

Beyond the Coasian Irrelevance: Externalities

- Main theme: When negotiation between parties affects the welfare of the parties not present in negotiation, the outcome of negotiation can be inefficient. (ex: cartel agreement, franchise contracts....)
 - What are the specific situations leading to inefficiencies?
 - Bilateralism
 - Sequential negotiation
 - Rent extracting
 - Moral hazard
 - What kinds of remedies/regulations are necessary?

(1) Bilateralism

- Often agents bargain in a “bilateral” fashion (i.e., their agreement is not contingent on other parties’ contracts). Terms negotiated may be distorted to weaken the third parties’ bargaining positions.

Model (Segal)

- Principal and n agents:
- Decision: $x = (x_1, \dots, x_n)$ in a compact subset of \mathbb{R}^n , $x_i = 0$ means null decision for agent i .
- Payoff:
 - Principal: $f(x) + \sum_i t_i$.
 - Agent i : $v_i(x_i, x_{-i}) - t_i$.
- Efficiency:
 - $\text{Max}_x W(x) := f(x) + \sum_i v_i(x_i, x_{-i})$.
 - Let x^* be the argmax.

Interpretation of the Model

- Technology licensing to n oligopolists (Katz-Shapiro, Kamien-Oren-Tauman)
- Franchise contracting (McAfee-Schwartz, O'Brien-Shaffer).
- Exclusive dealing (Rasmusen-Ramseyer-Wiley)
- Selling an indivisible Object (eg. Nuclear weapons) to competing nations (Jehiel-Moldovanu-Stachetti)
- Takeovers (Grossman-Hart, Bagnoli-Lipman)

Benchmark: Multilateral contract (JMS)

- If the principal can offer contracts to all agents contingent on one another's terms, then the efficiency arises.
- Let $y_i \in \operatorname{argmin}_{x_{-i}} v_i(0, x_{-i})$ be i 's "worst nightmare."
- Principal can offer (x^*, t^*) , where
$$t^*_i = v_i(x^*) - v_i(0, y_i),$$
along with a threat to implement y_i if i alone refuses the contract.
 \Rightarrow Principal becomes a residual claimant, so no need to distort x .

Bilateral contract

- Principal offers a bilateral contract (x_i, t_i) to each agent i . They each accept or reject after observing (x, t) .

- Principal solves

$$\max_{(x,t)} f(x) + \sum_i t_i.$$

$$v_i(x_i, x_{-i}) - t_i \geq v_i(0, x_{-i}).$$

- It is a SPE for the principal to offer

$$x_B \in \operatorname{argmax} f(x) + \sum_i v_i(x_i, x_{-i}) - \sum_i v_i(0, x_{-i}).$$

Inefficiency

- $x_B \neq x^*$ unless $v_i(0, x_{-i})$'s don't depend on x_{-i} .
- Direction of distortion:
 - If $W(x) = W(\sum_i x_i)$, then the objective function can be written as
 - $W(X) - R(X)$, where $R(\cdot)$ nondecreasing (nonincreasing) in $X = \sum_i x_i$ if $v_i(0, x_{-i})$ is nondecreasing (nonincreasing).
 - Too little (too much) X if the externalities on non-traders are positive (negative).

Implications:

- Positive externalities:
 - Too little takeover by superior raider
- Negative externalities:
 - Too much sale of a dangerous product (JMS)
 - Too much licensing of new technology.
 - Socially inefficient exclusion.

(2) Sequential Contracting

- *Sequential negotiation of contracts leads parties to ignore externalities imposed on earlier negotiators. (“Backward stealing”)*
- **Illustration:** “Opportunism in Franchise Contracting” (McAfee-Schwartz)
- Consider the earlier model with $n = 2$. The principal contracts sequentially, with agent 1 and then with agent 2.
- Assume $v_i(0, x_{-i}) = 0$, for all x_{-i} . No effects from the bilateralism.

- **Analysis:** Suppose P and A1 agree on a contract (x_1, t_1) . In the negotiation with A2, since a contract with A1 is sunk, P offers a contract that solves

$$\begin{aligned} & \max_{x_2, t_2} f(x) + t_2 \\ & \text{s.t. } v_2(x_2, x_1) - t_2 \geq 0, \end{aligned}$$

Or, $\max_{x_2} W(x_1, x_2) - v_1(x_1, x_2)$.

- Hence, x_2 will be chosen to maximize the joint profit of P and A2, possibly harming A1.
- Implication: In a franchise relationship, the intermediate good price with a later franchisee may be set too low to steal money from earlier franchisee.

(3) Rent extraction

- *When the unrepresented party has bargaining power, then negotiated terms may be distorted to limit the rents accruing to the unrepresented party. (Forward manipulation)*
- **Illustration:** Contract as entry barrier (Aghion-Bolton).
- **Three players:** Buyer, Seller, and Entrant (potential seller)
- **Buyer's value:** v
- **Seller's cost:** c ($< v$)
- **Entrant's cost:** a random variable $\theta \in [0, v]$, distributed according to a cdf $F(\cdot)$ and density $f(\cdot)$.

- **Timeline:** B and S contract on trade price p and liquidated damages d ; E arrives and make a take-it-or-leave-it offer.
- Suppose B and S agree on (p, d) , and E charges price q . B will switch if and only if $q + d \leq p$. Knowing this, E will charge $p - d$ if $\theta < p - d$.
- **Ex ante joint payoff for B and S:**

$$F(p - d) (v - p + d) + (1 - F(p - d))(v - c).$$
- It is optimal for B and S to set $d > p - c$.

Implications

- In equilibrium, there is too little entry.
- Rationale for intervention?
 - Penalty doctrine may solve the problem.
 - May be unwarranted, if B and S can renegotiate.
 - Inefficiency may still arise if there is specific investment involved (Spier-Whinston).

(4) Moral Hazard

- *Parties may choose a contract that provides a wrong incentive on an action, if that action has externalities on parties not present in bargaining. (e.g., precaution to reduce harm to others.)*
- **Illustration:** Strategic Judgment Proofing (Che-Spier)
- **Strategic Judgment Proofing:** Financial and corporate strategies adopted to create “judgment proofness”, i.e., to shield assets from tort claimants.

Motivation

- There was a 41% rise in taxi and livery accidents in New York City between 1990 and 1998.
- Many of the victims were unable to collect the their awards after receiving favorable judgments at trial.

Why was this happening?

- There were two main reasons. Taxis held minimal insurance and the taxi medallions, worth \$275,000 each, were unreachable by the victims.
 - Taxi medallion owners used the medallions as collateral for loans.
 - Owners of large fleets organize their operations into collections of much smaller taxi companies, owning maybe two or three medallions.
- Not limited to taxi industry: Physicians, lawyers, accountants, board members, oil companies...

Methods of Judgment Proofing

- Secured Debt

- Tort victims are forced into a subordinated position in bankruptcy.

- Asset Segregation

- Horizontal segregation
- Parent/subsidiary structures
- (Limited “Veil piercing”; e.g., *Walkovsky v. Carlton*)

- Asset Securitization

- The issuance of securities based on accounts receivable.
(Equipment leases, franchise fees, cash flows from oil and gas reserves.)
- “Bowie Bonds”

The Model

Consider an owner-managed firm.

v the cash flow from the project.

$k < v$ the outside capital required to finance the project.

The capital market is competitive.

The risk-free rate of interest is normalized to zero.

e the effort of the owner-manager (non-contractible).

$c(e)$ the owner-manager's (non-pecuniary) cost of effort. $c(0) = 0, c'(e) \geq 0, c''(e) > 0, c'(\infty) = \infty$.

x the harm to society, x distributed over $[0, X]$.

The harm is distributed according to $f(x/e), F(x/e)$ satisfying the monotone likelihood ratio property (MLRP) wrt $(-x, e)$.

MLRP implies $F_e(x/e) > 0$.

The Timing

$T = 0$ Firm chooses contract (K, \mathbf{r}) .

$$K \geq k$$

Suppose the firm borrows K with either *junior debt* or *senior debt*.

- *Senior debt has priority over torts, which has priority over junior in the event of bankruptcy.*

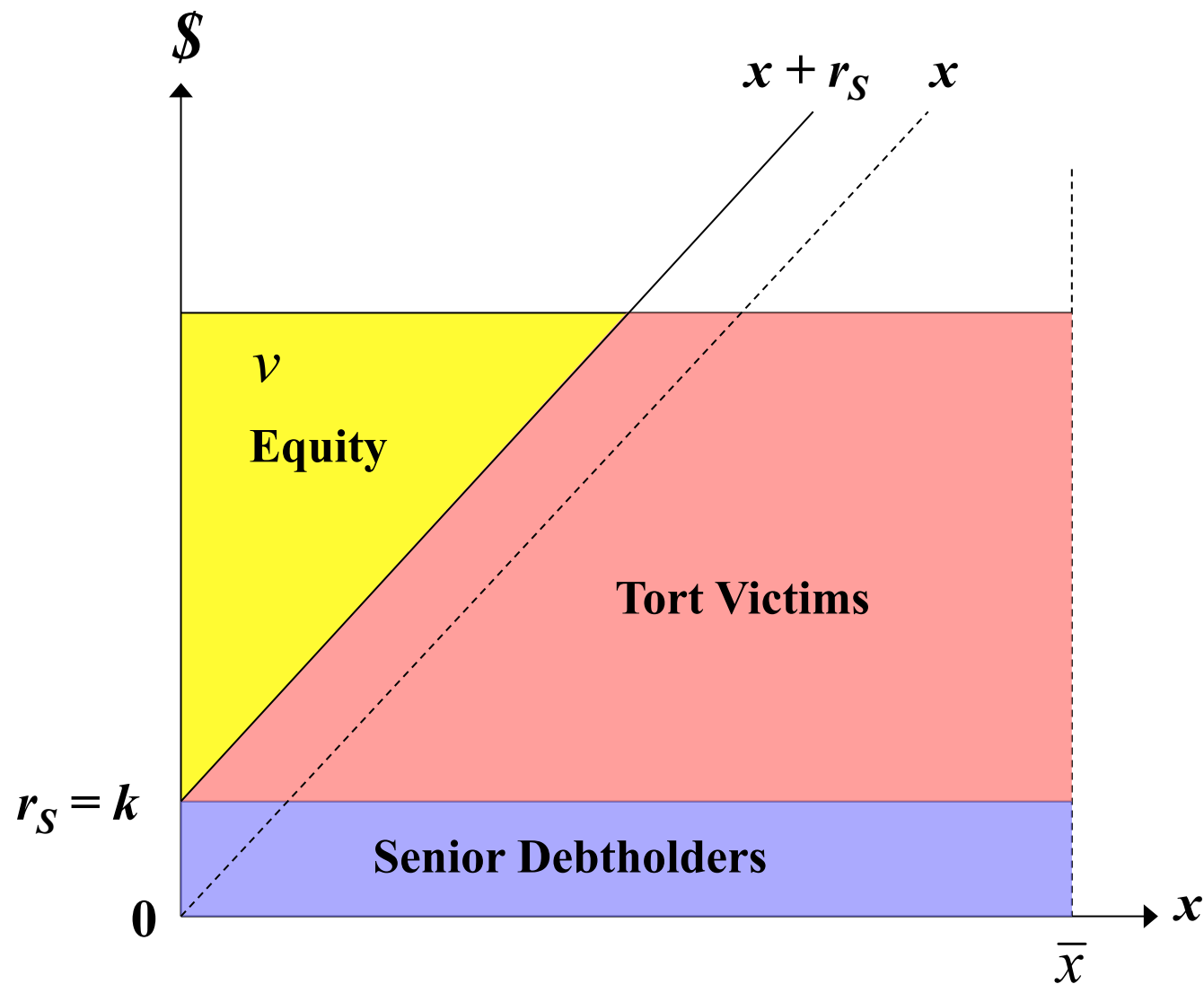
$T = 1$ Firm chooses effort e .

$T = 1.5$ The harm to the tort victims, x , is realized.

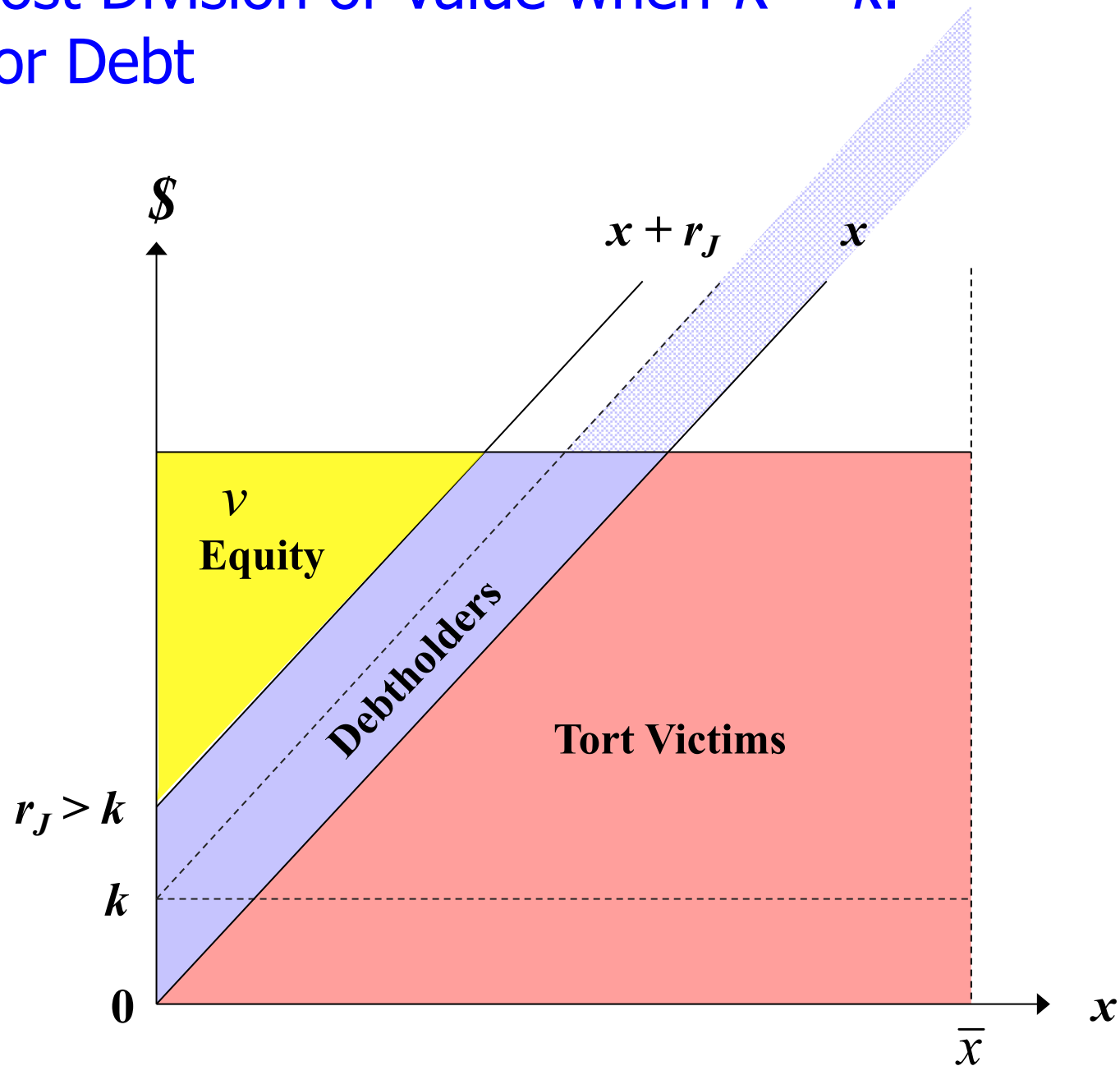
$T = 2$ The assets of the firm are liquidated.

The outside investor is repaid, the tort victim is compensated, the shareholders get the leftovers (if leftovers exist at all).

Ex Post Division of Value when $K = k$: Senior Debt

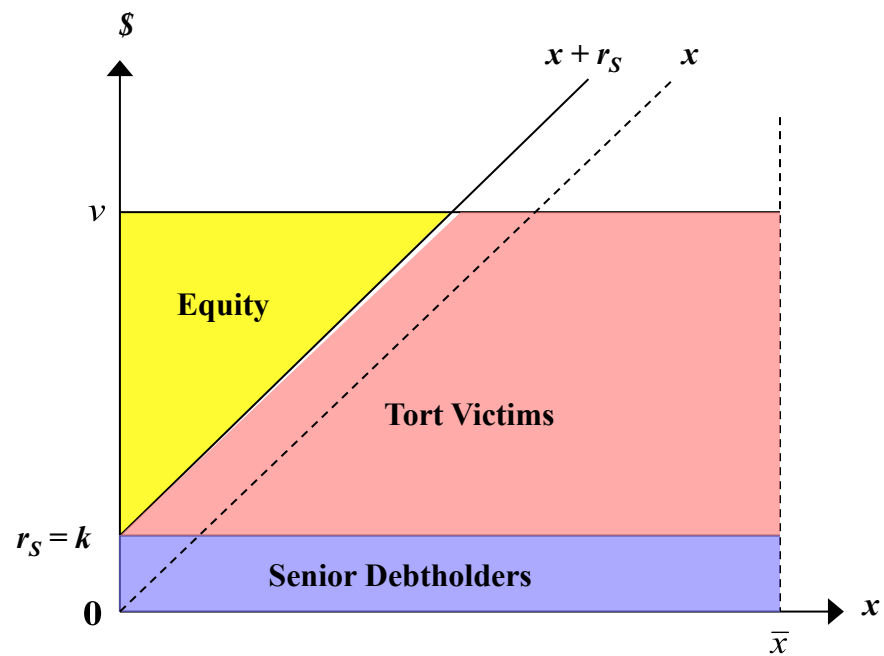


Ex Post Division of Value when $K = k$: Junior Debt

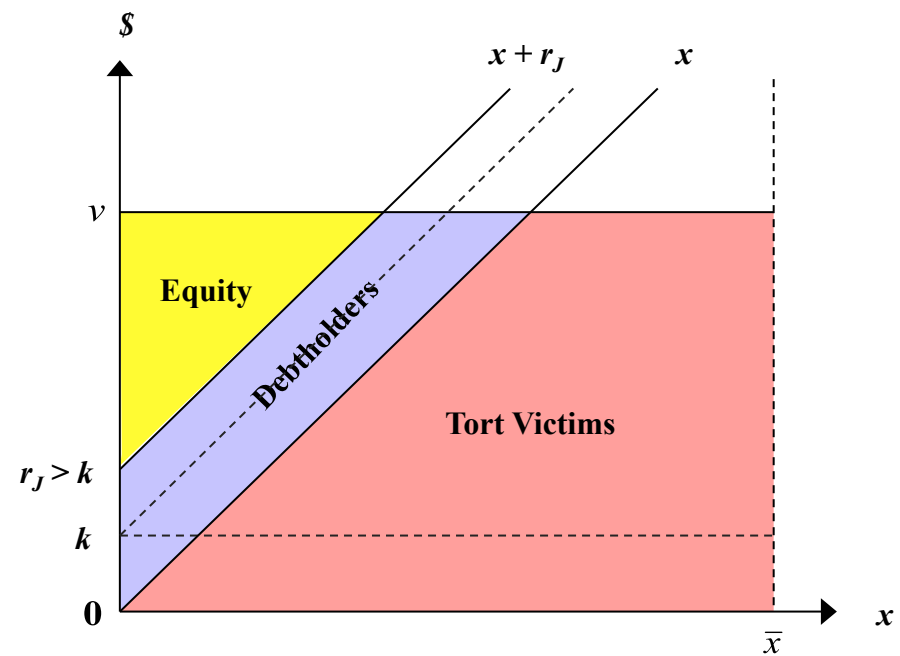


Comparison:

Senior Debt

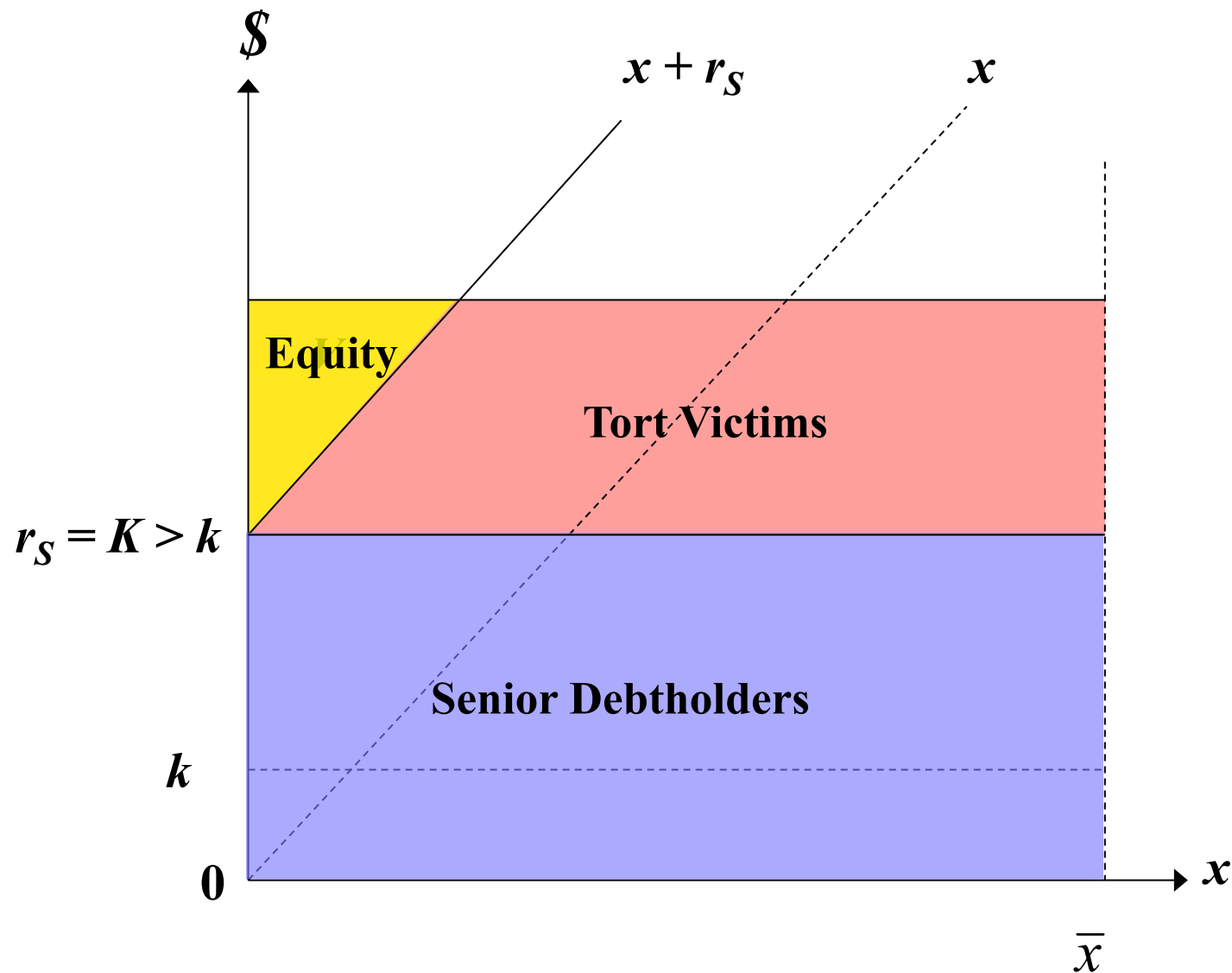


Junior Debt



Optimality of Senior Debt

- Surprisingly, the senior debt --- i.e., the instrument the firm finds optimal --- is also socially desirable, *holding the level of borrowing constant*.
- But the firm may borrow K more than k and use $K - k$ in a way unreachable by the tort victims. For instance, the firm may securitize $K - k$ and spend it away.



The outcome is inefficient: bad incentive and possibly dead-weight loss.

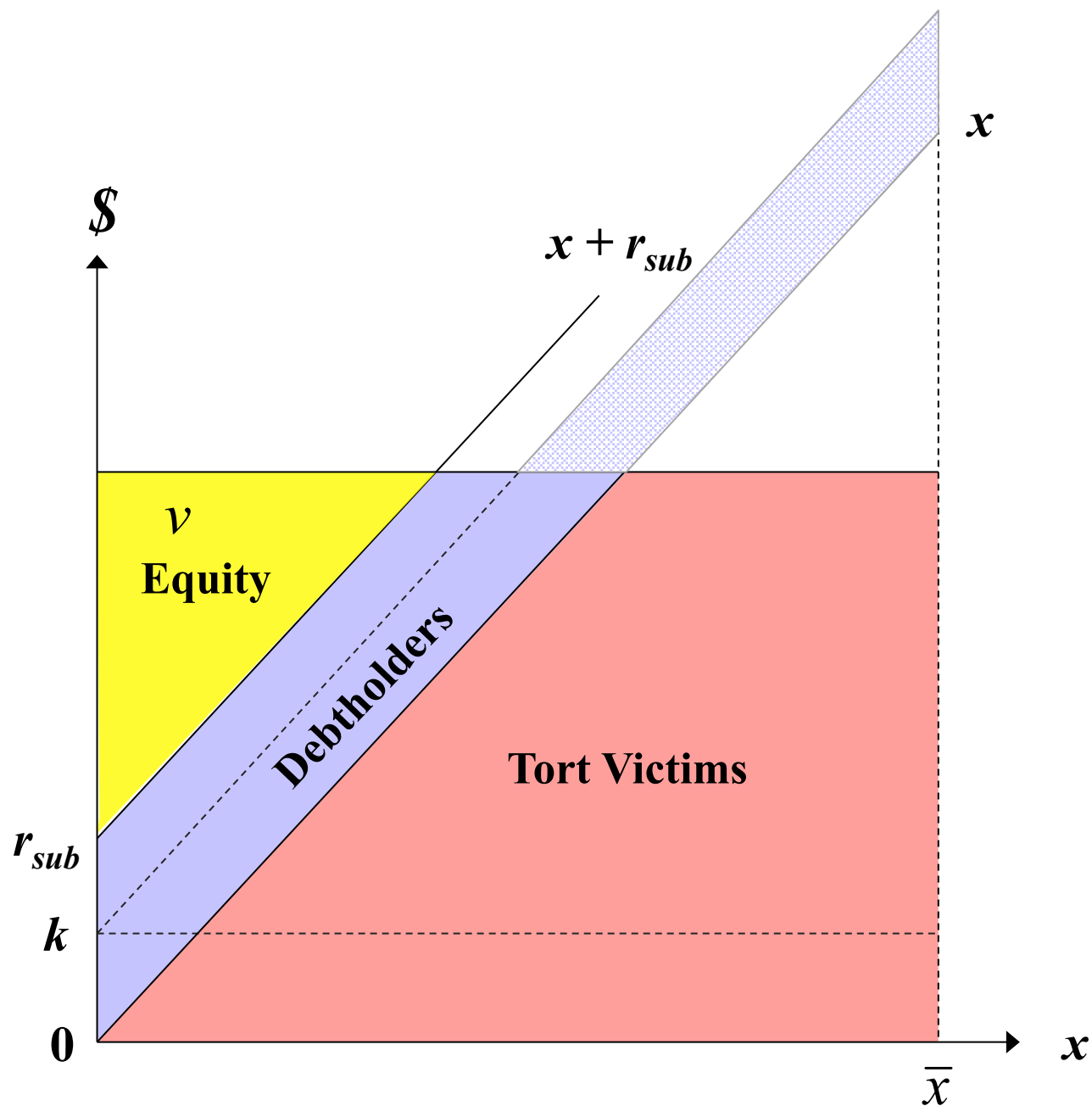
Remedies to JP

- Mandatory liability insurance: may not work well due to the moral hazard problem.
- We consider three rules:
 - Mandatory debt subordination
 - Extending liability to lenders
 - Limited seniority rule

(1) *Debt Subordination*

- Elevating the bankruptcy status of tort victims.
- Seniority of debt NOT honored, making any debt effectively junior.
 - ⇒ No over-borrowing but may not be ideal since it may raise the interests, which reduces the extent to which the injurer internalizes the harm.

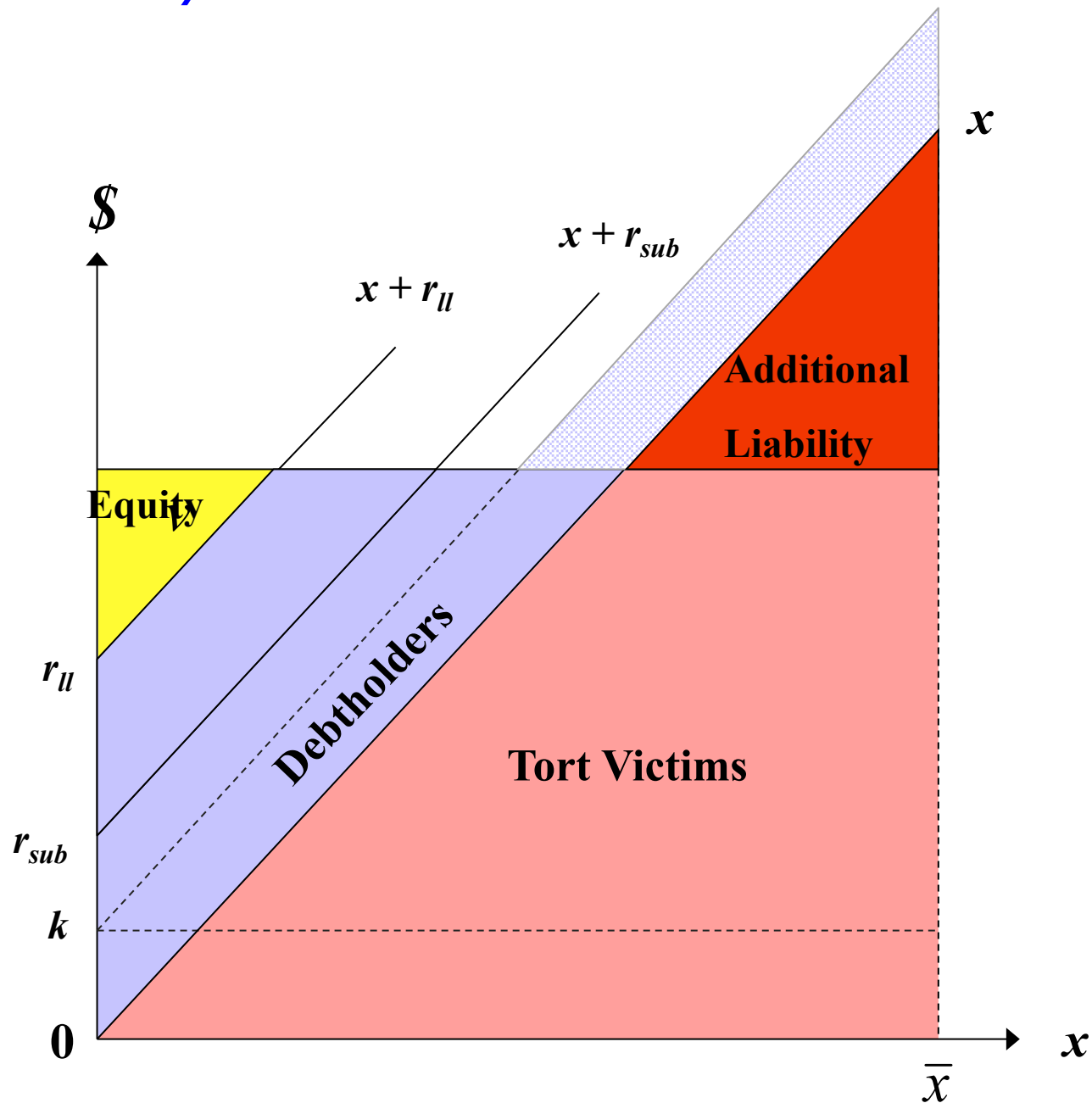
Debt Subordination – cont.



(2) Extending liability to the lender

- Lender is held liable for full “residual” liability.
 - ⇒ The lender is effectively made “junior” relative to torts.
 - ⇒ No over-borrowing.
 - ⇒ But the incentive is even worse than “Subordination.”

Lender Liability – cont.



(3) The *Limited Seniority Rule*

- Seniority of a debt is honored only up to “a justifiable limit,” k . Any borrowing in excess of this limit is automatically treated as junior to the tort.
 - The firm borrows no more than the necessary amount k .
 - The firm finances the project with senior debt, leading to a more desirable level of effort
- This rule dominates both *Subordination* and *Lender Liability*.

Summary and Implication

- Two Methods of Judgment Proofing:
 - Senior debt: Not bad.
 - Excess borrowing: Bad
- General Lesson: Ex post maximal compensation of the unrepresented party need not be the most desirable.