

Defect Liability in Construction Contracts

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Natures of Construction Projects

- Uncertain natural/physical conditions
- Complexity of process
- A number of sources of uncertainties

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Sources of Contractual Risks

- Force Majeures
 - Legal change, War
- Force Majeures + Human Hazards
 - Earthquake, Adverse Physical Condition
- Human Hazards
 - Defects, Failure of performance achievement
 - ➔ Defect liability rule for remedy is needed.

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Governing Law

- Defect liability rule provided by **governing law** is applied unless otherwise agreed between the parties
- Japan; Japanese Civil Code
- UK; Common Law

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Defect Liability Rule in Governing Law

	Japanese Civil Code (Japan)	Common Law (UK)
Liability rule	Strict Liability for workmanship and material	Negligence for workmanship Strict Liability for materials
Patent or latent at transaction time	Both of patent and latent defect	Latent defect

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Strict Liability and Negligence

- **Strict Liability**
Contractors are liable for defects without regard for a level of care undertaken.
- **Negligence**
Contractors are liable for defects only if he failed to take a minimum level of care, referred as the **due standard of care**.

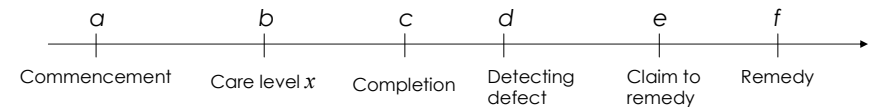
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Purpose of This Study

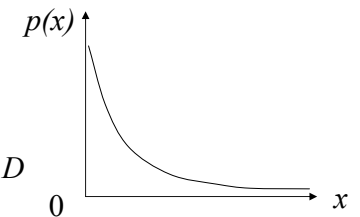
- Is either of defect liability rule in Japan and UK proper?
- If so, why?; Proposing an theoretical hypothesis
 - Existence of 'institutional complementarity'
- 'Law and Economics' approach

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Defect Liability Model



x : Cost of care undertaken by contractor
 $p(x)$: Probability of defect detection
 D : Amount of damage due to defect
 $F(D)$: Probability distribution function of D



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Efficient Level of care

- Social cost minimizing problem

$$\min_x x + p(x) \int_0^{\infty} DdF(D)$$

(cost of care) + (expected damage due to defect)

first-order condition

$$p'(x^*) = -\frac{1}{\int_0^{\infty} DdF(D)}$$

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Characteristics of Japanese Const. Cont.(1)

- Article 1 of the Civil Code
‘a duty to transact in **good faith**’
- Article 18 of the GCW (Standard form of Construction Contract in Japan)
“...the amount to be borne or to be reimbursed in this case (in case of Change of Work) shall be determined **upon by negotiation** between the Owner and the Contractor

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Characteristics of Japanese Const. Cont.(2)

- Definition of ‘Good Faith’; economic point of view (Kobayashi *et al.* 2001)
 - An shared belief on behavioral premise between the government and the contractor,
 - The government’s leading role in change of work
 - Ability to identify defects and
 - to verify some faults as defects as **neutral** point of view
 - Prohibition of contractors’ strategic behavior: The contractor is supposed **NOT** to take opportunistic behavior, such as hold-up or moral hazard

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Strict Liability with Good Faith

- Contractor’s cost minimizing problem

$$\min_x x + p(x) \int_0^{\infty} DdF(D)$$

- Selected cost of care coincides with the one of **social optimum**.

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Negligence with Good Faith

- Contractor's cost minimizing problem

$$\min_x \begin{cases} x & \text{if } x \geq z \\ x + p(x) \int_0^\infty D dF(D) & \text{if } x < z \end{cases}$$

- If $z = x^*$, selected cost of care coincides with the one of **social optimum**.

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Efficiency of Defect Liability Rule with Good Faith

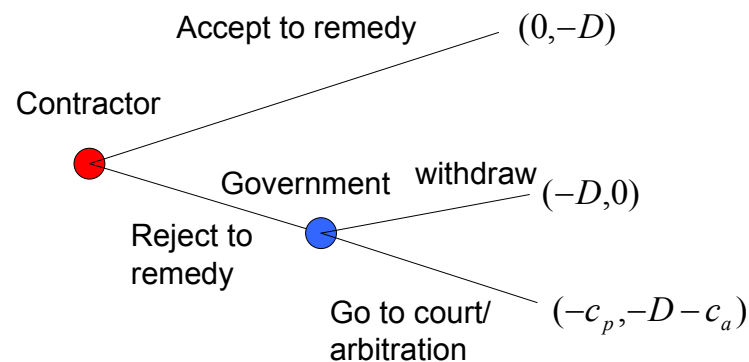
- Strict Liability
 - Verification of causation
 - Negligence
 - Verification of causation
 - Verification of due standard care which requires more administrative cost
- ↓
- Strict liability** rule is more efficient.

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Defect Liability Model without Good Faith

c_p : Litigation cost borne by Cont.

c_a : Litigation cost borne by Gov.



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Strict Liability without Good Faith

- The contractor's strategic behavior in decision to remedy
 - Accept to remedy if $D < c_p$
 - Reject to remedy if $D \geq c_p$
- Contractor's cost minimizing problem

$$\min_x x + p(x) \int_0^\infty D dF(D)$$

c_p

$x^o < x^*$
Insufficient level of care

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Negligence without Good Faith

- Liability of the contractor is determined according to the level of care undertaken
- Contractor's cost minimizing problem

$$\min_x \begin{cases} x & \text{if } x \geq z \\ x + p(x) \int_{c_p}^{\infty} D dF(D) & \text{if } x < z \end{cases}$$

- If $z = x^*$, selected cost of care coincides with the one of **social optimum**.

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Efficiency of Defect Liability Rule without Good Faith

Cost of applying strict liability rule



Verification cost of due care under negligence



Negligence is more efficient

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Summary of Results

	Defect liability rule	Care level	Range to be remedied
With Good faith	Strict liability	Efficient	$[0, \infty)$
	Negligence	Efficient	$[0, \infty)$
Without Good faith	Strict liability	Insufficient	$[c_p, \infty)$
	Negligence	Efficient	$[c_p, \infty)$

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Conclusion

- ✓ **Strict liability** may be appropriate for defect liability rule under the environment **with good faith**.
- ✓ **Negligence liability** may be appropriate for defect liability rule under the environment **without good faith**.
- ✓ **Strict liability** may be appropriate for defect liability rule **under the contract provision**.

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