and competitively at the time.

One way to capture the idea of “external” reference points is as follows. Return to the model from the first section, where the parties trade a standard good, but there is uncertainty about v and c . Suppose that in each state of the world there is a range of “reasonable” prices for the good, determined exogenously, and given by $[p_{\min}, p_{\max}]$. The interpretation is that this range is based on comparable transactions: trades in other markets at date 1, prices of previous transactions, prices embodied in new contracts written between dates 0 and 1, etc. Any price between p_{\min} and p_{\max} can be justified to outsiders as being reasonable, whereas other prices cannot. The $[p_{\min}, p_{\max}]$ range plays two roles. First, the range may affect entitlements in the presence of a contract. Second, the range may affect bargaining in the absence of a contract.

Consider the first role. Suppose that the parties’ date 0 contract specifies the range of trading prices $[\underline{p}, \bar{p}]$. We saw in the first section that, on the basis of this, S feels entitled to receive $\text{Min}(v, \bar{p})$ and B to pay $\text{Max}(c, \underline{p})$. We assume that the external reference points $[p_{\min}, p_{\max}]$ modify these entitlements only if: *i*) $p_{\min} > \text{Min}(v, \bar{p})$ or *ii*) $\text{Max}(c, \underline{p}) > p_{\max}$. In the first case the price S feels entitled to receive is raised to $p_{\min} (\leq v)$, whereas in the second case the price B feels entitled to pay is lowered to $p_{\max} (\geq c)$. In other words, S feels entitled to receive more than $\text{Min}(v, \bar{p})$ if (and only if) all external prices lie above $\text{Min}(v, \bar{p})$, that is, everybody else in the market is receiving more, and B feels entitled to pay less than $\text{Max}(c, \underline{p})$ if (and only if) all external prices lie below $\text{Max}(c, \underline{p})$, that is, everybody else in the market is paying less. Note that this formulation gives precedence to an existing contract in the sense that external reference points come into play only when contract prices are far apart from what’s going on elsewhere.

Consider now the situation where the parties write no date 0 contract. In the absence of “external reference points”, “no contract” is equivalent to setting $\underline{p} = -\infty, \bar{p} = \infty$, that is, to a very flexible contract. However, we now take the view that when the parties bargain at date 1 in the absence of a date 0 contract, they never consider a price below p_{\min} or a price above p_{\max} because such prices look unreasonable to outsiders (they might not even be enforced by a court). In other words, it is as if the parties had written an initial contract with $\underline{p} = p_{\min}$ and $\bar{p} = p_{\max}$: the parties bargain in the intersection of the $[c, v]$ and $[p_{\min}, p_{\max}]$ ranges, and S feels entitled to receive $\text{Min}(v, p_{\max})$ and B to pay $\text{Max}(c, p_{\min})$.

Thus, when there are external reference points, “no contract” is not the same as a flexible contract, because, as shown above, the initial contract governs (and secures) trade even if market conditions will change in the future. This is only in case of extreme change that of p_{\min} or p_{\max} , that one of the parties could feel aggrieved and would request adaption of the trading under the threat of shading. Following this, it is good to write an *ex ante* contract if p_{\min} is small and p_{\max} is large, or when the range $[p_{\min}, p_{\max}]$ does not vary with the state of the world; that is if the contract will limit the range of future adaptation without generating too much shading. “No contract” is optimal when the range $[p_{\min}, p_{\max}]$ is small since an *ex post* negotiation will allow trade.

One of the possible applications of the model is to explain contract length given the horizon of the relationship. Take the example of a wedding that will occur in six months. In this case the range of reasonable catering prices $[p_{\min}, p_{\max}]$ is plausibly quite large (there are many different types of weddings and caterers) and is unlikely to change much over the next six months. According to the theory, this is a situation where it is better to write an *ex ante* contract rather than “no contract.” On the other hand, imagine that the wedding will occur five years from now. There may be a great deal of uncertainty about future catering costs and future market prices for catering services (and the two may be highly correlated) and, to the extent that the latter acts as a reference point for entitlements, fixing a price, or a range of prices, now may create aggrievement with high probability. It may be better to take a wait-and-see attitude and postpone contracting.

Renegotiation

In the standard contracting literature, a renegotiation is always possible between the parties involved in the contract if it is mutually beneficial and if the benefit of an adaption to the new situation is fairly shared between the parties. That is, after the contract refinement process occurs, the parties would always renegotiate to a first best outcome (if it is not reached), and the parties would rationally anticipate this. In the context of aggrievement and shading, the point is that any flexibility in the trading price must be built into the initial contract. That is, one can set $p = 9$ or $p = 10$ or $p \in [9, 10]$, but one cannot set $p = 9$ and then change it to $p = 10$.

Such a view is consistent with legal practice and social custom. The courts regard contract renegotiations with some suspicion and may overturn them if they believe that opportunism or duress has played a role. To this end, the courts require that renegotiation must be in “good faith,” but, because this is difficult to monitor, they will often substitute the requirement that the renegotiation can be justified objectively; for example, the price increases because the seller is supplying an additional service and her costs have risen. In such a context no renegotiation will occur at all in the models in the first two sections (because Bach is not objectively more costly than Shostakovich, and vice versa).

Analytical developments

The canonical model proposed by Hart and Moore in 2008 establishes the idea that a contract written early on when an external measure of the parties' contributions to the relationship was provided by external conditions considered as "objective" and fair – here a competitive market – can continue to govern the parties' feelings of entitlement later when they become locked in to each other. The anchoring of entitlements in turn limits disagreement, aggrievement and the deadweight losses from shading external reference points can explain why parties sometimes should not write a contract.

The model also highlights some of the consequences of shading for the design of contracts. For example, letting one party choose among future options on a given contract leads to little inefficiency if the other party is approximately indifferent about the choice.

The model has, however, a number of "black box" features – i.e. about entitlements, self-serving biases and shading behaviours – that led to developments and experiments that will be discussed below.

Take the example of shading. It is clearly an ad hoc assumption. It has, however, been explored further in two ways. First, on a theoretical ground, it might be considered that shading – i.e. retaliating because of feeling of aggrievement – is an unrealistic assumption to describe relationships among professionals that should not act emotionally but rationally and should therefore understand that if *ex post* adaptation is mutually beneficial, then adaptation by the two parties is needed. An alternative to the costs linked to shading is the idea of persuasion costs. Consider a contract that admits two outcomes, a and b, and gives the buyer the right to choose between them. If the buyer prefers a and the seller b, the buyer may have to spend time persuading the seller of the reasonableness of the choice in order to ensure consummate performance by the seller. Second, experiments have enabled exploring how shading is actually performed and is anticipated in a bilateral relationship. For instance, it has been highlighted that *ex post* adaptation beyond the initial contractual terms can be accepted by the parties to which it is costly given its initial contractual entitlement if it is imposed by an outsider – as a court – rather than through bilateral bargaining. The idea is that a contractual term provided by the parties may affect entitlements, whereas one provided by an outsider may not. To illustrate the insight, let's consider wages. If real wages fall because prices rise, this can be blamed on an outsider – for example, the government – whereas if nominal wages are reduced by an employer, this may generate anger.

Let us now consider the main theoretical developments proposed by Hart and several co-authors.

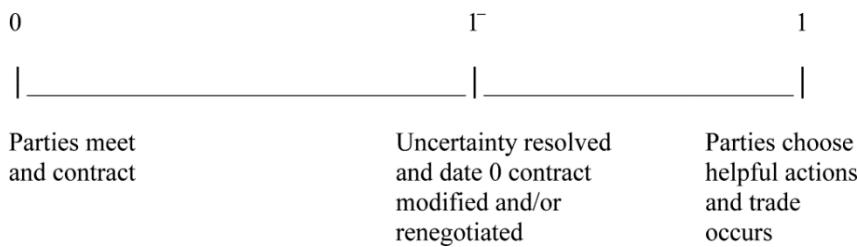
The benefits of indexation

To explore further how contractual agreement should be designed in the context of aggrievement and shading, Hart (2009) studies two parties who desire a

smooth trading relationship under conditions of value and cost uncertainty. A contract fixing price works well in normal times because there is nothing to argue about. However, when value or cost is unusually high or low, one party will have incentive to deviate from the contract and hold-up the other party, causing deadweight losses as parties withhold co-operation. Hart (2009) shows that indexation, by which he means tying price to a verifiable signal related to external (significant for the parties) conditions, can improve matters.

Hart (2009) follows Hart and Moore (2008) in supposing that, for the gains from trade to be fully realised, each party must take a number of “helpful” or “co-operative” actions at date 1, while none of these actions can be specified in a date 0 contract: they are too complicated to anticipate or describe in advance. However, to better capture what is going on during the performance of the contract, Hart introduces an intermediary period between 0 and 1 (date 1-) at which the uncertainty is resolved: some of the actions become describable and so can be contracted on, whereas others remain uncontractible. Thus some modification or renegotiation of the contract is possible at date 1-. The helpful actions are chosen simultaneously by B and S at date 1.

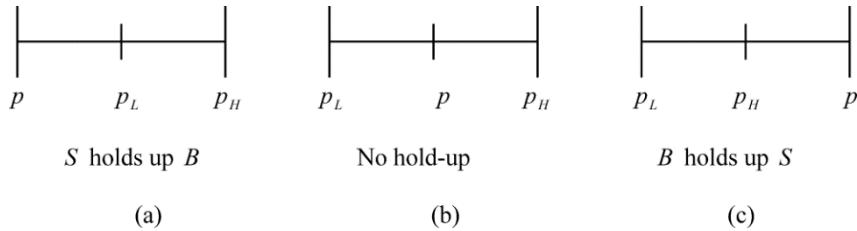
In a sense, the contract that the parties write at date 0 is not binding; it is more like an “agreement to agree”, since it is obvious that it can be renegotiated at date 1- when more is known and describable regarding the project on which B and S are co-operating.



The point is that at date 1- one party can engage in hold-up. He tries to force the other party to renegotiate the contract. He does so by threatening not to undertake any helpful actions unless he receives a side payment. Such behaviour is viewed as a hostile act by the victim – it is a breach of the spirit of the date 0 contract – and leads, in the first instance, to the end of all co-operation. The result is a Nash equilibrium, where neither party co-operates and yields a no-trade outcome: the parties get their outside option. The alternative is a cold but soured relationship: the parties can and will agree to undertake the helpful contractible actions at date 1. At the same time, neither of them will provide non-contractible co-operation (again, this is a Nash equilibrium): there will thus be a deadweight loss attached to this soured relationship.

What are the drivers of such opportunist renegotiation? Assume at date 0 the two parties agreed on a price p . If *ex post* (at date 1-) v (the value of the widget for B) is high, S can expect to do well in the renegotiation process because there is a lot of surplus on the table (even taking into account that a fraction gets lost due to B's grievement), and so S has an incentive to hold B up by asking for a higher

price than p ; similarly, if c (S's cost) is low, B can expect to do well in the renegotiation process, and so B has an incentive to hold S up. These anticipations allow each party to define a ceiling above/under which they will prefer the soured relationship to the co-operative. Define p_L to be the price p such that S is indifferent between receiving p and holding B up, and p_H to be the price such that B is indifferent. If hold-up would not lead to the souring of the relationship, p_H would be equal to p_L . However, because hold-up causes some dissipation of surplus, $p_H > p_L$, the price at which B is just ready to hold-up S is strictly greater than the price at which S is just ready to hold-up B. Note that p_H, p_L are random variables (they depend on the *ex post* situation revealed at date 1-), whereas p is chosen *ex ante* by the parties. The situation is illustrated in the figure below.



The interval $[p_L, p_H]$ can be interpreted as the “self-enforcing” contractual range and the parties should better choose to contract within this interval. However, uncertainty can lead the parties to be in one of the two a and b situations, where hold-up will occur.

One apparent solution to this problem could be to choose to implement a price within a quite large range $[p_{\min}, p_{\max}]$, so that the parties would reduce hold-up. However, as in the previous model (Hart and Moore, 2008), a large price range has a cost in terms of risk of shading, since each party may feel entitled to a different price in the range. Thus, a very large price range is suboptimal, because it leads to shading in all states of the world. The parties should prefer to accept the risk of hold-up: they will choose a limited price range, a fixed price contract being an extreme example of this.

Indexation of that fixed price to an external variable should, however, be a way to allow adaptation of the contract to extreme events. Indeed, situations a and c in the figure above arise only in case of extreme variation of the value and costs that were not expected to occur with great probability at date 0 (otherwise parties would have anticipated it and chose p so that it would have been *ex post* between p_L and p_H). This echoes Joskow's (1985, 1987) and Goldberg and Erickson's (1987) findings that price indexation is a common feature of contracts between suppliers and purchasers of petroleum coke and coal. Indeed, a “mechanical” adaptation of the price to extreme events is preferable to a renegotiation that could be otherwise interpreted as an opportunistic one, and to a rigid contract that would lead the parties to breach because there are more profitable outside options. Both Joskow and Goldberg and Erickson point out that price indexation is used to reduce opportunistic behaviours.

In addition, this model gives an additional reason why parties should write shorter term contracts in a more volatile environment; which is also in line with empirical observations as in Goldberg and Erickson (1987).

It should be emphasised that “simple” indexation is not the only way to avoid hold-up. Hart (2009) supposes that the seller’s cost is unverifiable, but in practice some measure of cost may be available. One possibility is to link price to this measure, as in a “cost-plus” contract. Such an arrangement has, however, well-known incentive problems, since it does not encourage the seller to make an effort to reduce costs and to reveal the truth. There is therefore a trade-off with such an endogenous indexation. Another possibility is to include a provision allowing the contract to be renegotiated if some exogenous index hits a minimum or maximum value. Indeed, in that case, renegotiation should not be considered as deliberate and hostile. Again the issue is that both parties understand from the beginning that renegotiation is not hostile.

Asset ownership and outside options

The same model developed in Hart (2009) shows that allocating asset ownership can reduce the incentives to engage in hold-up. In contrast to much of the literature, the driving force in this model is payoff uncertainty, rather than non-contractible investments. Indeed, by manipulating the regime of ownership of the assets engaged in the transaction, one can enhance a party’s outside option, which decreases the other party’s ability to hold-up. For instance, allocating an asset to the buyer is good to the extent that this increases the correlation between the buyer’s outside option and his value from trade. When value is unusually high, the buyer’s outside option will also be high, which reduces the seller’s ability to hold-up the buyer. However, there is a trade-off since this decreases the seller’s outside options and makes him more likely to be held-up by the buyer in case his costs are extremely low.

This approach renews the traditional explanation for vertical integration. According to transaction cost economics (see, for example, Williamson [1971]; Klein, Crawford and Alchian [1978]), contracts between independent parties are problematic because, given contractual incompleteness, deadweight losses will occur as parties haggle over the *ex post* division of the quasi-rents. A key factor in determining vertical integration decisions is the size of these quasi-rents. According to property rights theory (see, for example, Grossman and Hart [1986]; Hart and Moore [1990]), parties will bargain around the deadweight losses from haggling, but *ex ante* investments will be distorted. A key factor determining vertical integration is then the marginal product of quasi-rents with respect to (non-contractible) *ex ante* investments. The approach proposed in Hart (2009) emphasises a third factor: the variability of quasi-rents with respect to the state of the world; that is, payoff uncertainty.

In the paper, Hart explores the idea that asset ownership impacts on the parties’ trading relationship because it determines which assets each party can walk away with if trade does not occur. This, in turn, affects parties’ outside

options and their incentives to engage in hold-up. The interest of the model is, first, that it does not rely upon specific investment in the relationship, as this strong assumption that has been made both by Transaction costs economics and the Incomplete contracts theory tends to underestimate the possibility of redeployment of most investments in another relationships. Rather, it insists on the fact that investments can enhance the productivity/competitive advantage of one party, and reinforce *ex post* its bargaining position *vis-à-vis* any third party. Think, for instance, of a skill acquired by a worker, or of the expertise learnt from an employee by an employer and turned into an organisational routine or an algorithm.

Second, the model allows highlighting the fact that the distribution of ownership is not a decision on a [1,0] axis in terms of distribution of authority. It is about managing the outside options of both parties to control for the *ex post* incentives to hold-up the other. It is therefore a more refined tool than the right to allocate or capture the collective surplus.

Intuitively, a reduction in sensitivity of p_L , p_H is good because if the interval $[p_L, p_H]$ does not vary much, it is easier to find a price p that lies in $[p_L, p_H]$ for many states of the world. That is, hold-up is less likely. This suggests that it is optimal for B to own all the assets if only v varies, because this minimises the sensitivity of p_L and p_H with respect to the state of the world, whereas it is optimal for S to own all the assets if only c varies. If both v and c vary, it might be useful to distribute asset ownership among parties.

To go further in the analysis of assets distribution between the two parties, Hart proposes a qualification of assets in terms of idiosyncrasy. An asset is idiosyncratic to B if it is specific to B's business and not to S's, and vice versa for an asset idiosyncratic to S. Note that one reason an asset may be idiosyncratic to a party is that that party has human capital that is complementary to the asset; for example, he is the only one who knows how to operate it. Then, it shows that it is optimal for B to own asset a if a is idiosyncratic to B, and for S to own asset a if a is idiosyncratic to S. Under these conditions, taking away the asset from the other party is unlikely to affect the sensitivity of that party's outside option to the state of the world. Allocating an asset to the party to whom it is idiosyncratic would seem desirable, because it reduces the variability of the $[p_L, p_H]$ range. Then, if there are several assets with various levels of idiosyncrasy, the distribution of property rights over each of these assets according to their idiosyncratic characteristics allows to optimise the contractual relationship.

Of course, these results are very reminiscent of those obtained in the property rights literature (see particularly Hart and Moore [1990]). However, the driving force is different: uncertainty rather than *ex ante* investments. Hart (2009) emphasises the idea that ownership of an asset is good for one party because it reduces the variability of the party's payoff relative to its outside option. However, it is possible that asset ownership increases the variability of outside options relative to inside values. Under these conditions, it may be better to take assets away from the party, in particular by promoting joint ownership.

It is worth noting that, in this model, assets are equivalent to outside options. In practice, there are other ways a party can guard against hold-up than through owning assets. For example, a buyer can choose a flexible technology, so that it is easier to switch suppliers or form a relationship with more than one seller at date 0, so that it can play them off against each other. This analysis throws light on the desirability of these kinds of strategies as well.

Non-contractible investments

Empirical support for the idea that non-contractible investments are influenced by asset ownership can be found in a number of papers, including Woodruff (2002), Baker and Hubbard (2003, 2004), Acemoglu et al. (2010), and Gebhardt (2013); see also the discussion of franchising in Lafontaine and Slade (2007). The property rights theory is based on the idea that parties write incomplete contracts *ex ante* and that the allocation of asset ownership influences how contracts are completed *ex post*. One weakness of the property rights theory, however, is that in the standard model only a particular class of contracts is considered. Specifically, revelation mechanisms of the Moore-Repullo-Maskin-Tirole type (in combination with third parties and/or lotteries) can do better and indeed often achieve the first-best in theory. Such mechanisms are not observed in reality, but they pose a challenge to the theory. This is the reason why Hart explores how non-contractible investments might be influenced by assets ownership in the context of aggrievement and shading. To limit them, an open-ended contract could be preferable; hence the potential role of ownership in reducing contractual flexibility.

In the model developed by Hart in 2013, a seller can make an investment that affects a buyer's value; that is, a cross-investment. The reason for the cross-investment assumption is simple. If the investment is a self-investment (the seller's investment affects her cost but not the buyer's value) the first-best can easily be achieved with a specific performance contract since this guarantees efficient trade and ensures that the seller internalises fully the benefit from her investment. The parties have outside options that depend on asset ownership.

When shading is not possible and there is no contract renegotiation, an optimum can be achieved by giving the seller the right to make a take-it-or-leave-it offer. However, with shading, such a contract creates deadweight losses. Hart (2013) shows that an optimal contract will limit the seller's offers, and possibly create *ex post* inefficiency. Asset ownership can improve matters even if revelation mechanisms are allowed.

In Hart (2009), there is no investment and assets are allocated to avoid *ex post* hold-up, which causes aggrievement and shading. It is shown that a party whose payoff is relatively uncertain should own more assets and that a party should own an asset if it is idiosyncratic to him. In Hart (2013), seller incentives replace uncertainty as a driving force and (tend to) push in the direction of seller ownership. In addition, the seller should own assets idiosyncratic to her, but that it may not be optimal for the buyer to own assets idiosyncratic to him to the extent that this interferes with the seller's investment incentives. Indeed, the benefit of

ownership of assets to the seller increases its incentives to invest, while protection of the buyer tends to discourage investment by the seller.

The model is as follows. There are two states of the world: high and low. The value of the good is v_H in the high state and v_L in the low state, where $v_H > v_L > 0$. The seller can affect the probability of the high state through her investment. If the seller does not invest, the state is low with probability 1. The seller incurs a non-verifiable cost $c > 0$ if she invests. When the state of the world, i.e. v and c , is known to the parties, trade occurs. Note that v is non-verifiable. Hence price cannot be made contingent on v .

When the level of investment (c) is not too high compared to the difference of value between v_H and v_L and when the probability investment by S yielding the high state is high (that is, when the investment made by the seller has a strong influence on value creation), then the first-best cannot be achieved with a specific performance contract. In such a contract trade is mandated at date 1 at a fixed price and a party who refuses to trade has to pay large damages. It is easy to understand that if a specific performance contract is signed, then the seller has no incentive to invest since she receives the same price whether v is high or low.

To achieve the first-best in the absence of shading, the parties can agree in advance that the seller will make a take-it-or-leave-it offer to the buyer at date 1. The seller will propose price $p = v_H$ in the good (high value) state, price $p = v_L$ in the bad (low value) state, the buyer will accept and the seller will capture the entire surplus. This gives the seller the socially correct investment incentives. Lump-sum transfers can in addition be used to divide up the surplus *ex ante*, which allow the seller to be fair to the buyer; but this is not requested for having the contract achieving the first-best.

If there is shading ($\theta > 0$), however, a contract that allows the seller to pick $p_H = v_H$ or $p_L = v_L$ does not achieve the first-best. In the good state the seller will propose v_H , and the buyer will accept this, but he will feel entitled to the lower price v_L (the best outcome for him consistent with the contract), and will shade by $\theta \square (v_H \square - \square v_L)$. The buyer will not shade in the bad state since he receives the lowest possible contractual price, and the seller will not shade in the good state since she receives the highest possible contractual price. Finally, the seller will not shade in the bad state since she does not feel entitled to an outcome in which the buyer makes a loss (i.e. quits).

Thus, in many situations there is either shading or inefficient trade. One way to mitigate these effects is to take into consideration how asset ownership affects outside options. Appropriation by the seller or the buyer of the non-contractible investment by one of the parties due to the ownership regime affects outside options of the parties in case no trade occurs. The general point demonstrated by the model is that increasing the outside option of the seller is always good for the surplus, whereas buyer option discourages seller investment even if it is good to allow a better adaptation of trade. It should be noted that, in this model, joint ownership is never efficient, since seller ownership always lead to better results. That said, the optimal distribution of asset in specific circumstances is an

empirical question given the sensitivity of the joint result to the seller investment, the level of the potential surplus, the level of investment, the cost of shading and the value of the outside options.

Courts and their capabilities

An important assumption that Hart (2009) makes is that the initial contract is sufficiently incomplete so that one party can threaten to void it by refusing to co-operate. Moreover, it is impossible for outsiders, for example a court, to determine who the offending party is and to penalise that party accordingly. Of course, if a court could do that then the parties could always set the damage payment for “non-cooperation” or “breach” high enough so that hold-up would never occur.

The model in fact is inspired by situations where outsiders have some information and the non-cooperative outcome (which might also be something other than no trade) can vary, but insufficiently, with who holds-up whom. It may be that for trade to be efficient, the parties must modify the traded good in ways that increase the seller’s costs. If everything is going well, the parties will adjust the price in some reasonable manner (e.g. the buyer pays the incremental cost). However, if the seller is dissatisfied with the division of surplus, she can use the occasion to reopen price negotiation. It may be very hard for outsiders to control such behaviour. It is likely to be more relevant when the initial contract is highly incomplete and a party can wriggle out of it in subtle and covert ways.

Contractual incompleteness and relational context

Why and to what extent should a contract be incomplete? Transaction costs and bounded rationality cannot provide the entire explanation since states of the world are often describable, foreseeable and yet are not mentioned in a contract. Asymmetric information theories also have limitations in exploring the issue. Halonen-Akatwijuka and Hart (2013) offer an explanation based on “contracts as reference points”. Including a contingency of the form, “The buyer will require a good in event E”, has a benefit and a cost. The benefit is that if E occurs there is less to argue about; the cost is that the additional reference point provided by the outcome in E can hinder (re)negotiation in states outside E. They show that if parties agree about a reasonable division of surplus, an incomplete contract can be strictly superior to a contingent contract.⁵

The point is that when a contingency is written in a contract, they may disagree about the reference point for the evaluation of surplus. Suppose that a contingency not covered by the contract occurs. One party may choose what would have occurred in one verifiable contingency to be the reference point for renegotiation whereas the other party may choose what would have occurred in another verifiable contingency. Thus, having contractual outcomes in several contingencies can complicate the renegotiation process in contingencies not covered by the contract.

This approach of contingencies as hindering the capabilities or renegotiation seems consistent with lawyers’ views about contract interpretation. Schwartz and

Scott (2010), for instance, argue that judicial interpretation should be made on a limited evidentiary basis, the most important element of which is the contract itself. Although Schwartz and Scott do not consider the issue of contingent clauses, it seems inevitable that a court that focuses on a contract will find a clause governing one contingency relevant for adjudicating another contingency. If the parties do not want this to happen it may be better to leave the contingency out. This is similar to the idea that contracting parties may want to leave a contingency out to reduce disputes among themselves.

Halonen-Akatwijuka and Hart (2013) suppose that parties have views about a reasonable division of surplus rather than a reasonable price. They show that it will be desirable to exclude a verifiable contingency from a contract only if there is some ambiguity about the contingency.

In the first model a buyer wants a particular good or service most of the time but with some probability may require an “add-on” or “extra”. Some states of the world in which the add-on is required are verifiable, but others are not. The question they ask is whether it is better to specify that the add-on should be supplied in the verifiable states or whether it is better to specify the basic good and rely on renegotiation in the event that a change is needed. It is argued that adding a contingency of the form, “The buyer will require an extra good or service in event E”, has a benefit and a cost. The benefit is that there is less to argue about in event E; the cost is that the reference point provided by the extra service in event E may increase argument costs in states outside E.

In the second model they consider an at-will employment relationship where a verifiable signal is available that provides information about the worker’s productivity and opportunity cost, and ask whether the wage should be indexed on this signal. Indexing a price or wage to an exogenous variable has the benefit that if this variable tracks the buyer’s value and seller’s cost closely then breakdown in trade can be avoided; but the cost that if the index does not track value and cost closely the reference point provided by the indexation may make renegotiation harder when trade does break down.

The principal result of both models is that the relative benefit and cost of adding a contingency or indexing will be sensitive to how closely the parties agree about what is a reasonable division of surplus when an incomplete contract is renegotiated. The impact of the context of the relationship is highlighted.

If the parties have interacted before they may have grown to know (and like) each other, with the implication that each will become more generous about sharing surplus (see the social influence theory of Kelman [1958]). At least, they trust in the co-operative spirit of the other. Therefore, it is expected that contracts become less complete in long-term relationships, but are more complete when such relationships are formed – in contrast to the asymmetric information theory.

Beyond past experience, what determines empirically whether parties’ views about the division of surplus are likely to be similar or different. Halonen-Akatwijuka and Hart (2013) do not have a model to answer to this question. They

suggest, however, that it has something to do with norms, trust, social capital and empathy. A “dog-eat-dog” world may be one where each party feels entitled to the best outcome possible. A more civilised world may be one where sharing the surplus from renegotiation comes more naturally. Thus, the theory would predict that one should expect to see less complete contracts in situations where people are more empathetic toward each other and more complete contracts when people are less empathetic.

Some guidance about the importance of shared views for building trust can be obtained from the relationship marketing literature (Morgan and Hunt, 1994). Trust has two dimensions: credibility and benevolence. The first is related to ideas formalised in the repeated games literature in economics (see Malcolmson [2013] for a recent survey). The second is concerned with shared values as trust develops through interpreting and assessing whether the other party is interested in his partner’s best interests. Parties with shared values have a similar definition of what behaviours and policies are appropriate and can therefore better understand what drives the partner’s behaviour (see Heider’s attribution theory [1958]). This question has been investigated further in the experiments based on Hart’s propositions (and will be discussed later).

Long-term vs. renewable short-term contracts

In a recent paper Halonen-Akatwijuka and Hart (2015) study the trade-off between long-term, short-term and continuing contracts in a setting where gains from trade are known to be present in the short term, and may or may not be present in the long term. What distinguishes a continuing contract from a short-term (or fixed-term) contract is that parties apply notions of fairness, fair dealing and good faith as they revise the terms of the contract by relying on the previous contract as a reference point.⁶ According to Hart and Moore (2008), one role of a contract is to get parties “on the same page”, so as to avoid future misunderstandings. Misunderstanding leads to aggrievement and shading (in the form of departures from consummate performance), and consequent deadweight losses. A continuing contract may be a good compromise.

To emphasise, a continuing contract is one where there is no obligation to trade in the second period but if there are gains from trade the parties will use the first period contract as a reference point. Using the first period contract as a reference point can reduce negotiation costs since there is less to argue about. Of course, other factors can be important, such as market conditions, but the prior terms that the parties agreed to will have particular salience. A continuing contract can reduce (re)negotiation costs relative to a short-term or long-term contract when there is uncertainty about future gains from trade. Moreover, a long-term contract may be suboptimal given the trade-off between flexibility and rigidity discussed in the contract as reference point literature. That said, fair dealing may limit the use of outside options in bargaining and as a result parties will sometimes fail to trade when this is efficient.

Halonen-Akatwijuka and Hart show that a continuing contract (as compared to a long-term or a short-term contract) will perform particularly well if either “business will remain roughly as usual” over time or a big change will occur that will make it efficient for the relationship to break up. In these circumstances (re)negotiating a short-term contract from scratch when trade is efficient is costly while under a continuing contract good faith bargaining ensures that there is little to argue about. Renegotiating a long-term contract when trade is inefficient is also costly while under a continuing contract the parties are free to walk away. A situation where either business is as usual or a big change occurs may describe quite well many employment or rental relationships and help to explain why continuing contracts are often seen in these settings.

The fact that a continuing contract will lead trade to fail while it would be efficient to trade in certain circumstances leads one to consider the introduction of for-cause features in the contract, to mitigate this inefficiency. For-cause contracts are characterised by the fact that the party willing to terminate the relationship has to clearly explain the reason why they intend to break up; that is, termination can occur only for a good reason. A for-cause contract can help to reduce the inefficiency that arises if outside options cannot be used in bargaining since it makes it harder for a party to quit, and henceforth lead parties to explore all options to renegotiate their contract. The other side of the coin is that a for-cause contract can make it harder for a party to quit when this is efficient.

For-cause clauses are an important element if the value of flexibility is low. In the context of the labour market, for instance, the increasing search for flexibility could explain why in many OECD countries more flexible employment arrangements – i.e. independent contracting vs. employment and temporary vs. regular employment – have been observed for the past decades. Indeed, even at-will employment contracts may implicitly have some for-cause features in the sense that there is an expectation of a continuing relationship. Thus a firm that wants a true at-will contract may resort to hiring an independent contractor or temporary employee.

In another extension, Halonen-Akatwijuka and Hart (2013) consider the distinction between continuing contracts and another type of contract that is observed in practice: a renewable contract. A renewable contract is one that continues if both parties agree. However, the terms under which the contract will be renewed are typically specified in advance: they may be the same as the terms of the initial contract, or they may be the terms that one of the parties is offering to new contractors (i.e. a “most favoured nation” clause). In contrast, under a continuing contract, the terms of the new contract are left open and can be adjusted according to new events (a worker’s wage may stay the same most of the time but every so often he or she will get a raise; rents will typically change at the end of a lease, etc.). They show that, especially when it is difficult to foresee the future, a continuing contract is superior to a renewable contract. This result can be interpreted as telling us that it is sometimes better to say nothing than to say something. The advantage and cost of a continuing contract is that it triggers renegotiation in case conditions of exchange and outside options change. The

advantage of a renewable contract is that it economises on bargaining and shading if changes are predictable. Uncertainty is thus central.

Experimental insights

Although some of the assumptions underlying the Hart and Moore (2008) model are broadly consistent with well-established behavioural concepts such as reference-dependent preferences (e.g. Kahnemann and Tversky [1979]; Köszegei and Rabin [2006]), self-serving biases (e.g. Babcock and Loewenstein [1997]), and social preferences (e.g. Rabin [1993]; Fehr and Schmidt [1999]), there was no empirical evidence that directly supported the idea that contracts are reference points for a trading relationship before Oliver Hart initiated a co-operation with Ernst Fehr and Christian Zehnder, two renowned experimental and behavioural economists. They notably published two papers in 2011 and 2015 in which they relate the results of experiments aimed at studying how individuals involved in a contractual relationship behave.

Fehr, Hart and Zehnder (2011) confirm Hart and Moore's (2008) prediction that there is a trade-off between contractual rigidity and flexibility. Flexible contracts are useful because they guarantee trade in alternative states of the world, but flexibility also causes a lot of shading since buyers and sellers seem to have misaligned reference points concerning the final price. Contractual rigidity helps to reduce *ex post* shading substantially, because a competitively determined fixed price seems to align *ex ante* expectations. But rigid contracts prevent trade from occurring when the cost is high. These results are reassuring for the theory because most organisational implications of the model follow from the existence of this trade-off.

Building on this first experiment that supported the approach of contracts as reference points, Fehr, Hart and Zehnder (2015) try to take into account realistic aspects of trading relationships, such as informal agreements and *ex post* renegotiation or revision, that were not initially considered. They show that the central behavioural mechanism underlying contractual reference points is robust to such considerations. The data reveal that informal agreements can mitigate the trade-off between rigidity and flexibility but they do not fully resolve the problem of misaligned reference points. Their experiments also show that contract revision is a more nuanced process than the previous literature has recognised. They find, for example, that it is sometimes better for parties to write a simple (rigid) contract and then revise it *ex post* if needed, rather than to anticipate and include future contingencies in a (flexible) contract from the outset.

Interestingly, in both experiments, they have implemented a cost for shading. In the standard model developed by Hart and Moore (2008), agents are indifferent between providing perfunctory performance and consummate (non-verifiable) performance; which makes “retaliation” in case of aggrievement costless. In their experiments, Fehr, Hart and Zehnder make perfunctory performance more costly than consummate performance, in order to strengthen the results on how parties react to aggrievement. This leads to a better understanding of the motivation of

agents when shading and to interpreting them in terms of preference for fairness; a notion that can be better understood thanks to the experimental results.

The baseline experiment

In the experiment proposed by Fehr, Hart and Zehnder (2011), buyers and sellers contract and then trade. Each transaction involves two dates. At date 0 the trading parties interact in a competitive market and sign a contract. Supply exceeds demand, so that sellers compete for contracts. After signing a contract, a buyer and a seller form a bilateral relationship. They trade at date 1 if the date 0 contract allows for a mutually profitable exchange. At date 0 there is uncertainty about the state of nature, i.e. the trading parties do not yet know the seller's cost, which can be low (the good state of nature) or high (the bad state of nature). The uncertainty is resolved at date 1. However, while the seller's cost is observable, it is not verifiable.

Date 0 contacts are determined as follows. Each buyer decides whether to offer a rigid or a flexible contract. A rigid contract determines a single (fixed) price, while a flexible contract allows for a range of prices. Flexibility can be helpful, because it allows the price to adjust to the seller's cost at date 1. After a buyer has chosen a contract type, a competitive auction determines which seller gets the contract, and the contract terms. In the case of a rigid contract, the auction determines the single (fixed) price; in the case of a flexible contract, the auction determines the lower bound of the price range (the upper bound is exogenous).

At date 1 the parties observe the seller's cost. Trade is possible only if the date 0 contract includes a price that covers cost. Competition ensures that the price in the rigid contract is sufficiently low that trade is possible only in the good state, while trade is possible in both states in the flexible contract. If trade is possible the buyer chooses a price from those allowed by the contract and the seller chooses quality, that is, whether to shade. Shading has a small cost for the seller but greatly reduces the buyer's value. If trade is impossible, the parties realise their outside options.

Under the assumptions of the standard economic model (rationality, selfishness and subgame perfection), the prediction for this experiment is straightforward. Since shading is costly, sellers should never shade, irrespective of the contract type and the price. Buyers should anticipate the sellers' behaviour and therefore always choose the lowest price above seller cost permitted by their contract. The competitive auction used to assign contracts to sellers should ensure that the seller's profit is zero and that the entire surplus from the transaction goes to the buyer. Since only the flexible contract allows for trade in the bad state, the flexible contract yields more surplus than the rigid contract, and buyers should always choose the flexible contract.

However, if the behavioural assumptions of Hart and Moore (2008) apply, the predictions are different. The assumption that contracts are reference points does not affect the prediction concerning the competitive auction outcomes. But if competitively determined contract terms define reference points, the contract type

may affect the sellers' quality choice. Since rigid contracts pin down outcomes, sellers get what they expect and should not be aggrieved. Accordingly, shading should not occur in rigid contracts. In flexible contracts, in contrast, sellers may be aggrieved if they get a lower price than they had hoped for. This may trigger shading. In response, buyers may either offer a higher price or accept the possibility of getting low quality. Either way, the reference-dependent behaviour of sellers has a negative impact on the buyers' profit in flexible contracts. Thus, if the willingness to engage in shading is strong enough, buyers may find that rigid contracts are more profitable.

The following table summarises these elements:

Standard hypothesis	Reference point hypothesis
Market forces imply that the fixed price in rigid contracts and the lower bound of the price range in flexible contracts end up at the competitive level, i.e. $p^r = p^l = 35$.	Market forces imply that the fixed price in rigid contracts and the lower bound of the price range in flexible contracts end up at the competitive level, i.e. $p^r = p^l = 35$.
Sellers never choose low quality irrespective of the contract type and price level. Buyers always choose the lowest price available in flexible contracts.	In rigid contracts sellers never choose low quality irrespective of the price level. In flexible contracts sellers' quality provision is price-dependent. Heterogeneity in seller entitlements implies that the frequency of shading is decreasing in the price. Given the price dependence of quality, buyers may not choose the lowest price available in flexible contracts.
Buyers' profits are higher in flexible contracts than in rigid contracts. Therefore, buyers prefer flexible contracts.	Buyers' profits in flexible contracts are lower than predicted by the standard model. If the impact of the reference-dependent preferences is strong, buyers may even make higher profits in rigid contracts than in flexible contracts.
Lowering the upper bound in flexible contracts does not change outcomes.	Lowering the upper bound of the price range leads to less shading in flexible contracts, in particular in the bad state of nature.
Eliminating <i>ex ante</i> competition does not change outcomes.	Eliminating <i>ex ante</i> competition increases shading in rigid contracts.

The results of the experiment proposed by Fehr, Hart and Zehnder (2011) are largely in line with those of Hart and Moore (2008). The auction process indeed induces strong competition for contracts. Both the fixed price in rigid contracts and the lower bound of the price range in flexible contracts converge to the competitive level over time (the level at which the sellers break even in the good state). However, despite the fact that, in principle, buyers have the possibility to pay the same prices in both types of contracts when the good state is realised, Fehr, Hart and Zehnder observe that buyers pay significantly higher prices in flexible contracts. Moreover, depending on the price paid, there is considerable seller shading in flexible contracts in the good state. In contrast, there is almost no shading in rigid contracts. Under the parameter values of the experiment, the rigid contract is more profitable than the flexible contract even though it precludes trade in the bad state. Furthermore, a substantial fraction of buyers chooses the rigid contract.

Lastly, Fehr, Hart and Zehnder (2011) find that, in the absence of *ex ante* competition, contracts no longer serve as reference points; in particular, there is significant shading in rigid contracts. In other words, the fundamental transformation does seem to be important for the Hart and Moore (2008) theory.

Fairness, inequity aversion and reciprocity

Thus, the experiment proposed by Fehr, Hart and Zehnder (2011) shows that, as hypothesised in the Hart and Moore theory, the fundamental transformation from *ex ante* competition to *ex post* bilateral monopoly is associated with significant behavioural effects that influence the relative attractiveness of rigid and flexible contracts. It is worth noting that these results not only provide empirical support for Hart and Moore's model but also constitute new insights into the behavioural economics of fairness.

Theories of inequity aversion (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) suggest that there should be considerable shading in the rigid contract since the surplus is very unevenly distributed. Likewise intention-based fairness theories (Rabin, 1993; Charness and Rabin, 2002; Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006) also suggest that there should be shading in the rigid contract since the choice of the rigid contract signals rather ungenerous intentions (the rigid contract lowers the seller's payoff in the good state and prevents trade in the bad state, and so it would be generous of the buyer to choose the flexible contract). However, despite the very uneven distribution of the gains from trade, sellers rarely shade in rigid contracts with competitively determined prices. It seems that *ex ante* competition legitimises the terms of the contract, and aggrievement occurs mainly about outcomes within the contract and not about the contract itself. Moreover, experimentally the elimination of *ex ante* competition significantly increases shading in rigid contracts. This reinforces the interpretation that *ex ante* competition is important for the emergence of contractual reference points because it enables the parties to hide their unfairness behind the veil of the market.

Thus, Fehr, Hart and Zehnder (2011) interpret the emergence of shading activities in this experiment as a specific manifestation of the more general observation in the behavioural literature that many people are willing to engage in costly punishment of inappropriate or unfair behaviour. Theories of social preferences assume that people are not solely motivated by their material self-interest, but also take social considerations, especially fairness concerns, into account.

There are, however, two main classes of fairness theories: theories based on inequity aversion and reciprocity models.

1. Models of inequity aversion (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) suppose that people dislike inequitable outcomes and are therefore willing to forgo material payoff in order to prevent these outcomes from occurring. However, inequity aversion also predicts a high frequency of shading in rigid contracts in the presence of competition, since prices are typically close to the competitive level in such contracts. Thus inequity aversion cannot explain the central finding that sellers almost never provide low quality in rigid contracts when contract terms are determined in an *ex ante* competitive market.

2. The reciprocity models take into account the possibility that the same outcome may trigger different fairness perceptions depending on how the outcome came about. Specifically, these models assume that the evaluation of an outcome depends not only on the realised allocation of payoffs but also on people's beliefs about the intentions of their trading partner (Rabin, 1993; Dufwenberg and Kirchsteiger, 2004; Charness and Rabin, 2002; Falk and Fischbacher, 2006). The rigid contract is not attractive for the seller: in the good state trade will take place at a low price, and in the bad state the seller is forced to take his unattractive outside option. Thus, a buyer who wants to signal generosity should avoid rigid contracts and rather choose flexible contracts and pay high prices. Accordingly, reciprocity theories would predict that sellers punish buyers not only for paying low prices in flexible contracts, but also for choosing unfair rigid contracts. The low frequency of shading in rigid contracts suggests that sellers do not blame the buyer for the realisation of unequal payoffs in a rigid contract, but rather view this realisation as the natural and justified outcome of a competitive market. This implies that buyers can circumvent the punishment for unequal outcomes by delegating the determination of the outcome to the forces of a competitive market.

Informal agreement, or the role of non-binding communication among parties

In the informal agreement treatment managed in Fehr, Hart and Zehnder (2015), buyers have the opportunity to communicate informally their pricing plans in flexible contracts (i.e. they can make non-binding, state-contingent price announcements, which may align the trading parties' expectations). The data reveal that having this opportunity indeed reduces the shading rate in flexible contracts. As a consequence, flexible contracts become more attractive and are chosen more frequently than in the baseline condition. However, the decrease in shading is moderate and does not eliminate the trade-off between rigidity and flexibility.

The central question here is whether and to what extent the possibility of making *ex ante* price announcements allows buyers to "manage" sellers' reference points. If price announcements give buyers some control over sellers' reference points, buyers should try to push down reference points by announcing the lowest prices possible. Specifically, we would expect buyers to announce the competitive price for the good state and the lowest feasible price for the bad state. As a consequence, sellers may feel less entitled to high prices and therefore low prices should trigger less shading in flexible contracts as compared to the baseline condition.

In the extreme, informal agreements give buyers full control over the seller's reference points (i.e. the seller never feels entitled to prices beyond those announced by the buyer). In this case, buyers would always choose flexible contracts with low price announcements, because such contracts would not only allow them to implement the first-best (i.e. shading-free trade in both states), but they would also be able to reap (almost) all the available gains from trade. More

realistically, however, informal agreements will give buyers only limited control over sellers' reference prices. The buyer's optimal contract choice will then depend on the base level of shading in flexible contracts and the extent to which informal agreements reduce this shading rate. The larger the impact of low price announcements on sellers' reference points, the more attractive flexible contracts are for buyers.

Thus, it should be observed that: 1) flexible contracts in the experiment allowing informal agreement are combined with low price announcements; 2) sellers in flexible contracts engage less often in shading in response to low prices in the informal agreement than in the baseline treatment (i.e. the initial experiment of 2011 described above); 3) the profitability of flexible contracts relative to rigid contracts is much higher in the informal agreement than in the baseline treatment and buyers are therefore much more likely to choose flexible contracts in the informal agreement.

These predictions are partially supported by the data. However, it is important to emphasise that the decrease in the shading rate in flexible contracts in the informal agreement relative to the baseline treatment is not pronounced enough to eliminate the trade-off between contractual rigidity and flexibility in the informal agreement.

Brandts, Charness and Ellmann (2013) who, independently from Fehr, Hart and Zehnder, also investigate how communication affects the frequency and effectiveness of flexible and rigid contracts find that without communication rigid contracts are superior to flexible contracts even in the absence of *ex ante* competition. This result suggests that contractual reference points may be more broadly applicable than hypothesised before.

In a second treatment, Brandts, Charness and Ellman (2013) allow for the same restricted form of communication as it is used in the informal agreement treatment of Fehr, Hart and Zehnder (non-binding announcements of state-contingent prices). They find that communication renders flexible contracts more profitable for buyers than rigid contracts. The authors argue that free-form communication helps more than structured communication, because it allows the parties to establish a friendly relationship and helps to make promises more credible.

Revision and its impact on expectations

In their second new condition Fehr, Hart and Zehnder (2015) allow for *ex post* revision. Specifically, they suppose that the buyer has the right unilaterally to replace the existing contract with a new one. Since the seller has no veto, this is actually closer to what lawyers call "repudiation". Although revision is always feasible, the parties do not seem to hope for outcomes outside the *ex ante* contract when trade is feasible within the contract. Nevertheless, sellers seem to accept the competitively negotiated fixed price as a reference point and do not feel entitled to an upward revision of the price.

Revision improves rigid contracts if costs are high, because revision allows the buyers to increase the price to cover the seller's cost. While these mutually beneficial revisions could trigger some shading, because of misaligned entitlements caused by the introduced flexibility, the gains from trade are still substantial and comparable to those in a flexible contract. Thus, buyers who choose a rigid contract not only benefit from low prices and low shading rates in the low-cost state, but revision allows them to realise the same profits as with flexible contracts in the high-cost state. Therefore, rigid contracts yield significantly higher profits than flexible ones. However, revision could also be problematic, since the buyers could also engage in non-mutually beneficial revisions: specifically, to replace the contract in order to lower the price and grab a larger share of the surplus. Such opportunistic revisions should lead sellers to engage in substantial shading.

The experiment focuses therefore on the following two aspects. First, it investigates whether contracts remain reference points even when revision is feasible. This is important because *ex ante* contracts may no longer provide reference points once the trading parties know that it is feasible to change contracts *ex post*. Second, it examines how buyer-induced revisions affect sellers' performance and how this depends on the circumstances under which revision has been initiated. This analysis sheds light on the behavioural consequences of revision.

To do so Fehr, Hart and Zehnder distinguish three types of revision. First, the buyer may revise a rigid contract in the bad state of the world. This allows for a price increase and makes trade feasible. As both parties benefit (at least weakly) from such a revision, Fehr, Hart and Zehnder (2015) call this a "mutually beneficial revision". Second, the buyer may revise a contract in the good state of the world in order to decrease the price to a level below the *ex ante* agreed-upon fixed price or lower bound of the price range, respectively. They call this an "opportunistic revision", because the buyer intends to increase his own profit at the expense of the seller. Finally, there is also the possibility that a buyer voluntarily increases the fixed price of a rigid contract in the good state of the world. They call these costly attempts to increase the seller's profit "altruistic revisions".

The experiment yields three important insights: 1) contracts continue to provide reference points even if revision is feasible. Although prices are typically low, rigid contracts are rarely revised when the good state is realised. Sellers seem to accept this behaviour and do not shade more than in the baseline treatment. 2) Mutually beneficial revisions seem to turn rigid contracts into flexible ones. Prices and shading rates in revised rigid contracts and flexible contracts are similar in the bad state of the world. 3) Opportunistic revisions are perceived as hostile and trigger very high shading rates.

These findings seem to suggest that sellers evaluate outcomes in flexible contracts differently depending on whether or not the buyer has the opportunity to

revise the contract. Sellers seem to be more willing to accept low prices in flexible contracts if they know that the buyer has the opportunity to revise the contract.

Perhaps the most important implication of the revision treatment is that these findings provide support for a richer and more realistic view of the revision or renegotiation process. In standard incomplete contracting models, the parties can always do better by committing not to renegotiate. As any renegotiation process can be built into the initial contract, any further renegotiation simply adds incentive constraints (see, for example, Maskin and Moore [1999]). Thus, it is expected to see parties going out of their way to make *ex post* renegotiation difficult. Yet there is little evidence that parties deliberately put sand in the gears of the renegotiation process. Fehr, Hart and Zehnder help to explain this. If the parties build the revision process into the original contract – in their experiment this is equivalent to picking a flexible contract – then this raises the seller’s feelings of entitlement in states where revision is not needed (low-cost states) as well as in states where it is (high-cost states). The parties can do better by not incorporating revision initially and then revising *ex post* as needed.

Regarding the revision condition, there are several related papers. Bartling and Schmidt (2015) conduct a laboratory experiment in which a buyer and a seller can trade a widget but have to agree on the terms of trade before knowing the optimal time of delivery. If it turns out that there is a better delivery time than the one the parties have agreed to, the buyer can ask for a change in the delivery time. In response, the seller can ask for a markup on the original price. To investigate the role of *ex ante* contracts for the revision phase, they compare this main condition (the contract treatment) with a condition in which the same threat points which endogenously emerge in the main treatment are exogenously imposed on the trading parties (the no-contract condition). They find that sellers ask for much lower markups and buyers are more likely to reject given markups in the contract condition than in the no-contract condition. These findings suggest that the initial contract serves as a reference point. Moreover, these results are in line with the finding that revisions are quite unproblematic as long as they are seen as fair (which is typically the case if a seller asks for a low markup in response to a buyer’s request for a change in the delivery time), but lead to counterproductive conflicts if one of the parties feels that the other party has behaved opportunistically (e.g. if the seller asks for a high markup).

Hoppe and Schmitz (2011) report a related result. In their experiment participants can use option contracts to avoid hold-up. Standard contract theory predicts that (some) option contracts are helpful only if renegotiation is not feasible (otherwise there is an incentive for a party not to exercise the option and renegotiate). However, the results of the experiment reveal that option contracts also improve performance if renegotiation is feasible. It seems that buyers often refrain from opportunistic price renegotiation, because they anticipate that many sellers feel entitled to the option price stipulated in the contract and would refuse to trade at a lower price (even if refusal is costly to the seller). These results further support the view that many people perceive opportunistic renegotiations or revisions as hostile and are willing to punish such activities.

Iyer and Schoar (2012) observe similar behavioural patterns in a field experiment in which they confront wholesalers of custom-made pens with hold-up threats. Many of the wholesalers are not willing to accept lower prices even if this implies that they lose a valuable trade.

Notes

1. There are many ways one trading partner can hurt another. A seller can shade by cutting quality or withholding co-operation. For instance, the buyer may want to talk through some last-minute adaptation. The cost to the seller may be low, and she would normally oblige. But if the seller feels aggrieved she may refuse this request at considerable cost to the buyer. Another example would be “working to rule”: the seller abides by the strict terms of the contract and offers no more. Buyers can also shade, for instance by refusing to make minor concessions or to co-operate by accepting adaptations requested by the seller. He can also make life difficult for the seller by quibbling about details of performance, delaying payment or giving a bad reference.
2. Hart and Moore (2008) pose that contract at date 0 establishes a range of prices $[\underline{p}, \bar{p}]$ to trade at 1. They refer to a contract where $\underline{p} = \bar{p}$ as a simple contract, and a contract where $\underline{p} < \bar{p}$ as a non-simple contract.
3. Maskin, who was awarded with the Nobel Prize in Economics in 2007 for having, among other things, established a theorem of revelation which states that there is always a possibility to implement a revelation scheme based on incentives to tell the truth, making observable information verifiable.
4. If Δ/δ is large or θ is small (i.e. the cost of shading is not too high), B should choose the composer because B will make an efficient choice, and, given that S cares relatively little between playing Bach or Shostakovich, aggrievement will be low. If θ is very high, then a rigid contract (d) is preferable
5. This paper is related to a number of contributions on the interactions between formal and informal agreements. Bernheim and Whinston (1998) show that it can be optimal not to contract on some verifiable aspects of performance to improve unverifiable performance. The literature on the interaction of explicit and relational contracts is also related (see, for example, Baker et al. [1994] and Schmidt and Schnitzer [1995]). In this literature, an explicit contract determines the default position after renegeing and can undermine the relational contract governing the relationship if the default position is too attractive. Lastly, Benabou and Tirole (2003, 2006) and Herold (2010) find that a principal may choose to rely completely on intrinsic motivation if explicit incentives would backfire by signaling some adverse information, e.g. about the principal’s view of the agent’s ability, true motivation for good deeds or distrust.
6. In an influential study, Kahneman, Knetsch and Thaler (1986), using telephone surveys, posed hypothetical situations to people to elicit their standards of fairness. They found that people think that it can be fair for a firm to raise prices when its costs

go up or to lower wages if it is losing money, but not fair for it to raise prices if its product becomes scarce or to lower wages if other workers are willing to work for less. This is very supportive of the assumptions that using changes in value or cost within the relationship to justify a price change is consistent with good faith bargaining whereas using outside options is not. At the same time, they suggest that appealing to outside options may be more acceptable if these outside options represent general market trends.

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