



Bldg squeezes out all rent by input's all to i.

Fisher acts as tho land were free, but this wdn't affect i.

(If max. $\frac{g}{(1+i)^n}$ get $g' = gp$. What if max. $\frac{g - c(1+i)^n}{(1+i)^n}$?

That looks close to annual = nt formula.

$$\frac{d}{dn} = \frac{(1+i)^n [g' - cp(1+i)^n] - [g - c(1+i)^n] p(1+i)^n}{(1+i)^{2n}}$$

$$\frac{d}{dn} = 0 \text{ when } g' - cp(1+i)^n = gp - cp(1+i)^n$$

What if max $\frac{g-c}{(1+i)^n}$? Bes of course $\frac{g-c(1+i)^n}{(1+i)^n} = \frac{g}{(1+i)^n} - c$... same old story.

✓ Bldg thus is one who is max'g an AP of one factor, or part of one: C_0 .

Fisher is assum'g land free, but not doing anything w. the unimputed

income. i.e., max. $\frac{g - c_0(1+i)^n}{(1+i)^n} = \frac{g}{(1+i)^n} - C_0$ leaves a value unimputed away, if it > 0 .

Fisher is carry'g land & cap. both on further thru time, until their combined MP, g' , = MC of cap. alone, gp .

But all analogies are rough, bes is in no case a gn of det's proportions of land to cap. Except in a sense: more time means more land per C_0 .

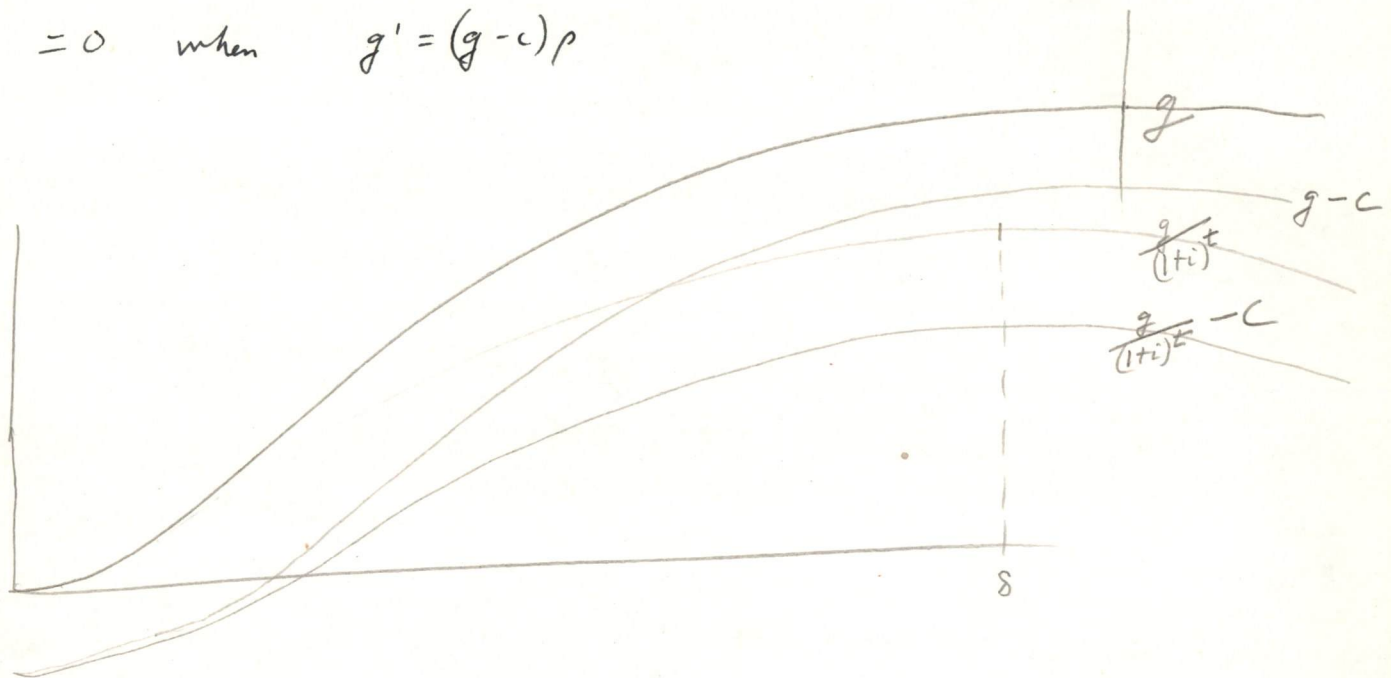
$$\frac{C_0}{n} \text{ falls w. time; } \frac{C_0(1+i)^n}{n} \text{ falls, then rises? } \frac{d}{dn} \left[\frac{C_0(1+i)^n}{n} \right] = C_0 \frac{np(1+i)^n - (1+i)^n}{n^2}$$

~~$\frac{C_0(1+i)^n}{n}$~~ This = 0 when $np = 1$, a min., then it becomes +, when $n = c. 20$

So yes, $\frac{C_0(1+i)^n}{n}$ falls, then rises.

$$\frac{d}{dn} \left[\frac{g-c}{(1+i)^n} \right] = \frac{(1+i)^n (g' - g(1+i)^n p (g-c))}{(1+i)^{2n}}$$

$$= 0 \quad \text{when} \quad g' = (g-c)p$$



If we had nothing but land, ^{& the cap. secreted by land} to economize on, β wd. be best. This is max. time-ave. of product per yr, with no cost but rent of land, ^{land secreted} Which is computed internally, & automatically increased to absorb entire product.

(If had only land to ec-zee on, no int, max. $\frac{g}{n}$)

If had only C_0 ^{& cap. it secretes} to ec. on, α best, with i automatically increased to absorb entire product. Well, α is max. the i earned by a fixed C_0 ; β is max. the C_0 α imputes land rent to i ; β imputes it to C_0 ... by some magic, inv.s of C_0 have present value of C_0 max. α ec-zes on both together.

? β ec-zes just on cap. realizable by cutt'g tree, g , ~~in $g-c$~~ ~~Differs from Bld's~~ in being all cap; & β m'g cap. by realizable g , not hist. costs compounded.

When ec. on $g-c$, call it β_c , ~~*~~ is when $g' = (g-c)p$, an even longer rotation. Paradox, when ec. on $g-c(1+i)^t$, move back to shorter rot-n, even tho magnify C . Reason: $(1+i)^t$ is $F(t)$.

By treat'g land as free, it β imputes, in the last few yrs, the rent of land to the cap. in tree, thus mak'g it appear the cap. is earning more than p . β differs from Bld's in that he so imputes it from start, ^{he imputes all product to C_0 - over} & consciously exhausts product by Δi . β lvs product unexhausted.

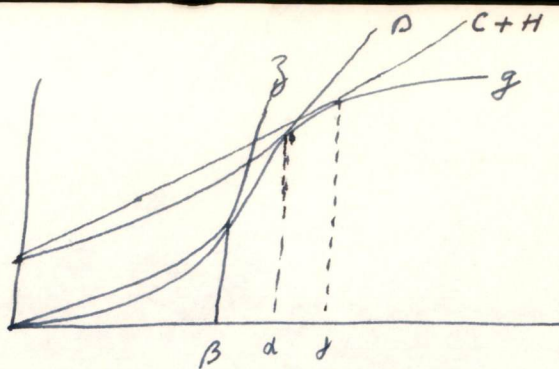
Add'g cap. until its lone $MC = MP$ wd. be proper way to max rent, in one-period ec. But here we add'g time, not cap. alone.

So not strictly analogous to any conventional fallacy. Gives appearance of max. rent by add'g cap to $MC = MP$; but actually adds cap. to $MP < MC$, when add 'a' to MC . That is closest analogy - add'g too much of a factor.

But is paradox that comes about by ignor'g cost of land, add too much cap. - a unique feature of this time situation.

thus he imputes product both of land, & of cap. secreted by land, to Co

- A. Find 3 points
 α, β, γ



- B. For each point.

1. Find n & ord. by simul = ns.
2. " " " " by max. i, a_i, a_{C+H} — & check
3. Find where MP, or its proper analogue
meets MC,

- over 4. Check if this is same as α, β, γ , each of which is a max. ~~one~~ something.

- C. ~~#~~ Decide what is analogous to max AP of one factor
(max a seems so, max i is diff, involves no division, no averaging)
(at which pt. is MP land = 0)

- D. ~~Work out plausible numerical e.g.s, show difference of methods.~~

- B. 5. Does max possible cost curve run thru intersection of AP & MP? Which one?
- 6 Does area under MP = TP? The growth Δ curve is that way, but not compoundg curves?

16 let MC of land be P_i , then
cut when $i = \frac{g'}{g} - \frac{P_i}{g}$

Don't bother w. Faustmann.

Then higher i means quicker
cutting, via both pressures.

(MC to indiv. $\angle$ to

Cut when $g' = i(g + P)$

This is using ~~explicit~~ objective
annual land cost to indiv., rather
than internal alternative.

Problems:

p. 1

1. Show $n = \frac{1}{p} \ln \frac{g'}{g-c}$ is $MC = MP$ of time. (see "analogy";)

2. See if foresters ever worked out, or just approximated arithmetically. Hilkey doesn't; Roth doesn't. Schlich doesn't.

MP of time is g' , $\frac{dg}{dn}$

MC " " " $gp \frac{dn}{dn} + a \frac{dn}{dn}$

$MC = MP$ when $g' = gp + a$, solve for n .

But 'a' is a fn of n , than g , & $c(1+i)^n$:

$$a = \frac{p}{(1+i)^n - 1} [g - c(1+i)^n]$$

This formula is not continuous? "n" grows by integers? Was it invalid, then, for me ever to differentiate it? Not nec. $(1+i)^n$ is same as a continuous int. formula, $(1+i)^n = e^{np}$, which can be differentiated w/o gn.

$$\frac{d(1+i)^n}{dn} = (1+i)^n p$$

$$\frac{d e^{np}}{dn} = p e^{np}$$

$$\frac{d e^{np}}{dn} = p e^{np}$$

$S = a \frac{(1+i)^n - 1}{i}$. The fn is continuous, even tho we derived it from yr-end pts

alone. Any error, if any, wd be very small. In fact, this is a sort of curve-fitting, we have run a continuous fn thru those pts.

$$g' = gp + a$$

$$((1+i)^n - 1) (g' - gp) = g - c(1+i)^n$$

$$(1+i)^n (g' - gp + ci) = g - gp + g'$$

We have 2 alternatives: a. Begin with $MC = g' + a$, get $(1+i)^n = \frac{g'}{g' - i(g-c)}$

b. Change def. of 'a' to $a = \frac{p}{(1+i)^n - 1} M$, getting

$$(1+i)^n = \frac{g'}{g' - p(g-c)}$$

p. 2

Latter is what we want. Can we do it? Does $S = a \frac{(1+i)^n - 1}{p}$
 when convert continuously?

s 531

By Kuhn & Morris, p. 84,

~~Star at the end~~

$$\lim_{m \rightarrow \infty} \left(1 + \frac{i}{m}\right)^m = e$$

$$\lim_{m \rightarrow \infty} \left(1 + \frac{j}{m}\right)^m = e^j$$

$$S = a \frac{e^{np} - 1}{p}$$

Their terminology, notation.

$K \equiv$ annual rent

$R \equiv$ periodic rent

$p \equiv$ no. of payments per year. (i.e. payments of a , not of interest)

$$R = \frac{K}{p}$$

$m \equiv$ no. of conversion periods (per year) (p. 32)
 (i.e. no. of interest computations)

$1+i = \left(1 + \frac{j}{m}\right)^m$, is basic relation giving corresponding values.

Solving for j , $j = m \left[\left(1+i\right)^{\frac{1}{m}} - 1 \right]$

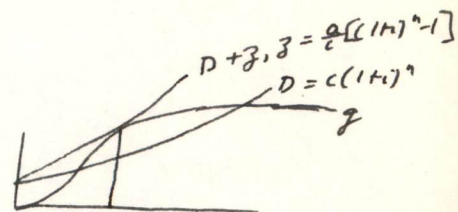
OK now:

p. 84, gives, when $p \rightarrow \infty$, $S_n = \frac{\left(1 + \frac{j}{m}\right)^{mn} - 1}{m \ln \left(1 + \frac{j}{m}\right)} \left(= \ln \left(1 + \frac{j}{m}\right)^{mn}\right)$

~~But this is~~

Let $m \rightarrow \infty$, and we get $S_n = \frac{e^{nj} - 1}{\ln e^j} = \frac{(1+i)^n - 1}{\ln(1+i)} = \frac{(1+i)^n - 1}{p}$

Viva - Q.E.D.



One of my solutions is already a magnet one:
(Use it if nec. But first spend 2 hrs trying to redefine 'a' with ρ)
 $D' + Z' = g'$, while $D + Z = g$

$$D' = c(1+i)^n \rho$$

$$Z' = \frac{a}{i} (1+i)^n \rho$$

$$c(1+i)^n + \frac{a}{i} ((1+i)^n - 1) = g$$

$$\rho c(1+i)^n + \frac{a}{i} (1+i)^n \rho = g'$$

Divide

$$\frac{(1+i)^n (c + \frac{a}{i})}{\rho (1+i)^n (c + \frac{a}{i})} = \frac{\frac{a}{i} + g}{g'}$$

$$\frac{1}{\rho} = \frac{\frac{a}{i} + g}{g'}$$

$$(\frac{g'}{g} - g) i = a$$

Sub. in orig.

$$(1+i)^n = \frac{g'}{\rho(c + \frac{g'}{g} - g)} = \frac{g'}{g' - \rho(g-c)}$$

Now, how does magnet formulation here differ from $g' = g i + a = g i + \frac{i(g-c(1+i)^n)}{(1+i)^n - 1}$?

$$= i \left[\frac{g(1+i)^n - g + g - c(1+i)^n}{(1+i)^n - 1} \right] = i \left[\frac{(1+i)^n (g-c)}{(1+i)^n - 1} \right] = i \left[\frac{g-c}{1 - (1+i)^{-n}} \right]$$

$$g' - \frac{g'}{(1+i)^n} = i(g-c)$$

$$(1+i)^n = \frac{g'}{g' - i(g-c)}$$

Time-ave. of Bldgs max i doesn't keep fall'g, but rises presently,
 bcs his $i_m > i$. So time ave. fn is $\frac{C_0 i (1+i_m)^n}{(1+i)^n - 1}$

$$\frac{d}{dn} = C_0 i \frac{[(1+i)^n - 1] p_m (1+i_m)^n - (1+i_m)^n p (1+i)^n}{n^2}$$

$$\frac{d}{dn} = 0 \quad \text{when} \quad \cancel{[(1+i)^n - 1]} = \cancel{(1+i)^n}$$

$$[(1+i)^n - 1] p_m = p (1+i)^n$$

$$(1+i)^n (p_m - p) = p_m$$

$$(1+i)^n = \frac{p_m}{p_m - p}$$

$$\text{as } p_m \rightarrow \infty, n \rightarrow 0$$

"Cap. ~~sunk~~ sunk in tree" may be regarded as what buyer wd. pay for tree, taken
 by self, at given yr. This is not $\frac{g}{(1+i)^n}$, bcs when one pays that he is buy'g
 not just the tree, but the additions from use of land ~~over~~ until maturity.

So cap sunk in tree is $C_0 (1+i)^t + a \frac{(1+i)^t - 1}{i}$, at yr. t . This is what buyer
 wd pay for tree alone - i.e. if he bought tree, but had to pay a rent of 'a' until
 maturity.

There are ^(at least) 2 ~~equivalent~~ ways of expressing MC of time.

1. Separate annual use of land from int. on previous use, subsume latter in g : $MC_1 = a + gp$ (But diff. shapes of g wd. affect TC, wrongly?)

2. Include annual land use w. int. on previous use. Other costs are plant's, compounded.

$$TC_t = C_0(1+i)^t + a \frac{(1+i)^t - 1}{i}$$

$$MC_2 = C_0 p (1+i)^t + a (1+i)^t \quad (\text{N.B. This is treating 'a' as not a fn of } t. \text{ Assumes rot-n is already determined})$$

$$= (1+i)^t (C_0 p + a)$$

Let $n \equiv$ yr. of hirst; let $t \equiv$ any yr.

~~Are~~? These expressions are in general equal, where $a \equiv \frac{p(g_n - C_0(1+i)^n)}{(1+i)^n - 1}$? ~~NO~~

$$MC_1 \equiv \frac{a + gp}{(1+i)^t - 1} = \frac{gp(1+i)^n - gp + gp - C_0 p (1+i)^n}{(1+i)^n - 1} = \frac{(1+i)^n p(g_t - C_0) + p(g_n - g_t)}{(1+i)^n - 1}$$

$$MC_2 \equiv (1+i)^t (C_0 p + a) = (1+i)^t \left[\frac{C_0 p (1+i)^n - C_0 p + gp - C_0 p (1+i)^n}{(1+i)^n - 1} \right] = (1+i)^t \frac{p(g_n - C_0)}{(1+i)^n - 1}$$

$$MC_1 = MC_2 \text{ when } t = n$$

~~$$\text{When } t < n, MC_2 < MC_1$$~~

(Area under $MC_2 = TC$) ~~So area under MC_1 must $> TC$.~~

To know if $MC_1 = MC_2$ in genl, must get g_t in terms of g_n , subst.

But 1st see if ~~are~~ they are obviously unequal.

$$\text{When } t=0, MC_1 = \frac{(1+i)^n p(-C_0) + p g_n}{(1+i)^n - 1} = \frac{p g_n - C_0 p (1+i)^n}{(1+i)^n - 1} = \frac{p(g_n - C_0(1+i)^n)}{(1+i)^n - 1} = a$$

$$MC_2 = \frac{p(g_n - C_0)}{(1+i)^n - 1} = \frac{p g_n - C_0 p}{(1+i)^n - 1} = \frac{p(g_n - C_0)}{(1+i)^n - 1} > a$$

These are unequal. $MC_2 > MC_1$ when $t=0$

Possibly MC_1 grows to $> MC_2$ for a time before n , so

$\int_{t=0}^{t=n}$ is same for each.

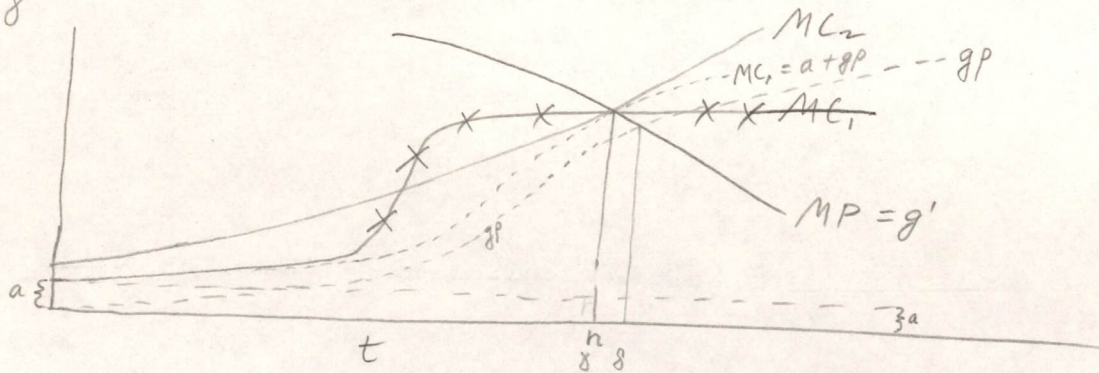
Check it

When $t = n-1$

~~$MC_1 = p g t$~~

$$MC_1 = \frac{g t p [(1+i)^n - 1] - C_0 p (1+i)^n + g n p}{(1+i)^n - 1} = g t p + \frac{p [g n - C_0 (1+i)^n]}{(1+i)^n - 1}$$

When $t = n-1$, or when back off a little from n , MC_2 drops faster? It must, ~~it must~~, but MC_1 is known to grow at an unsteady rate, in same form as g , so if it is to arrive at same pt. as MC_2 , which grows at steady rate, must rise above g . No - might be like dotted curve.



Take 2d derivatives, evaluate at $t = n$.

$$\frac{d MC_1}{dt} = p \frac{d(g t)}{dt} = p g'$$

$$\frac{d MC_2}{dt} = (C_0 p + a) (1+i)^t p$$

$$(C_0 p + a) (1+i)^t \stackrel{?}{>} g'$$

But at n , $(g' = g p + a)$ & $g' = MC_2 = (1+i)^n (C_0 p + a)$.

This is consistent with dotted line above, not with solid MC .

MC_2 is reckoned all along on assumption that max. a will be reached. MC_1 is reckoned on attained growth only, hence hits max. only at one pt, n .

MC_1 is ok for final decision; but in other yrs understates MC . Because g has not attained a value = to costs poured into it, these costs being reckoned on opt. yr.

MC_1 is opp. cost, looking future. MC_2 is historical.

$$\int_{t=0}^{t=n} MC_2 = TC, \text{ includ'g int, at } n.$$

$$\int_{0-t} MC_2 = \text{what present claim on tree is worth at } t.$$

More time also, ~~the~~ means more cap. in tree from site. So in a sense more time makes a more cap.-intensive op-n. a wd. ∴ be very land-intensive

∅ becomes very cap.-intensive, bcs apply cap. until it is yieldg less than p ,
[until $g' = g$ ~~now~~, & since yield of cap. is $g' - a$, mgnt yield of cap.

here is $\frac{gp - a}{g}$ But is land-intensive in respect to frequency of apply's

Co: $\frac{C_0}{n}$, or whatever, is very low here. But that is turnover.

Cap.-intensity means ratio of $\frac{\text{cap}}{\text{land}}$ used on a site, regardless of turnover.

Turnover may reflect labor intensity, tho here labor is congealed into cap. & thus subsumed. From one pt. of view it makes sense to try to min. no. of doses of C_0 — from inf. time view, ^{with all else fixed.} But from turnover view, it means little, as to intensity.

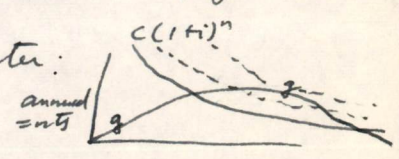
The cap. "sunk" in a tree is not g , but $C_0(1+i)^n + a \frac{(1+i)^n - 1}{i} (= (1+i)^n(C_0 + \frac{a}{i}) - \frac{a}{i})$
As time passes, the prop. derived from land, 2d term, increases.

Another sense in which long cycles might be land-intensive is that the cap in tree is contributed in large part by land, esp. after break-even year.

✓ This cap. differs from stereotype of my first article in not depreciatg. — tho of course it does turn over.

also, long cycles due to us'g low C_0 & ∴ gett'g slow regen. are land-intensive.

In max. a, annual return, we are in effect max. excess of annual =nt of g over annual =nt of $c(1+i)^n$. If C is higher, this max. comes later:



From view of annual =nts, makes sense to think of spread'g C over yrs. But from view of cap.-intensity, it doesn't.

Senses in which long rot-n. are more cap-intensive

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Longer woods grow, higher is value of trees to value of land.

.. .. lower mgnt returns are imputable to cap. in trees. ~~that~~
~~might equally well say it is land for which mgnt returns are taken~~

Less freq. hstg - & this cost reduces value of g , hence reduces cap. (But also reduces c , & value of land)

Senses in which long rot-n. are less cap.-intensive.

C_0 is spread over more years.

Even $C_0(1+i)^n$, when annualized, declines: $\frac{i C_0(1+i)^n}{(1+i)^n - 1} \rightarrow C_0 i$ as $n \rightarrow \infty$
(but tho C_0 is applied less frequently, is also removed less frequently)

~~Less frequent hstg, w. its expense (but this expense does not add to cap. & detracts.)~~

The amt of cap. in tree which is ~~imputed as~~ ^{derived from} rent Δs w. time. This is even true if we cf. $C(1+i)^n$ vs $a \frac{(1+i)^n - 1}{i}$; & true if cf. g vs $C(1+i)^n$. (But it still is cap.)

Fndly powerful, operationally weak species wd' have long rot-n. bcs:

1. $P\dot{p} + g\dot{p} = g'$ for them comes late. They can lavish time dimensions of both land & cap. down to low p . This is a form of cap. that doesn't deprec. (nor yield annualize) just appreciates, so p all-impnt.
2. apply little or no C_0 , so yields come late.
3. C_0 & hstg costs are hi relative to output. So, in $p = \frac{g'}{g-c} \Phi$, they hv higher

c & lower g , and deferred g' . All this means longer rot-n.

& also means they are not so cap-intensive, bcs their higher costs detract from cap. value of stumpage.

(On other hand, failure to thin, & hv'g better sites, speeds rot-n. Except these 2 may offset one another, for thinning is more ec. on better sites)

So they are more "cap-intensive" in sense they let woods grow longer; but less so in that they grow trees thinner, start 'em slower - i.e. use less C_0 .

The cap-land ratio is not, perhaps, det-d in the time-dimension.

as to what they will ~~pay~~ for land vs tree, ~~lo p~~ still has greater advantage
re land. This must show up in his being less willy to 'pay' for trees by
invest'g Co for them, hence his spend's less to start trees

A tree is, in large part, congealed land rent, esp. in later yrs.
 Deferred rent collection. One speaks of int. on the cap. created by not
 consuming annual produce of land, but this acc't'g fiction shd not blind us: to
 realities of situation.
 has bn no positive inv. of cap. by owner; he has no altern. use he foregoes, as a
 rule. "Annual rent" which becomes "cap." as he accumulates it is a derived concept,
 derived from large yield of rent he gets periodically. Probbly this whole
 thing, & not just na, shd. be called land rent.

~~From this view,~~

If go farther, & say $a \frac{(1+i)^t - 1}{i}$ is land, until severed, then
 production becomes more land-intensive as proceed, w. time.

Forestry, like livestock, is esp. suited for unc., bcs cap. appreciates.
 Requires little care. Indeed, if one holds land w/o any intent of forestry
 trees will probbly rise anyway. Casual spec. gets trees as well as
 AP.

Advantage of h is greater in val'g forests, ^{land.} than ordinary land

$$S_e = \frac{g - C \cdot (1+i)^n}{(1+i)^n - 1}$$

Can't formulate exactly, bcs as i changes, opt. n changes, & how much it
 changes depends on g .

But let $n = 20$, & cf. values at 2% & 4%

$$S_{e\ 4\%} = \frac{g - C \times 2.19}{1.19}$$

$$S_{e\ 2\%} = \frac{g - 1.49 C}{.49}$$

Numerator is Δd , & denom. is down to less than half.
 Might take actual e.g. from tables

Take yield tables for opt. rot-m at ^{3% & 6%}~~2% & 4%~~, & cf. Se.

Doug Fir. - wd take some figures yet. Must use diff. set of ϕ for ea. %.

Probbly a good idea to do it tho - wd. also, incidentally, show me how much Δi changes δ .

At 3%, $x = c. 39$, $y = c. 14,000$
 At 6%, $x = c. 30$, $y = c. 8,600$

See p. "Z" in yield file.

$C_0 = 1,000$

$$Se, 3\% = \frac{14,000 - 1000(1.03)^{39}}{1.03^{39} - 1} = \frac{14,000 - 3,167}{2.167} = \frac{10,833}{2.167} = 5,000$$

$$Se, 6\% = \frac{8,600 - 1000 \times 1.06^{30}}{1.06^{30} - 1} = \frac{8,600 - 5,743}{4.743} = \frac{2,900}{4.74} = 0.612$$

A tremendous % diff., about 1-8.

Incidentally, cf. effect of ϕ on how Δi affects rot-m.

	w/o ϕ	w. ϕ	diff.
3%	50+	40	10+
6%	33-	30-	3
diff.	17-18	10+	

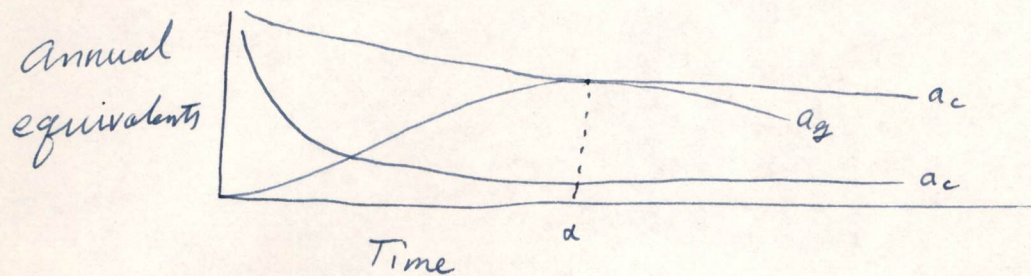
N.B. Diff not so great toward maturity. Might even be less than prop. to $\frac{i_1}{i_2}$?

You max AP of funds in C_0 at α — but thus make MP of land = 0.
(Prove it). The funds in land title are then earning less than they
might. And a small Δ of funds in trees — in their time dimension,
i.e., not their total original ~~total~~ amt C_0 , which is not at issue
here — will yield more than cost. From α to β

Bld's says they cost more than appear to, but can reinvest. at
 hi i.
This like says labor costs more than appears to but can
use elsewhere at hi AP. To get the hi AP elsewhere
must ignore other costs. & to get hi i next cycle, must
ignore other costs next cycle.

At α you are max'g annual rate of growth?

Analogy p. 7



These "time-ave." fns are close to simple ave.s. Only differ by ~~the~~ powers of i in denom.

a_c starts hi & falls, due to large initial outlay, C_0

a_g is like an ave., only falls over quicker

α is found by us'g higher & higher i , until $a_c = a_g$, only once. Note this is to right of max. a_g , due to downward slope of a_c . So this solution is not as bad as max a_g . Is this Bldg's solution? Is it max. i from C_0 ? Is it α ?

How relate to ΔQ & ΔC ?

✓ 7/6 we had no costs except time, i.e. int. on voluntary growth
on free land, B wd. be ideal. - max. annual = nt of £.

7/6 only cost were C_0 + time, a ideal ^{or is it?} - it averages out C_0 over
time, as well as figure's int. Cd hardly be ideal, as its mgnt is below it -
no, for 4% is also below a_0 there.

But when figure site, too, get 3d consumer

$$\frac{dD}{dn} = \frac{D}{n} \text{ where}$$

$$C_0 (1+i)^n \log(1+i) = \frac{C_0 (1+i)^n}{n}$$

$$\log(1+i) = \frac{1}{n}$$

$$n = \frac{1}{p}$$

This shd be where $\frac{d \frac{D}{n}}{dn} = 0$ But it isn't.

$$\frac{d}{dn} \left(\frac{D}{n} \right) = C_0 \frac{[-(1+i)^n + n(1+i)^n \log(1+i)]}{n^2} = \frac{C_0 (1+i)^n (-1 + np)}{n^2}$$

$$np = +1$$

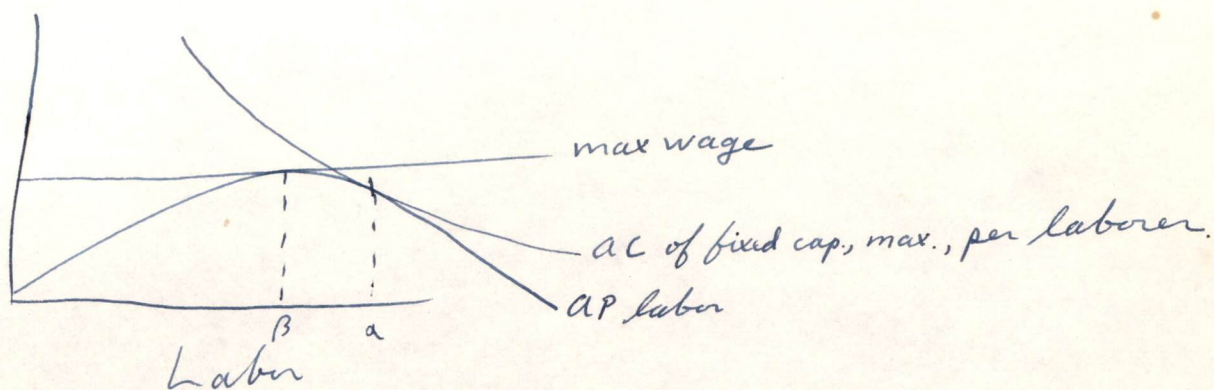
$$n = \frac{+1}{p}$$

$$a_c = \frac{dc}{dn} \text{ when } \frac{c \cdot i}{(1+i)^n - 1} = \cancel{\#} Cp$$

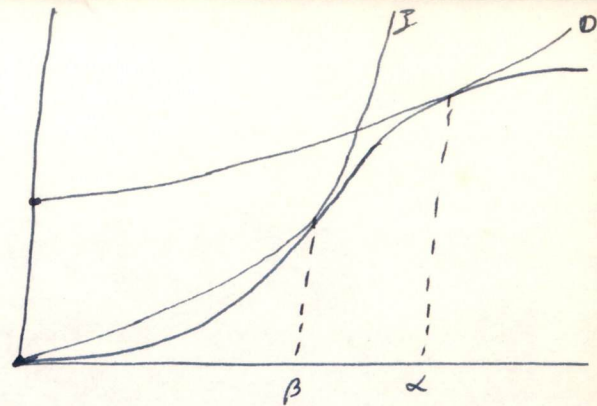
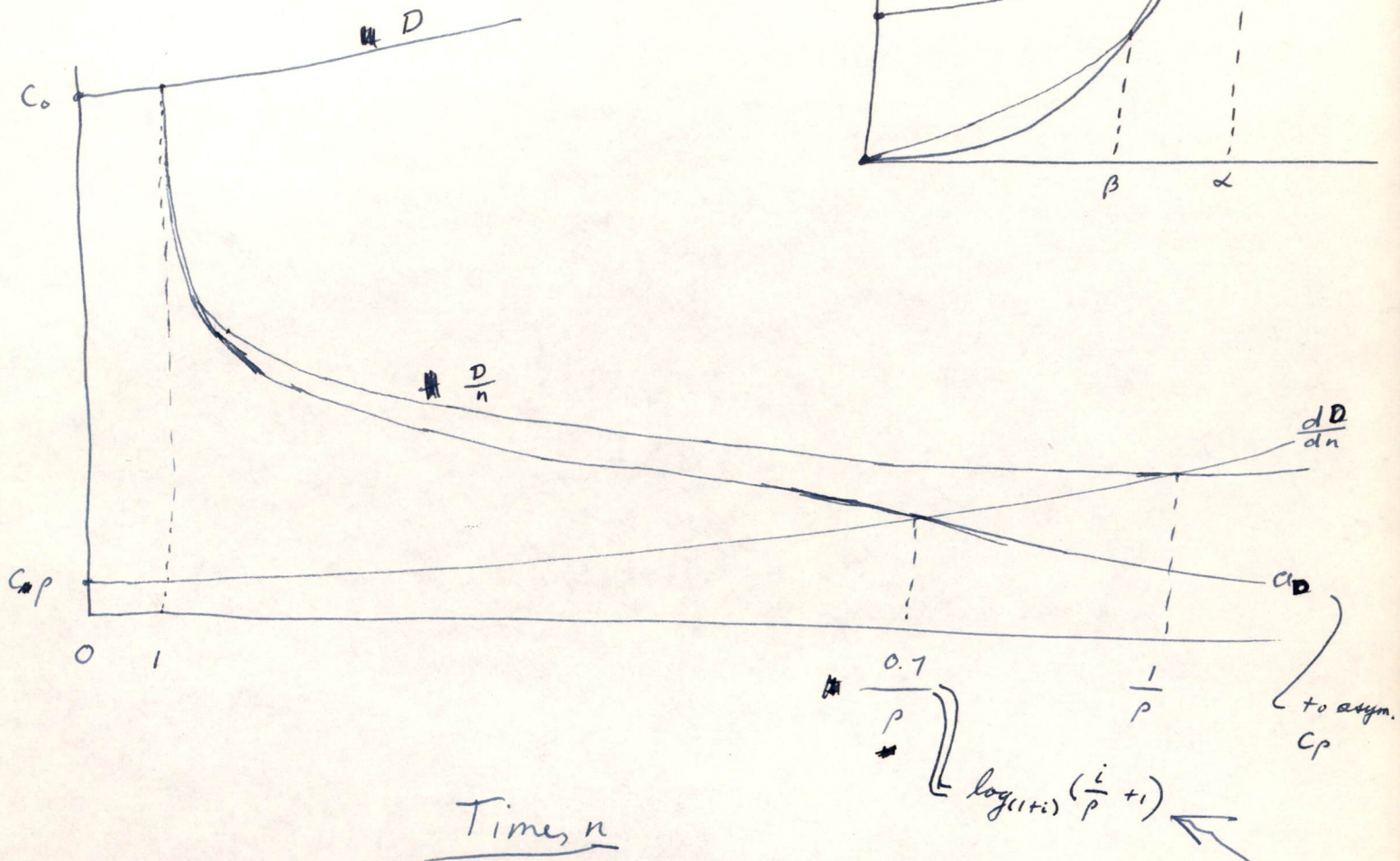
$$(1+i)^n \approx \frac{i}{p} + 1$$

$$n = \log_{(1+i)} \left(\frac{i}{p} + 1 \right) \approx \log_{(1+i)} 2^+$$

$$\log_{(1+i)} 2 = \frac{\log 2}{\log(1+i)} \approx \frac{0.7}{p}$$



$M_{\text{max.}}^{\text{a}}$ is as tho we had fixed cap, & we wanted to impute to it as much as possible. This leaves nothing for labor. MC is 0, so isn't $MC = MP$ probly.



Where $a_d = d'$, is that where ~~approx~~ i_d is max? - i.e., is it α ?

From p. 16

$$\alpha = \frac{g \ln\left(\frac{g}{c}\right)}{g'} \stackrel{?}{=} \frac{\log_{(1+i)}\left(\frac{i}{p} + 1\right)}{\ln\left(\frac{i}{p} + 1\right)^{\frac{1}{p}}} = \frac{\ln\left(\frac{i}{p} + 1\right)}{p} = \frac{1}{p} \ln\left(\frac{i}{p} + 1\right) =$$