Universidad de los Andes > FACULTAD DE DERECHO

SOCIEDAD CHILENA DEL DERECHO DE LA CONSTRUCCIÓN

PANEL 5: EL IMPACTO DE LA DISTRIBUCIÓN DE RIESGOS EN PROYECTOS DE CONSTRUCCIÓN

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CONGRESO INTERNACIONAL
DE DERECHO DE LA CONSTRUCCIÓN
RELACIONES COLABORATIVAS EN LA CONSTRUCCIÓN

SANTIAGO, CHILE, 9 Y 10 DE NOVIEMBRE DE 2017

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PANEL 5: EL IMPACTO DE LA DISTRIBUCIÓN DE RIESGOS

EL IMPACTO DE LA **DISTRIBUCIÓN DE RIESGOS**

- QUE ES
- CUANDO HACERLO
- COMO HACERLO
- EJEMPLOS

QUE ES

- UNA DE LAS IMPORTANTES TECNICAS PARA LLEVAR A CABO LA GESTIÓN DE RIESGOS

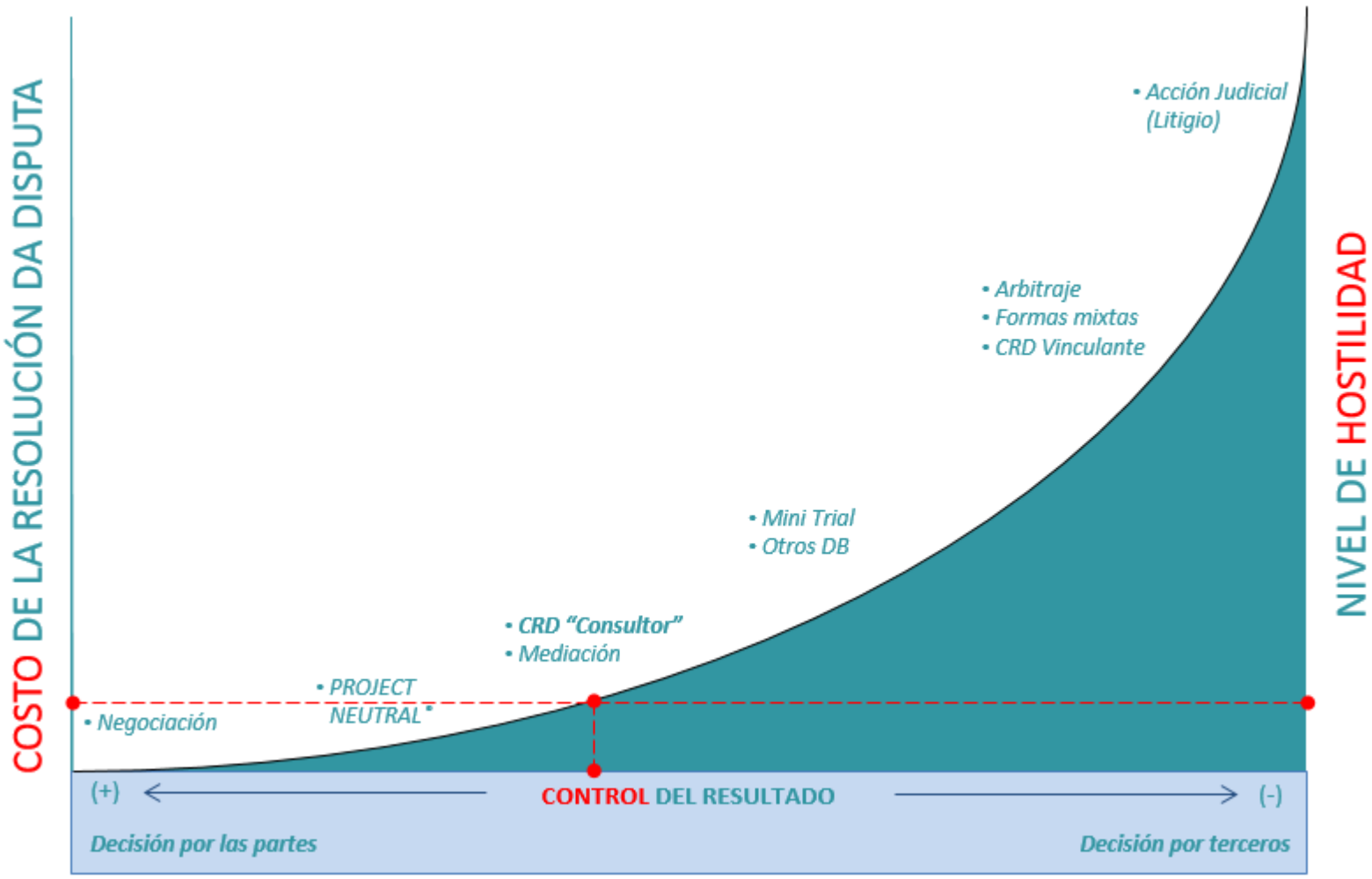
- SOLO SE PUEDE GESTIONAR RIESGOS QUE SE HAYAN IDENTIFICADOS

CUANDO HACERLO

- CUANTO MÁS TEMPRANO SE INICIE EN EL PROYECTO, MAYOR ES LA POSIBILIDAD PARA QUE LOS RESPONSABLES DE LA TOMA DE DECISIONES INFLUENCIEN EN LOS IMPACTOS

EFECTIVIDAD DE DEFINICIONES Y DECISIONES ESTRATÉGICAS EN EL TIEMPO

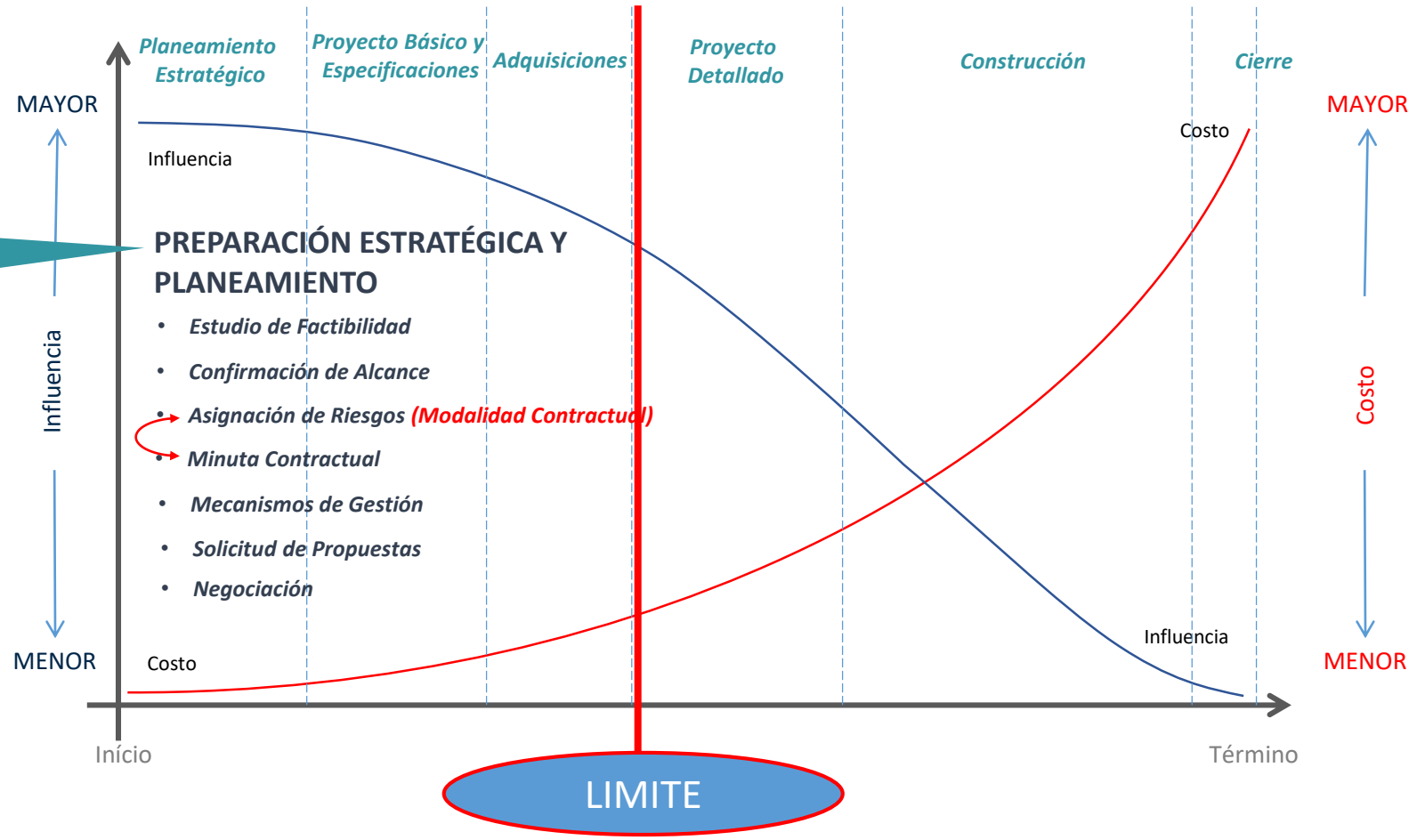
Posibilidad de influenciar el producto y el costo



EFECTIVIDAD DE DEFINICIONES Y DECISIONES ESTRATÉGICAS EN EL TIEMPO

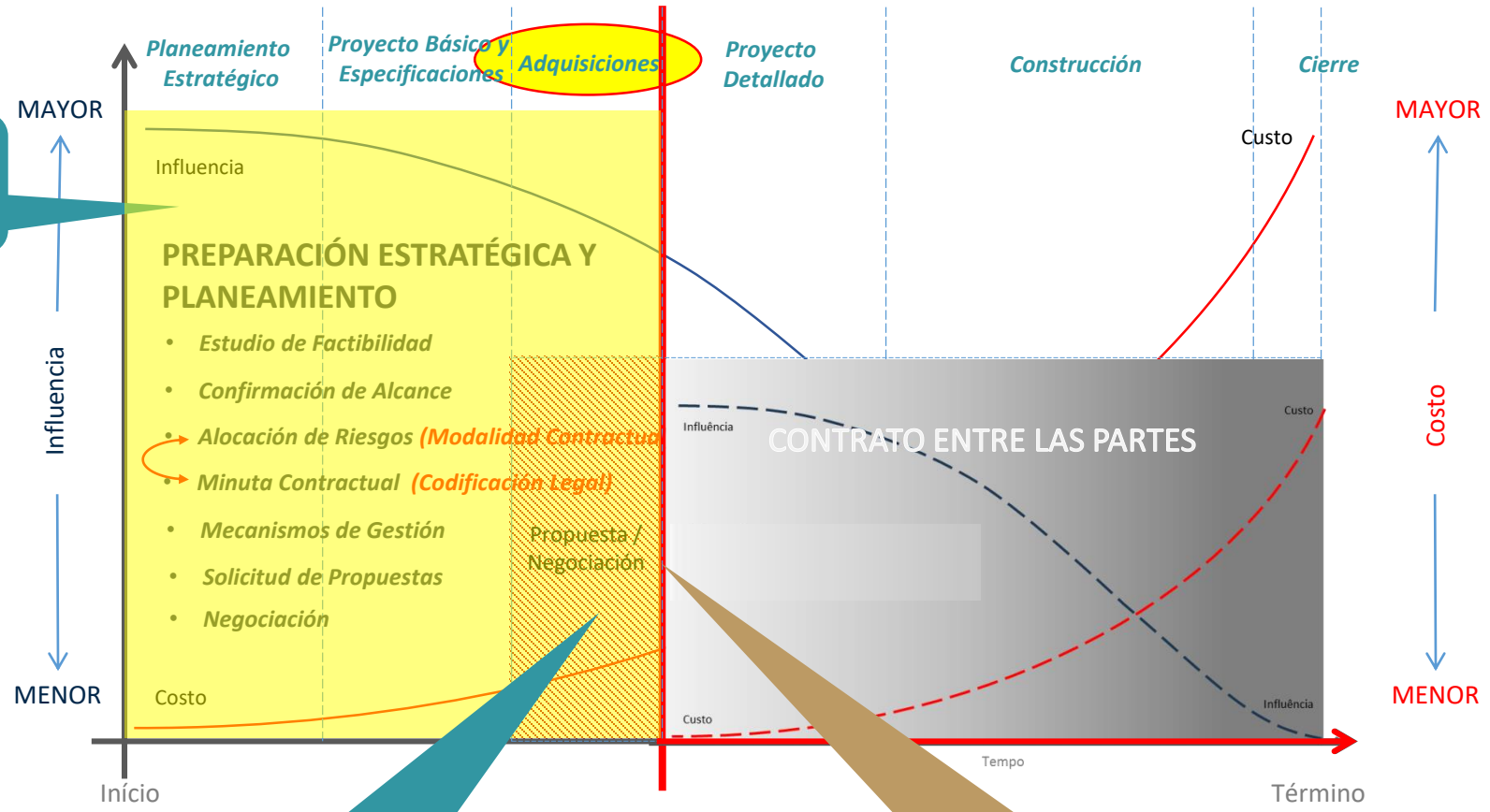
INFLUÊNCIA DE LOS *STAKEHOLDERS* vs COSTO

CLIENTE DEFINE LA ESTRATEGIA (SOLICITUD DE PROPUESTA)



EFECTIVIDADE DE DEFINICIONES Y DECISIONES ESTRATEGICAS EN EL TIEMPO

INFLUÊNCIA DE LOS *STAKEHOLDERS* vs COSTO



CLIENTE DEFINE LA ESTRATÉGICA (SOLICITUD DE PROPUESTA)

PROVEEDOR INFLUENCIA LA ESTRATEGIA (PROPUESTA)

PARTES CONSOLIDAN ESTRATEGIA (NEGOCIACIÓN Y CIERRE)

COMO HACERLO

- IDENTIFICAR LOS RIESGOS
- CALIFICAR Y CUANTIFICAR LOS RIESGOS
- ASSIGNAR LOS RIESGOS

COMO HACERLO

- El riesgo debe poder ser controlado por la parte;
- La parte debe poder transferir el riesgo (ej. Seguro) y hacerlo así, es más económico;
- El principal beneficio económico en controlar el riesgo se queda con la parte que lo asume;
- *Brainstorming*, *benchmarking* y el uso sistemático de abordajes comprobadas.

EL CONTRATO ES LA FORMALIZACIÓN DE LA ASINGACIÓN DE RIESGOS

Project Risk Management Guidelines

Managing Risk in Large Projects and Complex Procurements

Dale Cooper
Stephen Grey
Geoffrey Raymond
Phil Walker

CONTRACTS AND RISK ALLOCATION **14**

Introduction

- Purpose

Risks can be allocated or transferred to parties to a contract through specific wording in the contract or through behaviour. The contract is a risk allocation or transfer tool as is the way in which individuals manage it.

- Rationale

In any contractual relationship, the responsibility for managing specific risks should fall to the individuals or organizations best placed to manage them.

- Input

The risk register and outputs of the risk assessment activities form the basis of inputs to the contract and contract negotiations.

Contracts and risk allocation 163

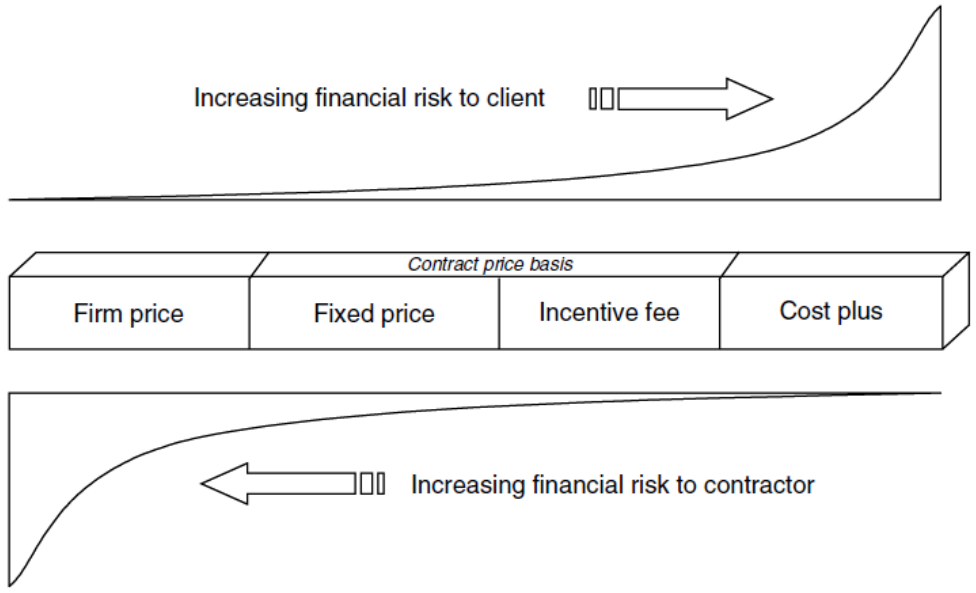


Figure 14.1—Contract types and financial risk allocation

Allocation of risks in a contract

Contracts are agreements between parties for the conduct of specific actions or functions, in return for consideration. Contracts of all sizes and for all purposes are intended to transfer risks, allocating them to an individual or an organization to be managed for the duration of the arrangement.

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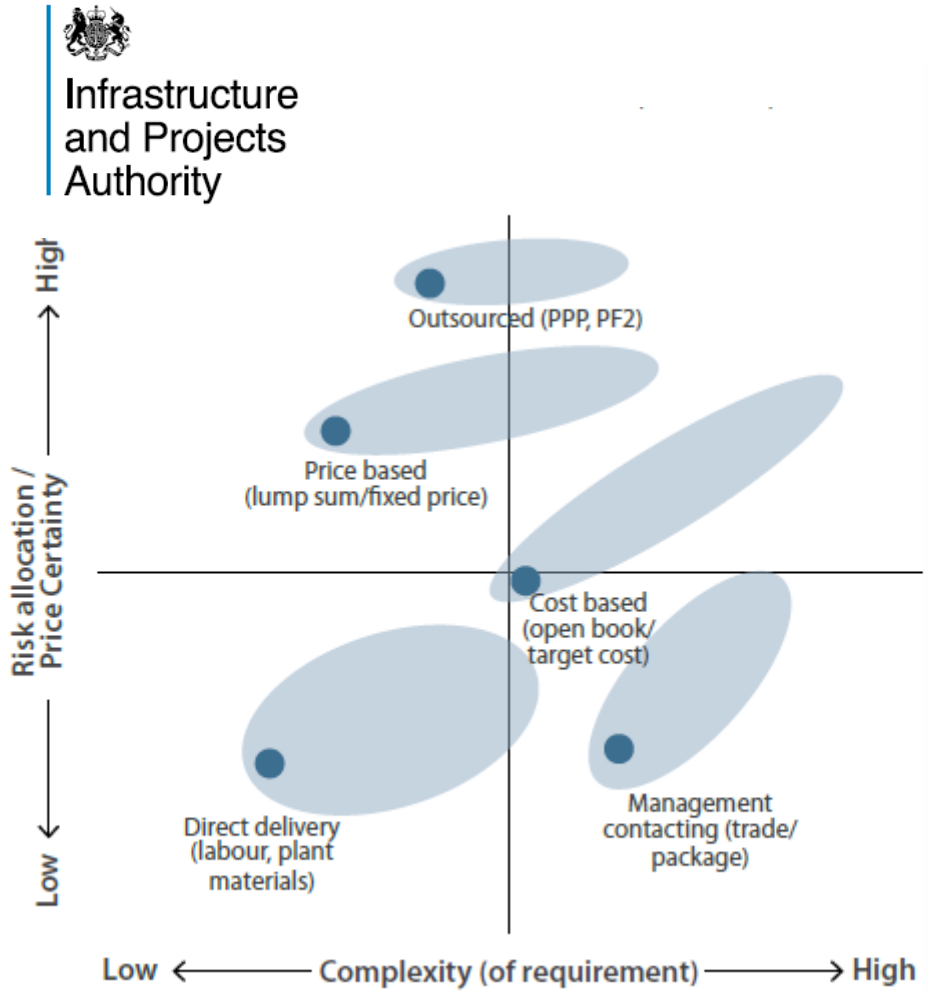
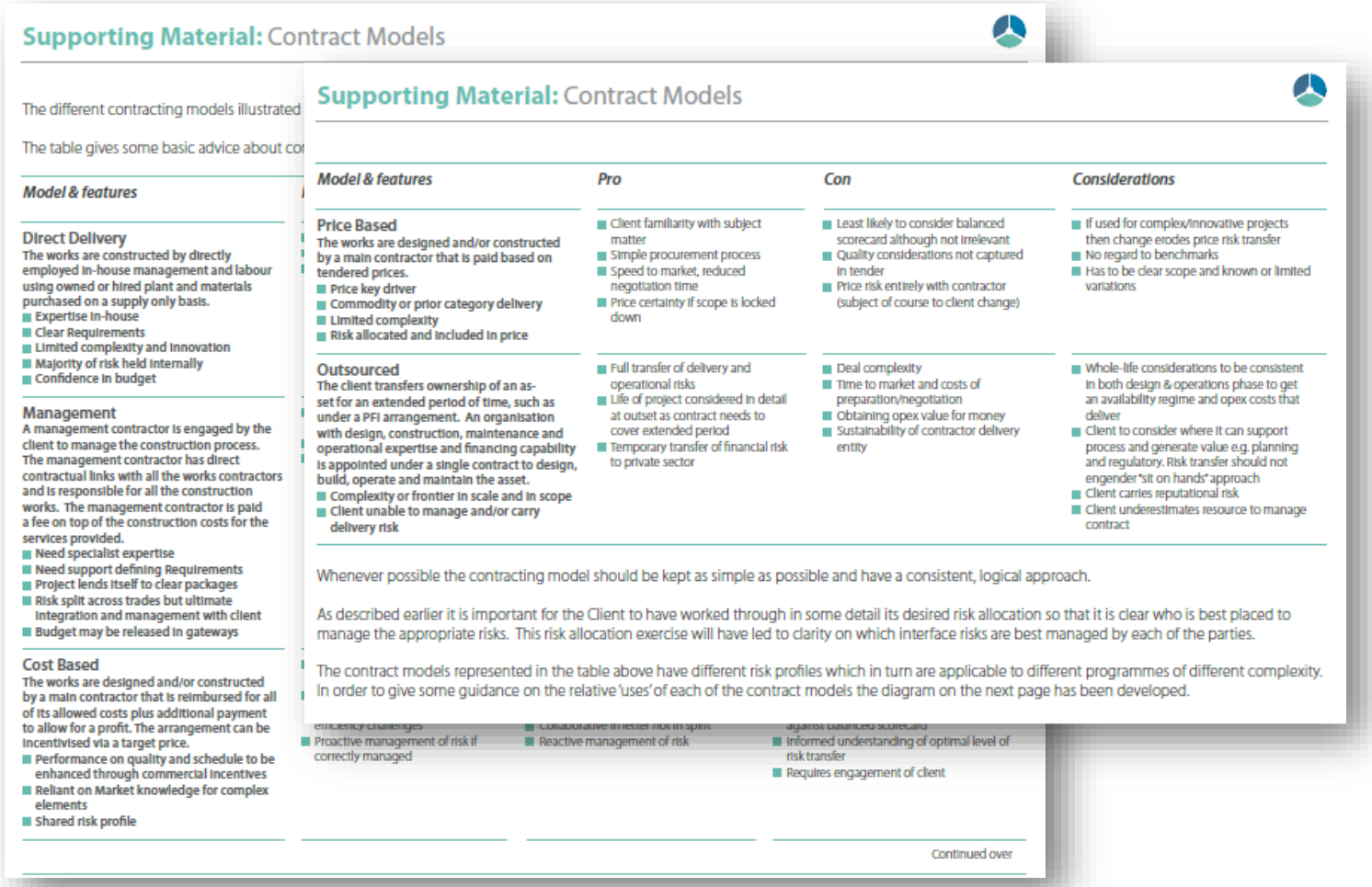
ASSIGNACIÓN DE RIESGOS – ALGUNAS ABORDAGES DE MERCADO





Supporting Material: Contract Models

The different contracting models illustrated

The table gives some basic advice about co

Model & features	Pro	Con	Considerations
Direct Delivery The works are constructed by directly employed in-house management and labour using owned or hired plant and materials purchased on a supply only basis. ■ Expertise in-house ■ Clear Requirements ■ Limited complexity and innovation ■ Majority of risk held internally ■ Confidence in budget			
Management A management contractor is engaged by the client to manage the construction process. The management contractor has direct contractual links with all the works contractors and is responsible for all the construction works. The management contractor is paid a fee on top of the construction costs for the services provided. ■ Need specialist expertise ■ Need support defining Requirements ■ Project lends itself to clear packages ■ Risk split across trades but ultimate integration and management with client ■ Budget may be released in gateways			
Cost Based The works are designed and/or constructed by a main contractor that is reimbursed for all of its allowed costs plus additional payment to allow for a profit. The arrangement can be incentivised via a target price. ■ Performance on quality and schedule to be enhanced through commercial incentives ■ Reliant on Market knowledge for complex elements ■ Shared risk profile	■ Proactive management of risk if correctly managed	■ Reactive management of risk	■ Informed understanding of optimal level of risk transfer ■ Requires engagement of client

Continued over

Supporting Material: Contract Models

Model & features	Pro	Con	Considerations
Price Based The works are designed and/or constructed by a main contractor that is paid based on tendered prices. ■ Price key driver ■ Commodity or prior category delivery ■ Limited complexity ■ Risk allocated and included in price	■ Client familiarity with subject matter ■ Simple procurement process ■ Speed to market, reduced negotiation time ■ Price certainty if scope is locked down	■ Least likely to consider balanced scorecard although not irrelevant ■ Quality considerations not captured in tender ■ Price risk entirely with contractor (subject of course to client change)	■ If used for complex/innovative projects then change erodes price risk transfer ■ No regard to benchmarks ■ Has to be clear scope and known or limited variations
Outsourced The client transfers ownership of an asset for an extended period of time, such as under a PFI arrangement. An organisation with design, construction, maintenance and operational expertise and financing capability is appointed under a single contract to design, build, operate and maintain the asset. ■ Complexity or frontier in scale and in scope ■ Client unable to manage and/or carry delivery risk	■ Full transfer of delivery and operational risks ■ Life of project considered in detail at outset as contract needs to cover extended period ■ Temporary transfer of financial risk to private sector	■ Deal complexity ■ Time to market and costs of preparation/negotiation ■ Obtaining opex value for money ■ Sustainability of contractor delivery entity	■ Whole-life considerations to be consistent in both design & operations phase to get an availability regime and opex costs that deliver ■ Client to consider where it can support process and generate value e.g. planning and regulatory. Risk transfer should not engender "sit on hands" approach ■ Client carries reputational risk ■ Client underestimates resource to manage contract

Whenever possible the contracting model should be kept as simple as possible and have a consistent, logical approach.

As described earlier it is important for the Client to have worked through in some detail its desired risk allocation so that it is clear who is best placed to manage the appropriate risks. This risk allocation exercise will have led to clarity on which interface risks are best managed by each of the parties.

The contract models represented in the table above have different risk profiles which in turn are applicable to different programmes of different complexity. In order to give some guidance on the relative 'uses' of each of the contract models the diagram on the next page has been developed.

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ASIGNACIÓN DE RIESGOS – ALGUNAS PRÁCTICAS DE MERCADO

Project Management Institute

"12.2.11 ***Contract Risk Allocation***

(...)

The most common types of construction contracts, each with their own parameters, are as follows:

- ***Fixed-price or lump-sum contracts.*** *Work is performed and paid for based on a fixed value or lump-sum price according to the contract. These contracts are suitable for projects that are sufficiently defined, which allows for an estimate of the total project cost.*
- ***Unit-rate (price) or remeasurable contracts.*** *Work is performed and paid for based on a fixed amount (unit rate) for each unit of work. Purchase orders most often fall in this category. These contracts are suitable for projects where the types of items are known, but not necessarily the quantity of units. Contracts can be written that combine the unit price and lump-sum method of payment.*
- ***Cost-reimbursable contracts.*** *The contractor performs the work on a reimbursable cost basis plus a fee. These contracts often include variations of one another, often with the final fee determination being the result of negotiations. Examples are:*
  - *Cost-plus fixed fee contract;*
  - *Cost plus fixed fee with bonus contract;*
  - *Cost plus fixed percentage contract;*
  - *Cost plus fixed fee with* ***guaranteed maximum price*** *(GMP) contract (also known as maximum allowable construction cost (MACC));*
  - *Cost plus fixed fee with* ***guaranteed maximum price*** *(GMP) and bonus contract, and*
  - *Cost plus fixed fee with agreement for sharing any cost-savings contract.*
- ***Time and materials contracts.*** *The contractor is reimbursed for the time spent and resources expended on the work performed.*
- ***Incentive contracts.*** *Payment is based on the services provided in accordance with an agreed-upon scope, budget, schedule, and quality. These contracts take the form of fixed-price incentive and cost-reimbursement incentive contracts.*
- ***Hybrid contracts.*** *Large projects may create a hybrid form using one or more combinations of contracts. For example, on a large design-build project, the civil works may be under a unit-price contract, while other bid packages are awarded on a fixed-price basis upon design completion. Occasionally, a provision sum may be reserved for work in which the design is not yet completed."*

(Project Management Institute, Inc. ***Construction Extension to the PMBOK® Guide****. ISBN 978-1-62825-090-9. Pennsylvania, USA: Project Management Institute, Inc.)*

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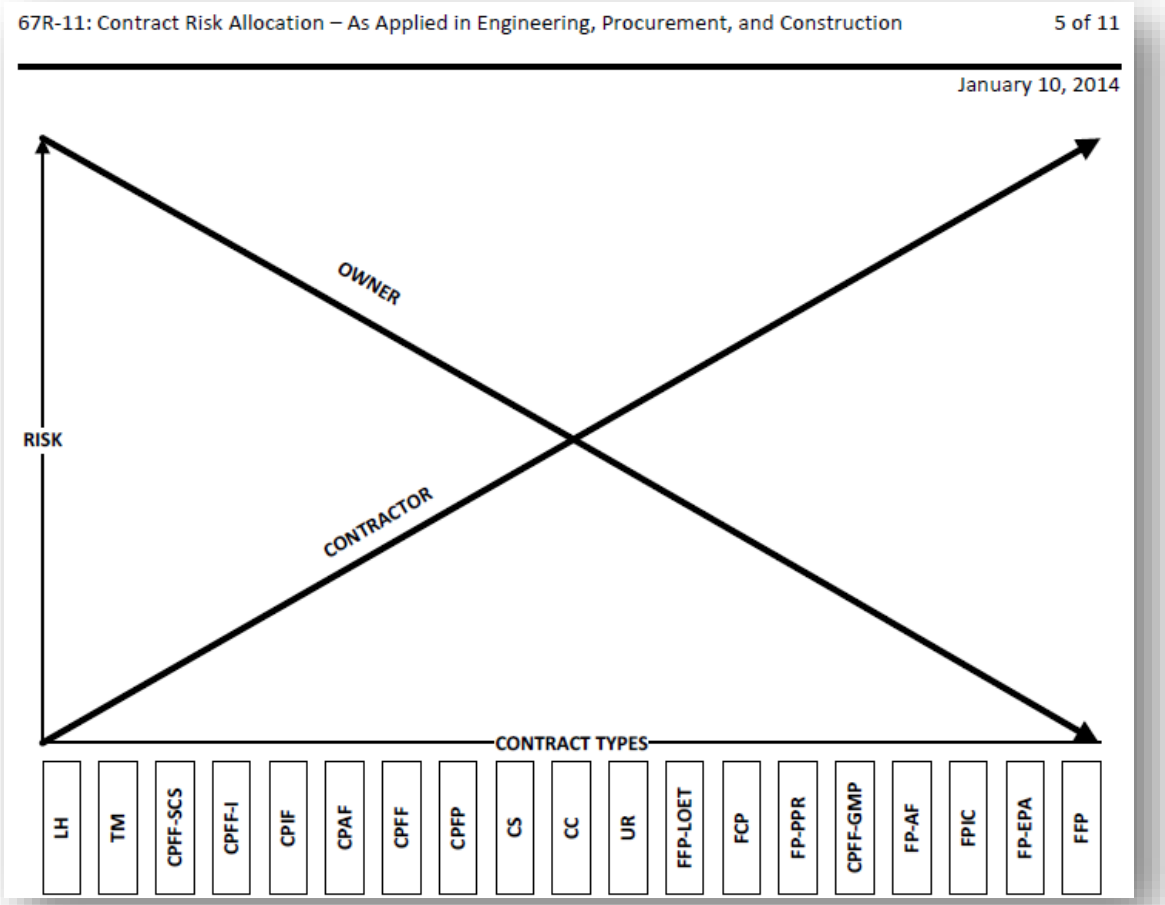
ASIGNACIÓN DE RIESGOS – ALGUNAS PRÁCTICAS DE MERCADO

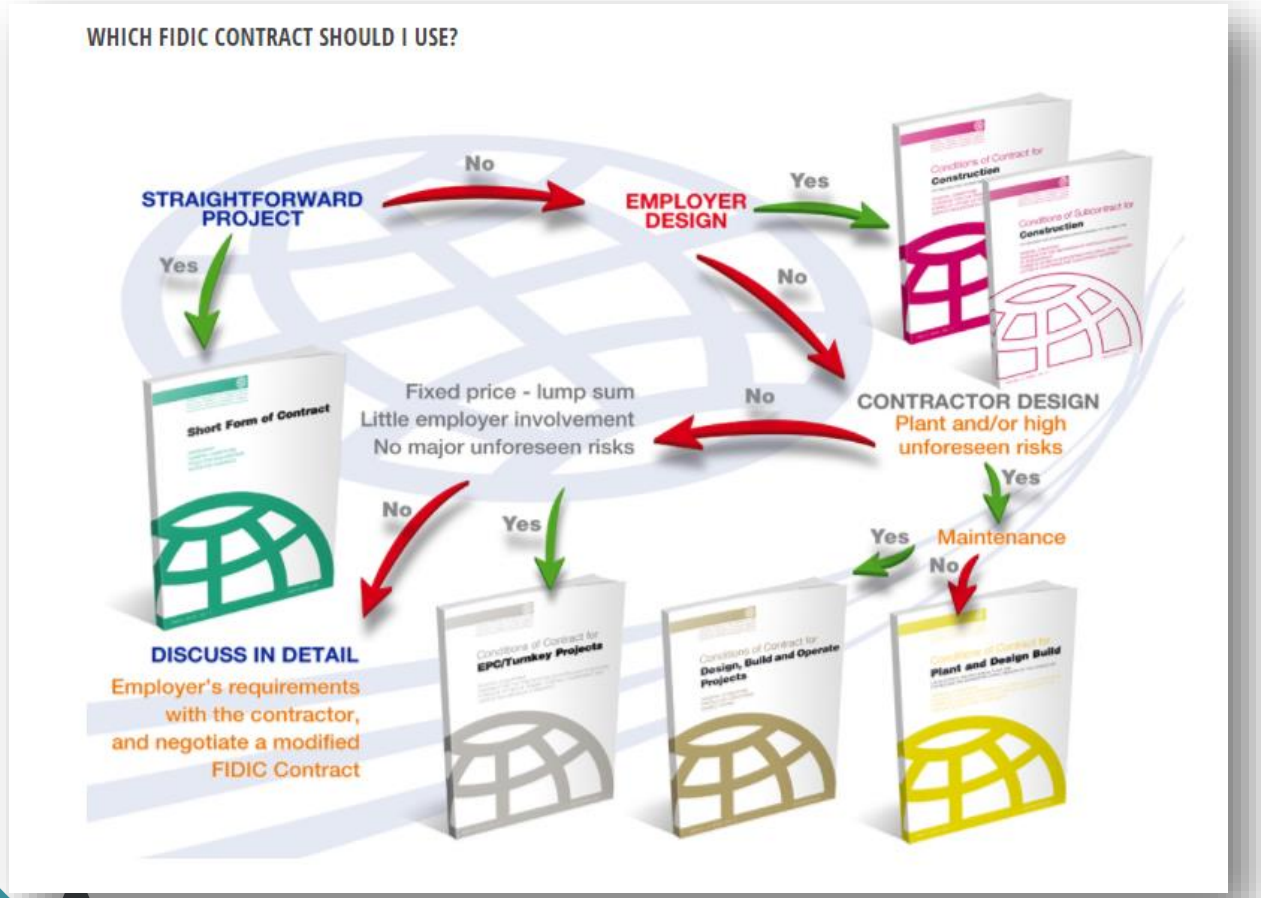
Description	*Lump Sum (contractor's burden)*	*Reimbursable (owner's burden)*
LH: Labor Hour Contracts	FALSE	TRUE
TM: Time and Materials Contracts	FALSE	TRUE
CPFF-SCS: Cost plus Fixed Fee with Agreement to Share any Cost Savings	FALSE	TRUE
CPFF-I: Cost plus Fixed Fee with Incentive	FALSE	TRUE
CPIF: Cost plus Incentive Fee (Alliance)	FALSE	TRUE
CPAF: Cost plus Award Fee	FALSE	TRUE
CPFF: Cost plus Fixed Fee	FALSE	TRUE
CPFP: Cost plus Fixed Percentage	FALSE	TRUE
CS: Cost Sharing	FALSE	TRUE
CC: Cost Contract	FALSE	TRUE
UR: Unit Rate Contracts	TRUE	FALSE
FFP-LOET: Firm Fixed Price, Level of Effort Term Contracts	TRUE	FALSE
FCP: Fixed Ceiling Price Contracts (w/ Retroactive Price Redetermination)	TRUE	FALSE
FP-PPR: Fixed Price Contracts with Prospective Price Redetermination	TRUE	FALSE
CPFF-GMP: Cost plus Fixed Fee with Guaranteed Maximum Price (reimbursable with upper fee limit)	TRUE	FALSE
FP-AF: Fixed Price Contracts with Award Fee	TRUE	FALSE
FPIC: Fixed Price Incentive Contracts	TRUE	FALSE
FP-EPA: Fixed Price Contracts with Economic Price Adjustment	TRUE	FALSE
FFP: Firm Fixed Price	TRUE	FALSE

Figure 1 – Allocation of Risk between Owners and Contractors

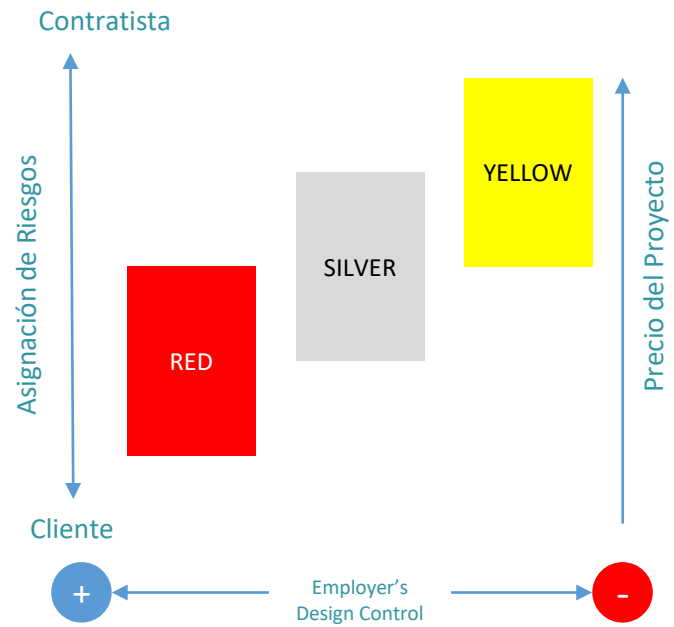


ASIGNACIÓN DE RIESGOS – ALGUNAS PRÁCTICAS DE MERCADO

International Federation of Consulting Engineers
The Global Voice of Consulting Engineers



Asignación de riesgos



EJEMPLOS

1) INVESTIGACIÓN EN PPP (BRASIL)

2) PLANTA HIDROELECTRICA EN PERU

3) CONTRATO DE PPP EN BRASIL

EJEMPLOS

1) INVESTIGACIÓN EN PPP (BRASIL)

1) INVESTIGACIÓN EN PPP (BRASIL)

Alocação contratual dos fatores de risco

Item	Tipo de Risco	Fator de Risco	Tipo de Alocação (em percentagem)			
			Privado	Público	Partilhado	Não Localizado
1	Político	País ou soberano	0%	0%	0%	100%
2		De nacionalização de ativos	0%	0%	0%	100%
3		Legal	0%	100%	0%	0%
4	Força Maior ou Caso Fortuito	Natural, social, calamidades etc.	0%	0%	93%	7%
5	Construção	Atrasos na construção	67%	0%	0%	33%
6		Alterações de *design ex post*	0%	87%	0%	13%
7		Falhas na construção	73%	0%	0%	27%
8	Financeiro ou Macroeconômico	De alteração dos custos	100%	0%	0%	0%
9		De aumento da carga tributária	0%	93%	0%	7%
10		De variação cambial	73%	7%	0%	20%
11		De aumento da taxa de juros	67%	0%	0%	33%
12		De indisponibilidade de financiamento	100%	0%	0%	0%
13		De inflação	7%	0%	0%	93%
14		Moratória	0%	0%	0%	100%
15	Operacional	De qualidade do serviço	93%	0%	0%	7%
16		De obsolescência técnica ou inovação	40%	7%	0%	53%
17	De mercado	De demanda	0%	0%	53%	47%
		TOTAL	36%	17%	9%	38%
TOTAL (255 observações)			93	44	22	96

Fuente: Rev. Adm. Pública, Rio de Janeiro 49(2):267-291, mar./abr. 2015; pg 281
- Carlos Marcio Campos Lima
- Antonio Carlos Coelho

EJEMPLOS

2) PLANTA HIDROELÉCTRICA

2) EJ1: PLANTA HIDROELÉCTRICA

- Aproximadamente 500MW de capacidad con una inversión estimada en USD $900M.
- El Proyecto ya tenia sido asignado un contrato PPA de 200 MW por 15 años.
- El *Owner* asignó el contrato EPC Suma Alzada (FIDIC Form) para una JV por USD $700M.
- La única excepción en el contrato fueron los riesgos geológicos y arqueológicos para túneles y cavernas.

2) EJ1: PLANTA HIDROELÉCTRICA (CONT.)

- LNTP enviada el noviembre del 2011 y FNTP 10 meses más tarde. El cronograma contractual consideraba 51 meses del LNTP hasta febrero del 2016;
- El contracto tenía un avance del 30% con USD 330 MM ya pagados cuando contrataron al Experto para revisar un reclamo;
- El JV reclamaba 6 meses de extensión de plazo y aproximadamente USD 100 MM por daños resultantes de 26 eventos, algunos de los más importantes, se referían a temas **arqueológicos**.

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2) EJ1: PLANTA HIDROELÉCTRICA (CONT.)

Composición del reclamo:

- Costos directos para adquisición de propiedades;
- Costos indirectos por retrasos causados por eso;
- Costos directos por aceleración para intentar resolver el impacto mencionado; y
- Costo directo para relocalización de equipos utilizando helicóptero para la construcción de otro acceso.

2) EJ1: PLANTA HIDROELÉCTRICA (CONT.)

De hecho:

- **Uno de los importantes riesgos del proyecto NO fue bien evaluado inicialmente y por lo tanto, fue mal asignado y mal gestionado.**

EJEMPLOS

3) CONTRATO DE PPP EN BRASIL

3) EJ2: PPP DE CARRETERA EN BRASIL

- Riesgo de demanda

MUCHAS GRACIAS!

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