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India's New Bankruptcy Code: A Model for Emerging Markets?

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Bad Debts and NPA

- A dozen big cases account for USD 33 bn
- Next 28 cases account for another USD 33 bn
- October 31, 2015

  Court cases of winding up: 4,636

  < 5 years – 955

  > 20 years – 1,274

  Voluntary winding up: 545

  < 5 years – 163

  > 20 years – 205
- Recovery rate: India is 26, OECD is 72

IBC, 2016

- No single law in India for bankruptcy before IBC
  - Liquidation of companies – High Courts
  - SICA, 1985
  - Debt Recovery, 1993
  - SARFAESI, 2002
  - Company Law, 2013

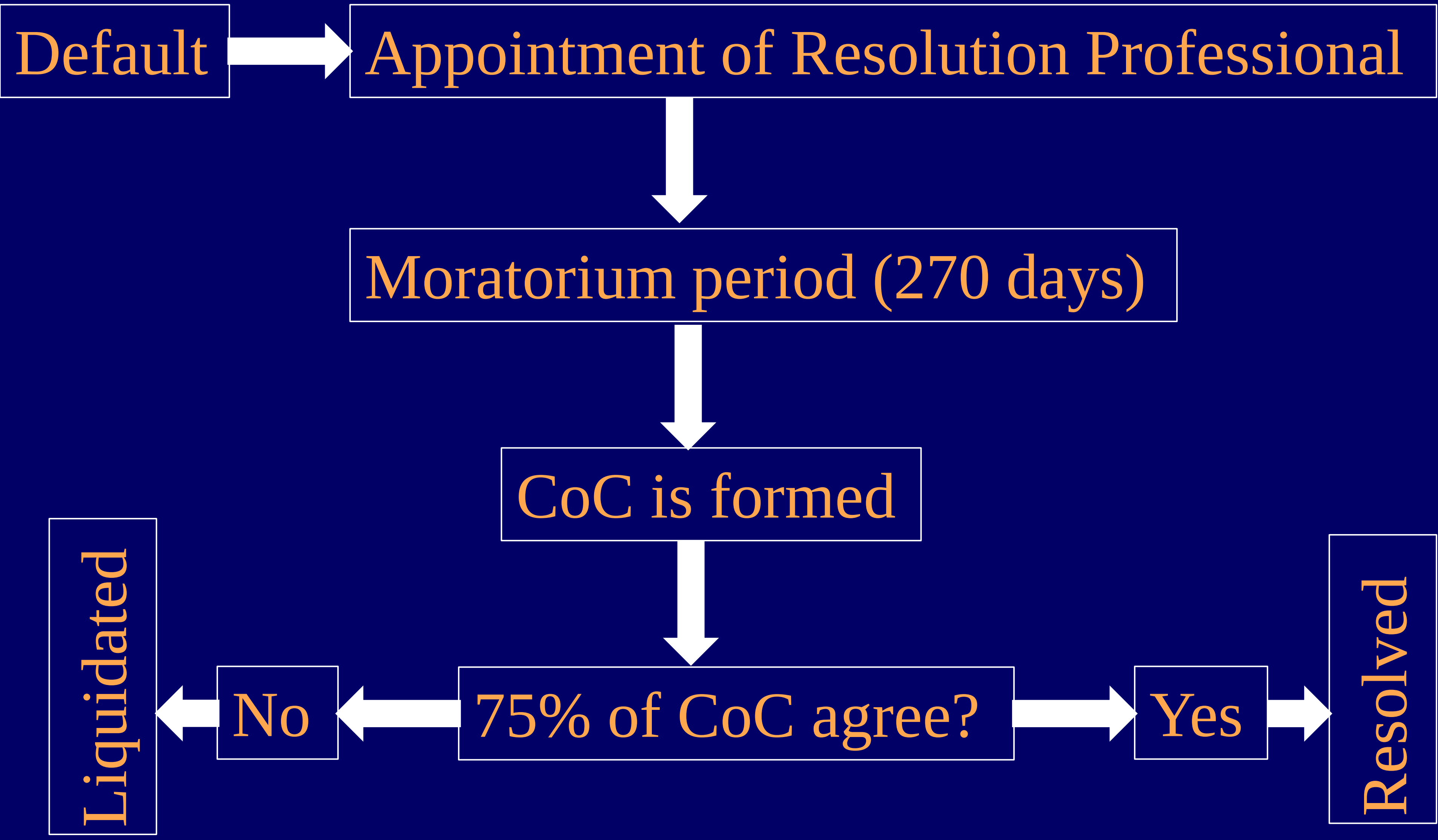
- Everything consolidated under one law, or code

Objectives of IBC

- Reduction in resolution time
- Higher recovery
- Higher levels of debt financing
    - Higher debt to equity ratios
    - Less intense credit rationing

- More projects get funded
- Increase in investment and employment

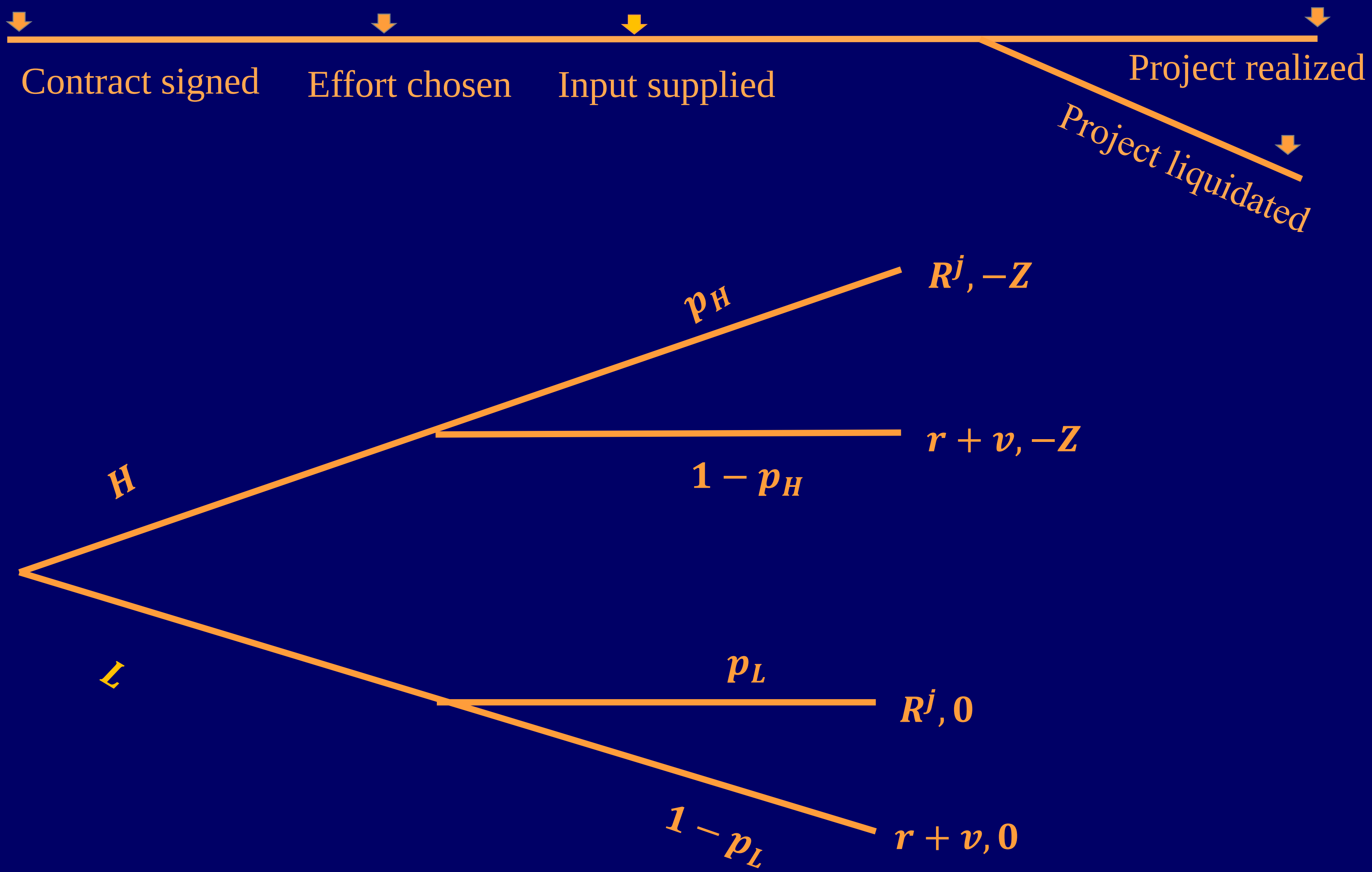
Process Map


Default
Appointment of Resolution Professional
Moratorium period (270 days)
CoC is formed
75% of CoC agree?
No
Liquidated
Yes
Resolved

Priority

- Costs of insolvency resolution
- Secured debt + workmen dues in last 24 months
- Other employee dues in last 12 months
- Financial debt of unsecured creditors
- Government dues in last 2 years
- Remaining debt

Problem Formulation



Model Setting

- Entrepreneur indexed by available funds M, $M \in [0, \infty)$
- Every project requires investment $I > 0$
- Project return is $R^j = R - v^j > 0$ if successful
- Project return is $r + v$, $0 < r + v < R^j$
- High effort has success probability p_H

  Low effort has success probability p_L

  $$1 \geq p_H > p_L \geq 0$$
- Private cost of high effort to entrepreneur is $Z > 0$
- Cost of input is q; market value is v

Assumptions

A.1: $p_H R^j - Z + (1 - p_H)(r + v)$
$> I > p_L R^j + (1 - p_L)(r + v)$

A.2: Competitive bank provides fund through a standard debt contract

(Not necessary; can show that SDC is optimal)

A.3: $p_H \left(\frac{Z}{p_H - p_L}\right) - [p_H(R - q) + (1 - p_H)(r + v) - I]$
$\equiv A > 0$

(Establishes credit-rationing with moral hazard)

Moral Hazard

Let j denote, FC (seniority of financial creditors) or OC (seniority of operational creditors)

$$\tilde{\pi}_E^j | H = \begin{cases} R_E^j - Z \text{ with probability } p_H \\ -Z + X^j \text{ with probability } (1 - p_H) \end{cases}$$

$$E\left[\tilde{\pi}_E^j | H\right] = p_H R_E^j + (1 - p_H) X^j - Z$$

$$\geq p_L R_E^j + (1 - p_L) X^j = E\left[\tilde{\pi}_E^j | L\right]$$

$$R_E^j \geq \frac{Z}{p_H - p_L} + X^j$$

Funding

$$\tilde{\pi}_{\mathrm{B}}^{j}|H = \begin{cases} R_B^j \text{ with probability } p_H \\ Y^j \text{ with probability } (1-p_H) \end{cases}$$

$$E\left[\tilde{\pi}_B^j|H\right] = p_H R_B^j + (1-p_H)Y^j \geq I - M$$

$$\Leftrightarrow M \geq I - p_H R_B^j - (1-p_H)Y^j$$

$$= p_H R_E^j - \left(p_H R^j - I\right) - (1-p_H)Y^j$$

$$\geq p_H \left[\frac{Z}{p_H - p_L} + X^j\right] - \left[p_H R^j + (1-p_H)Y^j - I\right]$$

$$= A^j + p_H X^j + (1-p_H)\left(r + v - Y^j\right)$$

$$\Leftrightarrow M \geq A^j + p_H X^j + (1-p_H)\left(r + v - Y^j\right) \equiv \overline{M}^j$$

Implication

- $\overline{M}^j \equiv A^j + p_H X^j + (1 - p_H)\left(r + v - Y^j\right)$

- So, rephrase question as follows:

  Which relaxes the credit constraint more?

  Institution FC or institution OC?

Re-formulation

For $j = FC,\ OC$ define
(a) Π^j to be the net expected return to borrower
(b) Ω^j to be the net expected return to supplier
(c) Γ^j to be the net expected return to the bank
(d) $\overline{M}^j$ to be the minimum fund from borrower

We will show that if $\Omega^{FC} = \Omega^{OC}$, then
(a) $\Pi^{FC} = \Pi^{OC}$ and
(b) $\Gamma^{FC} = \Gamma^{OC} = 0$ (competitive lender)
(c) $\overline{M}^{FC} = \overline{M}^{OC}$

Why is $\Omega^{FC} = \Omega^{OC}$? Competing buyers

Entrepreneur

Given competitive lending, bank makes zero profit

So, $E\left[\tilde{\pi}_B^j | H\right] = p_H R_B^j + (1 - p_H) Y^j = I - M$

$\Leftrightarrow p_H\left(R^j - R_E^j\right) + (1 - p_H) Y^j = I - M$

$\Leftrightarrow p_H R_E^j - M = \left(p_H R^j - I\right) + (1 - p_H) Y^j$

$\Pi^j = E\left[\tilde{\pi}_E^j | H\right] - M$

$= p_H R_E^j + (1 - p_H) X^j - Z - M$

$= \left(p_H R^j - I\right) + (1 - p_H) Y^j + (1 - p_H) X^j - Z$

$= \left(p_H R^j - I\right) + (1 - p_H)\left(X^j + Y^j\right) - Z$

Seller

We do not know how the input price is set
Suppose seller can sell to companies under OC and FC
Seller is indifferent if $\Omega^{OC} = \Omega^{Fc}$

$$\Omega^{OC} = v^{OC} - q$$

$$\Omega^{FC} = p_H v^{FC} + (1-p_H) min\{v^{FC}, max[r + v - R_B^{FC}, 0]\} - q$$

$\Omega^{OC} = \Omega^{Fc}$ implies

$$v^{OC} = v^{FC} - (1-p_H)(v^{FC} - min\{v^{FC}, max[r + v - R_B^{T}, 0]\})$$

Input Price

There are 3 possibilities:

(a) $min\{v^{FC}, max[r + v - R_B^{FC}, 0]\} = v^{FC}$

$$v^{OC} = v^{FC}$$

No loan default

(b) $min\{v^{FC}, max[r + v - R_B^{FC}, 0]\} = r + v - R_B^{FC}$

$$v^{OC} = v^{FC} - (1 - p_H)\left[v^{FC} - \left(r + v - R_B^{FC}\right)\right] < v^{FC}$$

No loan default

(c) $min\{v^{FC}, max[r + v - R_B^{FC}, 0]\} = 0$

$$v^{OC} = v^{FC} - (1 - p_H)v^{FC} = p_H v^{FC} < v^{FC}$$

Loan default

Result

We can show that if $\Omega^{FC} = \Omega^{OC}$, then

(a) $\Pi^{FC} = \Pi^{OC}$
(b) $\Gamma^{FC} = \Gamma^{OC} = 0$ (competitive lender)
(c) $\overline{M}^{FC} = \overline{M}^{OC}$

THANK YOU