Report

January 23, 2018

Contents

1 Check list

- ⊠ Do not round the state value to grids.

- ⊠ Change the action of buying client capital from increments to choosing the exact value.

- ⊠ Remove the depreciation factor and use an upper bound on the possible client capital.

- ☐ Make sure the action of quality > 0 when client capital >0: the firm must produce something when they are in the (have entered or being entering) the game.

- ⊠ Change the cost of choosing a client capital value,
    - ⊠ If k $==$ 0 and k' > 0: pay a entry cost. The total cost will be "client capital price*(k'-k) + entry cost"
    - ⊠ If k = 0 and k' = 0: total cost$=0$

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- ⊠ If k > 0 and k' > k: total cost = client capital price*(k'-k) + maintenance cost*k.

- ⊠ If k > 0 and k > k' > 0: total cost = -sale price*(k-k') + maintenance cost*k'.

- ⊠ If k > 0 and k' == 0: obtain a scrap value. total cost = -sale price*k - scrap value.

- ⊠ Make sure that if client capital is 0, the cost to produce a nonzero quality product is infinity. (Use 30 penalty as infinity)

- □ Also, try to add a 0-profit constraint on actions, that is: enforce each firm must have nonnegative stage pay off at any stage.

2 The Model

2.1 Basic parameters

Entry cost	0.03
Client capital unit price	0.005
Maintenance unit cost	0.005
Scrap value	0.01
Unit production cost	0.01
Number of normals	36

2.2 Grids

State	0:1:5
Action of client capital	0:1:5
Action of quality	0:1:5
Action of price	0:1:5

2.3 Equations

- Setup cost

$$C_s = \begin{cases} \frac{w^2}{20a} & k > 0 \\ 30 & k = 0 \end{cases}$$

3   Results