Maskin and Tirole's Example in the Framework of Noldeke and Schmidt's Model

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- Setting $\alpha = \beta = 0$, we have

$$U_A(a, b|A) = v(a, 0) + \lambda\{v(a, b) - v(a, 0)\} - a,$$
$$U_A(a, b|B) = \lambda\{v(a, b) - v(0, b)\} - a,$$
$$U_A(a, b|J) = \lambda v(a, b) - a.$$

  The payoff of party B is similarly defined.

- Maskin and Tirole's Mechanism:

  – Joint Ownership with Option

  – With probability 1/2, party A can sell the share of joint venture to party B at the price:

$$P_A \equiv \lambda v(0, b^*).$$

  – With probability 1/2, party B can sell the share of joint venture to party A at the price:

$$P_B \equiv (1 - \lambda)v(a^*, 0).$$

  – If party A (B) exercises the option, then party B (A) must pay "tax" t to the third party (e.g., citizens).

- How can the mechanism work to achieve the first best (a^*, b^*)?

- Suppose that $b < b^*$.

- With probability $1/2$, A is given the right to exercise the option. Then A actually exercises the option because doing so gives him (gross of investment cost a)

$$P_A + U_A(a, b|B) = \lambda\{v(0, b^*) - v(0, b)\} + \lambda v(a, b)$$

(B–ownership) while by not exercising the option A gets

$$\lambda v(a, b)$$

(Joint ownership). Since $b < b^*$ implies $v(0, b) < v(0, b^*)$, A exercises the option.

- Then B must pay large tax t.

- If $b = b^*$, A does not exercise the option and hence B can avoid paying tax t.

- Why is t paid to the third party?

  - If A (or B) pays t to B (or A), each party has the incentive to exercise the option even when the other party chose the first best investment.

- Renegotiation?

  - A and B renegotiate the mechanism to avoid tax t. Consider the case that B must pay t to the third party under the mechanism. Then A gets the renegotiation gain λt while B gets $-\lambda t$. Maskin and Tirole argue that the first best can be still attained by setting large enough t. Is this true?: When t is large enough, A (B) may have the incentive to exercise the option in order to capture the renegotiation gain λt even when B (A) chose the first best investment b^* (a^*).

- Sequential Investments vs. Simultaneous Investments: In the case of sequential investments we may have only to check that the first mover has the right incentive to choose the first best investment. This is because the second mover may correctly respond to such

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choice by choosing the first best investment as well (as assumed in the model of Noldeke and Schmidt). Thus we have only to consider the option contract in which the second mover is given the right to buy back the asset at the predetermined price: First the asset is owned by the first mover. Then the asset can be transferred to the second mover when he exercises the option to own it.