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WORKSHOP OVERVIEW

**Superior Project Management & Implementation:**

**Lessons from**

**Transaction Cost Economics and Comparative Contracting**

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Readings: Williamson, 2005, “Why Law, Economics, and Organization?”

Joskow, 2005, Vertical Integration

Joskow, 2004, New Institutional Economics: A Report Card

Faustino and Fabella, 2011, Chapter 10 in Asia Foundation (2011), Built on Dreams. Grounded in Reality. Economic Policy Reform in the Philippines

PREFACE

The story of how I linked up with 2009 Economics Nobel Laureate Professor Williamson is another story for another time. However, it should be said that he has been an advisor to me for the past 8 years for which I am deeply indebted. (See his comment about my introductory training workshop quoted below.) Many of the papers I published on my website were read by one of his senior Ph.D students, Dr. Sharon Poczter, now an assistant professor of economics at Cornell University to whom I am also indebted. I mention her name not as endorsement of my work, but for recognition that she helped me immensely.

**2009 Nobel Laureate Oliver E. Williamson describes Neil Boyle’s introductory training workshop as:**

“promising, ambitious, and worthy”, and observes that “more extensive knowledge of and use of a comparative contractual framework in government is sorely needed. Good luck in your efforts to put this across.” (Williamson, 2012)

I started studying transaction cost economics (TCE) in 1998 after I retired in 1997 from the World Bank and before departing in 2001 for a 10 year stint with the US Government in various foreign locations (Manila; Kosovo; Budapest; and Gaborone, Botswana). My beginning interest in TCE started because I quite by accident picked up Oliver Williamsons 1996 book titled “Mechanics of Governance” and became hooked on the subject about a year later. As I read and re-read large amounts of his and related literatures, it dawned on me that here were answers to many of the questions that plague just about every project manager who takes his work on institutional development seriously; these questions certainly plagued my work; in fact, over the years they infuriated me.

Here were the insights of empirical research that went back to the early and mid 1930s that dealt with the subject matter of organization, a subject that has intrigued me ever since I first became involved in economic development work in the 1960s in Northeast Brazil as a newly minted graduate engineer. The best description of the project was that it was a form of small and medium industry development *a la* “penny capitalism”. For three of the five years in the field, I advanced from a technical assistant to heading up the project and learned valuable lessons in the process. One of those lessons, perhaps the most important one of all, was that while it is easy to build the bridge, it is an altogether different matter when it came to get the host country entity we were working with to organize to adopt the changes. This was my introduction to the world that “institutions matter.”

This world of “institutional awareness” has existed for decades, but it existed only on paper. TCE changed this situation in two fundamental ways: i) it introduced real science for the first time into the arena of institutional analysis. I will discuss this later in greater detail, but for the present institutional project design work is dominated by what Williamson calls “goals and assumptions (1996); and ii) it changed project economic analysis so that the analysis and its result are “more in-touch with the phenomenon” it is analyzing. The two changes to institutional awareness are discussed in detail below.

On the introduction of science – There are three things that science does for institutional governance. First, the TCE framework is predictable. Second, analytical findings are refutable hypotheses. And third, experimentation is very much a part of the TCE tool kit.

Despite the feebleness of the world where institutions are supposed to matter, it nonetheless had value and represented valient efforts when nothing better existed at the time; and yes benefits were produced, but these benefits could not be predicted, nor could they be replicated, with any significant degree of reliability, alas because goals and assumptions prevailed.

Because goals and assumptions are not driven by the experimental science of a well tested empirical model of—“what is going on within the institutional mechanisms of economic exchange”—there could not be a well defined trajectory of experimental learning, innovation, and development—and upon a closer look we find fewer trajectories than expected.

Going back to the Brazil project, the only science-based model that existed at the time was the technical knowhow that existed with the graduate engineers, seasoned engineering faculty and consultants from economics and finance, and counterparts. “The building of the bridge part” is a metaphor that connotes one half of the solution—the technical part. The institutional part deals with organizing the institution of bridge building, and much more within the host entity, and organizing turned out to be more complex than imagined. The science side of the institutional model did not appear to the general public until Williamson fleshed it out between his first major book published in 1975, “Markets and Hierarchy: Analysis and Antitrust”, and about 30 years and many publications later when he, with others, had worked out the details and in 2005 there was sufficient validation of his work by his peers as witnessed by his Nobel award of 2009.

On modification of economic analysis – No longer are markets, firms, or government bodies perfect sources and transmitters of information. Indeed, markets, firms, and government agencies are not perfect transactors of exchange of any kind and much less so of economic assets. Under TCE, economic agents are not assumed to be super rational or to act on the basis of simple self-interest that maximizes a utility function. Instead, agents are more realistically represented as rational but limitedly so, that is to have bounded rationality. Agents are also assumed to be guided by self-interest with an agenda or technically opportunism instead of simple self-interst. Bounded rationality and opportunism are referred to as the twin behavioral assumtions of economic agents.

In brief, economic analysis is finally in-touch with the real world and total costs are now the sum of production and transaction costs and efficient transactions (read projects) are the result of minimizing the sum of the two costs.

In the process of changing the way economic analysis is done, it also changed the way in which institutional analysis is done. This paper concerns institutional analysis for two reasons. First, because it highlights how TCE can be complementary to project management and implementation; and second, because it is a prerequisite to economic analysis. Actually, both forms of analyses can be done simultaneously, but at the point of recommending a policy and interpreting it, the two would have to be integrated.

So what should an institutional analyst be concerned with upon taking on his first assignment to say analyze an autonomous railway authority. First and foremost, he should understand that institutional analysis is about governance or more precisely it is about the efficient organization of a transaction that has two sides to it each with multiple attributes, and they need to be aligned. It is not so much about government. Governance and government are interdependent, but need to be treated separately to keep things simple. What currently passes for institutional analysis is mainly about government—about its structure and function. For example, the introduction of a modern financial planning, management and reporting system into the operations of the railway authority is a part of the structure and function of government—and not governance per se. The institutional analysis part has to do with organizing the insertion of the financial system so that it performs efficiently within the existing structure of government to the satisfaction of both parties—the buyer and the supplier. An efficient transaction would have to minimize total costs, which is the sum of production and transaction costs.

The organization of TCE is technically called economic organization, which is defined as a nexus of transactions or their formalized versions, contracts. Economic organizaqtion will typically have several related transactions as part of a supply chain of transactions. Unlike administrative organization, which is opaque to economic analysis, economic organization can be analyzed. This is done by considering the transaction as the unit of analysis of organization, and contract the framework for analyzing economic exchange (read transaction).

Second, he should be aware that his analysis is primarily about detecting contract (read transaction) hazards that are created by some malfunction of the incentive structures of economic agents—all of which would disapper were it not for the the twin behavioral assumptions of bounded rationality and opportunism. Contract hazards are pre-transaction costs. Detecting, preventing and mitigating contract hazards are the best ways to address transaction costs. This is referred to as “economizing on transaction costs”; an important design feature of institutional governance. A word of caution. Tracing the twin behavioral assumptions to their origin or consequence will be an indirect route.

Were it not for the limited cognitive capacities (bounded rationality) and guileful self-interest (opportunism) of agents, we would be back to where we started—operating in a perfect world where transaction costs are zero. Operationally, bounded rationality and opportunism are intervening variables and not independent variables. As interveing variables they act indirectly on independent variables such as and mainly on asset specificity, which will be explained later.

This overview focuses on the institutional governance (not government) part of project management and implementation—this missing part is formally called transaction cost economics (TCE) and comparative contracting, an important subset of TCE. Operationally, transactions and contracts will be our main focus. The inner (microanalytic) and outer (microeconomic) workings of transactions, the crafting and design of institutonal governance contracts and how contract design correlates with project success are the key topics of interest to the analyst.

The intellectual transition from orthodoxy to TCE is conceptually complex and while every effort is made to link the reader from “the old to the new”, the differences between the two are profound. Section I sets out the purpose, scope, and methodology of the overview and as part of methodology—the definition and operations of a simple discrete transaction. Section II lays the groundwork for institutional governance. The reader will see the distinctiveness and complementarities that exist between project management and implementation and institutional governance. Section III attempts to link theory with example projects (the old) and their governance on page 15. Section IV deals with the special feature of institutional governance, namely “the unanticipated contexts of projects”, including the human dimension of projects. An entire new and heretofore hidden world is made accessible to the careful analyst. Section V are the “rules and the plays of the game”, which are important monikers that distinguish and show the important systemic relationships between the “rules” of Douglass North, and the “plays” of Oliver Williamson. Section VI deals with five recommendations for improving upon an existing project that you are familiar with. Section VII consists of examples of negotiated contract safeguards and credible commitmemt mechanisms. Section VIII provides ample details including illustrations regarding how and why the tradtional three governance structures of markets, firms (hierarchy), and long-term contracts (hybrids) govern projects. Finally, section IX consists of the references I used to write the overview.

Table of Contents

PREFACE 2

I. Purpose, Scope, and Methodology 9

A. The, purpose, scope, and methodology of this overview 9

B. Definition of a Simple Discrete Transaction 9

II. The Basics of Institutional Governance 10

A. Governance and government are different yet related. 10

B. Analytical perspective and the quality of solutions. 10

C. Adaptation to production demands and institutional environment. 10

D. The microeconomic landscape has changed for the better. 11

E. MIT economist Paul Joskow summarized TCE well. 11

F. Project management and TCE are distinct yet complementary. 11

G. TCE is based on a theory of organization 11

H. What is Going On? 14

III. Linking Institutional Governance with Projects 15

A. Project performance and total costs 15

B. Transaction costs defined 15

Box: Three Project Examples 15

Box: Governance Structure and Asset Specificity 15

C. Technical names for governance structures 16

D. Introducing asset specificity and uncertainty 16

E. Asset specificity defined 17

F. Contract defined 17

G. Why electric coal-fired plant is hybrid 18

H. The roles of different mediation features 18

I. Complex contract defined 18

J. Why nuclear power plant is hierarchy 19

K. TCE’s important point of view 19

L. Rule of thumb for selection of institutional arrangements 19

M. The cost of hierarchical governance 19

N. Why bushel of graded beans is spot market 20

O. Link between governance structure and total cost 20

Box: Transactions are Creations of their Owners 20

P. Introducing credible commitment 21

Q. Introducing negotiation of the triple 21

R. How to achieve successful negotiations 21

S. Introducing trust 21

T. Contract doctrine in most developing countries 22

U. One size does not fit all 22

V. Other benefits from TCE 22

Box: Transaction Costs as Friction 22

IV. The Unanticipated Context of Projects 23

A. Unanticipated consequences (UCs) say it all 23

B. Technical names for contract hazards 23

C. Bureaucratic disabilities 24

D. Human Agents and Hidden Hazards 24

Box: Examples of Hidden Hazards and Unanticipated Consequences 26

Figure 1. Twin Pillars of Human Behavior 27

E. A simple discrete transaction 27

Chart 1 - The Discrete Market Transaction 28

F. Defining the Transaction 29

G. The Discrete Hierarchy and Hybrid Transactions 29

Chart 2 - The Discrete Hierarchy Transaction 30

Chart 3 – The Discrete Hybrid Transaction 31

V. The Rules and the Plays of the Game 32

A. Overarching System: Institutional Environment (IE) 32

B. The Sub-System: the Economic Organization (EO) 33

C. How Asset Specificity Changes the Plays of the Game 34

Box: From Administration Centric to an Economic Organizational Mindset 34

D. How Buyer-Supplier Relations Affect the Play of the Game 37

E. Operationalizing the Plays of the Game: Governance of Transactions 38

F. Starting Points for Microanalytic Analysis 39

VI. Five Recommendations to Immediately Improve Your Project 40

A. Introduction 40

B. Project Problem Statement 41

C. Developing Trust: Sharing Negotiaion Plan 42

D. Negotiate to Attain Credible Commitment 42

E. Negotiate to Attain Trust 45

F. Search for Opportunities to Economize on Transaction Costs 46

G. Restore Positions onto the Contract Curve and Smart Monitoring 47

H. Redesign Project Monitoring 48

VII. Negotiated Safeguards & Credible Commitment Mechanisms 50

A. Examples of Negotiated Safeguards 50

B. Examples of Confidence Building Credible Commitment Mechanisms 52

VIII. Details on Markets, Firms, & Hybrids 53

IX. Bibliography 59

Endnotes 60

# Purpose, Scope, and Methodology

## The, purpose, scope, and methodology of this overview

### is to identify and explain the lessons from TCE and comparative contracting that will reliably improve project management, particularly implementation for infrastructure projects in developing countries. To simplify explication, the key concepts of superior implementation—and especially the incentive structures of the counterparties—are derived from a single discrete main transaction of a project excluding support transactions. Normally—instead of a single transaction—we would use a network of temporally sequenced interdependent transactions as the actual framework for infrastructure projects. This network feature necessarily complicates explication for an introductory level workshop and therefore will be put aside for now. According to Williamson, the main transaction is where all of the action occurs.

### The derivation begins with the main “transaction” as the centerpiece of two overarching systems, namely the institutional environment (IE) system of “the rules of the game,” and within that, a subsystem of economic organization (EO) of “the plays of the game,” for each type of transaction (market, hybrid, hierarchy) in the larger populated (IE) system of transactions. IE may be of the economy of a country or variations of different specialized sectors. IE is typically insensitive to variations in transactions in a developing country because regulatory regimes were setup under classical legal doctrines that have not kept up with modern economic and legal developments. EO may be of a sector or more specifically a transaction or project. Derivation of TCE from a single transaction expands upon several key concepts that are identified first in the definition below, and thereafter from each succeeding concept until the major features of TCE and comparative contracting are adequately covered.

## Definition of a Simple Discrete Transaction

### We will use the term “transaction” to mean a discrete exchange or project that is the subject matter for which contracts—a necessary step to project implementation—are formulated. The transaction is the economic relation between a buyer and a supplier who are involved in exchanging an asset that adapts to the economic organization that shapes and governs it and is regulated by its institutional environment.

# The Basics of Institutional Governance

## Governance and government are different yet related.

### Governance may be characterized as the inner engine of government and government the structure and function institutionalizing a concerned function of government. Until recently, researchers paid little attention to the inner engine that runs government or for that matter run any manner of economic exchange between two transacting parties of which there are many. In the case of government, it is the political-economic exchange of a social compact between a people and its government. In the case of governance, it is the economic (and political) exchange of a durable asset between a buyer and a supplier. Both involve the exchange of the terms of an agreement concerning durable assets, but the scale of each exchange differs. For governance, the exchange is the transaction; for government, the exchange is the social compact and its resultant constitution. Our concern with this overview is with the efficacy of the governance of transactions (read projects)—the inner engine of government, without which government is expected to function poorly. This concern with governance will acquire many names, but its primary concern will be called institutional governance.

## Analytical perspective and the quality of solutions.

### A very important implication of our work is that analysts no longer need to operate one-way--from the outside of a project looking-in, but rather two ways—from the inside looking in and out, and at the regularities discovered among the cross-relations he observes and hypothesizes. With the help of experimental science of a well-tested empirical model of what is going on inside the economic exchange relations between buyer and supplier, a new vista is opened up for project management and performance.

## Adaptation to production demands and institutional environment.

### TCE is premised on the idea that the economic organization of markets and firms adapt both to production demands of transactions as well as to the institutional environment that regulates production. Adaptation, however, can be anything between positive and negative ultimately depending on the twin behavioral assumptions of economic agents of bounded rationality and opportunism. Given the limitations of cognitive capacity (bounded rationality) and the inclination for guileful self-interest (opportunism), agents tend toward negative adaptation and its higher cost. This negativity can be partially explained by the unsecured property rights in these situations and joining that with opportunism of the agents involved. (See Figure 1 on page 27 and IV-D1 to 6 pages 24 to 25 for details on behavioral assumptions.)

## The microeconomic landscape has changed for the better.

### Economic analysis was made more complete through the work of Oliver Williamson of Berkeley. Because of his work on transaction cost economics, total cost is no longer limited to production costs alone; it is now the sum of production plus transaction costs. Until recently, transaction costs were not adequately defined nor were they quantifiable. This situation changed upon the award of the 2009 Nobel Laureate in economics to the work of Oliver Williamson.

## MIT economist Paul Joskow summarized TCE well.

### After his reading of Williamson’s first book published in 1975, “Markets and Hierarchy: Analysis and Antitrust”, he concluded there is “a general recognition that there is a wide range of institutional arrangements that can be used to govern transactions between economic agents. Specific institutional arrangements emerge in response to various transactional considerations in order to minimize the total cost of making transactions.” **[[1]](#endnote-1)**(1988:97)

## Project management and TCE are distinct yet complementary.

### *They c*ompliment each other by contributing the elements that are missing in each other. Project management is based on two analytical methods: decision theory and goals and assumptions (Williamson, 1996 and 2005). Decision theory is an advanced field of management science. Goals and assumptions are based on a theory of planning called program planning and budgeting systems (PPBS), which has been in use for at least the past half century. Both of these analytical methods address the production part of the project. They have gone far and have contributed to better technically designed projects. Nevertheless, they have not gone far enough on the institutional side of the project. The remainder of this overview is written from a practitioners viewpoint who is knowledgeable in both methods, and in these methods and TCE. It must be stressed that the two are mutually exclusive; each cannot do what the other does.

## TCE is based on a theory of organization

### The theory explains the ramifications of the economic exchange relations between a buyer and supplier as they interact with the production opportunities of any given transaction and work out the technical and governance requirements for successful project completion. The theory integrates the production part of economic exchange together with the governance institutional part of the producing firm, including its market exchange interface—the success of one is linked to the success of the other. In microeconomics this combination is expressed as total cost—the sum of production and transaction costs (Joskow, 1987, 1988);

### An efficiently organized project is defined as having minimal total costs. The definition includes both production as well as the institutional capacity to deliver efficiently on that production. And almost surely, that institutional capacity may include support and inpurt institutions beyond the producing firm.

### Transaction costs are analogous to the friction found in a machine. High friction results in poor performance of the machine and the low friction increases machine performance. Prior to TCE, these two—production and institutional components—were separated in everyway, but most importantly, operationally (Williamson, 1996);

### From this theory is learned the microanalytics of the transaction—a term coined by Williamson—that describes the mediating processes that take place in the process and governance of economic exchange. Later on we will learn of terms like intertemporal transformations and processes. (See IV-B1 page 23 for further details.) Microanalytic analysis’ focus is on the transaction where all of the relevant action and inner workings of the exchange processes reside. Powerful insights are produced from such analyses: how transaction specific incentive structures are formed, what their potential impacts are estimated to be, which markers to look for that will predict their occurrence, and how incentives when they are aligned optimize the intended action. (Williamson, 2005)

### TCE projects are multifaceted – They are designed to produce a good or service and simultaneously attain the following: credible commitment and discriminating alignment, economization of transaction costs, optimization of the triple, and restoration of positions on the contract curve when agents fall off. In fact, the efficient production of goods or services are dependent on the optimization of these terms. Each of the above terms is described in section V-D1a) to e) pages 37 and 38, and further explained in section V-C1-12 pages 34-37. (Williamson, 2005)

### TCE negotiates complex contracts (e.g., for infrastructure) – Its purpose is to achieve joint gains while in pursuit of a public-private partnership (PPP) whose goal is to minimize the total costs of the project. In a PPP project, the reduction of total costs requires keen collaboration and parternership of the contracting parties; success, total cost, and the partnership are interdependent;

### Unlike economic orthodoxy, TCE defines the firm as a governance structure; orthodoxy describes the firm as a production function; or typically as an extension of a market. This may sound minor to some, but for practitioners it is a major conceptual change in thinking. Many of us think of markets as a place and some of us think of markets as a fast and efficient way to distribute goods and services in a market economy. Both definitions are deficient in explaining the complex role that markets and firms play in governing economic exchange. Markets are one way to govern exchange; firms are an altogether different way to govern exchange, and hybrids are a third way that we will discuss later. Markets rely on the strong incentives of price to drive action; firms rely on hierarchical authority to drive action. The two have distinct applications in governing exchange. Hybrids are a mix of market and hierarchy, which to be effective needs careful crafting;

### Expost evaluation is made simpler. The following questions are posed: were total costs minimized and incentives aligned; was credible commitment attained; were transaction costs economized; was the triple optimized; and how many times did economic agents fall off of the curve, restored, and the length of time spent off of the curve;

### Adaptation is the central focus of economic organization (EO). The action resides in the details of the transaction and the mechanics of governance. The term transaction may be read as projects or the exchange relations between a buyer and seller. (Williamson, 1996)

### Project economic and institutional feasibility would be determined on the basis of analysis of total costs, which can be done by a specially trained economists (or financial analysts; whether this is optimum is unknown. Traditionally this kind of feasibility analysis involved an institutional specialist and at least two studies;

### Each of the above items comes out of many decades of empirical research, which involved and would involve collegial bodies in several disciplines (economics, law, political science, finance and organization theory) worldwide in the evaluation of project performance, or in TCE language, contract performance. Although contracts are uniquely defined (See III-F1 to 2 page 17 for definition of contract and III-G1 page 18 for definition of complex contract.), the three terms: projects, transactions, and contracts sometimes are used interchangeably.

## What is Going On?

### Explaining relevance through real projects - My recent presentation of TCE and comparative contracting at the George Washington University’s Seminar Series on Reflexive (Complex) Systems confirmed the valuable lesson of using real life examples when explaining complex material. **[[2]](#footnote-1)** I introduced TCE as the means to improve project management and used three different projects each as an example of a differential project management arrangement, or what is referred to technically as a governance structure in TCE language and then asked the obvious question of what explains these different means of governance. The answers to this question constituted the rest of the presentation, which was interspersed with very active Q&A. Upon reading the following 27 paragraphs, the reader will have sufficient introduction to TCE and comparative contracting within familiar territory to sustain his reading the rest of the document. Sections VI and VII are practical applications and easier reading.

### *Complex contract is the focus* - The focus of this overview is mainly though not exclusively on complex contracts (for infrastructure) as that is where most of the action takes place. PPP and FDI infrastructure projects in developing countries are governed primarily by complex contracts. The reasons for this approach will be clarified for the reader in this introductory section. The reader will also learn of the relevance of TCE for other kinds of investments and contracts. (See III-F1 to 2 page 17 for definition of contract and III-G1 page 18 for definition of complex contract and III-T1 page 22 for the role of contract doctrine in developing countries.)

### *Same goal, but different approach* - This overview begins with the statement that TCE and comparative contracting are about project management, the aim of which is to successfully execute projects to achieve the aims that were agreed in project design. While the aims are similar for TCE, TCE’s approach differs from traditional project management. Negotiation best captures the difference: TCE negotiates complex contracts to jointly gain in pursuit of a public-private partnership (PPP) whose goal is to minimize the total costs of the project. Traditionally, negotiations were often negotiated for the purpose of gaining at the expense of the counterparty.

# Linking Institutional Governance with Projects

## Project performance and total costs

### Let’s consider the means of managing the following three projects: a coal-fired electric power generation plant; a nuclear electric power generation plant that enriches uranium for military purposes; and a bushel of graded black beans. Let us assume that each project performed as agreed and that expost economic research has verified the strong correlation between successful project performance and the minimization of total costs defined as the sum of production and transaction costs. Let us further assume that the quality of coal for the electric generation plant is sufficiently high that the additional specialized technical and environmental protection transactions can be handled cost effectively by contract.

## Transaction costs defined

### Transaction costs are defined as the friction that constrains the smooth functioning of the organizations responsible for preparation and implementation of the transaction. The following two boxes helps to organize the thought and the question that is posed.

Box: Three Project Examples

Three Project Examples Means of Managing each Project

* Electric Power Generation……………………. Long-Term Contract (Hybrid)
* Nuclear Power Plant that enriches uranium… Vertically Integrated Firm (Hierarcy)
* Bushel of graded black beans………………… Spot Market (Market)

**WHAT CAUSES THESE PROJECTS TO BE GOVERNED BY DIFFERENT MEANS**?

**Asset SpecificityUncertainty**

* Moderate asset secificity
* Very high asset specificity
* Negligible asset specificity

**Three Project Examples**

* Electric Power Generation**………..**
* Nuclear Power Generation**………**
* Bushel of Graded Black Beans**…**

**Governance Structure**

* Hybrid Governance Structure**………….**
* Hierarchy Governance Structure**……...**
* Market Governance Structure**…............**

Box: Governance Structure and Asset Specificity

## Technical names for governance structures

### The electric power generation plant is typically governed by a long-term contract or what is referred to technically as a hybrid governance structure. Hybrids are for mid-spectrum (moderate) asset specificity; think spectrum of increasing specializtion from market on the low end, to hybrid mid-range, to hierarchy on the high end. Hybrids allow parties to keep their autonomy and provision their contract with appropriate safeguards against hazards at the same time. Autonomy maintains the strong incentives of markets. Contracting permits more flexibility in safeguarding against contract hazards.

### The nuclear power plant that enriches uranium is governed by a vertically integrated firm or what is referred to technically as a hierarchy governance structure. Hierarchy is for high asset specificity and complexity when authority is needed to coordinate the organization of the transaction within its economic organization. The military connection to the enrichment of uranium makes this transaction highly specialized that requires hierarchical authority to coordinate proper adaptation. Administrative controls of a long-term contract would be inadequate to do the job.

### The bushel of graded black beans is governed by a spot market governance structure because the beans have been graded and standardized and price is the only relevant determinant of choice among competitive trades. (See Chart I page 28 and IV-E1 to 2 on pages 27 and 28 for explanation and illustration of the difference between spot and regular markets.)

## Introducing asset specificity and uncertainty

### The three projects or we might just as easily call them transactions differ in three ways: asset specificity, uncertainty, and frequency. We will for the time being set aside the reputation effects that are caused by repeated transactions. (See V-F1e) page 40 for further details about frequency.) Instead we will dwell on the two differences that have had the most profound empirical effect: asset specificity and uncertainty, which are referred to technically as transaction attributes. Each project’s exchange asset’s asset specificity differs from other projects.

## Asset specificity defined

### Asset specificity is the degree to which the asset that is to be transformed into a good or service or exchanged is specialized in one or more of the following ways: physical, site, human, dedicated, brand, and temporal. As asset specificity builds up, hazard exposure increases as the asset acquires increased value and a condition of increasing bilateral dependency sets into the relations between the contracting parties. Each party depends on the other party for protection against opportunism and the costs of asset specificity and uncertainty—that is, contract hazards; if not mitigated, erode the productive value of the asset; and this erosion increases as specificity and uncertainty increase. Bilateral dependency is where trust concerns become important. As it happens, infrastructure projects and PPP projects are bilaterally dependent transactions.

## Contract defined

### So far, there has been lots of references made to contract and contracting without defining their meaning or contextualizing contract in the broader framework of the rules of the game. TCE defines contract as the triple of the price (p) of the exchange asset, the asset specificity (k) of the asset, and safeguards (s) that protect the agreement from change or default plus the quantity and quality of the asset and duration of the contract. Each component is interactive with the other components and must be negotiated simultaneously. According to Douglass North (1990), the rules of the game are the institutional environment, which is comprisied of contract law, property rights, and cultural codes of conduct. These mechanisms form the legal-regulatory framework that regulates the different institutions and mechanisms of governance for each governance structure.

### Systems theory has something called the law of requisite variety, which is applicable in regulatory regimes. Requisite variety means that for the regulatory regime to function well, the competence of the regulator and the variety of the material he is to regulate must be reasonably equivalent.

### 

## Why electric coal-fired plant is hybrid

### Note the differences in asset specificity. The coal-fired portion of the plant comes with well known environmental problems, which if not identified and mitigated with a high degree of assurance would have an asset specificity that is higher than the mid-spectrum specificity of a hybrid transaction. In this case, the plant is judged to be able to satisfy this condition and the plant is therefore governed by hybrid organization or what is called a long-term contract (e.g., franchises, and most infrastructure projects). Without the requisite capacity to mitigate the added mediating complexity, the plant would have to be governed at higher cost by a vertically integrated firm or what is technically referred to as a hierarchy governance structure. Hybrid organization involves institutional arrangements (i.e., institutions and mechanisms) that minimize total costs when the exchange asset’s asset specificity is midway between the asset specificities of market and hierarchy kinds of economic organization. (Joskow, 1987, 1988)

## The roles of different mediation features

### The implication of being midway is that the mediating features of markets such as its powerful incentives (i.e., the driving force of price) on the lower end of the asset specificity spectrum, and the mediating features of hierarchy such as its high levels of administrative controls (i.e., the controlling force of hierarchical authority) on the higher end are moderated to make room for trust, a feature that the two other governance structures do not need as much as the complex nature of mid-spectrum asset specificity hybrid contracts. (Williamson, 2005)

## Complex contract defined

### A complex contract and most infrastructure contracts are defined as a promise of future performance in exchange for a durable investment immediately, the outcome of which is not known until these promises have been fulfilled. However, because of opportunism, promises are not self-enforcing and unless they are protected, too many promises are reneged. (See IV-D1 to 6 pages 24 to 25 for further details.) All hybrid transactions are complex contractually and as mentioned most infrastructure projects are as well. (Williamson, 2005)

## Why nuclear power plant is hierarchy

### The nuclear power plant that enriches uranium for military purposes is governed by a vertically integrated firm or what is technically called a hierarchy that mediates complexity by internal organization. The fact that the plant enriches uranium gives the transaction a very high level of complexity and asset specificity that are not likely to be mediated satisfactorily by any long-term contractual arrangement of hybrid organization. Management by contract would not provide the necessary assurances that hierarchy can with its high-powered administrative control features of mediation. So for this project, we must move up the spectrum to hierarchy where administrative control and internal organization are available to coordinate the adaptation of the transaction to changing circumstances of complexity whatever its source. (Williamson, 1996, Joskow, 1988)

## TCE’s important point of view

### From the material presented thus far from the preface forward, an implication is that analysts’ no longer operate from the outside looking in, but instead are able to do a better job operating from the inside looking every which way, including at the regularities that are found between the inside and the outside. An example is the regularity that contract laws in many developing countries are insensitive to certain variations in transactions, particularly variations in the PPP infrastructure sector. Another example is the regularity between asset specificity and uncertainty, the cost of governance, and their relations to total costs. With the help of experimental science of a well-tested empirical model of what is going on inside the transactions between a buyer and a supplier, a new vista is opened up for project design and management. This is what is meant by making the transaction the “unit of analysis” of economic organization.

## Rule of thumb for selection of institutional arrangements

### According to Williamson 1996, the rule of thumb is to start at the lower end of the asset specificity spectrum with markets, move up to hybrid at mid-spectrum if markets do not work, and then move up to hierarchy at the upper end of asset specificity if hybrid does not work.

## The cost of hierarchical governance

### At all levels, asset specificity is very high due to the cost of bureaucracy, but especially high at the outer reaches of the asset specificity spectrum due to the increased complexity afforded by multiple dependencies on the internal organization of the firm for intermediation. It is noted that specialization at any level and the cost of its investment is only entered into to reduce production costs. (See Chart II page 30 for graphic details.)

Box: Transactions are Creations of their Owners

### Infrastructure transactions are essentially created by their owners—the principals to the contract: the private suppliers and the government buyers of the exchange asset—the electricity generating plant or the bushel of black beans—as they discover how to hedge against the contract hazards at the time of shaping and implementing their projects. Although implementation of development projects is an Achilles heel of economic development assistance efforts in developing countries, recent economic research shows a positive correlation exists between efficiently designed transaction contracts and their improved project implementation results. A refutable hypothesis that explains the correlation is that a total cost-minimized transaction contract reflects the incentives of the counterparties to succeed by reduction and mitigation of the sum of production and transaction costs, respectively.

## Why bushel of graded beans is spot market

### The bushel of graded black beans is governed by a spot market, which is a special feature of market transactions, generally. For spot market projects, complexity and asset specificity are negligible as the asset has been entirely monetized and price is the sole determinant of choice. For a regular market project, complexity and asset specificity are not entirely negligible as some information obtained through simple sight or touch may be required. This leaves the transaction with its known market features of: spontaneity, negligible defection costs, thick markets, high level of adaptation to rapidly changing economic market conditions, and legalistic contract, among others, but not the purchase sight-unseen feature of a spot market.

## Link between governance structure and total cost

### Governance structures emerge in accordance with their capacity to address the cost of asset specificity and uncertainty in minimizing the total cost of making transactions where total cost is the sum of production and transaction costs. (Joskow, 2005) Asset specificity measures the degree of specialization of the exchange asset and the specialized asset’s comparative level of exposure to hazards. Put another way, governance structures are the institutional arrangements, which when configured correctly, minimize the total costs of making transactions.

## Introducing credible commitment

### Critical to the process of cost minimization is credible commitment. Credible commitment is the source of “good relations” between hybrid contract parties. Good relations is a necessary condition for successful negotiations and project performance of complex transactions and contracts. It occurs when a workable level of trust exists between the contracting parties, which are better known as buyers and suppliers. This level of trust is articulated during contract negotiation, which is executed in the unique manner described subsequently. (Williamson, 1985)

## Introducing negotiation of the triple

### Negotiation means to negotiate the triple of price (p) of the asset, its level of asset specificity (k), and the contract safeguards (s) that are introduced to protect the contract agreement from breech or default. The three elements of the triple are interdependent, therefore, they must be negotiated simultaneously. (Williamson, 1985)

## How to achieve successful negotiations

### Successful contract negotiations is attained by negotiating price (p) and asset specificity (k) together as a means of leveraging the attainment of safeguards (s), which are designed to increase the net present values of financial revenues of both contract parties—the result of minimizing production and transaction costs. With this form of optimization of the triple, the contract is thus provisioned with institutional arrangements—the appropriate institutions and mechanisms in the form of contract clauses and structures of governance—that are designed to protect the contract throughout the project cycle.

## Introducing trust

### The notable feature of negotiating the triple to attain credible commitment and set the foundation for enabling trust is that safeguards are not gratuitous; there are cost and revenue implications for contract parties’ who agree to support any negotiated safeguard. (See section VI page 40 for application details.) This makes the attainment of minimizing the total cost of transactions feasible and credible and the probability of improved project management and implementation higher. (Williamson, 1996)

## Contract doctrine in most developing countries

### Most developing countries have a single classical contract doctrine of law and economics for commercial applications that is “supposed to say it all—sharp in by agreement, and sharp out by performance.” Williamson, 1996. This doctrine is suitable to market organization and exchange, but unsuitable for hybrid or hierarchy exchange purposes. (See first item listed in the Box on Hidden Hazards on page 26 regarding AIA standard contract clauses.) While countries have a single contract doctrine, they have multiple types of transactions, which makes contract law, and hence the institutional environment, insensitive to variations in transactions.

## One size does not fit all

Box: Transaction Costs as Friction

The addition of transaction costs to production costs introduces a second type of microeconomic cost—one that measures the “friction” in the transaction that causes unanticipated problems to appear despite the due diligence that may be put into project design. What had been missing was recently discovered by the 2009 Nobel Laureate in Economics, Oliver E. Williamson of Berkeley whose work complements economic orthodoxy. Total costs provide more than the production cost information needed to allocate resources, but also the transaction cost information that is required to detect the source of unanticipated consequences—the perverse incentives of contract hazards and the source of the problems that routinely beset implementation of economic growth projects and policy making.

### (See page 53 for further details on market organization.) Contract as forbearance and contract as framework doctrines are suitable for hierarchy (see page 54) and hybrid (see page 55) transactions, respectively. Although donor agencies and the World Bank are doing much along the lines of this issue in developing countries, much remains to be done.

## Other benefits from TCE

### There are numerous other features of TCE that benefit project management. Such features are:

#### Contract hazards in general and opportunistic behavior specifically are predictable during project design and as such are preventable, hence, the probability of successful project management increases;

#### The same thing can be said of contract hazards and opportunistic behavior during project implementation;

#### Credible commitment is rendered tenable because its procedures have been operationalized and trust building made feasible by economic fair play; and the joining of transaction and production costs;

#### Economic organization is susceptable to economic analysis by making the transaction the unit of analysis of organization and contract the framework for operationalizing economic exchange; economic and a revised institutional analyses could lead to improved internal organization as bureaucratic disabilities are identified and mitigated (See page 56 for details on bloated bureaucracy) (Williamson, 1976);

#### Economic agents routinely fall off of the contract curve due to the lack of appropriate stimulus. They fall off because organizations have complex lives of their own and agents are seriously limited in cognitive capacities. This has major implications for the way projects are supervised and monitored (Williamson, 1996);

#### The choice of governance structure (market, hybrid, or hierarchy) is based on which structure will be the most efficient (Williamson, 2002).

# The Unanticipated Context of Projects

## Unanticipated consequences (UCs) say it all

### They are the result of partially analyzed project risks that go undetected and show up during project implementation when it is often too late to take corrective action. Up until now there has been no method—indeed, no economic language even—to probe the microanalytic depths of the transaction and the contract hazards that lurk there. Failing to analyze “what is going on” at this level leaves projects at the mercy of a plethora of unaccounted for hazards anyone of which, if not mitigated, can and do turn into transaction costs.

### As emphasized later, the relevant action takes place in the transaction because of decisions and actions that take place within it. Keep in mind that according to Williamson, if it were not for bounded rationality and opportunism, all transaction costs would vanish. Motivation occurs because of the incentive structures that arise for reasons we will learn about later.

## Technical names for contract hazards

### TCE technically calls these hidden contract hazards intertemporal transformations and processes. They arise when incomplete contracts are supported by investments in specialized assets and are beset by uncertainty. Out of awareness of these hazards, contract parties have incentives to take hazard-mitigating actions, such as devising safeguards that infuse order thereby to reduce conflict and realize mutual gains. Williamson, 2005

## Bureaucratic disabilities

### One finds that the bureaucratic disabilities located in the internal organization of firms are an example of unanticipated consequences. Other examples are: the tendendcy of project goals to be subverted by new centers of project interests that arise soon after contracts are signed, but their origins started way before signing; related to this is that all democratic organization originates from oligarchy, which is a matter of considerable concern and should not be taken for granted; the fact that all complex contracts are unavoidably incomplete and that contract parties are likely to defect from their agreements (See IV-D1 to 6 below for details); the routine tendency of project agents to fall off of the contract curve is another form of bureaucratic defection due to a lack of “stimulus”; and the obscurity or shutdown of transparency that arises when large number bidding competition transforms into a small number supply condition during implementation and contract renewal of infrastructure projects governed by hybrid.

### TCE and comparative contracting have shed some light on this microanalytic level of transaction analysis that has revealed a world not previously accessible. Next is a partial explanation of “what is going on.”

## Human Agents and Hidden Hazards

### Arguably, hidden hazards are always, if not located within a transaction, detectable within them. This follows from what we mentioned above that all transaction costs would vanish were it not for the twin behavioral assumptions of economic agents: bounded rationality and opportunism. (1996) All economic agents are rational, but limitedly so, hence their rationality is bounded. All economic agents have simple self-interest, but with an agenda, hence they are prone to opportunistic behavior.

### *Special features of complex contracts* - Furthermore, Williamson asserts that while all agents are not opportunistic all of the time, the cost of verifying the contrary is prohibitive so that a pragmatic approach is warranted. From TCE we know that two conditions of complex transaction contracts support the conclusion of the pragmatic approach:

#### First, because of bounded rationality, all complex contracts are unavoidably incomplete.

#### Second, if not all, then most complex contracts’ exchange assets are specialized to some degree to reduce production costs. When incomplete contract and a specialized nonredeployable exchange asset are joined and the transaction is beset by uncertainty, we can be reasonably confident that contract hazards are posed as threats against successful consummation of the transaction, or against successful execution of the institutional arrangements (i.e., the play of the game) that are in play. That all infrastructure projects are problematic follows from this logic.

### *Applications of the twin behavioral assumptions of agents* - The implication that contract hazard sources are always located within a transaction interface or in the internal organization of its counterparties has instrumental value. Although, the source of hazards is the twin behavioral assumptions mentioned above, quantification is not precise, nor is it required in treatment protocols. Treatment protocols arise from discrete structural analysis and impacts on changes to bounded rationality and opportunism in the projected amounts and directions. Bounded rationality and opportunism are intervening variables in the TCE framework and not independent variables. This means that bounded rationality and opportunism are worsened by uncertainty and small number exchange, respectively; the change depending on their initial levels and these changes affect the complexity and cost of asset specificity—an independent variable. The latter two: uncertainty and small number exchange are objective market parameters. Change, however, is a binary outcome—the economic agent changed, or he did not change and experimentation is thus in order. Experimentation is very much in order because TCE is an empirical-based analytical framework—that is in its early stages of development—for detecting and mitigating transaction costs; and outcomes of the framework are refutable hypotheses.

### *The internal logic of bounded rationality and opportunism* – Diseconomies of bounded rationality unavoidably result in incomplete contracts. By itself, incomplete contract is not sufficient to cause opportunism, but as mentioned earlier, in the presence of uncertainty (disruptions) and special purpose assets, does cause opportunism with reasonably high levels of confidence.

### *Diseconomies of opportunism* - result in promises not being self-enforcing and parties will renege unless prevented from doing so by provisioning the contract with penalty or sanction clauses or by other means.

### *The twin behavioral assumptions* - of bounded rationality and opportunism of economic agents are shown on the page after next as the twin pillars of human behavior.

Box: Examples of Hidden Hazards and Unanticipated Consequences

* Although standard model contracts of the AIA (American Institute of Architects) and FIDIC (the International Federation of Consulting Engineers) are used as models worldwide, they are laden with hidden hazards of the kinds described in this overview. The author is currently assessing the “Payments” clause found in the AIA model contract document. The payments clause is just one of several similar problematic clauses in standard AIA contracts.
* Fixed fee planning consultancy contracts rarely have adequate safeguards built-into them that counter the perverse incentives that lead to wrong investment choices. For example, engineering liability clauses often have unanticipated consequences when they unintendedly distort the intended incentive structures of contracts. This was the case in water leakage in a transit tunnel design into which over designed capital costs were incurred instead of the lower operating cost solution. (Levitt et al, 1980)
* Overly optimistic project cost and demand estimates are the result of perverse incentives that routinely end up wrongly identified as—just that—overly optimistic project costs and demand—and hence go undetected as a result. The actual costs of these projects are typically borne by future taxpayers and users while benefits accrue immediately to local politicians and state owned development agencies and planning consultancies.
* These very same perverse incentives also create opportunities for collusion among key players—planning consultants, project principals, and the local and regional development agencies—without which the resulting opportunism could not exist. What are some of the other hidden incentives that support this kind of opportunism? Microanalytic transaction analysis provides some answers.
* Fixed price or fixed unit price contracts for construction are common sources of problems that frequently come under the rubric of unanticipated consequences as owners and contractors are inherently in conflict under these kinds of complex contracts. Contractors are typically motivated to complete projects at minimal cost while meeting the minimum design specifications. Clients are motivated to make sure the contractor meets or exceeds minimum design specs at the lowest cost to the client. Because engineering designs are frequently problematic in several ways, numerous opportunities for change orders exist. When these lead to negotiations on the validity and costs of a change order, they often escalate into arbitration or litigation.

### Engineering designs can also lead bidders to intentionally under-bid the actual cost of construction—a common hazard that is called “low balling” a bid offer. The more complexity and problems encountered in the technical specs of an RFP (Request for Proposal), the greater the signal to bidders that low balling may be feasible.

Figure 1. Twin Pillars of Human Behavior

BOUNDED RATIONALITY

|  |  |
| --- | --- |
| High-High  High bounded rationalilty and high opportunism  **Hierarchy** governance structure with strong admin controls that optimize coordination and adaptation and that boost capacity and deters quasi-rents; suitable for highly specialized transactions | Low-High  Low bounded rationality and high opportunism  **Hybrid** governance structure with an optimum triple and credible commitment; and contract provisions that boost capacity and deters quasi-rents; suitable for moderately specialized transactions |
| High-Low  High bounded rationality and low opportunism  **Hybrid** governance structure with an optimum triple and credible commitment; and contract provisions that boost capacity and deters quasi-rents; suitable for moderatley specialized transactions | Low-Low  Low bounded rationality and low opportunism  **Market** governance structure with strong incentives that promote hazard-free performance; suitable for general purpose transactions |

OPPORTUNISM

## A simple discrete transaction

### A simple discrete transaction that shows the behavior of a market transaction is drawn on the next page in Chart 1 and technically described in IV-F1a) page 29. Note that spot markets are driven entirely by price because all value has been standardized and priced leaving no discretion for hidden value. Not so for regular market items that are redeployable, but not standardized. Whereas spot market assets are perfectly monetized, regular market assets are highly monetized. As mentioned in paragraph I-A2 above, the transaction is part of the two overarching systems: the rules of the game institutional environment (IE) and the plays of the game economic organization (EO), which are explained on pages 32 and 33, respectively. (Williamson, 1996, 2005)

# Chart 1 - The Discrete Market Transaction

# **Twin Behavioral Assumptions** **Twin Behavioral Assumptions**

# **of the Buyer of the Seller**

* Rational but limitedly so
* Simple self interest but with an agenda
* Rational but limitedly so
* Simple self interest but with an agenda

Exchange Asset

# **DRIVER OF MARKET ASSET SPECIFICITY FOR GOVERNANCE STRUCTURE**

# **TRANSACTION MARKET TRANSACTION OF MARKET TRANSACTION**

##### Spot Market

Price

##### Simple standardized asset

*Redeployable asset*

# Redeployable asset *Regular Market*

# Cost MARKET = **M(k,Ɵm)**

M

**of Ɵm** = Shift parameter of market organization,

changes in which change the cost of governance

# **Gov**

##### Rises steeply because market organization does not adapt to high asset specificity K>>0

##### **Regular Market**

# **k = Asset Specificity**

***Spot Market***

### Note that pure market transactions are limited to certain exchange assets, to transactions of low to low moderate asset specificities. We will see later that hybrid, long-term contract (e.g., franchises) are also market transactions but not exactly having the identical mediating features of a pure market; hybrids have some market and some hierarchical mediating features Hybrids are mixed governance structures. (See pages 53 to 55 for illustrations and detailed descriptions of these features of all three governance structures: market, hierarchy, and hybrid.) Note that market governance structures are structured with certain mediating features that minimize hazards of any kind and enable twin behavioral assumptions of the low-low kind as defined in Figure 1 page 27.

## Defining the Transaction

### There are three types of transactions each named for the way they are governed. The kind of governance has much to do with the asset specificity or the degree of redeployment to another use or user without loss of productive value.

#### An interfirm exchange across an autonomous market interface of a redeployable nonspecialized asset (shown in Chart 1 page 28); this form of exchange is called a market transaction. Within this context are spot markets where the redeployable exchange asset is simple, generic, graded or standardized and price is the only criteria for exchange—this is the basis for trading commodities.

#### An intrafirm exchange that is internally organized within a firm (i.e., vertically integrated) of a highly specialized nonredeployable asset (shown in Chart 2 next page); this is called a firm or technically a hierarchical transaction where hierarchical authority reigns in the form of vertical integration for the purpose of coordinating highly complex transactions such as might occur within government of its own intelligence agency; and

#### An interfirm exchange across a market procured interface of a mid-spectrum moderately specialized nonredeployable asset (shown in Chart 3 on page 31); this is called long-term contract, one of numerous relational contractual variations technically referred to as a hybrid transaction where interpersonal, social, and political trust in the form of credible commitment are crucial for optimum functioning.

## The Discrete Hierarchy and Hybrid Transactions

### Charts 2 and 3 of the two remaining transactions: hierarchy and hybrid are shown for the purpose of illustrating items IV-F1b) and c) immediately above.

# 

# Chart 2 - The Discrete Hierarchy Transaction

# DRIVER OF HIERARCY ASSET SPECIFICITY OF GOVERNANCE STRUCTURE

# TRANSACTION HIERARCHY ASSET OF HIERARCHY TRANSACTION

Authority

# Nonredeployable Hierarchy or Firm

# Highly specialized

# Contractually incomplete

##### **Costs**

H

# of HIERARCHY OR FIRM = (k,Ɵh)

# **Gov** High costs for all k due to bureaucracy

k = Asset Specificity

# **Ɵh** = Shift parameters of hierarchy organization, changes in which change the cost of governance

# Price shift to authority

# DRIVER OF HIERARCHY ASSET SPECIFICITY OF GOVERNANCE STRUCTURE OF TRANSACTION HIERARCHY ASSET HIERARCHY TRANSACTION

# k >>0

Parameter Shift

Price shifts to Authority

At k^ under conditions of negligible scale/scope economies

# Nonredeployable Hierarchy or Firm

# Highly specialized

# Contractually incomplete

Crossover point

##### **Costs**

# of

H

##### Gov HIERARCHY OR FIRM = H(k,Ɵh)

High costs for all k due to bureaucracy

Pre-1972 issuance of Anti Trust Enforcement Guideline

k = Asset Specificity

k^

# 

# **Ɵh** = Shift parameters of hierarchy organization, changes in which change the cost of governance

# Chart 3 – The Discrete Hybrid Transaction

Twin Behavioral Assumptions Twin Behavioral Assumptions

# of the buyer of the seller

* Rational but limitedly so
* Simple self interest but with an agenda
* Rational but limitedly so
* Simple self interest but with an agenda

Exchange Asset

# DRIVER OF HYBRID ASSET SPECIFICITY OF GOVERNANCE STRUCTURE TRANSACTION HYBRID ASSET OF HYBRID TRANSACTION

# k >0

Parameter Shift

Market Organization is favored in mid spectrum

Under conditions of minimizing the sum of transaction and production costs; price shifts to mix of price, authority, and trust; optimum k is within k\*< k < k~

# Nonredeployable

# Moderately specialized Hybrid or L-T Contract Most infrastructure

# 

# Contractually incomplete

# M’ > X’ > H’ > 0 Hybrid or Long-Term Contract = X(k,Ɵx)

M

x

##### **Costs**

##### **Of**

H

##### **Gov**

Envelope for Hybrid (k\*<k<k~) where k is optimum

# 

Plays of the game

H

x

M

k = Asset Specificity

k~

k\*

# 

# **Ɵx** = Shift parameters of hybrid organization, changes in which change the cost of governance

# The Rules and the Plays of the Game

## Overarching System: Institutional Environment (IE)

### Typically referred to as the “rules of the game” (North, 1990), they could also be called the “laws of the game”—they set the legal and regulatory context within which economic exchange takes place. The rules are three: contract law, property rights, and cultural codes of conduct. Each is discussed separately below: (See chart on page 57 for illustration of IE and EO.)

### Contract law in most developing countries is singular, in that there is one basic legal doctrine that regulates commercial contracts. That legal doctrine is classical law and economics characterized by “sharp in by agreement; sharp out by performance”, and court ordering (Williamson, 1996)—suitable for market transactions, but inadequate for hierarchical and hybrid transactions where asset specificities and exposures are non-trivial. What is needed is to bring contract laws and education systems in countries lacking legal and economic development in harmony with these recent developments. World commerce has evolved toward more complex transactions—classical doctrine no longer sufficies —the result, contract law is insensitive to variations in transactions. Williamson, 1996 Conflict, even meltdown between complex contracts and classical legal doctrine is observed in project financed Build-Operate-Transfer (BOT) power and large capacity national airport investments in low to middle income countries.

### Property rights determine what can or cannot be done with economic property of all kinds—real, intellectual, or defacto. Property ownership is the common institutional mechanism that determines who possesses rights over property. Rights typically grant legal authority to use property, sell it, mortgage it, and assign it to others. While ownership goes a long way, it does not go far enough, particularly for defacto possession of property. In such cases, the security of property is tantamount. ( Williamson,1996) As already stated, complex contracts are unavoidably incomplete so that property rights are only partially secure under such condition and residual rights are left in the public domain unless safeguarded from capture by appropriately provisioning the contract; experience tells us that traditional safeguards in the absence of credible commitment are often inadequate in PPP infrastructure projects.

### Codes of conduct in many countries are ignored at the peril of the parties to a commercial contract. These codes can be a binding constraint to successful contract completion and when they appear, they oftem do so as an unanticipated consequence. An exampe is the willingness and ability to pay of consumers toward user charges or tariffs for private concessions for public transport or urban services such as water supply and sewerage, and electric power. Concessionnaire rates of return are typically set on the basis of market prices for foreign construction and foreign purchased equipment, machinery, and installation, and on exchange rate policies that are not entirely floating. This combination can result in rates-of-return calculations that over price user charges from the perspective of the consumer. The problem is rarely poor computation, usually it is a lack of thorough understanding of the “morph code”—what community reaction can be expected when user charges are misaligned with willingness to pay and will the reaction morph in the specific community and compound and propagate itself? (Faustino and Fabella, 2010)

## The Sub-System: the Economic Organization (EO)

### The “plays of the game” (Williamson) are the various governance arrangements that are designed for each transaction. In other terminology, they are the institutional arrangements, the institutions and mechanisms that are inserted into a transaction to improve governance.

### Economic organization is the contractual framework of a nexus of contracts within which:

#### the institutions and mechanisms (i.e., the governance structures) that govern the project’s transactions;

#### the institutional environment that regulates those institutions and mechanisms; and

#### the twin human behavioral assumptions of bounded rationality and opportunism and the objective market parameters (of uncertainty and small number exchange) of the agents who govern transactions come together in contractual forms to create the three parts of the economic system of TCE.

### Whereas, administrative organization has one governance structure and driver, the firm (i.e., hierarchy and authority, respectively), economic organization has three: markets and price, hierarchy and authority, and hybrid and a mix of price, authority and trust, respectfully.

### Economic organization is susceptible to economic analysis whereas administrative organization is not. Analysis occurs by:

#### making the transaction the unit of analysis of organization and contract the framework for operationalizing economic exchange; this makes the heretofore obscured complexity of organization life revealed to economic analysis;

Box: From Administration Centric to an Economic Organizational Mindset

Economic organization and governance are key TCE concepts about economic exchange, the understanding of which requires shifting ones’ mental frame of reference from an administrative centric to an economic organization mindset in order to better understand the governance problems of project implementation. Simply put, the governance power of economic organization is several times that of administrative organization for reasons already mentioned.

#### emphasizing workably realistic behavioral assumptions of bounded rationality and opportunism; this brings human project designers and managers into the realm of experimental science and refutable hypothesis testing;

#### employing discrete structural analysis rather than marginal analysis; this motivates economic analysts to deal with first principles rather than only with refinements at the margins (See details on bloated bureacracy on page 56.); and

#### adopting remediableness by which comparisons to hypothetical ideals are avoided; this motivates the analyst to ground truthing. (Williamson, 1996)

### The added value of economic organization are three forms of exchange and governance instead of just the firm, namely: a) market, b) the firm or what is technically called hierarchy; and c) long-term contract or what is technically referred to as a hybrid form of exchange. Both economic and administrative forms of organization have the firm in common.

## How Asset Specificity Changes the Plays of the Game

### Asset specificity creates Incentives and contract hazards. Of the elements that make up a transaction, perhaps the most important is the exchange asset—the water treatment plant, the electricity generating plant, or the bushel of sorted black beans. Exchange assets are comprised of durable assets that vary according to the degree to which they are specialized as measured by their asset specificities. It is the specificity of the exchange asset, which determines much about the choice and design of institutional arrangements (i.e., the governance structures) that are employed to govern transactions in a least total cost manner.

### There is little doubt that asset specificity is a prime reason for the creation of a major part of the myriad of incentive structures that drive these choices and that are found empirically throughout each of the stages of the project cycle.

### *The exact institution(s) or mechanism(s) that create incentives* are unknown, but asset specificity offers a plausible explanation. Asset specificity is a measure of the degree to which the asset needed to produce a good or service ecan be redeployed to other uses or users without loss of productive value. For most PPP infrastructure investments the assets are specialized so they are not redeployable and as such the identity of the contract parties take on special meaning, if for no other reason, they will have lasting influence on outcomes. But here is a better explanation. Identity is unimportant for low asset specificity generic goods and services, but for the identity of the immediate parties to an exchange it is critical as asset specificitiy (of physical, site, human, dedicated, brand name, and temporal kinds) builds up. (Williamson, 1996) When asset specificity of anyone or more of these kinds builds up, a bilateral dependency relation sets in and the parties are subject to opportunistic defection from the spirit of the contract. Defection can take on various forms depending on the level of build up. At the higher end of asset specificity, a common hazard is to insist on the letter of the contract—one might refer to this as an “African Buffalo hazard”—where the large gains are. As mentioned previously, contract hazards arise when incomplete contracts that are supported by investments in specific assets are beset by disturbances (uncertainty). Williamson, 2005

### *Incentives and economic organization vary* according to three syndromes of transaction governance attributes, the primary attribute of which is asset specificity. On the asset specificity spectrum the three syndromes are situated from what is called a market syndrome that ranges from low (k≥0) to low moderate (k>0) specificities and generic technology on one end of the spectrum; to what is called a hybrid syndrome from low moderate (k>0) to high moderate (k>>0) specificities and intermediate technology located midway on the spectrum; to what is called a hierarchical syndrome from high moderate (k>>0) to very high (k>>>0) specificities and highly specialized technology on the other end of the spectrum. (Williamson, 1996, 2005)

### Each of these syndromes are the areas of concern of microanalytic analysis.

### *The costs of each syndrome of governance* are a function of asset specificity (and uncertainty, among others), and one of three shift parameters of its economic organization and ideally its institutional environment (remember what was said before about singular legal doctrines in developing countries), comprising the differing regulatory regimes of contract laws, property rights, and cultural codes of conduct. The institutional environment described earlier is the shift parameters, changes in which change the cost of governance.

### The level of asset specificity reflects the level of exposure of the transaction. It measures the degree of specialization of the asset and to that extent, the level of dependence (or exposure) on the counterparty for protection against opportunism. Dependence is manifest through the extent to which the counterparties have attained optimum negotiations of the triple. Dependence and trust are linked; how exactly is unknown. However, a rough approximate refutable hypothesis is that dependence is inversely related to trust in the form of D = 1/T such that as trust declines dependence increases, and as trust increases dependence decreases.

### *The implication is that little trust*, if any, exists between contract parties at early stages of the relationship known as a hybrid long-term contract governance arrangement, or simply complex contract. From this point forward, trust must be earned—in some non-trivial ways, trust and the willingness of the parties to invest in building trust depends on the time horizons of both parties and their exante assessment of expost hazards and their farsightedness.

### At the level of the transaction, much but not all, of the above is operationalized as follows:

#### Transactions at the negligible to low moderate end of the asset specificity spectrum are governed by spot markets and markets, respectively, have low exposures to hazards and therefore have low governance costs; (See Chart 1 on page 28.)

#### Transactions at the high end of the spectrum are governed by firms (hierarchy) have high exposures to hazards and therefore have high governance costs; (See Chart 2 on page 30.)

#### Transactions in the mid-range of the spectrum are governed by long-term contractual market procured arrangements (hybrids) have moderate exposures to hazards and moderate governance costs, wherein contract parties are able to:

##### preserve enough of their autonomy and strong incentives to get the job done while also;

##### administratively coordinate provision of contractual safeguards that are needed to protect their agreement from hazards and to operationalize it. Hybrids take advantage of market organization in the case of preserving autonomy; they take advantage of hierarchical (firm) organization in the case of protecting their agreements through the provisioning of contractual safeguards; and lastly, they take advantage of the combination of the two in the case of building interpersonal, social and political trust through the exchange of credible commitments. (See Chart 3 on page 31.)

### The asset specificity (k) of the exchange asset partially determines the incentive structure of how the governance structure of transactions are governed. Uncertainty is the other determinant of the governance of transactions. Uncertainty impacts the twin behavioral assumptions of the economic agents involved in the transaction. (See section IV-D1 to 6 on pages 24 to 26 for further details on these relations.)

### Governance structures emerge in accordance with their capacity to address the costs of asset specificity and uncertainty in minimizing the total cost of making transactions, which is equivalent to the total costs of production and transaction (governance) costs. (Joskow, 2005)

### At a microanalytic level of the transaction, trust, dependency, alignment, credible commitment, the triple, economizing on transaction costs, and restoration of the contract curve are interdependent. Althouth exactly how is unknown, experience and experimentation leaves the door wide open for learning.

## How Buyer-Supplier Relations Affect the Play of the Game

### Relations between buyers and suppliers work cost effectively when contract parties are credibly committed. Credible commitment involves a sustained course of activity that includes negotiating the following contract agreements and clauses for insertion in the concerned contract:

#### Discriminating alignment of transaction incentives is the matching of the transaction’s attributes of asset specificity and uncertainty with the costs (of exposures) and competencies (adaptations) of governance structures without which poor performance and opportunism are predicted; (See page 57 for the exact description of the discriminating alignment theory.

#### Optimization of the triple refers to negotiating the correct equilibrium between the three parts of the triple: price, asset specificity/technology, and safeguards without which the contract is predictably unstable. Optimization is attained by economizing on transaction costs and restoring positions on the contract curve; both while continually working toward credible commitment.

#### Economization of transaction costs is leveraging the attainment of safeguards (s) that are designed to increase the net present value of financial revenues of both contract parties by negotiating price (p) and asset specificity (k) together against the counterparty’s agreement to minimize total costs (to the extent feasible)—the sum of production and transaction costs of the contract agreement, without which the contract is predictably unstable and lacking in credible commitment;

#### Restoration of positions onto the contract curve because agents predictably fall off of the curve due to organizations having lives of their own and individuals having serious cognitive limitations. Restoration of contract positions requires a sustained form of stimulus (See sections V-G&H pages 47-48 for details on stimulus and smart monitoring); and

#### Sustaining credible commitment by revisiting each of the above four items regularly because agents routinely fall off of the contract curve.

## Operationalizing the Plays of the Game: Governance of Transactions

### Governance structures refer generally to the set of institutional arrangements that minimize the total cost of making and consummating a transaction. This includes provisioning contracts with safeguards that minimize total costs plus provide for the generic governance incentive structures as described herein. Generic governance structures include market as one of three such structures; the firm or what is technically referred to as hierarchy is another means of governing transactions; hybrid is the third. Each of the three are described in more detail below and illustrated on pages 53 to 55:

#### Markets are spontaneous self-enforcing structures that have low operating costs, high powered incentives and display outstanding adaptive properties to disturbances of an autonomous kind, but are poorly suited in coordination adaptation respects. Markets operate efficiently at negligible to low moderate levels of asset specificity;

#### Hierarchies, by contrast, are deliberate administrative governance structures that have weaker incentives and higher operating costs, and are comparatively worse at autonomous adaptation but comparatively better in coordination adaptation respects. Hierarchies operate efficiently at high levels of asset specificity; and

#### Hybrids are in-between markets and hierarchies in terms of exposure costs and adaptation competencies. Hybrids combine the powerful autonomous adaptive incentives of markets and the coordination adaptive administrative controls of hierarchy. Hybrids are adaptive to mixed market/hierarchy transactions as in PPP infrastructure projects where autonomous traders enter into bilateral (and ideally credibly committed) relations with their counterparty and who are able to use the powerful market incentives of autonomous interfirm transactions across a market interface to spontaneously consummate exchange, as well as the administrative control of hierarchy to coordinate the internal organizations of the trading firms to mediate the exchange conflicts that occur both in the interfirm interface and the intrafirm internal organization.

## Starting Points for Microanalytic Analysis [[3]](#endnote-2)

### At least five important characteristics of transactions are starting points for microanalytic analysis leading to identification of owners’ incentives and transaction hazards. Incentives and hazards are identified by analyzing the impacts that the following characteristics have on relevant asset specificities of: site, physical, human, dedicated, brand, and temporal kinds. For example, for site specificity the following questions are posed for [a)] below: What effect will local or global uncertainty and complexity have on the site specificity of the transaction?; and What effect will SNE (small number exchange) have on site specificity? The five impacts are:

#### Impact (local and global) that uncertainty and complexity and small number exchange have on the transaction. They each impact on the twin behavioral assumptions of bounded rationality and opportunism. Uncertainty and complexity aggravate and worsen bounded rationality (i.e., limited cognitive capacity is increased), hence they increase the probability of opportunistic behavior. Small number exchange aggrevates and worsens opportunism (i.e., simple self-interest with an agenda is made less transparent), hence it also increases the probability of opportunistic behavior;

#### Uncertainty and small number exchange also have objective market impacts on production opportunities, such as the uncertainty of rapid economic change on production costs and prices; and the small number exchange impact of a bilaterally dependent relation on productive performance of a support transaction (e.g., a commercial bank) within the same economic organization could lead to higher production costs;

#### Impact that durable transaction-specific sunk investments have on minimizing costs in the neoclassical cost function sense. Example: specialized investments are made for the purpose of reducing production costs and site specificity requires a specific location, for instance in the case of locating a coal-fired electric generation facility close by its source of coal. Locating elsewhere introduces higher production and probably transaction costs due to possible misalignment or maladaptation of incentives. Locating the generation plant correctly from the neo-classical production cost perspective is not likely to prevent transaction costs (i.e., friction) from occurring;

#### Impact that diseconomies (e.g., scale, scope, or learning from supplying similar inputs to multiple vertical supply relationships) associated with vertical integration have on market transactions and the creation of transaction costs. Misalignments of incentives between buyers and suppliers create opportunities for higher production costs and introduces transaction costs in market transactions; and

#### Impact that frequency of transactions has on the reputations of the parties involved. Contract breeches pose future hazards through higher prices and future reductions in opportunities, hence reputation effects limit future choices and actions and thus act to restrain future behaviors that lead to hazards.

# Five Recommendations to Immediately Improve Your Project

## Introduction

### We assume your project has been designed thoroughly and has procured an investor (yourself) and it is currently preparing for contract negotiations. A specialist has been brought in to assist with planning for negotiations.

### The first thing to do is to develop a problem statement of the project you want to negotiate. At first, this may turn out to be a fruitless exercise, but as you gain experience and familiarity with TCE and comparative contracting, the statement will gain in accuracy; and writing out the problem statement provides both time for reflection and a record of archived problems. For this exercise, the following statement is not related to any specific project but to numerous projects, the problems—though not many of the solutions—experienced by the author.

## Project Problem Statement

### After review of the project plans and design documents and interviews of key personnel, it is determined that the exchange asset is specialized in the first of the six specificity areas: physical, site, human, dedicated, brand, and temporal. It is further assumed that physical specialization takes the form of a newly developed and patented automatic control panel that is vulnerable to reverse engineering can be procured sole source and managed by a carefully crafted long-term contract. The contract is complex because it involves an exchange of durable assets for a promise of future performance. It is therefore mid-range infrastructure in a PPP arrangement with an autonomous government executing agency in charge of the electricity sector. The mode of governance is a long-term contract that is unstable in one or several ways because it was negotiated and written as if the contract was complete when all complex contracts are unavoidably incomplete. The government buyer of the exchange asset is engaged in its first electricity sector PPP power generation investment in any form—this first one a BOT or build-operate-transfer project. The government has just completed procurement of the investor and is now developing its negotiation plan.

### The prospective incompleteness of the contract combined with the special-purpose exchange asset and local uncertainty means that you the investor will be bilaterally dependent on the counterparty to help the contract from fraying at the edges or at most unravelling. There are numerous hidden hazards (opportunisms) that are unpriced and unrelieved, such as suggested by the specialist, the following:

#### contractual inflexibility to deal with unanticipated consequences such as the production contingencies that are certain to arise, as well as the myriad of hidden hazards in standard AIA contract documents. (See Box: Examples of Hidden Hazards and Unanticipated Consequences on page 26.)

#### the lack of restoration mechanisms to restore agents to their contract positions after falling off the contract curve, which is expected to occur with a reasonably high level of confidence;

#### the lack of credible commitment because it was not a normal practice at the time of the project and the accompanying high probability that future promises will be reneged because promises are not self-enforcing under conditions of opportunism;

#### problematic budgetary and/or investment policy decisions based on inadequate allocation of resources due to sole reliance on production costs to inform investment decisions rather than on total costs;

#### instances of opportunism wherever contract parties interact with clients or customers; and

#### existing contract law and legal regulatory regime are not aligned with the institutional arrangements that govern the transaction; contract law doctrine is classic law and economics where contracts ‘say it all.” Williamson, 1996)

## Developing Trust: Sharing Negotiaion Plan

### After completion of the problem statement and negotiation plan, they are shared with the government executing agency and core ministerial officials from Finance, Budget and Management, and probably Industry and Trade. Together with the investor, a technical workshop is designed to achieve a joint profit understanding of the following project cycle stages: negotiations, contracting, construction and equipment installation, commissioning, implementation, and project management supervision and monitoring. The objective of the training program is to arrive at common understanding and rationale for recommending the actions proposed to minimize total costs some of which may be distasteful or considered intrusive to government. In such case, the investor will need to be very well informed about: the counterparty; the transaction; the economy; the exchange asset; the range of feasible trade-offs; and the local and national politics that are involved, and be creative. The goal of this training should be to arrive at a tentatively acceptable percentage of joint profit shares of the two contract principles to prevent strategic bargaining downstream.

## Negotiate to Attain Credible Commitment

### TCE takes project management to be about credible commitment. Credible commitment adds the governance part of total costs that is missing in traditional project management.

### Credible commitment is attained by negotiating the five items listed in V-D1a) to e) on pages 37-38 and provision each negotiated clause into the contract.

### Negotiate safeguards such that their successful outcomes accrue to increase the net present value (NPV) of financial revenues of the transaction (project) by leveraging the combination of price and asset specificity. Safeguards can include a plethora of institutions and mechanisms that mitigate hazards or transaction costs. The selection of these are a matter of priority and feasibility that are determined in accordance to their contribution to optimize the projects financial NPV.

### As mentioned previously but worth the reminder, the triple is defined as the price (p) at which trading takes place; asset specificity (k), the level of specialization of the exchange asset in the bilateral relationship; and the transaction-specific safeguard (s), which is introduced to protect the bilateral exchange and the agreement (i.e., the transaction) from hazards and transaction costs.

### The objective of negotiations is to optimize credible commitment. It is understood that an optimized triple translates ideally into a stable equilibrium of the three elements of the triple, which reflects a stable economic organization of the project and this in turn reflects a credibly committed contract. This stable equilibrium should lead to the parties staying on the contract curve they supported by adopting smart monitoring. Smart monitoring is a combination of monitoring and stimulus. Smart monitoring is discussed in sections VI-G&H pages 47 and 48.

### Negotiating stability requires a considerable degree of inter-disciplinary knowledge and skill. Negotiators need to be knowledgeable about how each element of the triple interacts economically, financially, politically and institutionally, and has an idea what each feasible trade-off option looks like before negotiating. For trade-offs that are unknown, the negotiator will have knowledge and skills to “think on his feet.”

### To negotiate well, recruit technically qualified negotiators and technical assistants because the optimization of the triple will take a knowledgeable and skillful team of people to accomplish. If project finance is involved, initiate two sets of negotiations: first negotiate to settle the issues of governance; followed by negotiations to settle the issues of financing.

### Be prepared and plan for the negotiating capacities of the two parties to be fundamentally asymmetrical. Expect that you will negotiate on the basis of knowledge of the trade-offs associated with the full triple while the counterparty will negotiate on the basis of something less than the triple, perhaps on the basis of price and quantity and some limited knowledge about trading off price against asset specificity or technology but uninformed about how negotiated stability could be achieved and how contract hazards vary with price, technology and safeguards. Asymmetric and incomplete negotiations are often the outcome and a source of hidden risks and poorly written contracts.

### This raises the opportunity to plan for giving and receiving credible commitments. Keep in mind that the complex contract needs a PP partnership, which by itself is assumed to thrive when asymmetrical relations have been addressed. Equilibration of contract hazards between the parties, even if not perfect, is fundamental to a partnership relationship.

### Negotiations calls for smarter trade-offs between price (incrementally lower to higher), technology (from degrees of generic to degrees of specialized), and contractual safeguards (from looser to tighter). All three (price, technology, and safeguards) are interactive, are determined simultaneously, and are scaled to be approximately comparable.

### In terms of alignment, is there a project management unit that deals with the autonomous bilateral trading that comes out of hybrid mediation so that decisions are made in a coordinated and sequential manner that maximizes mutual interests and diminishes guile and confusion? Review the specific clauses of the contract for relevance to the set of problems listed in the problem statement above. Are they designed to mitigate hazards as you perceive them? These problems may provide you with an opportunity to introduce credible commitment to the other party. Offer to give the other party some economic ground in order to get his attention to mitigate this or that hazard, but before doing so, make sure the benefit cost ratio is positive to justify doing it because the trade-off involves something of value. Ensure that the net benefits, that is, the increase in net financial revenues of the transaction accrues to the transaction so that both parties are benefitted according to their agreed joint shares.

### Given that organizations are complex and have lives of their own, and individuals have limited cognitive capacities, incentives naturally deteriorate over time and parties are apt to “fall off of the contract curve” and mis- and nonalignments occur routinely. Hence, alignment is an on-going process problem that should be addressed in project and contract design and management and in monitoring project implementation. In practice, this is rarely the case. Provisioning the contract appropriately will a specific work task.

### Realignment hazard is the incentive to perform poorly in the absence of discriminating realignments to restore the alignments between the costs and competencies of the governance structures and the attributes of the transaction in a transaction cost economizing way whenever contract parties fall off of the contract curve—a form of “misalignment creep.” Realignment in the form of “contract stimulus” will restore their position on the curve. (See VI-G&H)

### The plays of the game also must align with the rules of the game. Carefully check the wording of the contract law to ensure alignment with the transaction—if not, negotiate in a transaction cost economizing manner aiming for the giving and receiving of credible commitments.

## Negotiate to Attain Trust

### It is reasonable to assume that trust is never fully attained, but it can be a state of continual becoming. Consider that every trade-off has two sides; giving economic ground may gain trust, but lose in revenues; au gratis provision of training counterparts may gain in trust but lose in revenues. The question reduces to “What is going on?” Are all trade-offs simply two-sided, or are they more complex? Always choose the more complex option to a 50:50 proposition; only differing from that choice when one side is increased due to greater accessible real information. The analyst shifts from a gamble in the former case to experimentation in the latter complex option. It is noted that the acquisition of knowledge is always cheaper than gambling a portion of the project away. In infrastructuure negotiation, project portions are rarely smaller than large portions of knowledge acquisition, especially with solid cooperation from the government partner in a PPP investment.

## Search for Opportunities to Economize on Transaction Costs

### The best opportunities to economize on transaction costs occur during negotiations as that is when leverage is at an optimum level. However, there are opportunities during implementation as well. Recall that economizing on transaction costs is what optimization of the triple and attaining credible commitment is all about. Whenever opportunities arise to execute any of these mechanisms, by all means do it. In effect, they should be considered “process mechanisms.”

### Economizing on transaction costs is to negotiate to trade-off the combination of price (p) and technology (k) as levers in order to gain the benefits of appropriate safeguards (s) that relieve transaction hazards and prevent them from becoming transaction costs. This is what is meant by the phrase “in a transaction cost economizing manner”.

### Safeguards are clauses that are inserted into contracts for the purpose of relieving contract hazards or mitigating transaction costs. In the new TCE language, safeguard insertions are referred to as contract provisioning superior governance structures or governance institutions or mechanisms.

### Economizing on behavioral assumptions occurs when the twin assumptions of bounded rationality and opportunism are specifically economized by contract provisioning. Two things occur:

#### the transaction costs from bounded rationality and opportunism decline or vanish and transactions become more efficient leading to superior project implementation; and

#### economies of bounded rationality and opportunism occurs in spot markets. Spot market governance is comparatively free of hazards because the effects of standardized exchange assets, strong incentives, and appropriability of returns on all margins prevent bounded rationality and opportunism from taking hold.

## Restore Positions onto the Contract Curve and Smart Monitoring

### Restoring the alignments of the contract parties to the original (or to an updated) contract agreement when the parties “fall off of the contract curve” is generally required on a routine basis. A typical example is the employment contract of an employee. Frequent restoration to his original terms of contract keeps the employee constantly oriented in the intended direction. Contract incentives deteriorate naturally and falling off of the curve tends to occur routinely. Frequent restoration requires a form of project related intellectual stimulus best provided as a part of project monitoring. **[[4]](#footnote-2)**

### Restoring the contract curve through smart monitoring is probably the next most influential phase of infrastructure governance next to procurement, negotiations, contracting, and project management. Typically, with the exception of the latter, these were areas generally treated as bureaucratic afterthoughts, the productivity of traditional monitoring activity left much to be desired. Often, monitoring activities are little more than check-lists that are carried out with little or no regard for expost incentives or for getting agents back onto the contract curve. Moreover, because critical thinking of the shallow kind frequently appears in monitoring and evaluation reports, one must ask what was monitored. From some accounts, the answer is whether the “goals and assumptions” of the monitored project made any real difference?

### Monitoring personnel are rarely self-motivated to collect data or to feed the appropriate data properly back to where it would count the most. Personal observation over 40 years in the field indictes that the appropriate skills for transferring technology in real time is largely absent. This problem represents a missed opportunity to improve project implementation and keep project parties aligned and on the “contract curve.” Just as or perhaps more important than collecting data on performance, getting contract parties back onto the contract curve should be a major priority of team leaders.

### Getting parties onto the curve is achieved during the critical period of real time implementation, and project monitoring comes closest to real time. Missing this opportunity to execute project monitoring differently results in comparatively high real costs. Smart monitoring focused on “tuning-up expost incentives” and “high productivity stimulus” is believed to be the way to get and keep contract parties on the curve. Expost governance is thereby addressed.

## Redesign Project Monitoring

### Let us call the project monitor, the restoration agent or the stimulus monitoring agent. He has engaged the contract’s team leader and his implementation team in their monthly review session to discuss and comment on their 3-month moving action plan in time for the next immediate phase of project implementation, in one month.

### The action plan is presented by the team leader with support provided by his team members. Discussion and commentary focus on the accomplishments to date and the expected progress in the next increment of the work cycle. Discussion is open to all those present. The restoration/stimulus monitoring agent asks challenging “why” kinds of questions of the team to gain clarity and in so doing finds numerous opportunities to raise the issues of the comparative contracting framework such as the focus on: “what is going on” and “compared to what” within the transaction; the level of specialization (k) of the exchange asset and their resulting exposures; the institutional arrangements that are necessary to minimize total costs; the alignment necessary between the incentives of the buyer and the supplier; the economizing on transaction costs; the giving and taking of credible commitments; the analytical process of arriving at conclusions, causes or correlations and following action steps; and the identification of hazards and transaction costs and their mitigation.

### Importantly, contractual performance indicators, milestones and time frames are brought to bear on the prospective action plan for their relevance to the next phase of actions given the state of the institutional arrangements at the time.

### The success of stimulus monitoring rests almost entirely on the qualifications of the restoration/stimulus monitoring agent. In critical ways this agent replaces the traditional management consultant.

### Done successfully, the project team leader sees perhaps for the first time the expanded role that transaction costs, incentives, credible commitments, and contract hazards play in good design and actual project implementation. Moreover, he sees the connection between past actions and the refutable hypotheses buried in the comparative contract analysis.

### The refutable hypothesis can take several forms: a contract clause; a negotiated safeguard; or a management policy of the project manager. He is enabled to think at the level of the transaction where the principal action takes place. He is able to query what is missing and what in addition is needed to achieve an agreed output in the time and resources allotted that leads to the desired outcome downstream. If the planned output is not complied with, then this information is fed back into the next monthly action planning monitoring session, and the refutable hypothesis that led to the mistake is analyzed as to why results are different from what was expected, and that information is used to change or discard the safeguard or policy decision.

### At some point, the team leader catches-on to what is going on and he begins to self-initiate this process of stimulus monitoring and action-planning. When that takes place, the project begins a process of self-learning and is documented in the monitoring report.

### For the farsighted team leader, the incentives to look for are an increased focus on human incentives that lead to real and intended interim project outputs and outcomes and the experimentation with institutional arrangements that lead to real output and outcome regularities. By transaction regularity is meant the identification of transaction patterns or markers in prior designs that worked and applying them currently as informed experimentation.

### Markers are the wording of a contract clause that consists of for example, the joining of a lack of staff knowledge or skills and discernable uncertainty; the joining of dyad supply relations and reasonable potential for opportunism; and the particular organizational structural arrangement (highly leveraged debt and the preemptive security constraints controlled by lenders, and a multidivisional or unitary organizational structure) of a project management unit and an incentive mechanism or negotiated safeguard that prevents excessive lender control of a project financed PPP infrastructure project. (See project finance paper I authored concerning debt and equity financing as governance structures in project finance listed in the bibliography.)

### What needs to be done to change the accustomed way of doing things in government bureaucracy is a challenge, but one that a farsighted team leader assumes is surmountable. Smart restoration and stimulus monitoring, a “high productivity expost stimulus restoration mechanism”, has the potential of accomplishing several ends:

#### The monitoring task of gathering more relevant information,

#### The stimulus task of realigning contract parties back onto the original (or adjusted) contract curve agreement,

#### The micro transfer of technology through self-enforcing incentives at the transaction (project) level of action,

#### The inducement of project management staff to self-learn,

#### The experimentation that comes with testable predictions and refutable hypotheses that induce innovation, and

#### Combining traditional monitoring with the tuning-up of project implementation incentives and the transfer of technology is underdeveloped and can be an important arena for further applied research.

# Negotiated Safeguards & Credible Commitment Mechanisms

## Examples of Negotiated Safeguards

### A condition of complete safeguard occurs when asset specificity is negligible and hazards are relieved. Rationale for negotiated safeguards include a broad range of institutions and mechanisms that:

#### Spell out in detail the terms and conditions of the rules of adaptation and risk sharing concerning contingent claims made by either party;

#### Establish the condition to create an adaptive sequential decision-making structure that facilitates autonomous bilateral parties to manage their project by ensuring adaptation and gap-filling machinery are in-place for contract parties when needed;

#### Raise the issue of changes in incentive structures in privatized state-owned enterprises and safeguard against any diseconomies;

#### Raise the issue of incentive differentials between the public sector government and the private sector party and safeguard against any diseconomies such as asymmetry between the parties;

#### Post a hostage such as a performance bond to signal credible commitment to the other party;

#### Change the benefit/cost calculus of the counterparty where a net gain is achieved by offering technical assistance to resolve an important problem the counterparty is unable to tackle for various reasons;

#### Require self-enforced payment of a penalty for failure to achieve an essential milestone that interrelates to progress of the counterparty;

#### Realign incentives by continuously giving and receiving credible commitment by renegotiating price, technology, and safeguards simultaneously as production and governance cost savings go together and constitute the main ingredients of efficient trade-offs;

#### Introduce trading regularities that support and signal continuity intentions; constrain the conditions of supply or procurement when appropriate continuity conditions have been satisfied;

#### Consider contractual safeguards before attempting to remove a transaction from the market and vertically integrate it;

#### Adopt franchise bidding procedures where monopoly pricing is feared and include protecting not just an efficient bid price but also an efficient supply price by safeguarding against the hidden ex-post risks of incentives changing due to small number exchange relations and the opportunism that accompanies it;

#### Bind autonomous bilateral contracting parties to actions of a joint profit maximization kind to safeguard against strategic bargaining;

#### Make use of collective organization where reputation effects are accurately and reliably recorded and experience is shared among interested parties (e.g., supplier associations);

#### Adopt contingent compensation in specific situations;

#### Adopt frequent adaptation of employment contracts to restore project related public service positions onto the contract curve; and

#### Make use of credible threats that comport with the investment that supported those threats.

## Examples of Confidence Building Credible Commitment Mechanisms

### In PPP infrastructure projects, a credibly committed government policy is the ultimate complex contract safeguard. Such a commitment means the private investor promisee is reliably compensated should the government promisor prematurely terminate the contract or alters it in any way. (It should also be noted that credible commitment works in both directions, where the roles mentioned above are reversed.) Credible commitment mechanisms – can be designed and introduced during negotiations and contracting to promote and secure credible commitment. There is a range of credible commitment measures that can be applied in various combinations according to local circumstances. Some of these credible commitment measures are to:

#### Restore contract integrity by critically renegotiating the triple and provisioning the contract to do so;

#### Supplant court ordering by private ordering, keeping court ordering for ultimate relief;

#### Embed transactions in more complex trading networks as a way to encourage transaparency;

#### Write hostage contracts;

#### Bond agents to principals where both have comparable stakes in the game;

#### Change the B/C calculus of counterparties by exchanging credibly committed hazard mitigating proposals with them, including proposals that give economic ground;

#### Assign responsibility to the line managers of executing agencies and ensure they are transparent with the agreement of the counterparty principals, of course;

#### Proceed with farsighted but incomplete contracting throughout management of the project cycle, using institutions to build confidence and mitigate contract hazards as they arise; and

#### Adopt frequent adaptation of employment contracts to restore project staff positions of executing agencies onto the contract curve.

# Details on Markets, Firms, & Hybrids

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# Cost of market governance = M(k, ƟM)), which is a function of asset specificity k, and the shift parameter ƟM corresponding to market rules of the game where governance costs are low for small k and M’(k,ƟM)>>0 because markets are unable to adapt to the hazards of high asset specificity.

# Attributes of Market Governance

# Strong incentive of parties to act quickly on the basis of price information to maximize own utility;

# Identities of traders are irrelevant—persons history is not important; trader makes own decisions based mainly on price, i.e., they are autonomous;

# Exchange assets are of general purpose technology that are easy to measure by sight and simple inspection; characterized as commodity when the exchange asset has been standardized; generally mass produced and marketed;

# Occurs within thick markets at competitive prices where there are numerous alternative suppliers and defection costs are negligible;

# Contract law is highly legalistic; contracts say it all: sharp in by agreement, sharp out by performance;

# Assets are fully monetized and price reflects full value of commodity;

# Adaptation is autonomous.

# Main Attributes

# Strong incentives and low cost of governance;

# Frictionless;

# Spontaneous;

# Unable to adapt when k >>>0

# 

# Costs of hierarchy governance = H(k,ƟH) a function of asset specificity k and a shift parameter ƟH corresponding to corporate rules of the game where governance costs are high for all k and M’ > H’ > 0 because firms are able to adapt to the hazards of high asset specificity, but at a cost of governance. The optimal mode of governance changes from markets to hierarchy at the crossover point as asset specificity increases.

# Attributes of Hierarchy Governance

* The high incentive intensity of market transactions do not exist in hierarchy transactions;what does exist is the internal organization of the firm with its capacity for control and coordination adaptation at high levels of asset specificity. Control and coordination adaptation are achieved mainly through sequential decision making of hierarchical authority.
* Identities of traders are irrelevant when corporate struture is unitary; personal history is unimportant; traders are autonomous but unified under a single corporate owner so that the exchange is actually governed by internal organization of the owning firm; when corporate management is in the M Form of organizational structure, identity matters.
* Exchange assets in PPP projects are made from special purpose technology that is difficult to measure completely due to the limited cognitive capacities of economic agents, so contracts are unavoidably incomplete, hence property rights are only partially secured and residual rights are left in the public domain unless safeguarded from capture; experience tells us that such safeguards are often inadequate in PPP infrastructure projects.
* Conflict is resolved by fiat as the firm is its own court of ultimate appeal.
* Contract law is forbearance
* Assets are not fully monetized at mid to high levels of asset specificity and price does reflect the full value of the asset

# Main Attributes

* Adaptation is autonomous coordination
* Strong administrative contols
* Able to adapt when k > k~ in a coordinated manner

# 

# Cost of governance = X(k,ƟX) ; a function of asset specificity k and a shift parameter ƟX corresponding to hybrid rules of the game where governance costs are lowest for mid-spectrum k and where M’ > X’ > H’>0 because hybrid contracts are able to adapt to the mid-range hazards that are characteristic of non-redeployable assets such as found in most FDI and PPP investments.

# Attributes of Hybrid Governance

# Preserves autonomy of the parties and the low cost and strong incentives of markets but provides added transaction specific safeguards compared with the market to protect against contract hazards that occur mid-spectrum due to autonomous bilateral trading of FDI/PPP project managers.

# Identity of traders is relevant although traders are autonomous bilateral, they are dependent on the counterparty for protection of risk exposure of specialized assets

# Assets are non-redeployable

# Occurs in thin markets typically where negotiated breakeven price is greater than projected breakeven price

# Contract law is not legalistic but more of the doctrine of framework for guiding adaptation of contract to changing circumstances and states of the world

# Assets are not fully monetized and price does not reflect full value of the asset; and contracts are unavoidably incomplete due to bounded rationality

# Main Attributes

# Adaptation is autonomous coordination

# Moderate incentives intensity and administrative controls

# Able to adapt when k\* < k < k^

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**Economic Governance**

**Cost of Governance**

**Governance Competencies**

**The three generic governance structures of market (M), hierarchy (H), and hybrid (x) provide different adaptive governance competencies at different costs of governance depending on the level of asset specificity.**

**Adaptation is the central focus of economic organization (EO); the action resides in the details of a transaction and the mechanics of governance; it occurs in the course of autonomous or coordinated action and differs systematically across modes of governance. (Williamson, 1996)**

**Coordinated**

**Adaptation**

**H Plays of the Game**

**Coordinated**

**Adaptation**

**X Plays of the Game**

**Autonomous**

**Adaptation**

**M Plays of the Game**

**H(0)**

# Envelope

**X(0**)

**M(0)**

k>0

k>>0

k=0

**Asset Specificity (k)**

**(and uncertainty)**

# Institutions of governance

# Plays of the Game

**INSTITUTIONAL ENVIRONMENT**

**Rules of the Game:**

* **Contract law**
* **Property rights**
* **Codes of conduct**

**Discriminating Alignment Rule**

Align transaction attributes of asset specificity and uncertainty with the costs and competencies of governance structures in a transacost cost economizing manner. Costs refer to degree of exposure and competency refers to degree of adaptation. **(Williamson, 1996)**

Governance structures emerge in accordance with their capacity to address the cost of asset specificity and uncertainty in minimizing the total cost of making transactions or the cost of production and governance. Asset specificity is the measure to which the exchange asset is non-redeployable to another use or user without loss of productive value. It measures the degree of specialization of the asset and the specialized asset’s level of exposure to hazards. **Joskow, 2005**.

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Endnotes

1. It is useful to remind ourselves about the “comparative institutional” perspective that Joskow took away from reading Williamson’s 1975 seminal book on *Markets and Hierarchies: Analysis and Antitrust*. In the words of Joskow, the perspective is “a general recognition that there is a wide range of institutional arrangements that can be used to govern transactions between economic agents. Specific institutional arrangements emerge in response to various transactional considerations in order to minimize the total cost of making transactions….Firms can take on many different organization structures. Market transactions can take many different forms ranging from simple spot market transactions to complex long-term contracts. The specific set of institutional arrangements chosen would represent the governance structure that minimized the total cost of consummating the transaction of interest.” (1988:97) [↑](#endnote-ref-1)
2. Some people ask, what does reflexive systems have to do with project management? The answer is a lot. Project managers are similar to anthropologists; both are affected by two-way feedback loops and therefore need to understand their organization or community in objective ways; ways that are not intrusive and in some very demanding ways. [↑](#footnote-ref-1)
3. Williamson (1975) and Goldberg (1976) “make it clear that we must start our analysis of institutional choice, whether the analysis is normative or positive, with a complete understanding of the characteristics of the transaction that buyers and sellers are seeking to consummate. We can then identify the problems that must be confronted to provide for an efficient trading relationship and compare alternative institutional arrangements in terms of their ability to cope efficiently with these problems.” (In Joskow, 1988: 99)

   In summary, the lesson learned is that the choice and design of institutional arrangements are undertaken to minimize the total cost of transacting. The total cost of transacting is as mentioned earlier the sum of production and transaction costs. [↑](#endnote-ref-2)
4. After the completion of a successful project, the author was told by a local project leader that a significant contributing factor was due to the provision of “intellectual leadership” by the author to the project team at their monthly planning sessions—a form of Socratic interchange and discussion took place at those meetings. This observation combined with Williamson’s statement about agents falling off the contract curve due to the lack of “stimulus” led the author to a deeper understanding of the meaning of “stimulus.” [↑](#footnote-ref-2)