The model of Rothschild + Stiglitz

$t=1$

$e \to e$

$t=2$

$e \to 2e$

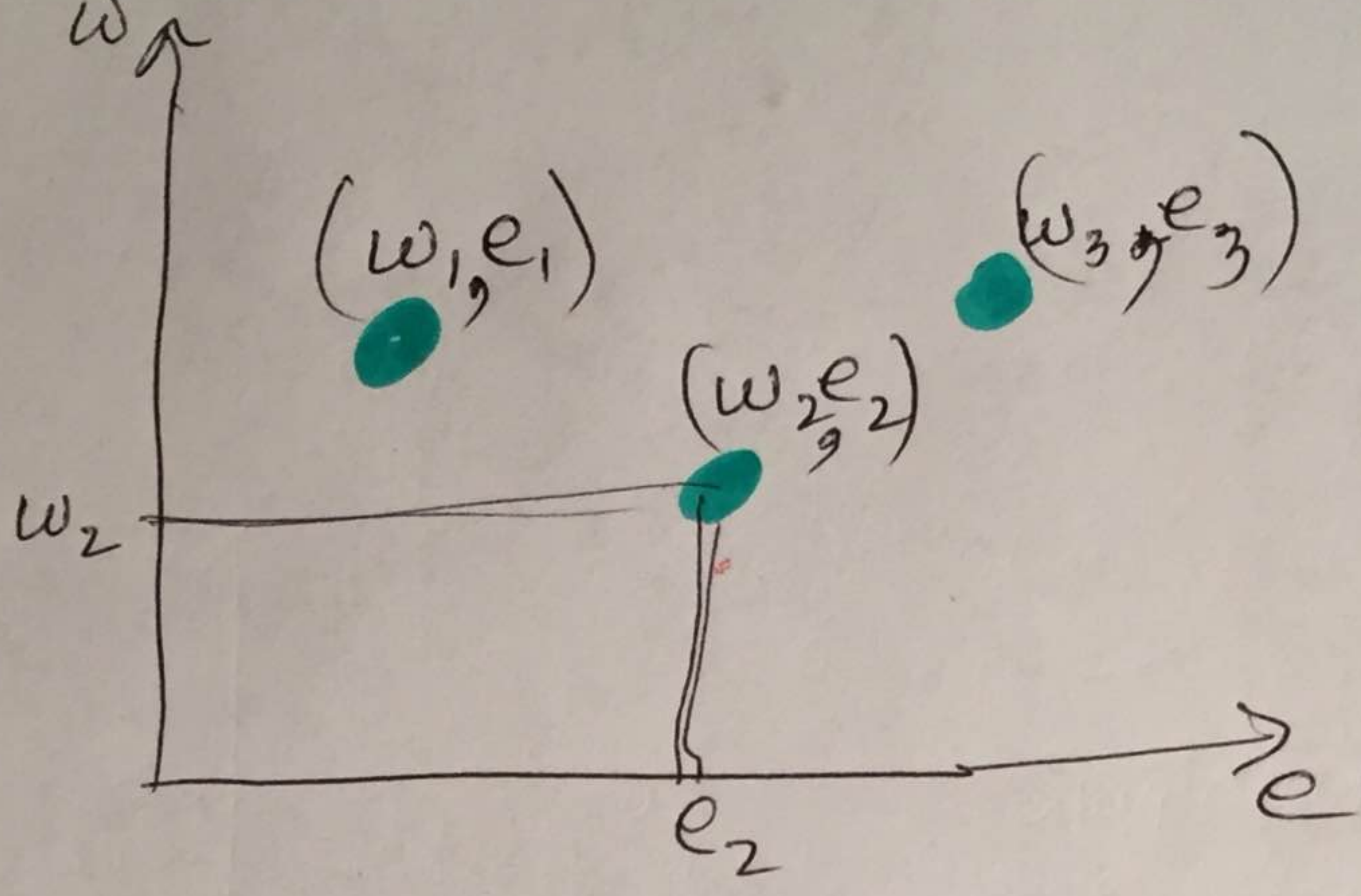
Single crossing

N_1 of type 1

N_2 of type 2

Define : $\alpha = \dfrac{N_1}{N_1+N_2}$

Firms offer <u>contracts</u> (w_i, e_i)



NOTATION

If $0 \le n_i \le N_1$ of type 1 go to contract (w_i, e_i) we say that the fraction $\pi_1(w_i, e_i) = \frac{n_i}{N_1}$ of type 1 go to (w_i, e_i)

Similarly for $\pi_2(w_i, e_i)$

DEF^n

An eq^m consists of a finite menu $M = \{(\omega_1, e_1), \ldots, (\omega_k, e_k)\}$ of contracts (where k is an arbitrary positive integer) and two probability distributions π_1, π_2 on M such that

(1) $\pi_t(\omega_i, e_i) > 0 \Rightarrow u_t(\omega_i, e_i) = \max_{1 \le j \le k} u_t(\omega_j, e_j)$

(2) no firm makes a loss, i.e.,

$\pi_1(\omega_i, e_i) + \pi_2(\omega_i, e_i) > 0 \Longrightarrow$

money paid to workers $\leq$ money produced by workers

i.e. $\omega_i \left(\pi_1(\omega_i e_i) N_1 + \pi_2(\omega_i e_i) N_2\right)$

$$\leq \pi_1(\omega_i e_i) N_1 e_i + \pi_2(\omega_i e_i) N_2 2e_i$$

$$\longleftrightarrow \quad \omega_i \leq \frac{\alpha \pi_1(\omega_i e_i) e + (1-\alpha)\pi_2(\omega_i e_i) 2e}{\alpha \pi_1(\omega_i e_i) + (1-\alpha)\pi_2(\omega_i e_i) 2e}$$

(3) No firm can enter and propose another contract which will "attract workers" away from M, and make a profit.

(DISCUSS variations of the meaning of "attract workers")

FREE ENTRY
(new idea here)

CLAIM A

IF there is an eq^n and

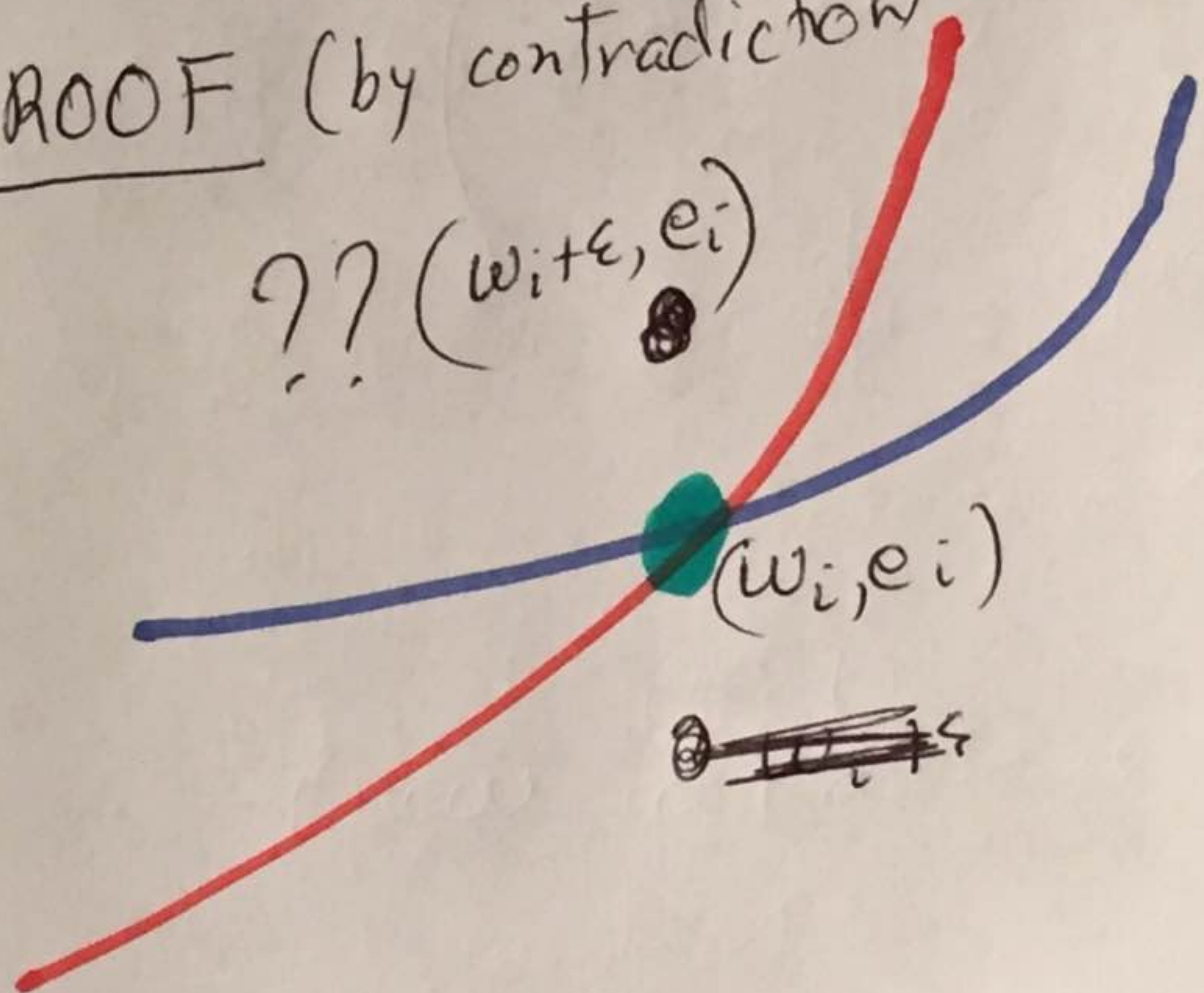
(w_i, e_i) is active

then it cannot make profit.

(i.e. $\pi_1(w_i, e_i) + \pi_2(w_i e_i) > 0$ ......)

$\Rightarrow w_i =$

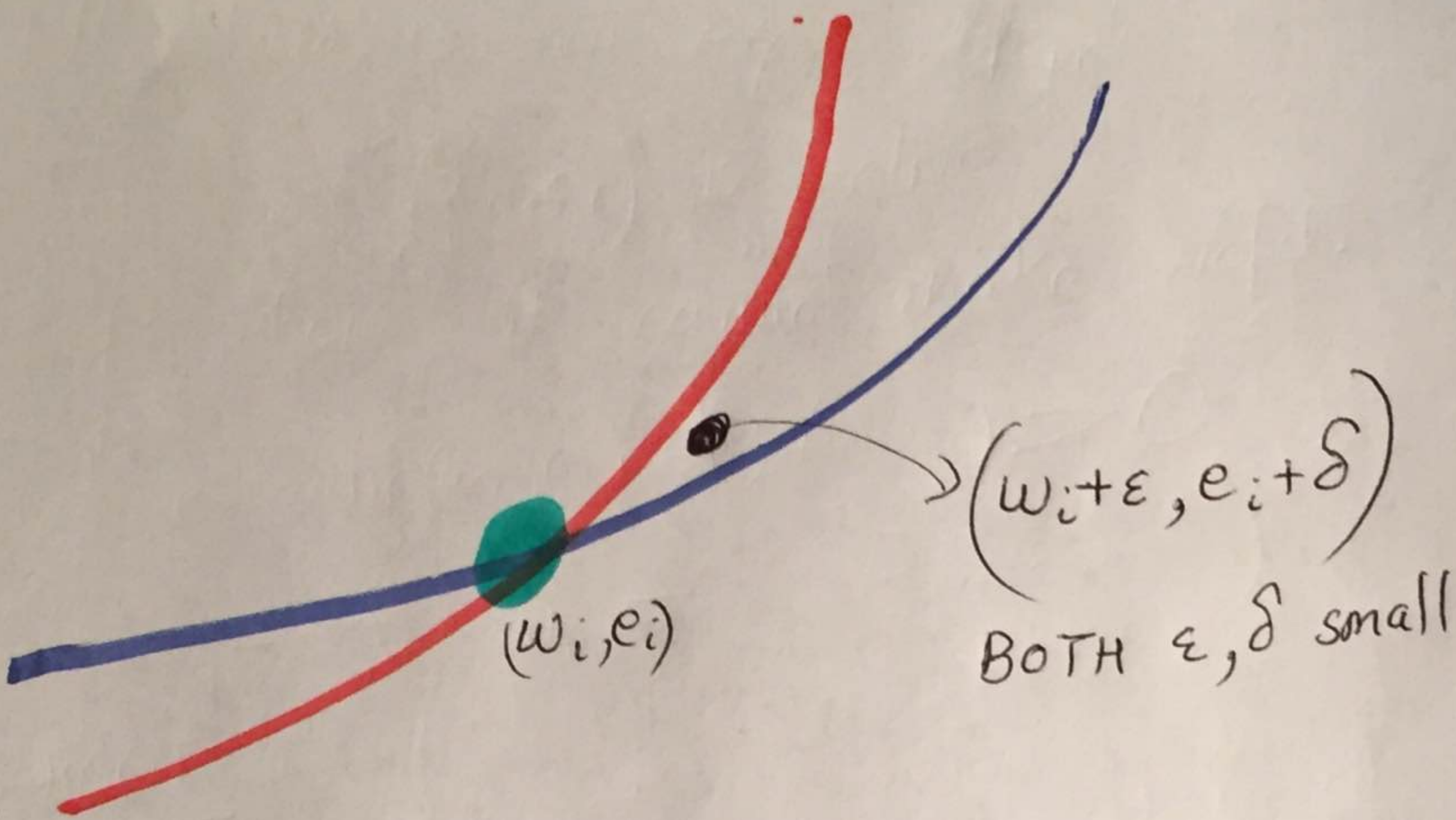
PROOF (by contradiction)



WON'T WORK NECESSARILY

(BTW) ALL $t=1$ on 

ALL $t=2$ on 



$$\omega_i < \frac{\alpha \pi_1(w_i e_i) e_i + (1-\alpha)\pi_2(w_i e_i) 2e_i}{\alpha \pi_1(w_i e_i) + (1-\alpha)\pi_2(w_i, e_i)} \quad *$$

CASE I If $\pi_1(w_i e_i) = 0$ (and only $\pi_2(w_i e_i) > 0$)

then $*$ reduces to

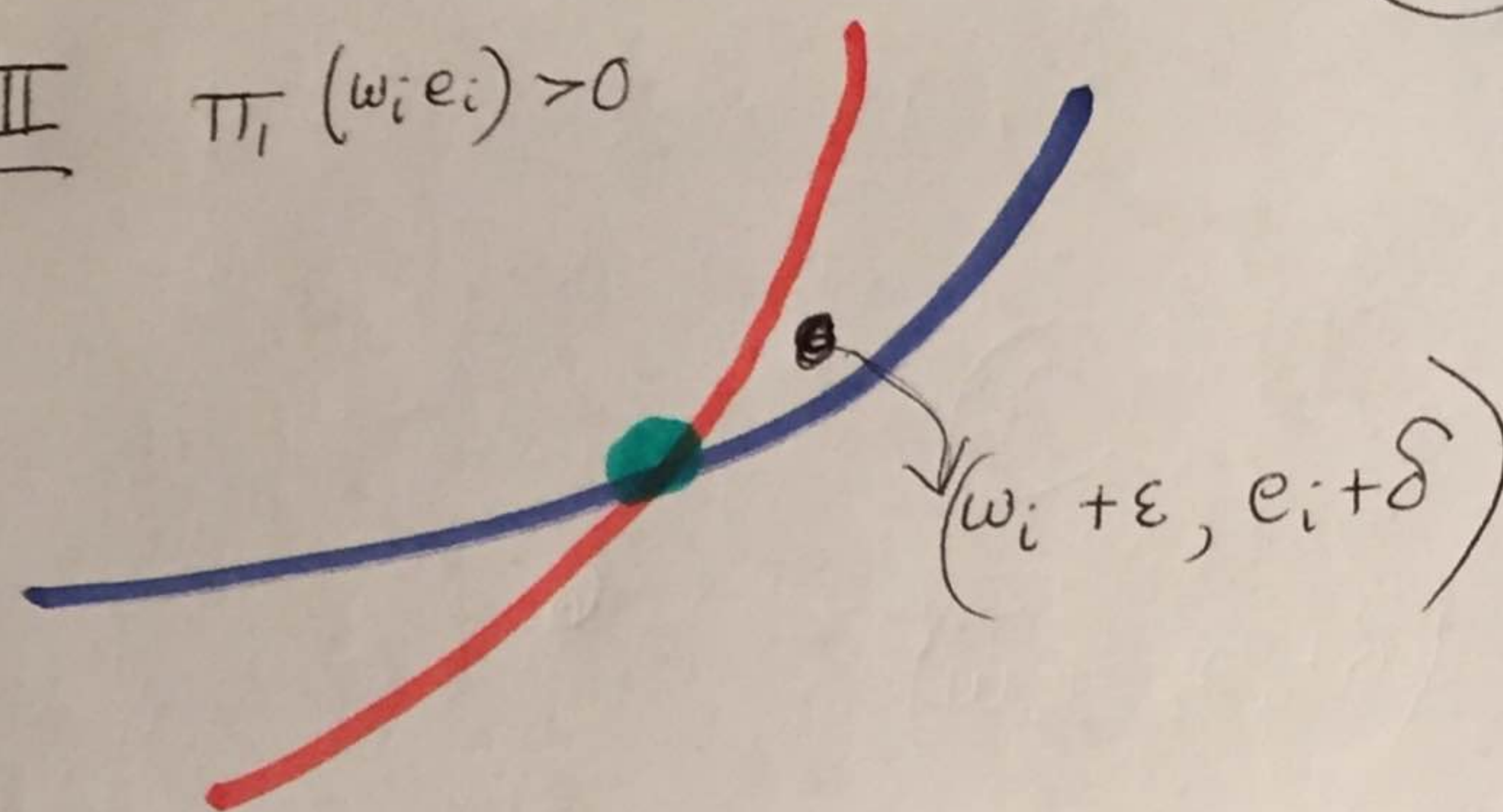
$$w_i < 2e_i$$

$$\Rightarrow \quad w_i + \varepsilon < 2(e_i + \delta)$$ for small enough ε and δ

So entrant can upset eq^m + make profit

"upset eq^m" = lure ~~high type~~ workers away to himself

CASE II $\pi_1(w_i e_i) > 0$



Then RHS on * is a convex combination of e_i and $2e_i$ with positive weight $\frac{\alpha \pi_1(w_i e_i)}{\alpha \pi_1(w_i e_i) + (1-\alpha)\pi_2(w_i e_i)} > 0$ on e_i

So * says

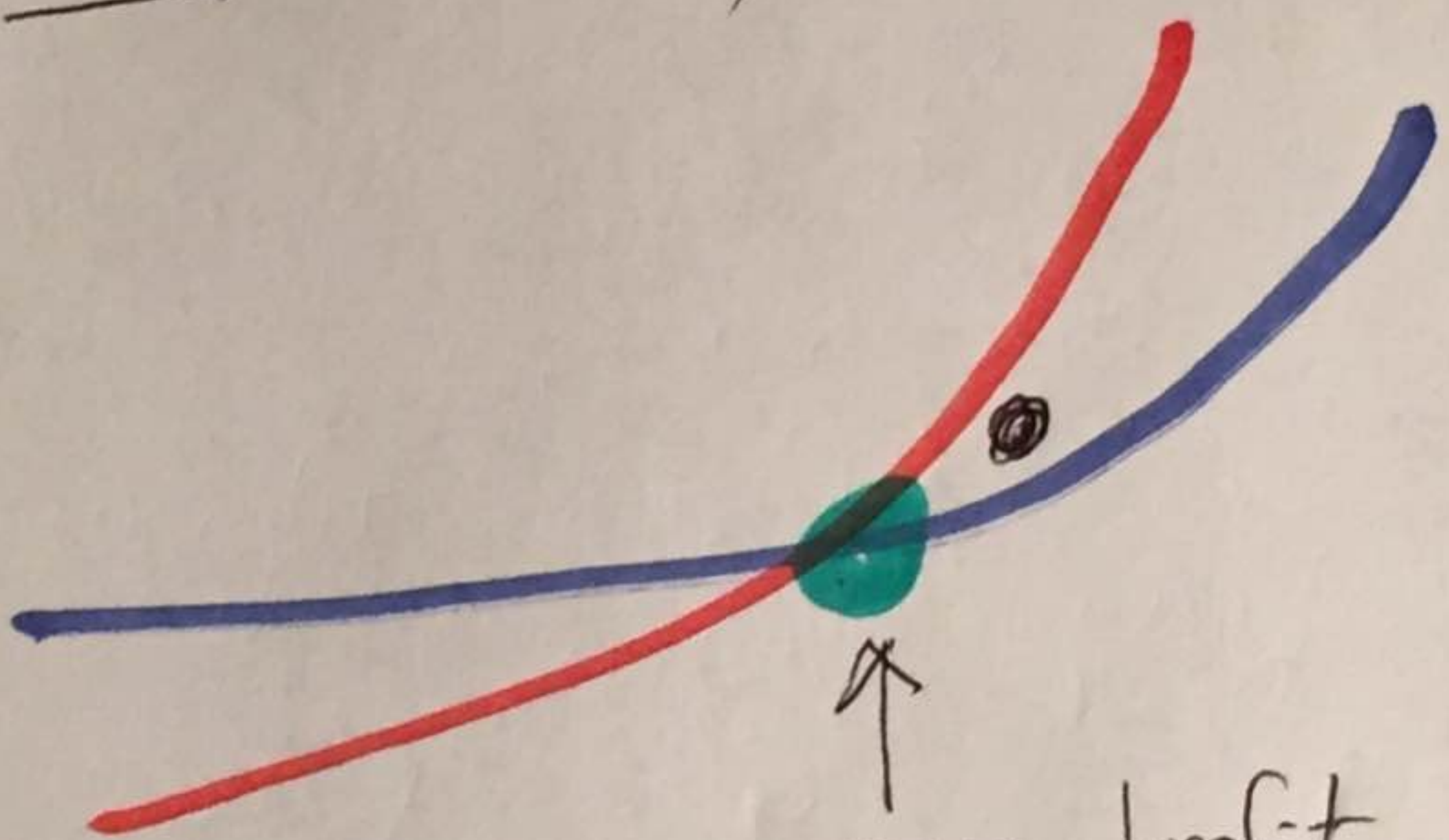
$$w_i < \dots < 2e_i$$

$\Rightarrow$ $w_i + \varepsilon < 2(e_i + \delta)$ for small enough ε and δ

So entrant can upset eq^m and make profit

CLAIM B At any active contract, cannot have both types present (no pooling possible)

Proof (By contradiction)



zero profit

So $w_i = z e_i + (1-z) 2 e_i$

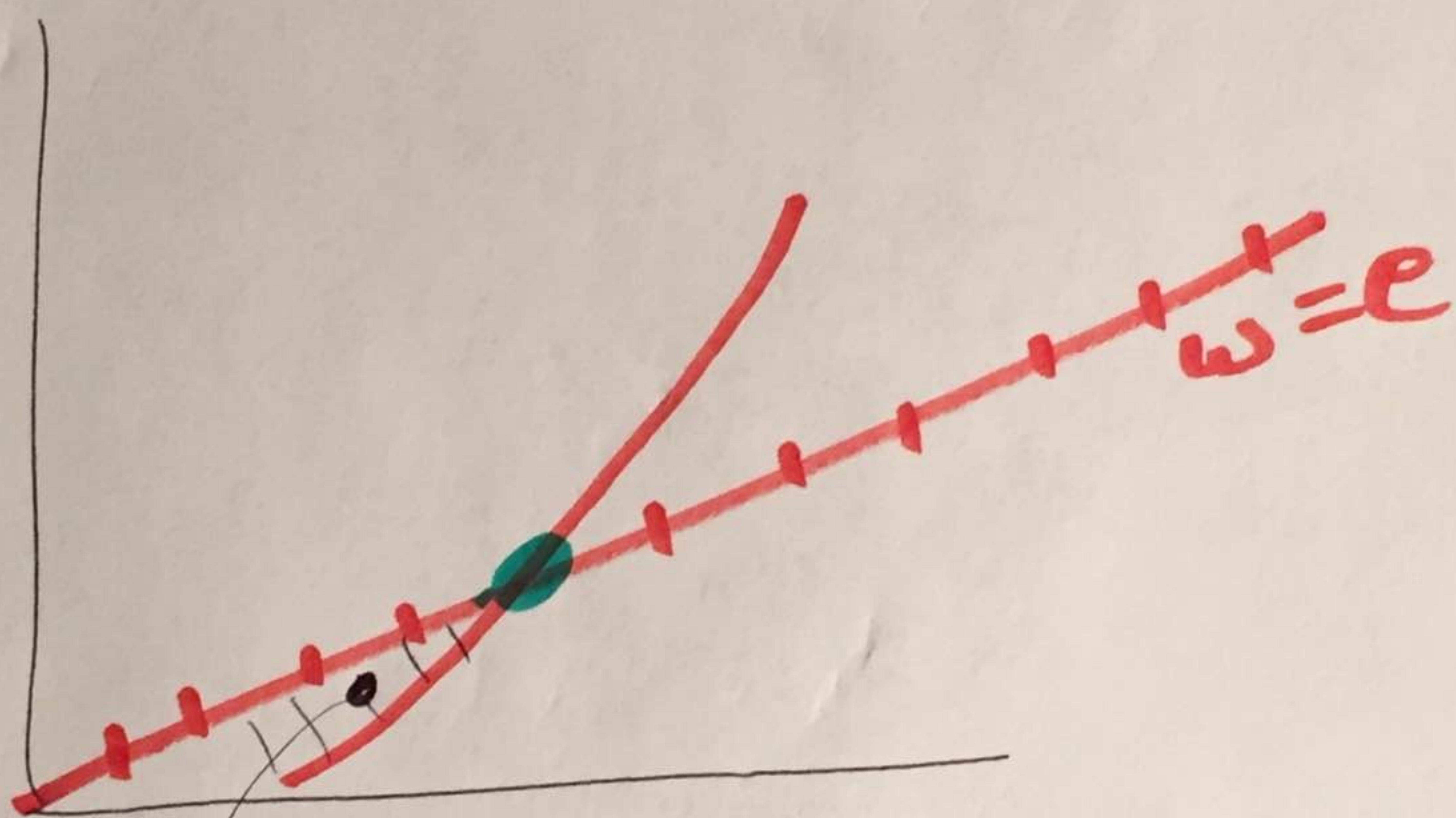
POOLING $\Longrightarrow$ $0 < z < 1$.

Therefore $w_i + \varepsilon < 2(e_i + \delta)$ for small ε, δ.

Entrant can upset, and make profit

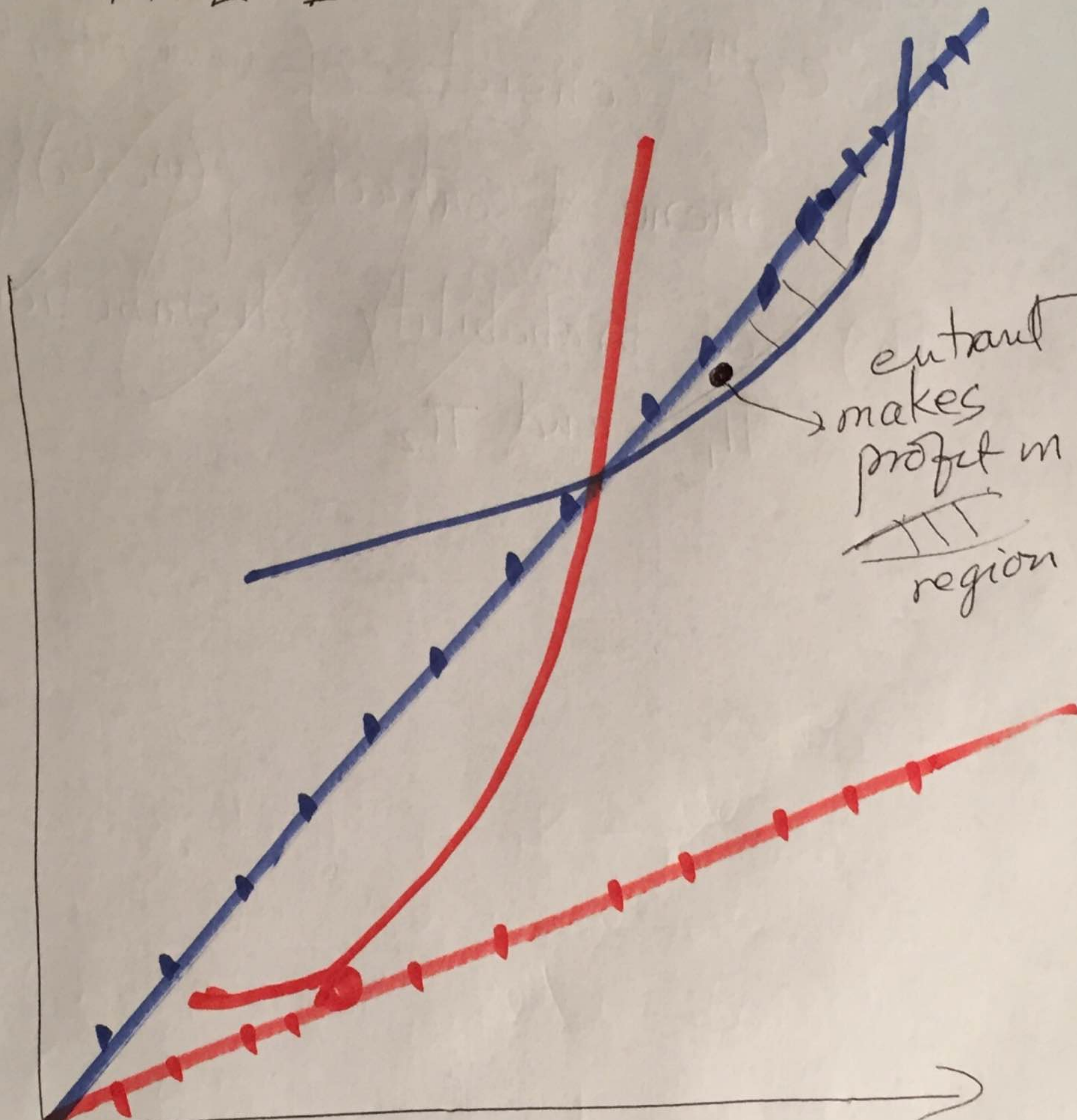
Contradiction

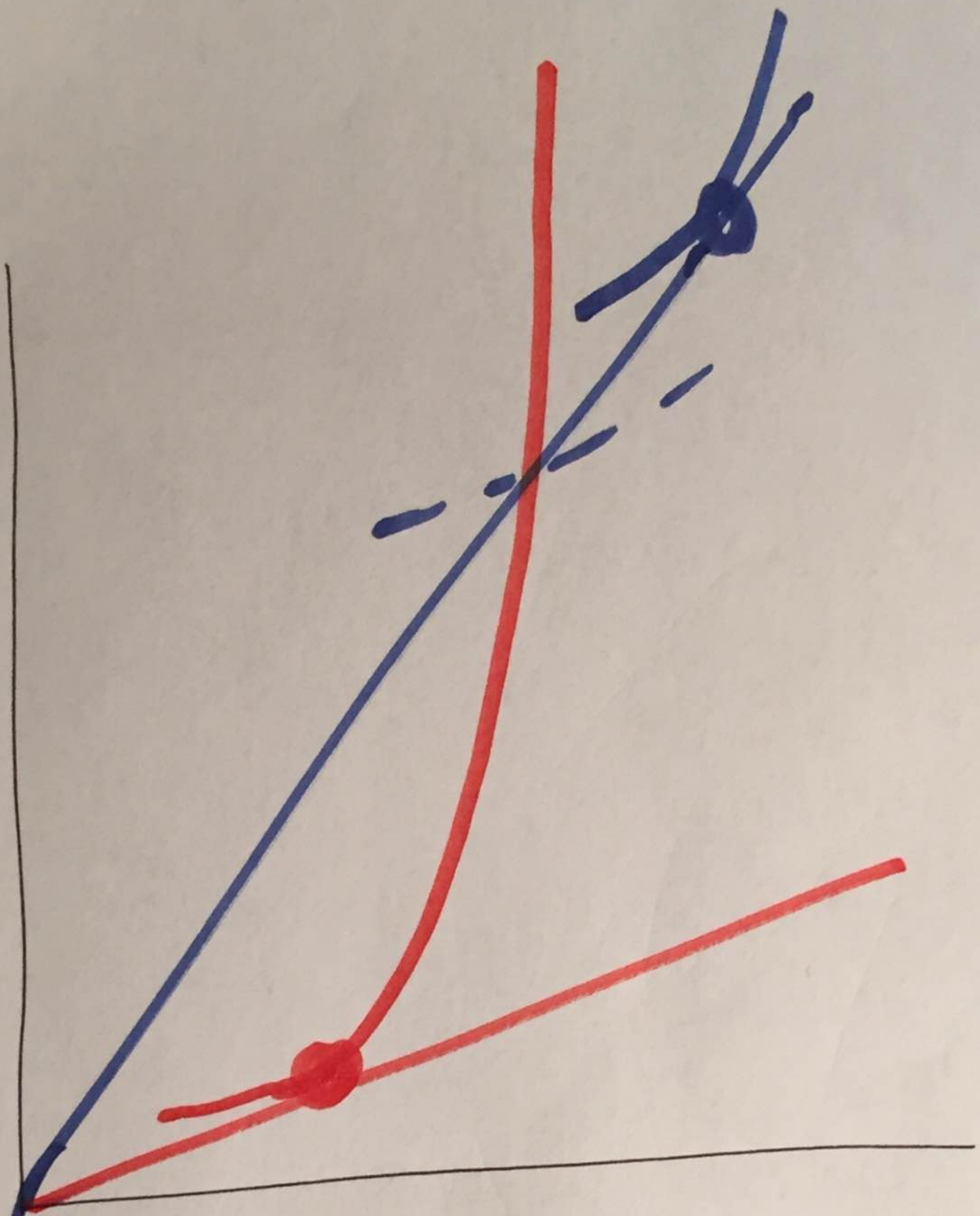
CLAIM C All low type must be tangential to the low productivity line.



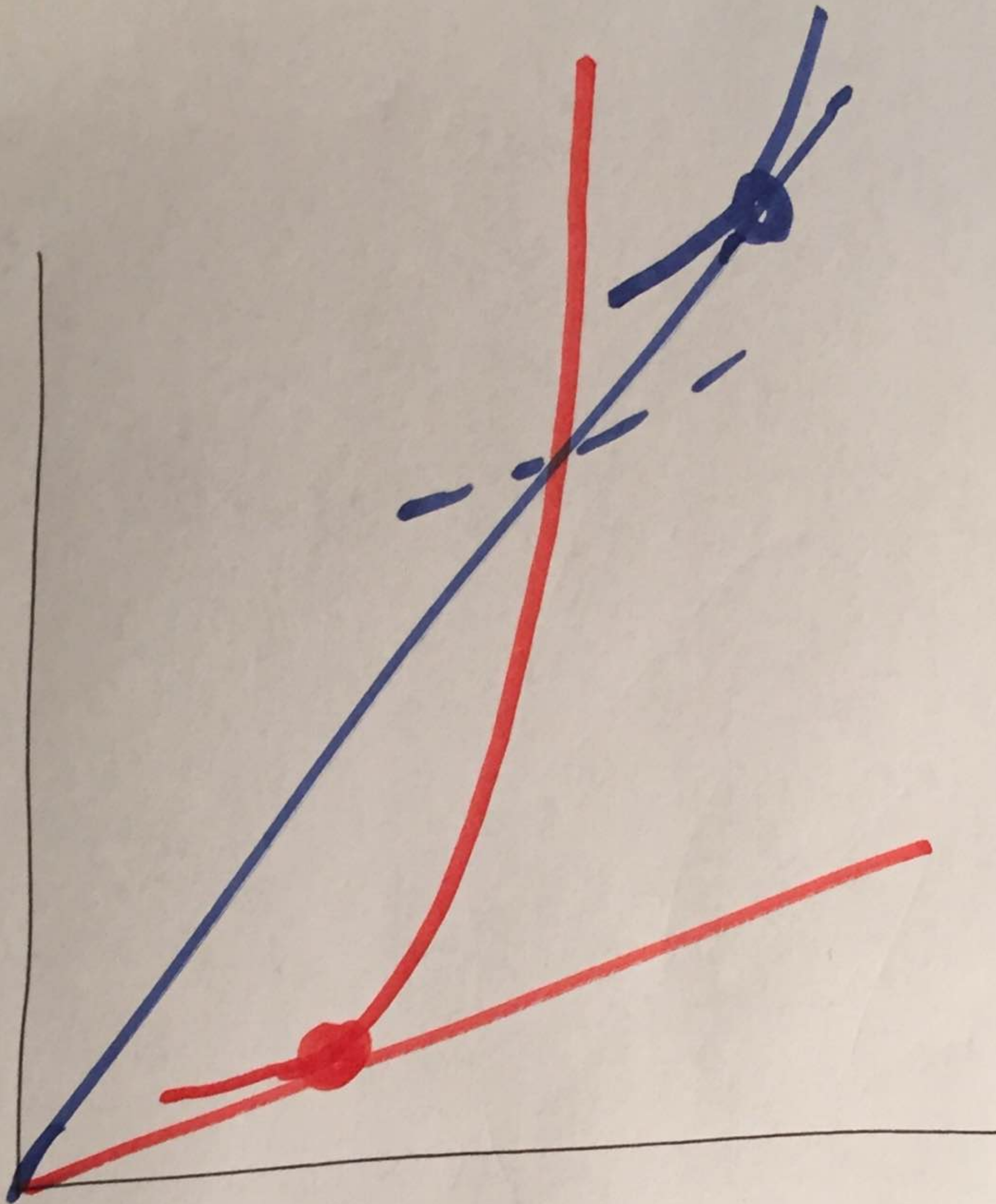
entrant will make profit ~~line~~ by an offer in ⅠⅠⅩ
e upset eqⁿ

TYPE I intersection



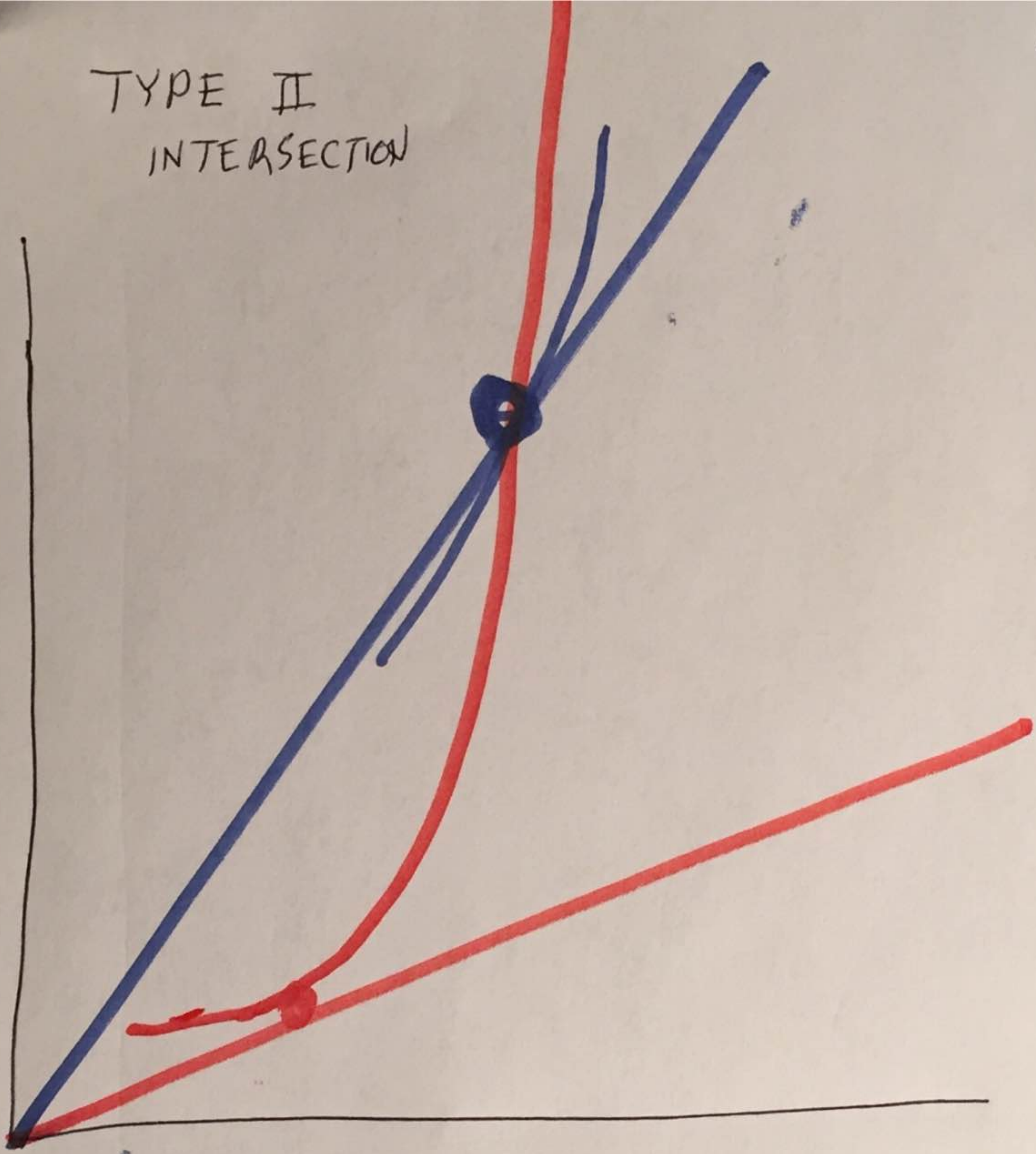


UNIQUE EQ^{m}
AS SHOWN

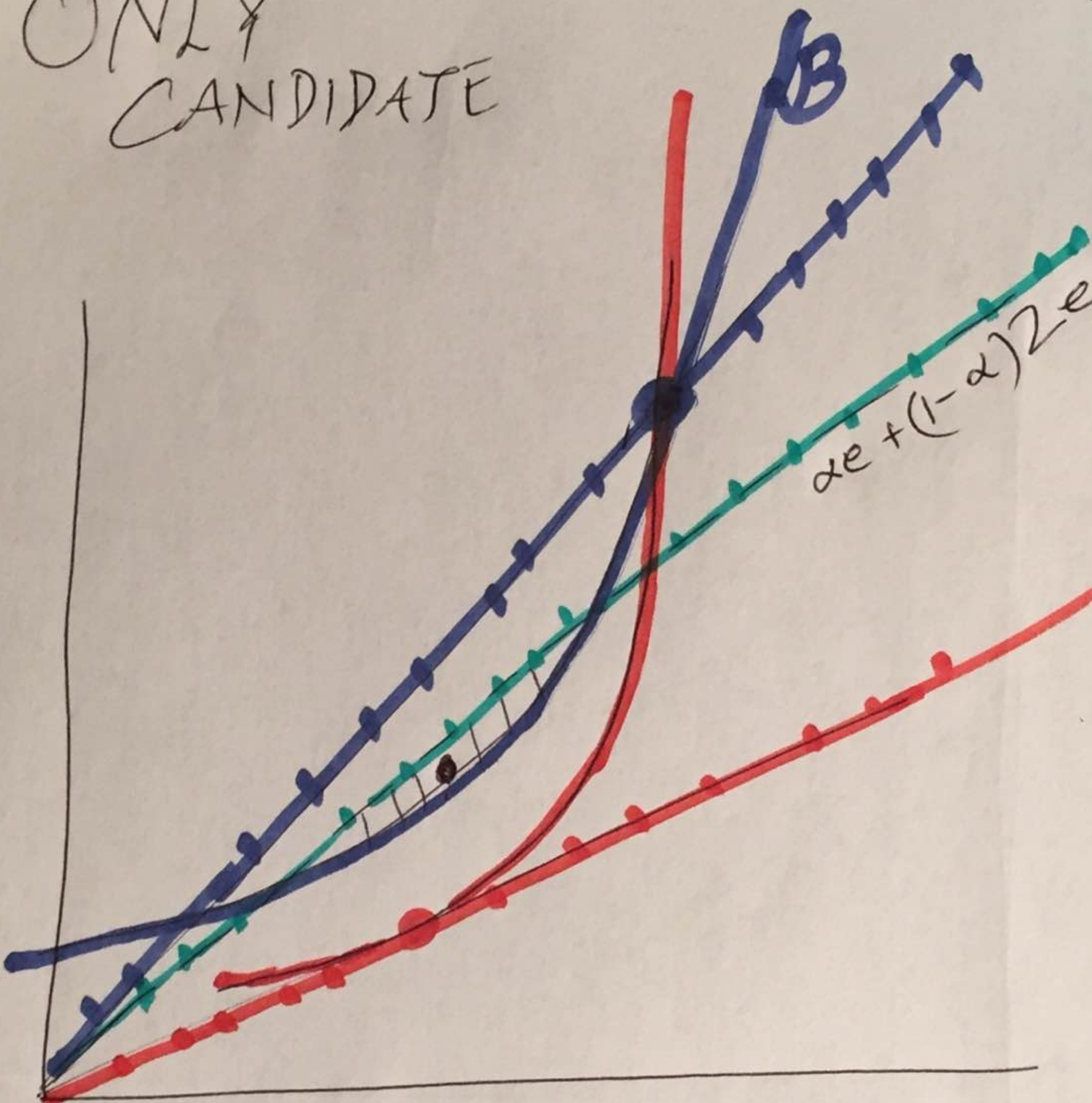


UNIQUE EQ^{m}
AS SHOWN

TYPE II
INTERSECTION



ONLY
CANDIDATE



If indifference curve B dips below , then eq^m does not exist (candidate fails the test)

O.w candidate is eq^m