

Adm. 203, ~~11/11/11~~, ~~11/11/11~~, Current

These are good notes, but need more polish

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Adm. 203.

Mon. Feb. 13, 1978

Achieving synergy & avoidg. disses. of scale.

I. What is Sy. net or synergy

II. Causes

A. ~~Feetures~~ Legit. & socially advantageous

B. ~~Anti~~ Spurious

C. Explorative

D. Gray

III. Instl. biases

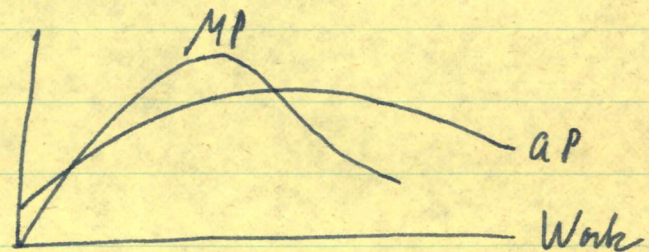
IV. Disses. of scale

I. What is increasing returns?
Review of ec. theory, terminology, and insight.

A. A. "Stage I" in factor mix, even tho one input is fixed, get Δ returns by Δ another.

$$2 + 2 = 5$$

$MP > AP$
Means AP is rising.



also means a 1% ΔW (work) yields $> 1\%$ Δ output.
Elast. of prodn. is MP/AP

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

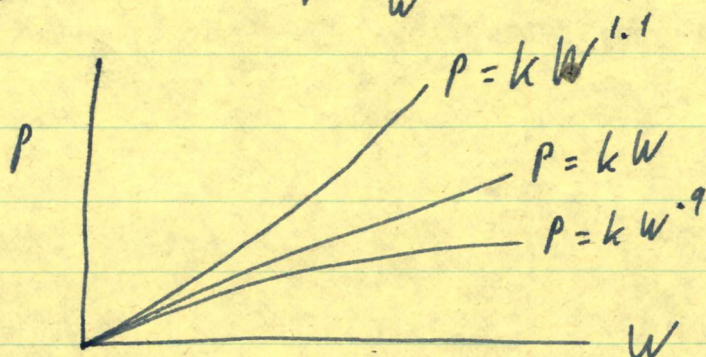
B. This also means that P increases by more than the first power of W .

i.e., $P = k W^{\alpha}$, and $\alpha > 1$

If $\alpha = 1$, $P = k W$,

then $\frac{P}{W} = k$, so P is a fixed multiple

of ~~the~~ W . If $\frac{\Delta W}{W} = 10\%$, then $\frac{\Delta P}{P} = 10\%$.



Generally, let

$$P = k W^{\alpha} R^{\rho}$$

($R = \text{Resources}$)

$$\frac{dP}{dW} = k R^{\rho} \alpha W^{\alpha-1}$$

$$\frac{\frac{dP}{dW}}{P} = \frac{k R^{\rho} \alpha W^{\alpha-1}}{k R^{\rho} W^{\alpha}} = \frac{\alpha}{W}$$

$$\frac{dP/dW}{P/W} = \alpha$$

So α is elast. of prodn.

Whenever input & output are related exponentially, this is handy to remember.

E.g. $A = \pi r^2$
~~Circ. = $2\pi r$~~
 ~~$A = \frac{r}{2} C$~~

E.g.

$$P = \alpha \pi r^2$$

$$C = \beta 2\pi r$$

$$\frac{P}{C} = \frac{\alpha}{2\beta} r = \frac{r}{2\beta} \frac{C}{2\pi r} = \frac{\alpha}{4\pi\beta^2} C$$

~~$P = 2\pi\alpha r^2$~~

$$P = \frac{\alpha}{4\pi\beta^2} C^2$$

So here, the $\frac{\Delta P}{P} / \frac{\Delta C}{C} = 2$

i.e., a 1% Δ cost gives a 2% Δ of capacity.

When you go to larger increases, there is a compounding effect, so a 100% Δ cost gives a 300% Δ Capax. -- i.e., double the radius, and quadruple the area,

C. C.

We are still just Δ one input, however so beware. The change in proportions, rather than scale, may be the driving force.

E.g., with men on land, the benefit may come from getting them nearer together.

If so, can do so by selling land. Land is negative returns.

Not likely to be true of firms; but often true of cities, suffering from sprawl, hopscotch, scatter, etc.

also true of any orgn. in throes of imperialism
- e.g. re water supply.

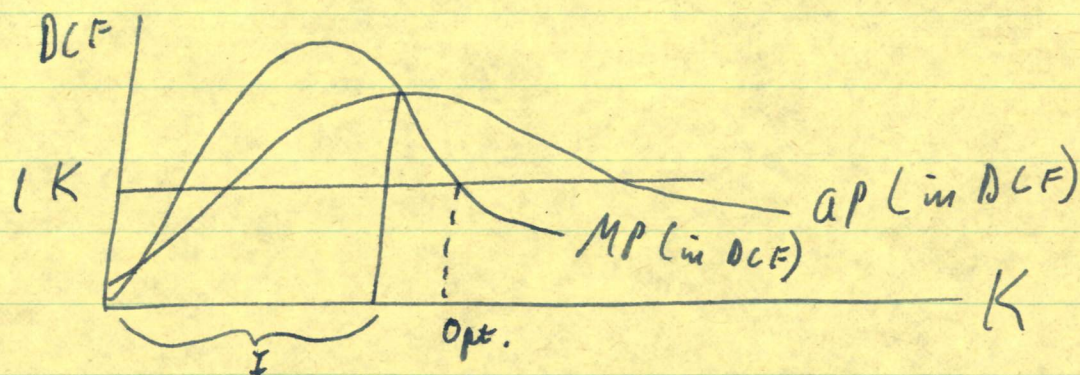
D. Pure synergy is where we Δ all inputs.

A handy unit for this is Capital, because we can use to measuring its return net of assoc. costs. We call this DCF.

Can do the same w. labor or land. (I often prefer land.) Figure ~~the~~ Net Products each case.

But this is a strain for non-theorists. So let's use Capl, and DCF. There are

common business concepts.



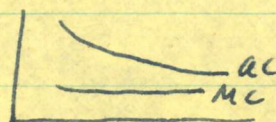
Say, you are planning ^{size} ~~the~~ of bldg.

(Note, flexibility re units. Your unit could be ~~storage~~ ~~the~~ floor space. Or, \$ revs.)

Note, opt. ^{size} ~~the~~ goes beyond Δq retr., this case. Comput. might drive you back to max. A.P.

E. Δq returns are same as dev'g cost.
Change units from input to output.

$$\frac{MC}{AL} < 1$$



Take the waterpipe case again.

$$P = \alpha \pi r^2$$

$$C = \beta 2\pi r$$

We had $P = \frac{\alpha}{4\pi\beta^2} C^2$

Solve for C

$$C = \left[\frac{4}{4\pi\beta^2} \right]^{\frac{1}{2}} P^{\frac{1}{2}}$$

Let $[] = \theta^2$

$$C = \theta P^{\frac{1}{2}}$$

Again, the exponent is the elasticity. But this time, of cost.

$$\frac{MC}{AC} = \frac{1}{2} = .5$$

Experience shows .6, hence the 6/10 rule.

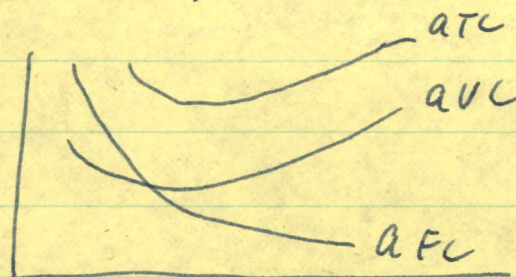
$$MC = \frac{6}{10} AC$$

And ~~the~~ the % $\Delta C = \frac{6}{10}$ the % Δ capacity.

- F. Same true of square, & cube.
Thus, are savings in large bldgs.
Fencing large areas,
Etc.

- G. N.B., difference of s.r. & l.r. deriv costs.

S.r. deriv costs are gains of proportion.
Spreading overhead, AFC



This cd. be spurious ec. of scale. Might mean
too much FC, rather than true scale.

L.R. deriv costs are pure scale.

H. LR design costs add a new dimension to replacement problem as you look ahead.
If demand is growing, you want to select sequence of plants over time, to max. DCF today.

A lovely complex problem -- too much for this course, but look forward to meeting it.
(offer RIMS)

II. Causes of Δ returns.

Share common costs

A. Technological -- have mentioned geometrical laws.

B. Team work

Sharing tasks, e.g. lifting

Specializing (but can do this thru mkt.)

Coordg & synch'g under direct authority

Teaching -- sharing info.

Directing -- ~~those~~ smart ones transmit skill to slow ones (or, trained to less trained)

Sociability

C. Ask class to name others

But note, can be done via mkt., usually.
So, advantage of scale is to reduce contracting costs,
and taxes, and use of streets.

- Service program

~~D. Pooling risks~~ - Advertising

- Mutual aid -- vs. govt.

D. Pooling risks

B. Grey area ~~acc.~~ of scale.

Δ credit ratings

~~for~~

Bulk ~~trans~~ buying, selling.

Share common costs (e.g. of iniqu. supply.
(why not thru inter. ~~1~~ or community?)

Specialize (.. ..)

Spreads info. easier

Avoid bad inter by doing or getting your own.
Buy or make options. Δ inter power.

Avoid:

Overpriced services (banking)

Unreliable inter (credit)

Instl. biases (defer)

Internalize spillovers, spatial & informational

P.U.D.

Exploration

Fake
C. Spurious us. of scale.

1. Spreading o-head over space. Adds more o-head.
Acres, & A.C.

2. S. r. decr. costs, more use of K in place

Note danger in city plan, point system

3. Spread o-head over time.

Ecs. of longevity call for smaller scale.

Require big reserves, ignore cost, or slough to others.

Or. if reserves are given. produce less per year.

4. Holding reserves cheaper. for future expansion or use.

D. Exploitive ex. of scale.

1. Muppy

2. Avoid taxes.

Avoid double sales tax (ind. sales are taxed.)

Big farming.

.. oil

K-intensive firms gain bes. prop'ty. inc. taxed less.

3. Leverage over public purse

Big Trucks, need roads

Big Tankers need deep harbors. cleanups, etc.

Seasonal employees, & cyclical, exploit welfare system

4. Regulatory favoritism

Old oil vs. new oil helps new oil, high R:O,

big firms

III Instl. biases

Taxn.

Regu.

Gov. contract

Subsidized research: military, space, agric.

Directing p.w. your way

Int. rates favouring primary products

Dereliction of govt. re planning & supplying infrastructure,
adequately & creatively.

Disposal & adm. of public lands

Expand

~~#2~~ -

-15-

IV. Directs. of scale.

To be orgd. from top.

1. ~~Less time on~~ Overload on top persons.

E.g. Congress & President.

Loss touch, loss control, loss cognition.

Cognitive limits of persons

allocate limited attn. span, ~~to~~ o.c. of studying,
each decision gets higher & higher.

f. Getting more use out of resources.

~~Maximizing~~ credit ratings

~~Specializing~~

~~Pooling~~. Seasonal & cyclical risks.

Double-using

g. Why coord. inside firm instead of thru mkt? There shd. always be a reason - burden of proof.

Res. there will be extra costs

Some frequent reasons.

~~Avoid taxes~~

~~Avoid un dependable supply or demand~~

~~Gain mkt. power~~

~~Avoid overpriced services, e.g. banking~~

h. Discs of scale (poverty of thys. books on subject.)

— ① Exhaust effs. of scale

— ② A xptn. cost (vol. effect v. distance effect) ^{x-hauling at diff. voltages.}

③ Wt. & vol. Δ by cube of dimension, if solid

④ Overcome gravity, if vertical -- hi-rise bldg.

— ⑤ Crowd land, if not expandable.

E.g. widening roads, city v. country
longer trucks, less maneuverable
longer trains, longer to make up.

h. Disen. of scale, cont.

- {
 - ⑥ Slow bldg. pd., gestation
Land acq., long pd.
Pipeline v.o.w.
 - ⑦ Starting, stopping, breakdowns, downtime, ..
 - ⑧ Long trains, less frequent service.
- ⑨ Fixed capacity v. variable demand.
- ⑩ Surveillance lost -- e.g. stores w. big inventories, few clerks. Owner far away. Stealing, property control a problem. Cattle rustling.
- ⑪ Communication costs & losses.
 - Directives going out from ~~center~~ hub
 - Info coming in to ..
 - Coord. across spokes, round trip thru center.
 - (Maybe hub is better org. than pyramid?)
 - Policies become rigid & simple. for lowest common denom. // Overload cognitive limits of top mgmt (Simon.)
- ⑫ Cross-hauling, at different "voltages" or pressure levels. Need for breaking points, "load-breaking".

1 clear, synergy etc.

Treating info. as priv. property encourages big corps.
Otherwise, people get info. in the mkt., buying & selling.
House mkt. is good e.g. Patent mkt. may force verticals.

— (12) But disec. of scale there is info. leakage.
Hiring away key men. Ind. espionage
The more commonplace the thinking, the
easier swiped.

Corp. seminars seek to exploit synergy -- the effort
suggests they are forcing something unnatural.
TRW, e.g., separate parts in Cleveland & L.A.,
seminar in Vt. (IBM systems corp.)

Spatial spillovers, PUD. Vs. reciprocal spillovers.

Both internalizing info. & space spillovers is
appropriating something normally given away. This
may allow better plug; otherwise, dubious.

Fast write-off of R&D & obs. inv. is "conservative"
acctg. i.e. it understates profits or "earnings."
(For theory students, use "earnings" to replace
profit, help explain why don't use it.)

→ Thus, makes harder to raise more equity K.

⑬ Incentives, conflict of motives.

a) Mgmt. may have greater int. in growth of sales than owners, to A its own job opps. Galbraith says so. But Simon's satisfying mgr. is revenue, values quiet life.

The common thread is: mgr's personal goals conflict w. owners, so K is used wrong.

Mgmt. may dislike lifting work force, expand instead.

b) Learning as e.g. of conflict. Share lessee wants more land. Salesman on commiss. wants more territory, & better. So, commission incentive doesn't elim. conflict, divergence of interest. Piecework, same idea -- everyone wants best tools & equipment. Quality neglected, impr. required.

~~⑪ Policies required: simple, ~~un~~understandable by lowest common denom., ~~un~~iform, rigid~~

~~E.c. of scale: smartest control & ∴ enhance work of dumbest (but biggest corps. hire smartest.)~~

"Induce", for actuate or incite.

"Move", "motivate"

A mngt. of fixed capacity, w. captive K , may seek to max. agg. earnings by adding to capacity -- & other slow T outlets.

Mngt. is like the sharecropper who takes too much land. max's output/mngt. by adding K , (captive K)

to $MP = 0$

Mngt. cd. do same thing by adding more workers. But they don't, facts show.

Mngt. cd. & opps for self by Δ vol. But add wealth, instead. Cost of wealth doesn't appear in budget. Harder to audit, monitor.

Hayek & Galbraith agree! p. 234, 218

Mngt. bias to max. sales (G.) or agg. profit (H.) instead of earnings/dollar of K . (Simon sees other bias)

E.c. of scale. Bigger prodn. run in given time.

Disec. Stability induces too much fixed K , reduces to obsolescence.

(11) Disec.: cognitive limits (Simon) of individs. Sweeping, simple policies (e.g. "Reduce

Inventory!")

Top loses touch w. line.

- 14) Disc. local obs., fate of many large bldgs -- banks & govt.
& A&P, suburbanized too slowly.

Simpler ply -- add op. costs to K costs of new asset.
Value as a whole, over life as a whole, -- plus replant.

Layers of plans & horizons

Op. plans

Short-run, quant-ly to yearly.

Long range, 3 yrs & more

- Disc. 15) Note, K of long life requires a long plan to fit it. Not
just the bldg or eq. &c., but the use & org.

Ec. of scale. Franchised dealers. Your weight attracts
satellites. They run their show, yet are integral part of
you.

- 16) Disc. of scale. Niches. Promountain beds, do not fit
indivs. One or the other must give.

- 17) Remote mgr. evaluating performance by ave. rather than irreg.
earnings or return, bcs. easier to get data.

- 18) Remote mgr. using simple, single-valued basis for judgment.
Can't give due acct. of other values. E.g., absentee owners of orange
groves see only cash, not pleasure of community.

Ad. 203, Mon. Mar. 13, '78

Last mtg.

Sequence.

1. Plng. to meet payroll

~~Individ.~~ Individ., if faith goes insolvent

~~Aggregate~~ Aggregate -- prices rise, instead, (if money available)
(unless $-\Delta M$, as in '31 etc.)

2. after bank collapse, learned to prevent.

But then, tempted to do more, keep inflating.

3. Money supply.

A		L	
Gold		Notes	
Bonds		Deposits	



A		L	
Reserves		Deposits	
Loans,			
Invts.			

4. Fed. deficits, money spending.

a. Monetary purpose

b. Keynesian purpose

i) Δ spending, activate hoards

ii) Reduce taxes. The Heller alliance.

iii) Keynesian hawks

Ec. base, regional mlt., ~~subside~~

auxiliary philosophy. Klein

5. ~~Mean~~ Keynes' ^{multiple} ~~double~~ message.

a. For labor, underconsumptionism

b. For K, need inv. out let, higher yields

c. For debtors, need inflation

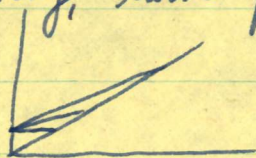
d. For govt., need more spending.

e. For anti-Wasps, mock Puritan ethic

6. Greenspan grasps b, favours ITC, expensing, etc.

7. Problem is, these distort choices betw. labor & K.
Esply. coupled w. payroll tax.

8. But, you say, labor produces K. But now it lasts longer.



Slower replmt; less labor.

9. K turns over:
- Delivers the goods
 - Recover funds
 - Replant. inv.

So can Δ inv. demand w/o infln. by faster turnover; by reduce payroll tax.

Greenspan's Rpt. Chap. 1

- Reduce taxes
 - Permanently
 - Δ bus. inv. mainly
 - Balance (fluff & fatten)
- Measured, regular Δ of M
 - Decentral energy price.
 - Make 'productivity' grow
(No soft technology or approp. techn. inv.)
 - Go easy on Ag empl.
- Unempl. really isn't so bad. 5% is full empl.
No, $5\frac{1}{2}\%$. Less than this causes infln. Beware wage infln.

Full empl. is the rate that can be attained w/o "accelerating" rate of infln. (i.e., 7% / yr. is OK.)

(Thus, Greenspan too was locked into Phillips curve. Limited by this paradigm, sees Δ aggr. demand as only way to Δ empl.)

Chap. 4 Policies to Δ Supply

Good Micro ideas. But locked into fallacies of Chap. 1, re labor & K.

Induced unempl:

Unempl. compensation. Not experience rated, so cyclical indies subsidized by steady ones.

Lower min. wage

Pub. Service Empl.

ET Credit .. they patronize but oppose

Govt. regs.

1. Floor prices.

Trucking.

Entry restricted

Airlines.

(Both e.g. are from xptn ... where we shd. cut back for other reasons.)

2. Ceiling prices.

Natural gas

3. Direct effect on costs

Power, Env. regs.

OSHCE

Ag policy

Got rid of price supports by dumping abroad. (Now, have new problems)

Cap Factor:

They think policy biased vs. inv.!

Paranoia.

6
ITC

acc. depr.

Expensing

"Integrate" corp. tax.

Tax cons. to stimulate saving
Inc. tax biased vs. saving.

1978, Ec. Rpt. of President.

Highlights

A political document, very woolly in many places.

Excessively defensive. Spend 3 pp. telling you the reasons before they tell you the proposal.

Chap. 1 Progress during 1977

a. Major sources of demand. This they make the motor, it drives everything.

~~Excessive inflation~~. This thinking leads to infln.

Bus. inv. is down. Exports are weak.

We rely too much on housing & govt.

b. Stimulus package (some was adopted)

Reduce taxes, run deficit.

~~ITC~~ ITC made permanent.

New ETC

CETA

P.W. --- local

Rw. sharing

c. Velocity continues to grow.

Chap. 4

Infln. & Unempl.

No solution.

Episodic explanations. No focus on chronic problem.

Blame foreigners for infln -- OPEC. (Later, blame foreigners for lack of demand.)

Lagging productivity.

Blame lag of K factor.

More likely, misalloc. --- too much in housing.

Major change in new int'l. prices. '73.

Chap. 5

Major policy issues

a. Energy. "NEP"

1. COET. Reduce other taxes

2. Let gas rise -- pussyfootwise.

3. Coal conversion -- 10% ~~to~~ ITC

4. Consum.

- Graduated gas guzzler tax

- Mileage standard

5. Utility rate reform

6. Nuclear

7. Petrol. reform.

h. Agric. Woolly.

c. Regn. Fuzzy

d. Tax Reform
Mostly blacked
But expanding ITC

e. Welfare
Elaborate