

f4c Lo i.r. gets hi 70
of Land. Exposition

Add any asset until $\frac{MP}{P} = i - \frac{\Delta P}{P}$

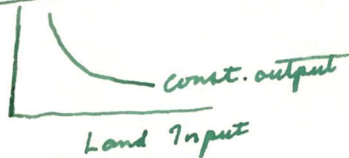
$$MP = P i - \Delta P$$

$$P i = MP + \Delta P$$

Have I been unconventional in assuming MP of cap. was net of deprec-n? I believe custom probly wd dictate distinguish'g inventory from equipment, & deduct'g turnover but not deprec-n. I'm ~~not~~ treat'g both same.

$$\frac{MP + \Delta P}{P} = i$$

H_i
Turnover
input



The Value of a Man

8-16-56
The Miami investment firm of Makris and Kakoulis places a high price tag on one of its partners, Michael Angel Socrates Makris. The Miami agent of the Pan-American Life Insurance Company of New Orleans sold the firm a \$2,000,000 life insurance policy, with an additional \$1,000,000 accident policy naming the firm as beneficiary. This is reportedly one of the largest life policies ever written in the Florida city.

Only 29 years old Mr. Makris has made quite a name as the boy investment wonder of Houston, Tex. Back in 1933, for example, he organized the Texas International Sulphur Company, to mine sulphur in Mexico.

R.G.D. Allen has
diagram on time
pref., choice between
present & future.

As to propriety of calling gross MP of cap. its MP,
Bach calls it its "rent" (p. 437), by which he means same as MP.
From that deducts depreciation for 'net yield'.

Is this the good usage of "quasi-rent"?

Bernhard seems to use it so, too, p. 196

Show how low i.r., compet'g w.
hi, can earn higher & higher returns
by shifting to buy'g futures.

Work it out algebraically, &
arithmetically, add to
ch. 6 demonstration.

Stigler, Thy of P, p. 180 ftnr

Says Marshall's 'quasi-rent'
was net of maintn & deprec.

This lets quasi-rents be negative.

Stig. says they are "non-cost
outlays", shldn't be neg. ∴

So his quasi-rents include
gross, ~~evidently~~. Deprec. included
as part of A & C

Articles re i.r. & rate of inv.

5236 Nallich, Henry C., "The Changing Significance of the interest rate", AER, XXXVI Dec. '46 761-87. Mentions that off. studies, proponents of i.r. took refuge in long term.

Cites

5237 a. J.E. Meade & PWS Andrews, "Summary of replies to questions on effect of interest rates", Oxford Ec. Papers, No. I, Oct '38, 14-31

5238 b. J F Ebersole, "The Influence of i.r.s. upon entrepreneurial decisions in business", Harvard Bus Rev., XVII Aut. '38 35-39.

See also

5235 H.D. Henderson, "The Significance of the rate of interest", Oxford Ec. Papers, No. I, Oct '38 p. 9

And

5234 Lutz, FA, "The i.r. & inv. in a dynamic economy", AER XXXV Dec '45 811-30

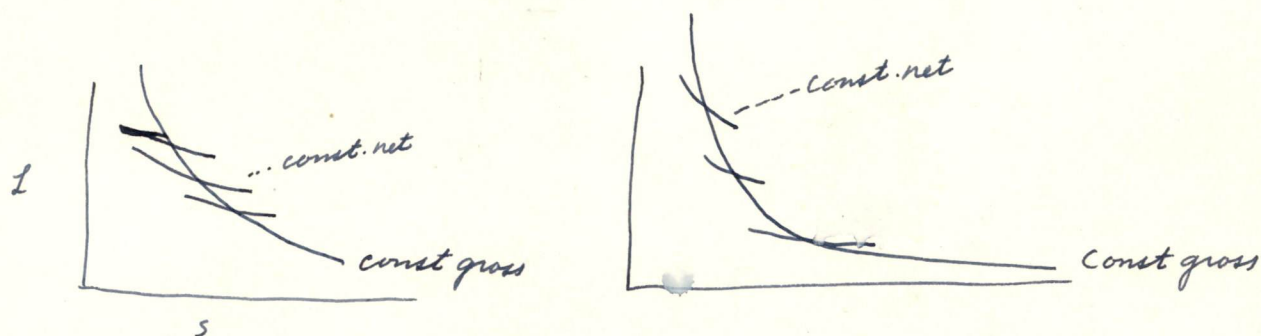
good { Lutz says theorists who emphasized effect of i.r. on decisions were assuming cet. par., while in fact cet. non par., hence small evident effect of i.r. (Good, jibes w. my idea, for are more cet. to be non-par w. stock)

p. 819, has i.r. affecting long term decisions more, but is a larger factor in them.

5233 And Moonitz, M, "The risk of obsolescence & the importance of the rate of interest" JPE LI Aug '43 349-55. Moonitz emphasizes capitalization as restoring imp. of i.r.

Moonitz cites studies that machinery, equipment, must be recovered in 3 yrs or less or bus. won't invest, due to risk of obsolescence.

i.e., studies show in practice i.r. of almost no account in det'g margin to which apply machines & equipment.



S.MRS, $\frac{\Delta L}{\Delta S}$ to keep const. gross output - which means changing net output, increasing it as get more land, which yields less $\frac{\text{gross}}{\text{net}}$.

As move along g.o. curve, $\frac{\Delta L}{\Delta S}$ remains const., but $\frac{\Delta L}{\Delta S}$ probly changes. & $\frac{y_L}{y_S}$ changes. That being so, is there any presumption that g.o. curves become steeper as move to right? Yes, steepness ΔS bcs y_L falls, almost exclusively.

Cd use gross m.p.s. argument. As curves move to right, ~~point out~~ why become steeper? Bcs y_L falls. But point out it doesn't fall fast as y_S , bcs of low $\frac{\text{gross}}{\text{net}}$. Mov'g out, keep's any fixed ratio of $\frac{\text{land}}{\text{stock}}$, y_S falls much faster --- say 21 times faster, if 21 times more gross. That wd keep gross curve const. slope, result in more land/stock due to lower i .

Org. of Conclusion, 2

~~p 2~~

Therefore ~~to~~ m.a. uses much more land, but only a little more cap, & tends to be land intensive. [$\therefore$ also, misalloc-n of land more serious ~~than~~ "problem" than of cap. - more waste]

R. Come at same point some diff. ways.

a. $MRS = \frac{1+i}{i}$ or forget that?

Int. is only cost of hld's land. ^{w cap is small, gets submerged.} $\therefore$ diff. curves

b. So i.a. makes futures relatively cheaper

c. So m.a. can not outbid for near future, can for far future. Apply to diff. mrgns?

d. When $-\Delta i$, land becomes worth more, by $\frac{\text{yield}}{\Delta i}$; cap, by only small sum.

E.g., i.a. halves, l.v. double, but cap. just up a little.

e. Tie up less money for given Δ of output.

Add some reinforcing pts. - & qualify first. Might say dim. ret. curve falls slower for cap., but includes corpus. Land also embodies annual potential of land.

5.

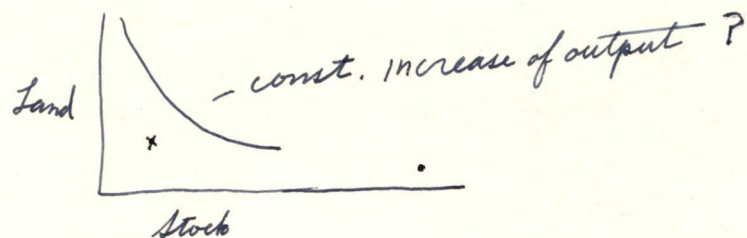
a. As Δ land & cap, latter hits dim. ret. sooner - & has higher returns go'g back. (which inc. means steep MP curve). Avoid hi gross ret escape into futures w superabundant assets

b. Land has Δs

c. Credit rationing, higher i.a. on long run loans for small

d. Mrgy - land Δs gross sales less than same in cap.

e. Large margin of error in det'g MP. Hard in thry, more in practice. So aren't very sure what net MP of stock is, mrgn of error exceeds i. So i little influence.



Draw curve for which MP of stock = MP of land
 " "
 $1 + y_s$ y_L

✓ Start by supposing an individ. com or wants to handle a bus. w-a
 S, a. grows of so much. Then i.r. clearly settles it. Introduce $\frac{1+i}{i}$ here, note
 that i affects sh.t. tm very little, so ass. is warranted.

To achieve given Δ of gross output, how decide on land or stock? cf.
 costs to outputs, or adjust so cost of land $\times$ unit sub's for $\Delta s = \Delta s \times (\text{cost of } \Delta s)$

$$q \times i \times \Delta L = \Delta s (1+i)$$

$$\frac{1+y_s}{y_L} = \frac{\Delta L}{\Delta s} = \frac{1+i}{i}$$

✓ Sounds awfully persuasive — until you get into effect of lower
 yields on mas. Besides, does it sound persuasive to say ~~lower i.r.~~ you wd.
 settle for higher yield on pig, & let it go at that? Might

Another approach: Take off annual basis. Take MP as $\sum_{0.8}^{\infty} \frac{F_n}{1.08^n}$. Then fall of i.r.
 As MP of land more than stock, cost remains same.

✓ Put it this way: i.r. halves from 6% to 3%. Suddenly land becomes
 worth twice as much, same cost, so buy much more. But stock becomes
 worth only 3% more, might buy a little more.

Algebraic solution to

Problem of land-stock ratio.

b, cont.

So as lower i.r., you buy future assets you wdn't have otherwise. Also buy near futures you wdn't before, but not to same extent

This, again, is not absolute proof. It just seems likely that if you are willing to pay, at 2%, 14 times more than at 6% in one mkt, but only 1.04 times more in another, for given article, you'll move into that mkt. more, but you'll find a greater increase of things you can get in yr price range, below yr max. price.

How spike this argument? When i. halves, yr will'g to pay twice as much for land. (or get half as much from it). You won't pay much more for cap. - (nor get much less from it). Except you will get half as much annual yield from it. Are you pay'g twice as much for anything? Yes, for the annual use of the capital you'd be willing to pay twice as much interest

If land yielded \$6, & i fell from 6 to 3%, you'd be will'g to pay twice as much for land. If stock yielded \$ on \$100 worth, & i went from 6% to 3%, you'd be willing to pay only \$3 more for it. --- \$103 instead of \$100, (sell'g it for \$106)

You'd add land until it yielded \$3 on \$100. You'd pay \$200 for land yield'g \$6.
 .. stock \$103 .. stock.. \$6
 — only then it wdn't yield \$6.

I still see no shining ray of light. So drop it for now.

9-10

that for any given asset, w. given gross ^{annual} MP, ~~is~~ lower i.e. affects purchases more when future weighs heavier. And can say is no reason to think cap. free of dim. ret. (except that its MP includes corpus - ~~is that~~ & that argument has ~~different~~ qualifications). & corpus makes for quicker dim. net returns.

b. Future vs present.

Problems arise in converting to annual basis.

Original argument is: present value of future depends on i.e. & the further future, the more it depends. $P_n = \frac{F_n}{(1+i)^n}$. So as i falls, you will pay the amt you will pay for futures Δs , & the further future the higher the % Δ

What is $\frac{dP}{di}$? $P = F(1+i)^{-n}$

$$\frac{dP}{di} = F[-n(1+i)^{-(n+1)}] = -\frac{Fn}{(1+i)^{n+1}}$$

That is the absolute change in price. If Δs with n up to a pt, then falls.

What of relative change, % change:

$$\frac{\frac{dP}{di}}{P} = \frac{\frac{Fn}{(1+i)^{n+1}}}{\frac{F}{(1+i)^n}} = \frac{n(1+i)^n}{(1+i)^{n+1}} = \frac{n}{1+i}$$

Which varies w "n"

Probably
not
rigorous

I tried to show that lower i makes ^{annual use of} land cheaper relative to stock, bcs $\frac{1+i}{i}$ grows higher ... i.e. $\frac{\text{annual price of stock}}{\text{land}}$.

But failed bcs as i falls, firm expands, & y falls. But this means it takes more land to sub. for given stock ... $G.M.S. = \frac{\Delta L}{\Delta S} = \frac{1+y_s}{y_L}$. At lower i , firm applies more land & cap. to fixed labor, so y falls, on both.

So at same time land becomes cheaper relative to stock, it also becomes less productive relative to stock. Must fall back on i not affecting short inv? That weak, bcs more land means y_s rises. Fall instead on faster dim. ret. to stock.

How does this affect other arguments? Are they also thus neutralized?

a. MP ; b. Future vs present

a. MP.



Arg. is, for something w. given MP, today. If land, cost is all int. If stock, almost none is.

So arg. says, as i falls, Δ land, to lower mgn. Firm wd. then find yield of stock rise, & by adding wd add it, too, until previous proportions reached? Cf. to labor. Firm wd. add more labor, but not enough to keep prop. fixed, wd. have more land for any fixed amt of labor.

✓ Wd. also have more cap. for any fixed amt of labor. But only a little more, bcs price is only a little lower, bcs int. is only one of many costs. Now there's no proof here that this small % decline of cost may not Δ amt in same % as Δ land. We can say

As i rises, const. outlay line becomes flatter

As y_L " , IMRS curve becomes flatter.

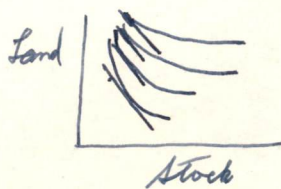
y_L can rise
a, bes are getting more stock/land

b, " " " " labor/stock & land, both, by reducing outlay on stock & land.

In other words, as yields rise ^{due to getting smaller}, it isn't nec. to have more stock/land to Δy_L .

Which leaves it absolutely indeterminate. If Δ i.e. means more land/stock, must be due to factors other than on graph.

As i rises, a const. outlay hires less factors. Have I considered that?
I think so. At lower i.e. y_L op'n becomes bigger, g.m.s higher as (y_L) falls, & price ratio, $\frac{1+i}{i}$, higher as i falls.



Const net output curves become flatter as lower i & move to higher output, bes as Δ stock by 1, Δ gross output by $1+y_L$; but as Δ land by 1, Δ gross output by only y_L . So crowd the fixed labor complement more w. stock.

Of course, c.d. Δ the labor compl, but reasoning holds for any fixed labor compl.

In concl. do it w/o graph, just m.r.s.

A + pt. B, if wanted to keep same gross output, cd. Δy_s the nec.
% pts by ~~g~~ buy'g it just a fraction cheaper, or sell'g just a little dearer.

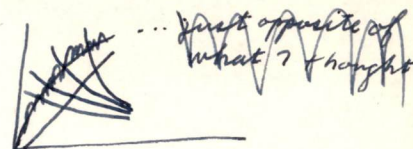
W. land, cant Δy_e so easily. If bought 10% cheaper, still only Δ yield by 1%.

Slopes of const. output curves change as y changes.

Const. Gross output, slope is $\frac{\Delta L}{\Delta S} = \frac{1 + y_s}{y_e}$

Const. Net output, slope is $\frac{\Delta' L}{\Delta S} = \frac{y_s}{y_e}$

As we Δi , is nec. to Δy , for new eq. That means a smaller output, move toward origin. Larger y means $\frac{\Delta L}{\Delta S}$ becomes smaller — const gross output curve becomes less steep, becomes flatter, thus:



In other words, at higher yields, Δ ms of land for stock falls.

✓ Is it that the curves flatten? Or that we must find flatter place on them?

At higher mgnt yields, takes less land to replace gross output ~~lost by~~ of a unit of stock.

When i rises, new eq. will be on a const. gross output curve at a place where slope is flatter, where $\frac{\Delta L}{\Delta S}$ is smaller. If we cd. be sure that G-MRS curves were concentric, then new eq. wd. have more stock/land.

Slope of const. outlay line is $\frac{1 + p_s}{p_e} = \frac{p_s(i+1)}{p_e i} = \frac{1+i}{i}$

Slope of const. output line at any pt. is $\frac{\Delta L}{\Delta S} = \frac{p_s + p_s y_s}{p_e y_e} = \frac{1 + y_s}{y_e}$

$$G-MRS = \frac{\Delta L}{\Delta S}$$

Condition of gross eq. is $\frac{\Delta L}{\Delta S} = \frac{\text{price of stock for a yr}}{\dots \text{land} \dots} = \frac{P_s + \sigma}{\lambda}$

$$\text{Eq. condition, at A, } \frac{\Delta L}{\Delta S} = \frac{P_s + P_s(i)}{P_L(i)} = \frac{1+i}{i}$$

Depending on "i", This comes at diff. ratios of $\frac{\Delta L}{\Delta S}$

$$\Delta L \times y_L = \Delta S (1 + y_S)$$

$$\frac{\Delta L}{\Delta S} = \frac{1 + y_S}{y_L}$$

$$\text{So eq. cond-n at A, is } \frac{1 + y_S}{y_L} = \frac{1 + i}{i}$$

This is not nec. satisfied when $y_S = y_L$ (the net eq. cond), not until $y = i$.

It can be satisfied when $y_S \neq y_L \neq i$

To satisfy both at once, $y_S = y_L = i$

Now suppose "A" is dual eq. We want to ~~see~~ see what happens when Δi . As Δi , get smaller ΔL , & higher y_L relative to y_S on const gross output curve. So at B, not in net eq.

& when halfway along curve from A to B, gross reasoning says sub. stock for land; net reasoning says sub. land for stock! Is humanness of method.

Wd. cut back on both land & stock until again reached condition that $y_S = y_L = i$

Which leaves us w. this: for a given gross output, i.e. matters; for a given net, it doesn't. Which leaves a net suggestion that it matters some.

const. gross output, ~~with~~ equal to $P_L \times Q_L + P_S \times Q_S$

const. gross output of $\$L$

Stock, measured in \$

Unit of land is \$1 worth } so $P_s = P_L = \$1$.
 " " stock " " " }

i is l.n. on which const. gross outlay drawn. (e.g. 5%)

y_e is yield, mgmt, on land, (e.g. 84%)

y_s is " , " , " stock (e.g. 890)

(For net eq, y_s must = y_L , since their prices σ & 1 , are =.)

(What is condition of gross eq.? $i=y?$) (when get gross eq, is $y_s = y_e$, nec.?)

A curve of const net output is one on which $y_s \neq y_L$, except at one pt., which is eq. pt. There, $\Delta' L = \Delta S$, bcs $y_L = y_S$

For any given net output, regardless of i.r., producer will choose ratio of land to stock such that $y_L = y_S$. There is only one such pt., for a given net output. My case rests on this, that at diff. i.r., choose diff. net outputs (i.e. a given firm will). And as net output changes, ratio at which $y_S = y_L$ changes. Which can be shown by showing that for given ~~diff~~ gross outputs, choose diff. ratios at diff. i.r.s.

τ is annual cost of holdg stock, net, = $P_s \times i$; gross is $(\tau + P_s)$

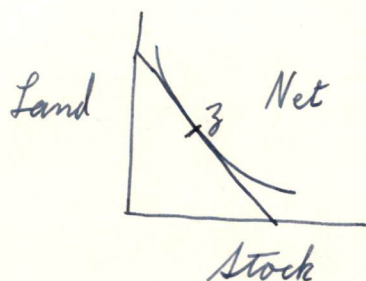
Land, net & gross, = P_{exi}

ΔL is amt of land subbing in gross output for Δs ; ΔL ~~for~~ omit subbing in net output

~~What is condition of σ grows eg. as at pt. A?~~

~~44-45?~~

Now refute argument that $N-MRS$ same at all $i.r.$, $\therefore i.r.$ doesn't affect $\frac{\text{land}}{\text{stock}}$



At z , $N-MRS = \frac{\sigma}{\lambda} = 1$. In genl, $N-MRS = \frac{\Delta l}{\Delta s} \frac{1}{1+i} \left(= \frac{\Delta l}{\Delta s} \frac{y}{1+y} \right)$

So for any given net output, best combo unaffected by $i.r.$

Of course, for the net output to be final eq., $i=y$. Where $i=y$, get both gross & net eq., same pt.

$$\text{But for gross eq., } \frac{\Delta l}{\Delta s} = \frac{P_s + \sigma}{\lambda} = \frac{1+i}{i}$$

This must come at same pt. as $\frac{\sigma}{\lambda} = 1$

Next exercise: Take net eq, see if is gross.

(Ultimate goal: show how i.r. affect G-MRS. Show that at lower i.r.

MRS higher, but ~~higher~~ $\frac{\sigma + P_s}{\lambda}$ ~~higher~~, but ~~lower~~

falls ~~more than~~ by higher ρ than does $\sigma + P_s$, which is obvious

since P_s remains fixed as i.r. falls. This, the main point, is just as

easy to show as that. Can also show for any depreciating

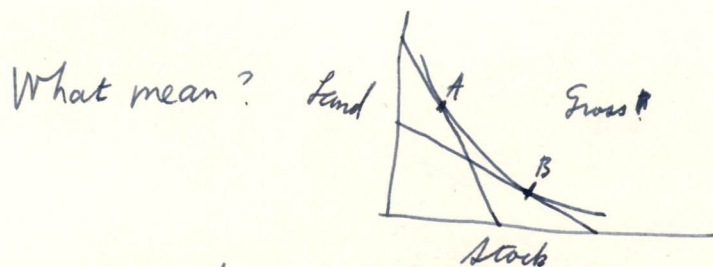
asset, is a $-\Delta P$, which ~~subtracts~~ add to σ each yr as part of cost.

Problem is: N-MRS. For eg. it must = $\frac{\sigma}{\lambda} = 1$

~~It = 1 whenever $i = y$, at any G-MRS, any i.r.~~ This condition is

met whenever a) G-MRS = $\frac{1+i}{i}$, which it does when in gross eq.; & b), $i = y$.

The condition is also met at other times, but then not in gross eq.



Can both A & B be in net eq.? At both A & B, G-MRS = $\frac{1+i}{i}$... for diff i 's, of course. Suppose at A, $i = y$. At B, i is higher, so if y is same, $y < i$. Chances are that at B, w. same gross y is same, for mgr of given capacity, maybe even lower, but stock harder to handle. So at B, must then get smaller to make $y = i$.

Corroborating that smaller more cap land.

Hold it. At A, σ is price of hiring unit of stock, but not nec.
the net output of the unit.

Let y_s^{net} be ^{net} output from a unit of stock. $= P_s \cdot y$, where y is $\%$ return at margin

Let y_L be $\dots \dots \dots$ land. $= P_L \cdot y$

At A, can't say that $y_s^{\text{net}} = \sigma$ & $y_L = 1$; but just that

$$\frac{y_L}{y_s} = \frac{\lambda}{\sigma} \quad \text{or} \quad \frac{\lambda}{\sigma} = \frac{y_L}{y_s} ?$$

~~because otherwise could Δ output, (or $-\Delta$ outlay) by sub's one for the other.~~

& $y_L = y_s$ - because otherwise could shift funds, Δ output

$$\& \lambda = \sigma$$

Now at A, problem is to ~~show that when~~ ^{find whether when} $G-MRS = \frac{P_s + P_L}{\lambda}$,
as it does at A --- & it boils down to $\frac{1+i}{i}$ --- does, then,

$$N-MRS = \frac{\sigma}{\lambda} = 1 ?$$

$$\text{At "A", } N-MRS = G-MRS \left(\frac{y}{1+y} \right)$$

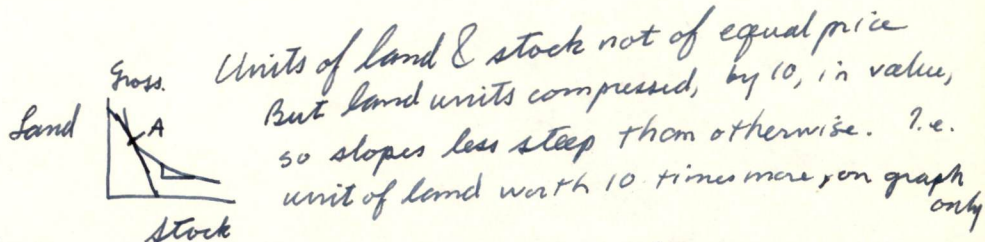
$$\text{But } G-MRS = \frac{1+i}{i}$$

$$\text{So } N-MRS = 1 \text{ only when } i = y$$

Conclude: When $i = y$ --- i.e. in conditions as they are --- for given gross output, use more land/stock at lower i.r., and at whatever i.r., when $i = y$, gross eq. is also net eq.

Algebraically

~~Let~~



N-MRS is net mrs ... the Δ of land nec. to replace a unit of stock, & keep const. net output
 G-MRS is $\frac{\Delta L}{-\Delta S}$, ~~for~~ such as nec. to keep const. gross output.

i is i.r.

~~P_L is price~~

P_L is price of land, one unit.

~~$P_L \times i$ is price of one year's use~~

λ is annual price of ~~one unit~~ ~~of land~~ ~~of land~~. $\lambda = P_L \times i$

P_S is price of one unit of stock

σ is annual ^{net} price of hiring one unit of stock. $\sigma = P_S \times i$

$\sigma + P_S$ = annual gross price of hiring a unit of stock.

(Might simplify to assume $P_S = P_L$, define units such) (Do so: $P_L = P_S = \$100$)
 Then $\lambda = \sigma = \$100 \times i$

$$A + A, \quad \text{G-MRS}, \quad \frac{\Delta L}{-\Delta S}, \quad \text{is} = \frac{\sigma + P_S}{\lambda} = \frac{P_S(1+i)}{P_L(i)} \quad \text{or} = \frac{P_S}{P_L(i)} + \frac{P_S}{P_L}$$

$$\text{or} = \frac{P_S}{P_L} \left(\frac{1}{i} + 1 \right)$$

What is N-MRS at A? Reduce s by same amt, Δs , and what

ΔL is nec. to keep net output const. Not nearly as much as ΔL .

We've reduced net output by much less ... by $\frac{y_s}{1+y}$ instead of $\frac{y_s}{1+y} + P_S$.

So we need only add enough land to Δ output by $\frac{y_s}{1+y}$, whereas ΔL is enough to Δ output by $\frac{y_s}{1+y} + P_S$. Call this amt of land $\Delta' L$.

$$\frac{\Delta' L}{\Delta L} = \frac{\frac{y_s}{1+y}}{\frac{y_s}{1+y} + P_S} \left(\frac{P_L \times y}{P_S y + P_S} = \frac{y}{1+y} \right), \quad \Delta' L = \Delta L \left(\frac{y}{1+y} \right)$$

$$A + "A", \quad \text{N-MRS} = \frac{\Delta L}{\Delta S} \left(\frac{y}{1+y} \right) = \text{G-MRS} \left(\frac{y}{1+y} \right)$$

As long as $y_s = y_e$, are in net eq., since $\sigma = 1$, always

~~$\Delta' l = \Delta s$, when in eq., otherwise not.~~

$$? \Delta' l = \Delta l - ??$$

$$\Delta l = \frac{\Delta s + y(\Delta s)}{y}$$

$$\Delta' l y = \Delta s y$$

$\Delta' l = \Delta s$, any where along a curve of const. net output

$$\Delta s = \Delta l y - \Delta s y = y(\Delta l - \Delta s)$$

$$\therefore \Delta' l = y(\Delta l - \Delta s)$$

N O - can't assume $y_s = y_e$... they keep changing



Ship?
Ftnte?

If firm has resistance to Δg gross, so is appropriate to ask what combo they use
to keep gross output fixed, ^{for given gross,} so i.e. means more

land. $\frac{1 + i}{i} = m.r.s. = \frac{\Delta L}{\Delta S}$

Not meaning they will keep

same gross output, will expend. But not so much cap. as land, to keep down
gross, & b/c $-\Delta i$ doesn't affect ~~the~~ cap. inv.-mt decisions much.

But suppose we abstract from all that, is reason to
believe net MP falls rapidly.

Present v
future

~~5105~~

Shows what types
become holders.

p. 8 'Every stlr who pd & outrageously inflated P cd nt earn
either & purch. P or & int on it out of & soil. Yer strong
as it my sm, sls of this chrt'r in md w ease. In part this
was due to many of & buyers being also spec.

Reprise:

ch. 8 strong holders needed

p. 19 'Strong owners w outside sources of income pay the (tax) bill [&
capitalize its amount in & commercial value of & timber, w.r.t. which
~~Weak~~ they expect op-n or sale to make good when & time comes.

--- Weak owners, hav'g no outside sources of income or

already burdened w debt, are not able to do this.

--- when & mkt becomes dull & owners face a long period of

holding --- & burden of taxation may be severely felt.'

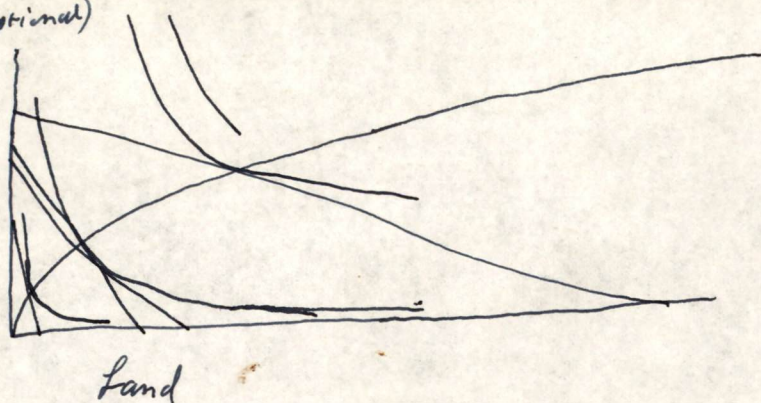
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is ever done, is because of the loss of time - & that only
means something if i.r. exists. The only reason anything

Strong gets land.

V , const. (optional)

Other



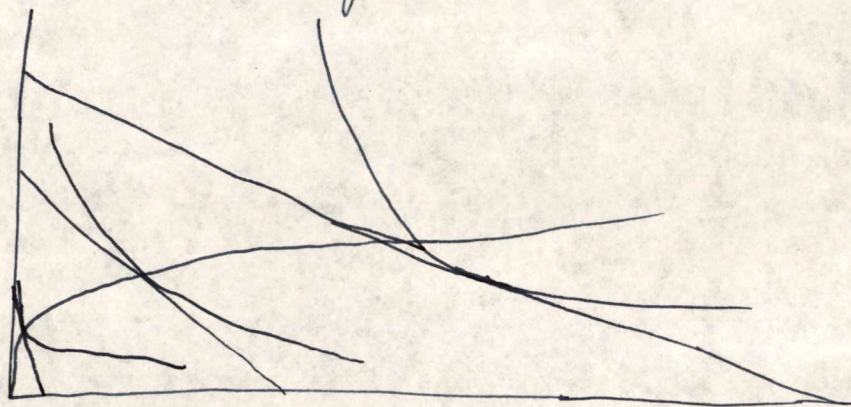
Const. output lines.

Const. expenditure lines.

(latter shows quantities of diff. resources you can buy with a given outlay.)

What mainly changes, as Δ output, are p lines, - land becomes cheaper.

also, const. output curves change some, to favor land, bcs add'g more land creates no extra mgmt problems, add'g others does.



The graphs prove nothing. They merely represent what we discover to be facts. Are worthwhile, to sharpen our thinking.

(Find Boulding assignment?)

Danhof - 5231

320

frnte. Many refs to widespread proclivity to put M into land, not leave any to develop it.

p. 333

1862 9a Census, $> \frac{1}{2}$ purely held lands of state, 15ma, absentee owned.

& much else..

Danhof, Farm Costs & Safety Valve Thy, JPE, Jun '41
320, many refs. of spec.
355, cites high i.r.

Billington: 556

p. 205

Types of land specs. 'Some were ordinary farmers who, on reaching the frontier, engrossed far more land than they could use ...' 556
Local businessmen, eastern merchants, & spectacular big co.s.

Land price
takes cap.

7,8 Observe if settler must buy excess land at spec price, he cannot repay, & cannot have cap. to improve 594

Use cap. to
buy land, hence
underuse it.

p. 13 - 'Mfs often put their earnings largely into further timber purchases, when portions of them might perhaps have been better used to reduce indebtedness or improve their plots.' 567

ch. 6

p 5, 541

Excess
Cap. mis-assigned

Cap won't go to settlers, land users. Goes easily into buying land, [pwr (which is form of buying land)] He doesn't outright say this, ~~is~~ but it underlies

Land
poor

They sunk great sums "in the purchase of wild land, frequently retaining little or nothing for taxes, interest, fees, development costs, and other expenses conn cted with landownership." p. 2

Gates, Frontier Landlords, Cornell UP '45.

Often lost for taxes, p. 2

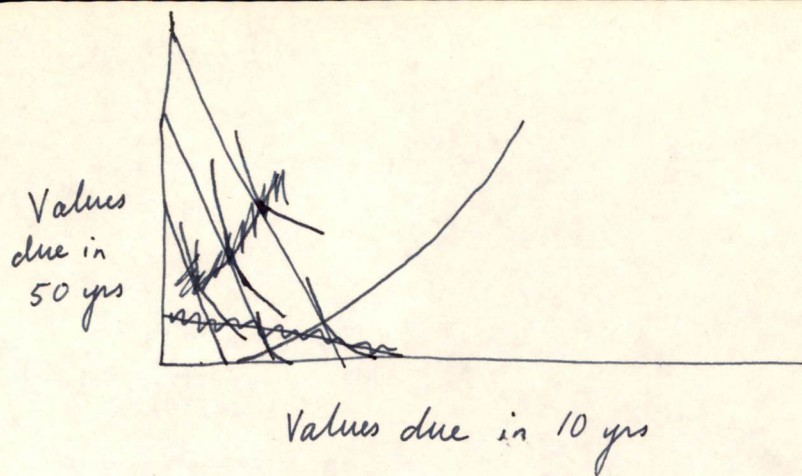
Price of land & of stock are same to hi & lo i. But relative values differ. Thus, when take off annual basis, get same price ratios, but diff. m.r.s.

$$\frac{P_L}{P_S}, \text{ at eq, should equal } \frac{\text{subjective value of stock}}{\text{.. .. . land}} = \frac{\frac{\text{gross MP stock}}{1+i}}{\frac{MP_L}{i}}$$

MRS between MP's, same for hi & lo m.r. But subjective values, or ~~but~~ capitalized values, differ. Hence lo i, more $\frac{\text{land}}{\text{stock}}$.

Work out

(I)



The future values are not discounted. Axes have same scale.

With 10,000, can buy, say, \$30,000 due in 50 yrs; & 13,000 due in 10 yrs. At the discounts the mkt has established.

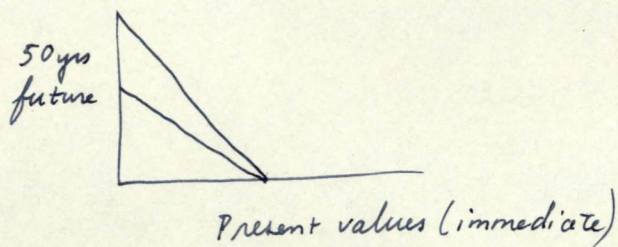
as assets Δ , preference changes toward farther future value, for 2 reasons.

1. Farther future values require less mgmt. ^(should we deduct that from values?) & ~~individual's time~~ as each individual has but 24 hrs a day; & as with Δ wealth one can put more value on leisure; & must spread self thinner over many inv.s. & puts more value on own time, prefers future. Also, present desires well satisfied, wants rather to make sure of future.
2. $i.r.$ falls, as needs & wants of intervening years are taken care of. That esp. enhances ability to buy future values. The farther future, the more it enhances it, % wise. E.g. a drop of $i.r.$ from 8 to 6%. As Δ what you are willing to pay for values 10 yrs future from -1% to -2% of their face value; but Δ $\dots \dots \dots$ 50 $\dots \dots \dots$ -70 to -7% . $\dots \dots \dots$ — a much greater Δ . Thus it improves your ability to perform in futures mkt's esp. — what you are willing to pay ^{increases} ~~changes~~ much more in those futures mkt's

In mkt for future values, \$10,000 can buy more than \$10,000

But a given value, due in 50 yrs, has a given mkt value today

Hi man has urgent uses or needs for M in intervening years. That limits his pp in futures mkt. Regard'g i.e. as rate of exchange between pts of time; & assum'g individs do not ~~depart from~~ violate this rate of exch; then can view it as an absolute budgetary restraint. And one with ~~him~~ ^{him} in, having \$10,000, cannot buy as much future values of any kind as low man w 10,000. He can buy just exactly as many present values, & fewer of every kind of future value.



If both put ~~M~~ all M into present values, buy same amt. If
 " " " " " 50 yrs fore " " " in terms of
 present mkt price; also in terms of future value. But hi m^r buys less
 in terms of present discounted value

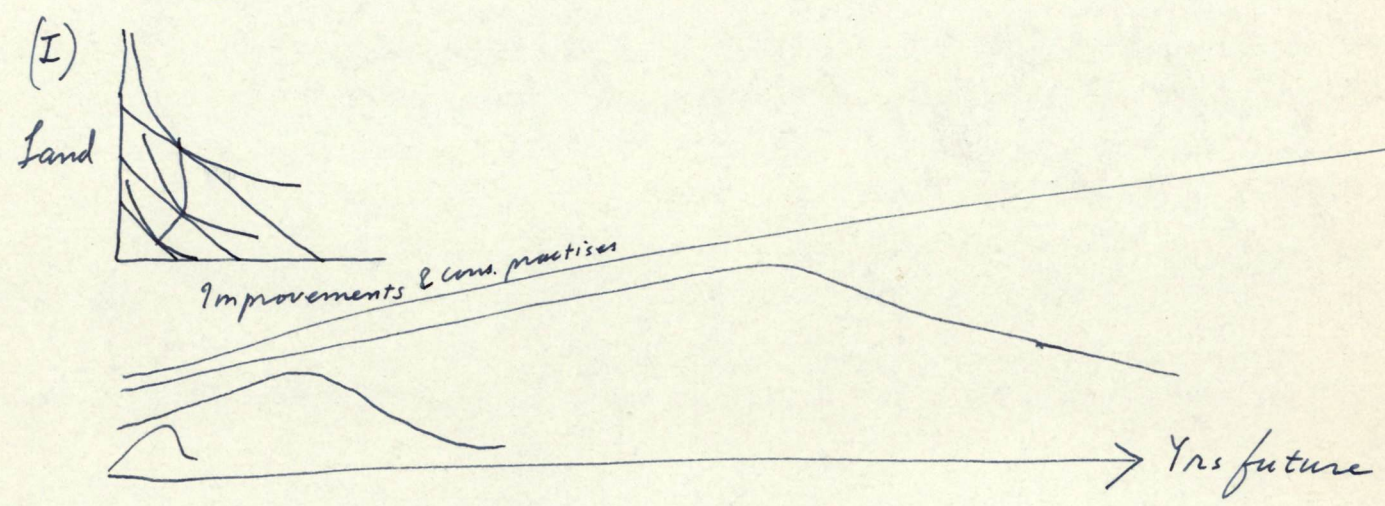
That approach wd get pretty messy.

So stick to (I). Show parallel ability to pay curves; shift pref. curves.

31

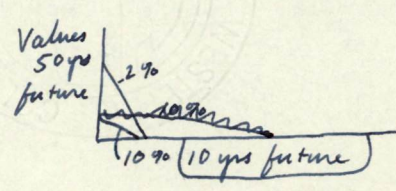
Small farmers ~~are more~~ have debts as higher % assets than big. (?) We take that to show hi mr.
 is it true? Firms in govt have low debts, but can't borrow.
 But very rich have debts as higher % assets than poorer. We take that to show low mr

Reconcile.



(I) shows as have more total assets to dispose of, preference changes, toward land. Because it requires less mgmt per \$ of income, & one man has only a limited capacity to mng.

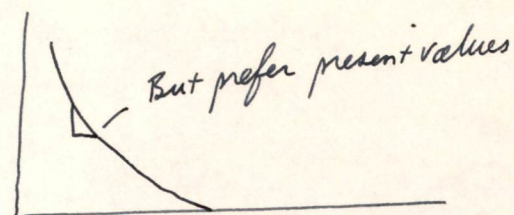
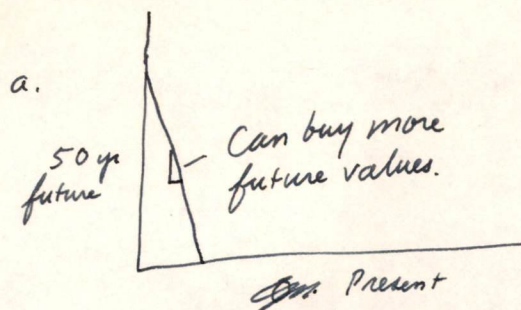
But this tells us that, as assets grow, i.r. falls. And at lower i.r., ability to buy land vs impr. changes. But don't put it that way w/o preparation. For in one sense, the most accustomed one, ability to buy is still the same - for \$20,000 can buy twice as much of any asset as for \$10,000. Try putting it first in terms of futures. - say, specific futures.



With a given sum of money, your ability to buy future values depends, not just on the sum, but on the i.r.

To avoid tangential quibbling over methodology, show are willing to subsume this on (I) under changes in preference curves, leav' ability to buy curves of const. slope. Or cd. change slopes, as wish.

3. Preference of low mr for futures, simply means less use per acre.



When mr rate of subst., in your mind, = ratio of P ,
you have the best ratio for you

Ratio depends on $i.r.$ (or perhaps it det- s $i.r.$ - anyway, $i.r.$ is an index to it)

	1 yr	10	20	35	50	100
2%	98	82	67	50	37	14
4%	96	68	46	25	14	1

At 2%, ~~prefer~~ c. 3 (future 50 yrs) = c. 1 present

At 4%, c. $7\frac{1}{2}$ " " " " " "

So at 4%, you won't buy 50 yr stuff until you have so much other that 50 yr becomes more valuable to you - perhaps bcs your other stuff complements it. (Perhaps bcs your mr falls) (i.e., w yr present needs satisfied, you look future)

You won't buy it until it becomes worth $7\frac{1}{2}$ times present to you.
We need straight indiff. curves, to show const. mr ; & curved price lines, to show chang'g productivity of land to indiv. as he gets more complements.

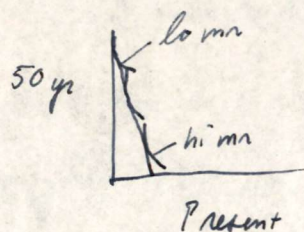
Why do ms prefer for future. To expound, provide figures such as below.

	2%	1 yr	10	20	35/50	100
A+ ~~2%~~	~~98~~	98	82?	67	50	37
A+ 4%	98	98	88?	46	25	14

If 6%er can do just a little better, e.g. cut costs a little more, on near future values, than can 3%er, he will outbid. On 100 yrs future, no chance

Low ms will be low for present yrs. As move future, will find better bargains there, as fewer compete for such values.

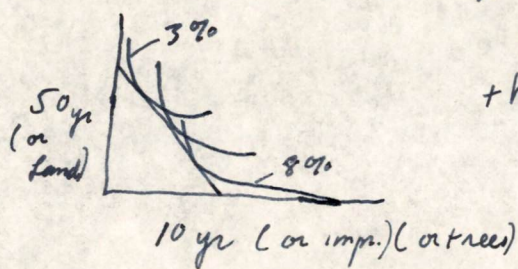
The lower the ms, greater preference for further future values at given mkt prices, based on goal S & D



For given sum, you can buy, at mkt ps, a certain amt of present values, & a certain, larger amt of future values.

Each indiv. has his preference curve - for ex. i.e., a diff. curve.

Low ms prefer mixtures w more future values in them.

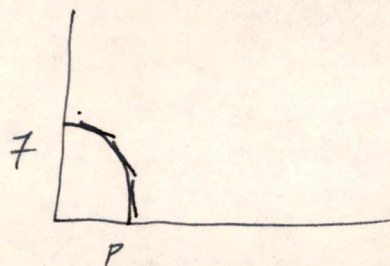
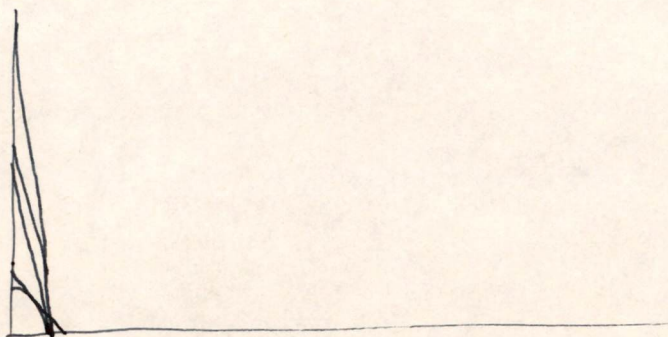
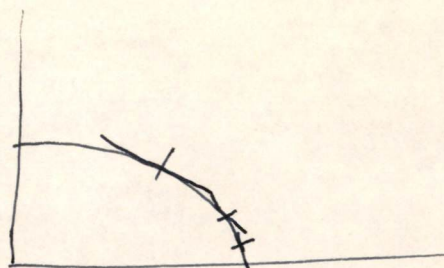
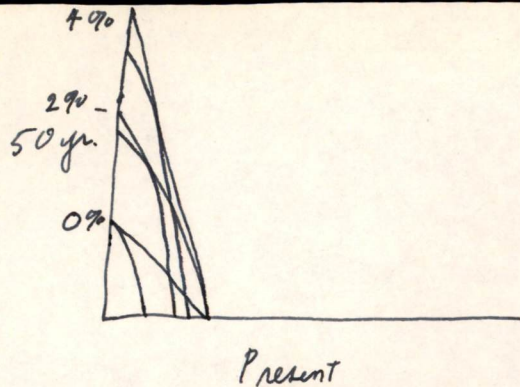


Having just one opp. line implies all come to same M.R. Actually, all have diff. opp. lines. Hi ms, bcs he can do more w. M, can buy more future values w. given sum than low ms

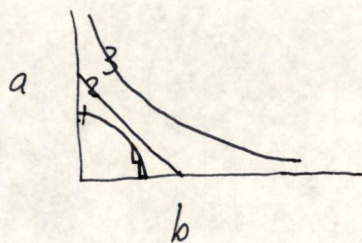


But in bidd'g for given asset, where p of future already fixed

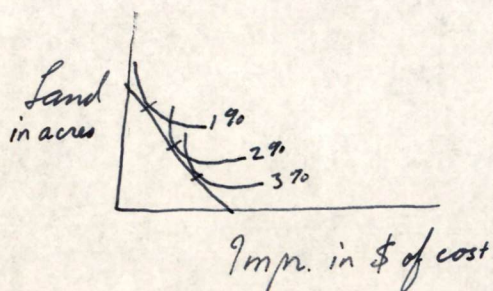
4.



Curved line says, as you get higher & higher ratio of P to F , P becomes more costly. (?)



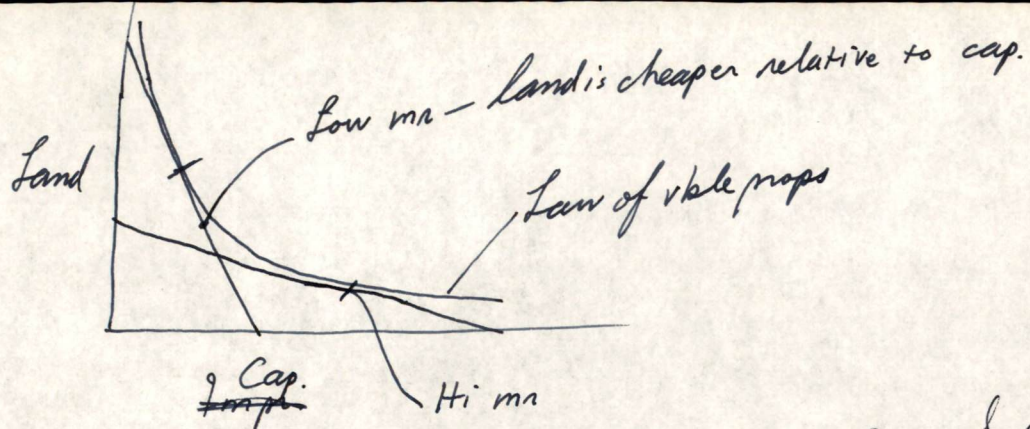
1. as buy more, it costs more
2. " " " " " same
3. " " " " , utility diminishes



This graph is ok. It does not imply all arrive at same i.r. It just says they must pay same prices for land title. (Cd also work out on basis they pay diff. prices, have same preference curves) & 1% prefers land, holds higher prop. of assets in land.

If critic says, but they all have same i.r., ans. no, they get diff. yields from land.

But when have 50 yrs future value on ord-tg, ~~the~~ st. line reps 1 i.r. thruout, bcs future value does not depend on indiv. All who buy at that p have come to that i.r. All indiff. curve shows is as they get more future values, their i.r. rises - pref. turns vs futures.

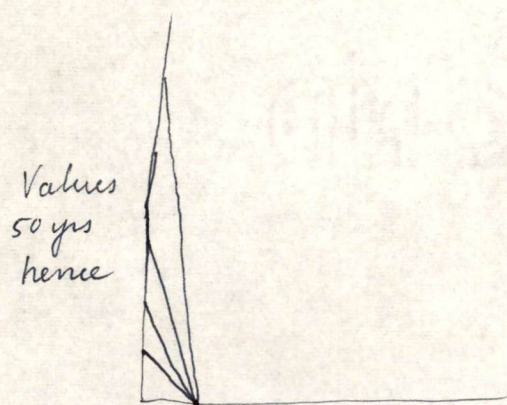


Here, p lines rep. annual costs. So? - Annual cost in a particular sense. M_{sig} yield of cap. net of deprec.

~~if~~ If halve i.e., if change in $\frac{a}{1+i}$ & $\frac{a}{i}$

As individual gets more assets, he gets low mr for early years first. Then shifts it forward, as gets more & more. Before present wants are filled, he discounts 1 yr hence very much - (& incidentally as much as 10 yrs hence.) Then he begins to fill up present desires, looks forward: 2, 3, 5, 10 yrs come w/in his purview. Even now, values due in 15 yrs are almost as remote to him as 50 yrs. In other words, beyond the purview, annual discount rates become very hi.

So those with longer views can do very well in futures mkt's.



Present Values.

scales same.

Future values have a given value on today's mkt, discounted. So with \$100 you can always buy more future values than present.

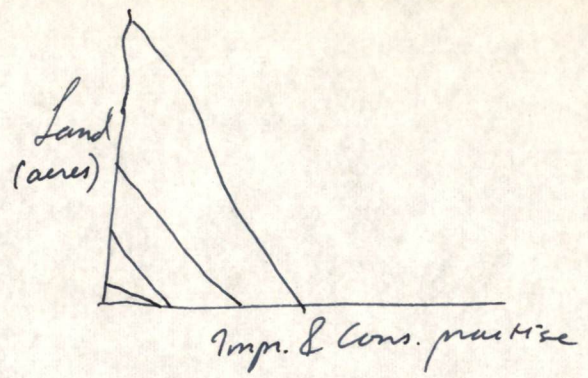
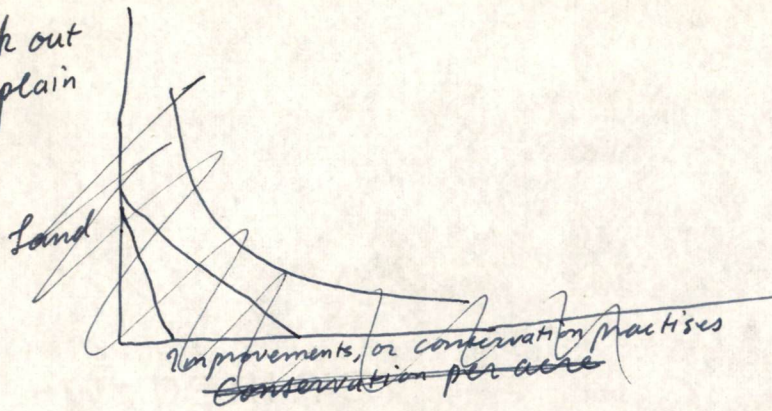
Lines refer to given sum of M , but diff. i.r. They refer, not to absolute budgetary restraint, but what appears good to indiv. in view of his i.r.

at 0%, do not discount futures at all. So if mkt discounts them to face value, you can buy 10 times as many 50 yr values as present ones.

NG

If you can penetrate far future, your best advantage is to buy there, since few can. You may actually earn higher int. if you can wait 50 yrs for it. So? ^{Can} ~~Why not~~ sell prematurely, realize anytime?

Work out
to explain
cons.



Distrib. of assets among diff. forms.

Everyone ~~dist~~ holds his assets in diff. forms, accordg to equingrd principle. He disposes of them into different kinds of assets so the last \$ in ea. brings same return.

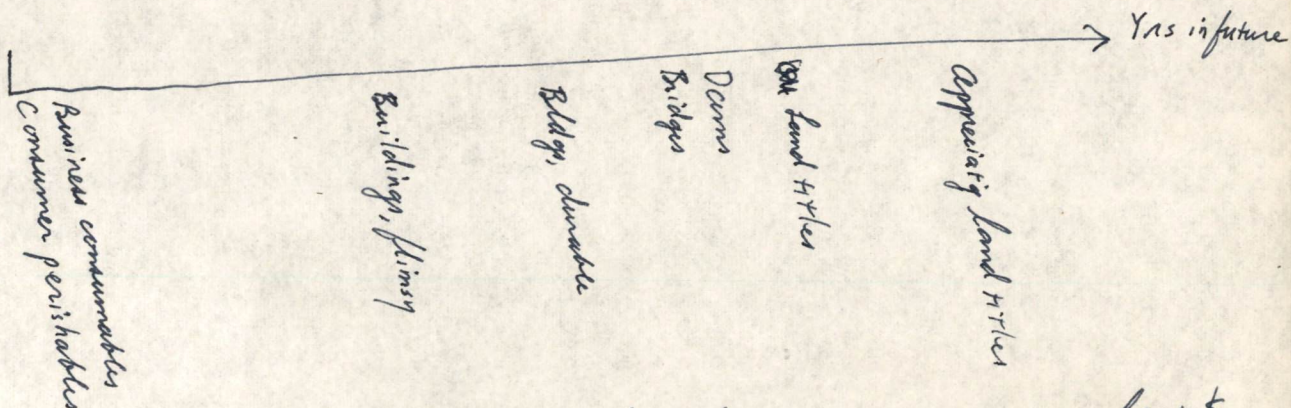
If has few, & is indep. entrepr., then uses them esp. to as to ~~com~~ supplement his own labor.

His i.r. is hi. He prefers assets that pay off soon - can't tie up much ~~as~~ assets in deferred benefit items.

If i.r. is low, goes into deferred benefit assets. His income line (or opp. line) moves out: he can buy more of both land & improvements.

But as it moves out, it also rotates, clockwise. Work this out - - - It rotates because i.r. changes, & i.r. is major cost in holdg land; not so with transitory cap. Opp. line does not rep total cost, but annual cost

Arrange assets along a time scale.



Apply equingrd princ. Last \$ you put in land brings same return as last \$ in cap. If 8%, find no land to yield that much. If 2%, find much land; also find cap., but soon acquire beyond capacity to mng, hence your returns fall, go into land.

Discount rate data.

4% - 7th year. All yrs.

6%

Yrs

1	2	3	4	5	6	7	10	12	15	20	25	30	35	40	50
96	92	89	85	82	79	76	68	62	56	46	38	31	25	21	14
94	89	84	79	75	70	66	56	50	42	31	23	17	13	10	05

Yr 21

4% 44

6% 29

Crossing.

What year do they cross?

~~Farmers~~
To Δ output,
Entrepreneur has choice between
buying more land, & improving
what he has w. capital.

To achieve any given Δ w.
capital, the cost is the cap. itself,
which depreciates & gives itself over
to the product; + int. on it.

The deprec. cost is same to all
buyers - is the original price
of the cap. Int. differs - but
is smaller element.

To achieve the gain w.
land, cost is all int.

Hence l.o. i.e., land intensive.

B1

R

In Eng, says John Abbott

Farms are bigger partly
because of commercial fortunes
which allowed people to have
the capital to do it - showing
importance of cap. mkt.

ch. 5

Marshall, Principles,
London, Macm, 1921, 8th ed.

~~"Natura non facit saltum"~~

p. 151-2 "... the ambition of farmers often leads them to take more land than they can properly manage; & indeed almost every great authority on agr. from A. Young downwards has inveighed against this practise. mistake."

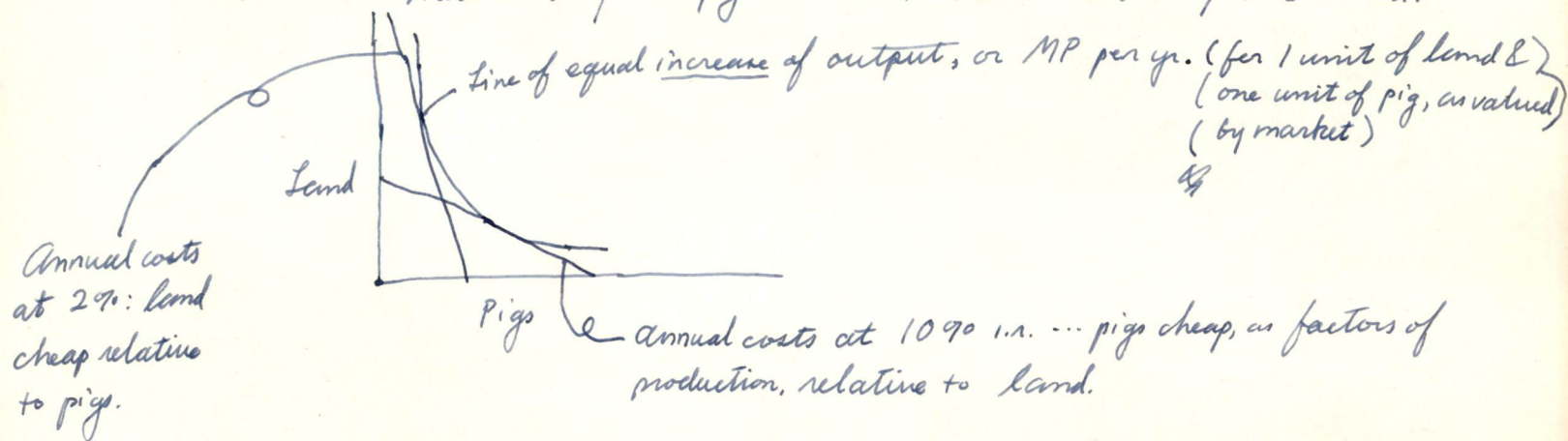
Here is the winning approach: of relative costs of achieving given Δ output.

To achieve a given Δ of output, firm cd. hire more land, or more cap.

If more land, must invest much larger sum to get given Δ , bcs cap. turns over, land not.

E.g., suppose cd. Δ output of ^{usable, salable} ~~milk~~ ^{pork} ~~pigs~~ ^{in a year} in 2 ways; by ~~hiring~~ buying 5 more acres; or 1 ~~kg~~ more pig. 5 acres cost ~~10,000~~ \$1,000, i.e. 10%, = \$100/yr. ~~kg~~ pig costs \$50, at yr's end ~~is~~ gone, cost \$50 + 5 = \$55.

So 10% i.e. means buy the pig. 2% wd. mean buy the land.



Genl line: depreciation ^{or inventory reduction} is a cost; is same to all. Is major cost, ~~of~~ of shrt tm cap.; no cost of land.

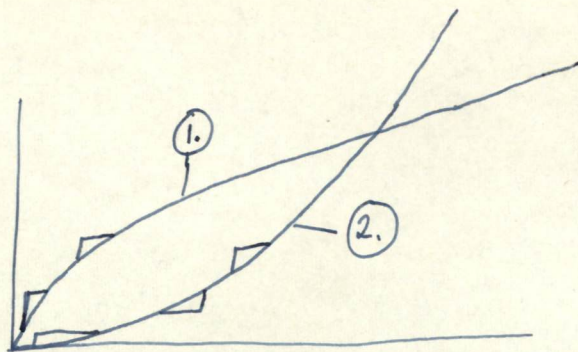
Further small matter: firm needn't keep funds tied up all yr in inventories, needn't bear int. all yr. round.

Now, critic says, next yr must replace pig, True. ~~But~~ And pay int., True. But only int. on \$50, not on \$1,000. By complementing his labor & enterprise w. short term assets, he minimizes his int. burden — doesn't have to carry the claim to future values each yr. Bcs land ea. yr. yields up ^{but a small fraction of its value; pigs are utterly} consumed in production.

Underdeveloped countries, is known & clear, landowners & moneylenders almost synonymous. Those who have the low m become landowners; & $v.v.$

✓ Hicks, p. 225, says i is of negligible importance for near future decisions, but far future ones are very sensitive to i .

Q. of labor



Q. of land

This shows that if land is what keeps you below opt. scale, if it is limited, fixed, then smaller are more labor intensive.

also wd apply to land vs cap. ~~show~~ As we can show actual relationship looks like (1), can draw that inference.

S 109
Pres. v. future

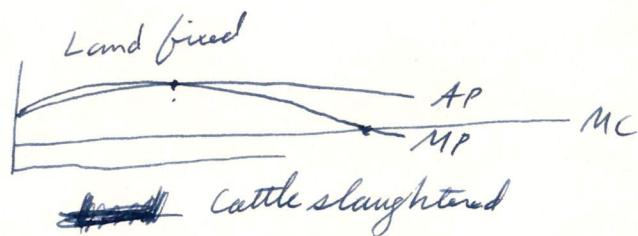
p. 12 10% is return expected from r.e. by most r.e. dealers, Olney cty.
(values of land very low)
But evidently was too hi, for sales values & cap. val @ 10%.

Low m_a
prevails

p. 15 Timber cannot return compound int. at prevail'g rates, ps ... another
way of saying is cap-zd at low i.r., ~~PM~~ (goes to one with low m_a or hi antic ... is no way
to tell diff. of ten, ex ante) 567

Cleon & ~~George~~ George observed at Swifts they didn't aim for max absolute excess of gains over costs, but sacrificed that to avoid risk of crippling loss.

This means they must have aimed for max % excess of gain over ~~low~~ costs. Max AP, instead of $MP = MC$



cf. max ben/cost ratio idea.

i.e. they underuse fixed r.e., for 'safety'. A manifestation of mnpy, &/or lo i.

This is the thinking of those who put so bld'gs on good sites, etc.
Why doesn't this same thinking hold down purchase of land, too?
Bes when you decide to accept lower % returns in return for some
assured % return you buy land, use it lightly.

G G G Gaffney G G G G G G