

Be here

→ Wed, Nov. 16, 7 PM

Sat. Nov. 12, 1 PM

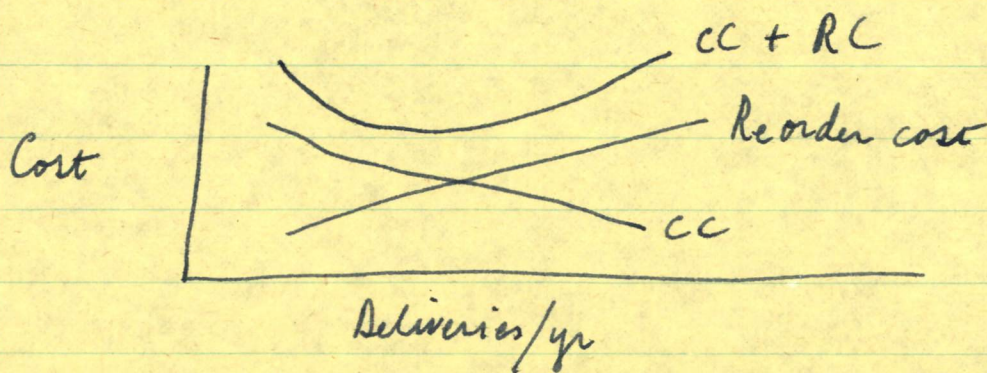
Oct. 200, Fall, '17: Used notes

Oct. 10
- 11

II. Useful math.

A. Optimizing.

1. Reorder re inventories.

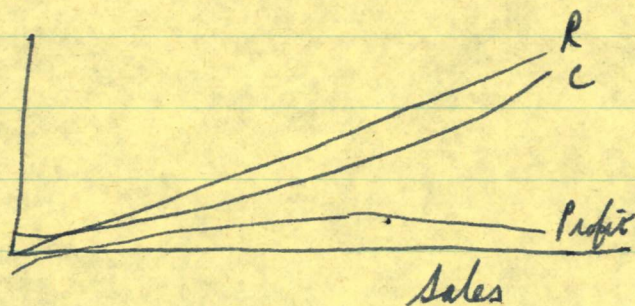


He does it algebraically, OK. Graphs good, too, help visualize.

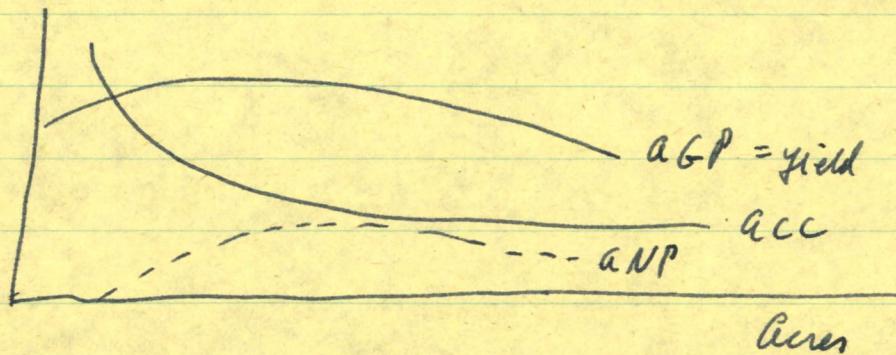
So are Tables. There 3: & the greatest is algebra. But the other 2 help you get there.

$$CC + RC \equiv \text{"Objective fn."}$$

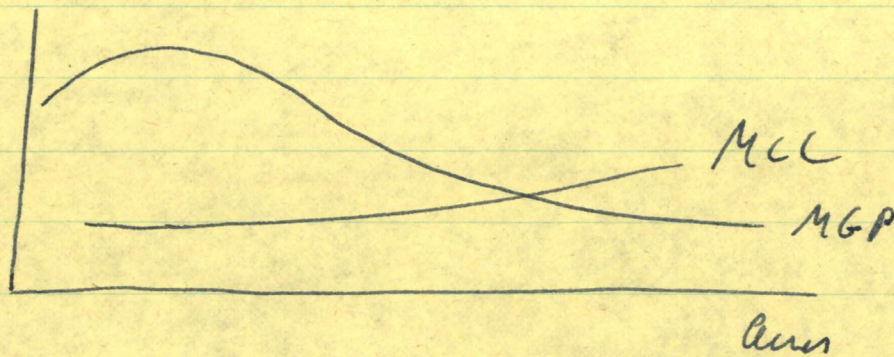
2. Often one subtracts



3. One may divide fine



4. One may use marginals, for same result



Re No. 5

$$\log_e y = \frac{\log_2 y}{\log_2 e}$$

$$\log_2 y = 10, \quad y = 2^{10} = 1024$$

$$2^{10.1} = 1097.5$$

$$\div = 1.07178$$

$$\ln 1024 = 6.9315$$

$$\ln 1097.5 = 7.0008$$

$$\cancel{7.0008 / 6.9315 = 1.00999 = 1.01}$$

$$7.0008 - 6.9315 = .069 \quad \text{Aha}$$

$$10.1 - 10.0 = .10 \quad \text{Aha}$$

$$\frac{.10}{1.4427} = .069 \quad \text{Aha!}$$

Ad. 200, Oct. 10, '77.

I. What is theory. Value & role.

II ~~the~~ Useful work.

Total, ave. util.

Elast. (of prodn.)

MP/AP

Exponent?

Optimizing, as in B's inventory case.

Log.

III ~~the~~ Prodn Ecs.

Limits & dangers of theory

✓ Excessive formality - fault of ec. theorists.

Imperfect info. E.g. of interregional c.o.l. differentials

Omniscience practically near to "perfect knowledge", requires forecasting, too.

Many phenomena not done justice by formalism. E.g. cumulative specn. leading to monopoly. E.g. cartel behavior.

E.g. saw-tooth supply curve.

E.g. combo of instl. & analytical that is at heart of ec. understanding. Re prescription doctrines, e.g. Leading to "capital roll-out" (a happy phrase)

E.g. exercise of judgment. Retreat of L. Robbins school to role of technical adviser, abandon role of leadership & authority, and more, of creativity — yes. True creativity involves judgment. An economist qua economist shd. have superior judgment, & not be afraid to express it.

If some theorists elect not to express theirs, is ok — they vacate stage for those who do express judgment.

Frictionless plane, analogy to perfect competi? Perf. competi. even more unreal — abstracts from space & time. "Firms" the unit — w/o dimension. Like Weber's locn. thry. All export producers, too.

Really, for nodal systems, there is a center. The nearer center, the fewer sites, the higher probability of some monopoly, at least in serving local mkt. ∴ the better the res., the more likely to be

undermined. The cartel principle.

Principle of cftr. disadvantage, or prescriptive principle. Interplay of law & self-interest. Pure theory has little grasp of it, conveys little of it — $\therefore$ is poor for forecasting. Is useful normatively, to see enormity of situation.

Principle of pooling — value of access to common pool.

Storage near point of variation, economize on lines.

Price flexibility as subst. for storage.

Above are some defensible principles disclaimable a priori.

"Theory" as known has developed largely a priori — & shows it. Needs more instl. feel or grasp.

✓ Excessive preoccupation w. the profession itself, its rival 'schools'; confusion of means & ends. Better to bring things to a head immediately in policy proposals. Many schools are essentially negative, e.g. Marx; Chamberlin

Oct. 10
11

I. What is theory. Value & Role. Limits, dangers.

- B. Commensurability, so can use ability to manip. concepts & nos. Rates of exch. apples & oranges; things & money; here & there like math.
- A. Transcendental. Theory transcends technical, & specific concrete e.g.s.
Gets to essentials. Energy > oil; value > energy, comprehends (usually) all.
- C. Radon. all options. Defn. of ops. anal. } Extract the universal truth from concrete cases.
Vary everything
- F. Scarcity of & demand for applied theorists - working engs, biols., foresters, drs., lawyers. O.R., system analysts, B/c analyst.
- A. Theory endures, not obs. Same today as always - but ~~exp~~ we know more.
- G. ~~the~~ Bad e.g.s. of act'g w/o trans. thy
- Congr. & tail-end Charlie. Materialistic fallacy
- sav'g res. & us'g more labor
suppress extr. sector, stimulate service center,
close to cons. But think farmers are labor int, big hint.
- Or, subst. sawmill for pulp mill.
P system, carry message to every nook & cranny of system, balance + & -.
- Requirements, needs - Engel syndrome
- D. Fight confusion, including those who prefer it, one-culture school. Quantify contributions, reward accordingly, for incentives & punishment justice.

Precise formulation of ideas, defns

E.g. indivis. vs. continuity

E.g. how a society, or a vert. int. firm, ecges. on K.

D. ^{save us from errors.}

Identify recurrent fallacies. (E.g., wages depend on A.P.)

Disprove once, in general terms, not fall again.

Read from list, samples.

E

Also, a list of truths or principles.

~~Data on change of mix w. size of farm or firm. Regress. fallacy.~~

E. Machine Tools of creative thought.

Ways to help you think for self

" .. communicate

2-11-69, G. 701

2 more thoughts on fn. of ec. theory

1. Implicit conspiracy to allow dissent so long as it is contained within acad. community. In Russia, explicit.

Hence arcane lingo, mystery language, models that never quite work → avoidance of clear stands on gut issues. But always clear bias towards scale.

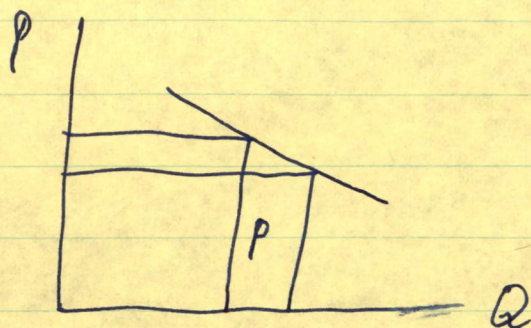
Argumentation preferred to action. Periphrast action preferred to ^{app.} direct and effective action. Viz. recent fac. mtg. on Oshkosh students.

✓ 2. Most important thing we teach is how to think for yourself.

Theory helps.

(Writing helps even more. Gather together loose ideas, get a balanced view -- that is greatest creative experience.)

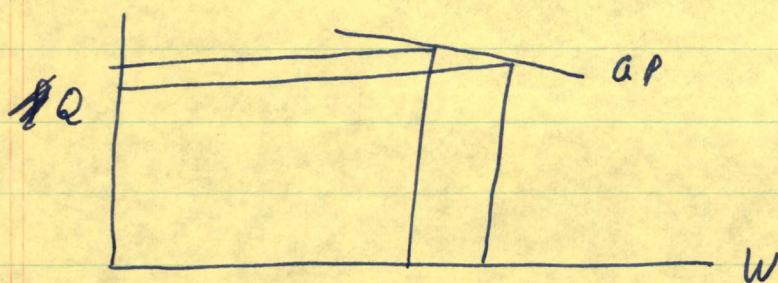
Unsolved problem



$$MR = P - Q \frac{\Delta P}{\Delta Q}$$

$$Q \cdot \Delta P ; \Delta Q = 1, \text{ \& } \Delta P = \frac{\Delta P}{\Delta Q}$$

$$Q \cdot \frac{\Delta P}{\Delta Q} = P \frac{Q \Delta P}{P \Delta Q} = P \cdot \frac{1}{\frac{P \Delta Q}{Q \Delta P}} = P/e$$



$$MP = Q - W \frac{\Delta Q}{\Delta W}$$

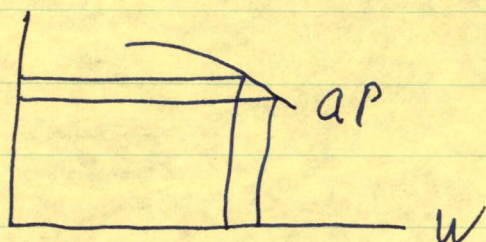
$$W \frac{\Delta Q}{\Delta W} = Q \frac{W \Delta Q}{Q \Delta W} = Q \frac{1}{\frac{Q \Delta W}{W \Delta Q}} = Q e$$

$\therefore$

$$MP = Q - Qe = Q(1-e), \text{ where } Q = AP$$

checking,

$$MP = AP - AP \cdot e$$



$$MP = aP + aP \frac{\Delta aP}{\Delta w} = \cancel{aP(1 + \Delta aP)} \quad [\text{where } \Delta w = 1]$$

$$aP = \frac{P}{w}$$

$$\frac{\Delta aP}{\Delta w} = \frac{\frac{dP}{dw} \cdot w - P}{w^2} = \frac{dP/dw}{w} - \frac{P}{w^2}$$

$$= \frac{MP}{w} - \frac{aP}{w} = \frac{MP - aP}{w}$$

$$MP = aP + aP \frac{MP - aP}{w} = aP + \frac{aP \cdot MP}{w} - \frac{(aP)^2}{w}$$

Solve for MP: $MP(1 - \frac{aP}{w}) = aP - \frac{(aP)^2}{w} = aP(1 - \frac{aP}{w})$

$$MP = aP$$

$$aP = \frac{P}{w} = P \cdot w^{-1}$$

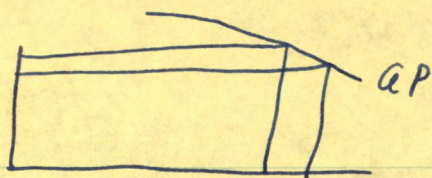
$$\frac{d}{dw} (P \cdot w^{-1}) = \frac{dP}{dw} \cdot (w^{-1}) + P(-w^{-2}) = \frac{P'}{w} - \frac{P}{w^2}$$

$$MP = aP(1 + \frac{MP}{w} - \frac{aP}{w}) = aP(1 - \frac{aP}{w}) + \frac{aP \cdot MP}{w}$$

$$\cancel{MP = AP(1 - \cancel{AP})}$$

$$MP(1 - \frac{AP}{w}) = AP(1 - \frac{AP}{w})$$

$$MP = AP$$



$$MP = aP + aP \frac{\Delta aP}{\Delta W} = aP \left(1 + \frac{\Delta aP}{\Delta W} \right)$$

$$aP = \frac{P}{W}$$

$$\frac{d(aP)}{dW} = \frac{\frac{dP}{dW} \cdot W - P}{W^2} = \frac{P'}{W} - \frac{P}{W^2}$$

$$MP = aP \left(1 + \frac{P'}{W} - \frac{P}{W^2} \right)$$

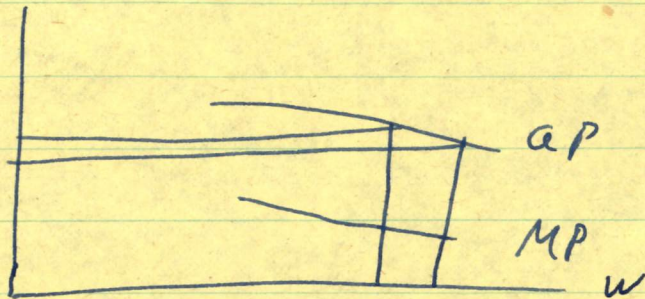
$$P' = \frac{P}{W} \left(1 + \frac{P'}{W} - \frac{P}{W^2} \right) = \frac{P}{W} \left(1 - \frac{P}{W^2} \right) + \frac{P}{W^2} P'$$

$$P' \left(1 - \frac{P}{W^2} \right) = \frac{P}{W} \left(1 - \frac{P}{W^2} \right)$$

$$P' = \frac{P}{W}$$

This can't be right, but I keep getting it.

To be finished



$$\frac{\frac{\Delta W}{W}}{\frac{\Delta P}{P}} = \frac{\frac{\Delta W}{\Delta P}}{\frac{W}{P}} = \frac{\frac{1}{MP}}{\frac{1}{aP}} = \frac{aP}{MP} = \frac{1}{e}$$

$$MP = aP(1-e) = aP\left(1 - \frac{MP}{aP}\right) =$$

$$MP = aP - W \cdot \Delta AP$$

$$\Delta AP = AP \cdot \frac{\Delta AP}{AP} = AP$$

$$\frac{\Delta AP}{AP} =$$

1 ~~the~~ ANP morals

- a. Euler - $\sum MP = TP$. Inputs, vs. ^{or "no-think"} one-lette school.
- b. Tendency to = intensity. (in value terms)
(given same indivisibilities -- farms, tractors, etc. But if neighbors are in diff. businesses, maybe not.) (Hi-int. use may not need more adjoining land, but better land -- e.g. outlying apt.)
- c. Falling of "low quality As" to intensity.
- d. L.v. (v. s.r.) means adding more vbls - total (vs. partial)
diff. B p.60) e. Max. P-C, not P/c

5. Continuity v. Divisibility.

6. Rent - no social fn. (B, p. 593) ^(ration supply, not elicit) Rent land wd. be there anyway
(But also = MP of land)

Is a source of greatest confusion in thinking, & policy. To understand us, must understand rent - then all follows.

- receive rationalize their position.
- gets spread around -- "rolled in" --
 - FPL
 - Oil price
 - x. subsidy.

- "easier to meet enemy." Tax at source.

Keep p. eye on rent. Is it maxed? Who gets it?
How distrib'd? How rationalized?

7. Tendency, incl., to suppress intensive margin.
 - lot limits in cities
 - other bias v. infilling
 - cartel price umbrella, priv. & public.
 - coastal zone
8. If you're in stage 1 to K , & can't get more K , are you stuck? No, use less land - (and then buy more K , too.)
9. Classical ec. was mostly distn. - who gets what & why?
Evaluate fairness & effie.
10. Residl. vs. Dist imptn.

Nov. 21, 1917

Ad. 200

0. How many find this class harder than ever? Slack off the pace.
1. Spent 2 weeks on K thy. by inadvertence.
2. No session Wed. night. Happy Thanksgiving. Avo. pickers?
3. When want exam -

Dec. 5?

Dec. 12?

4. Louisville - debate on who shd. get rent (= taxable surplus)
Some in Canada.

Demand Analysis

1. IE's partial. Prior study of distribn. has been general. E.g. re rehts.
2. New unit: Output, rather than input.
3. Is less than whole system analysis.
One unit. at a time.

If you feel more at home w. this,
it may mean you are used to being myopic -
better compensate.

Study of agg. demand is macro.

4 Importance of demand

Keep in touch w. what.

Sad fate of those who don't

People who think they have a right to a certain way of life, regardless.

Engineers who use "requirements" approach, regardless of price.

Planning generating capac.

Installing line capac.

(Int. free money)

House builders who project undoubling regardless of price.

Foresters who grow for the ages. Ramp

Urban bldrs. who improve wrong site at wrong time. & suffer obsolescence

- too early, land not worth enough for site

- too late & too little, local obsolescence hits in 10-15 years.

Everyone who builds too durably - esp. where new generations of techn. are coming in.

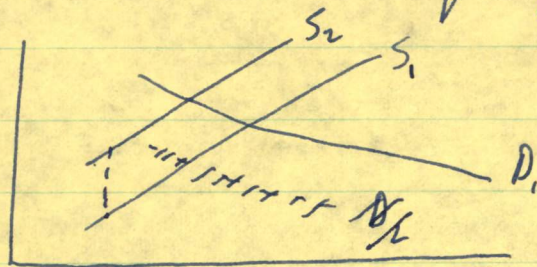
5 Q R, elasticity, & MR

$$MR = P - Q \cdot \frac{\Delta P}{\Delta Q} = P - P \cdot \frac{Q}{P} \frac{\Delta P}{\Delta Q} = P - \frac{P}{\frac{\Delta Q}{Q}} = P - \frac{P}{e}$$

6 S & D

How few understood!

a. E.g., are taxes shifted forward?



Depends on:

- a. Elast. of supply
- b. Kind of tax
- c. Elast. of demand

b. Energy policy - subsidize both.

c. Price controls. Surplus & shortage.

7. Complexity of demand, & pervasiveness of price

Cf. proposal to require better mileage vs. higher price.

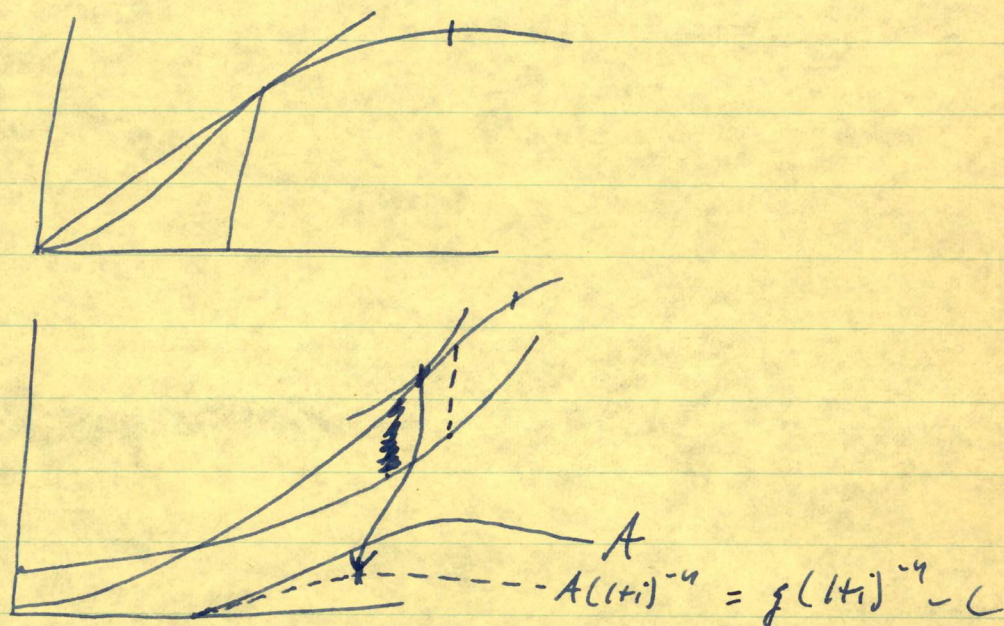
Mon, Nov. 14, 1977

Applications of financial formulae.

1. Replacement.

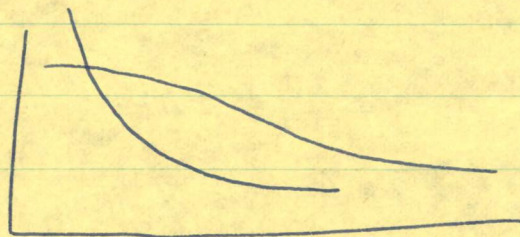
What to max? PV of cycle 1, or PV in perpetuity?

a. When to cut a tree



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

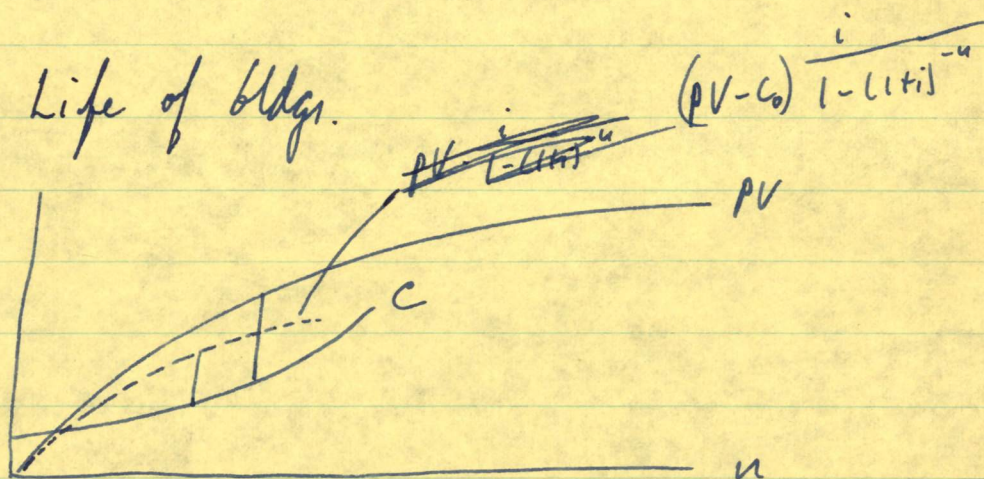
b. Life of mine.



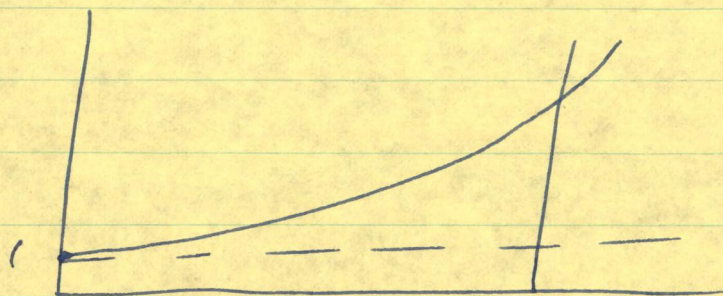
$$PV = \frac{A}{n} \frac{1 - (1+i)^{-n}}{i} - \frac{C}{n}$$

$$= \frac{A(1 - (1+i)^{-n}) - Ci}{ni}$$

c. Life of bldgs.



d. Normalizing, and factor propn.



$$\begin{aligned}\Sigma &= 1 + (1+i)^1 + (1+i)^2 + \dots + (1+i)^n \\ &= \cancel{(1+i)} \frac{1 - (1+i)^{n+1}}{1 - (1+i)} = \frac{(1+i)^{n+1} - 1}{i}\end{aligned}$$

$$\begin{aligned}\text{Share of labor} &= \cancel{1} \\ K &= K_i = (1+i)^n - 1\end{aligned}$$

Same as for single cycle.

So what does labor-intensity mean?
Short cycles.

e. Effect of i and wage rate on substrn.

