Ec. 171 F89 Current

Holding

1. Act like a pvt. landowner: max. rent.

2. Max PV: is same.

$$a \frac{1 - I^{-n}}{i} \times \frac{i}{1 - I^{-n}} = a$$

2. Make a rent base

3. Collect w/o destroying
   - avoid hi royalty

4. Avoid dissipation
   a. Too soon
   b. Mnpy

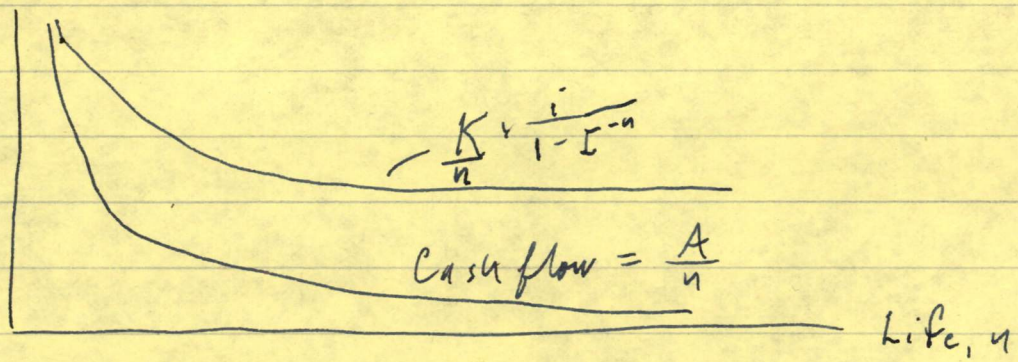
5. Don't let lessees keep it on condition they plow it back.

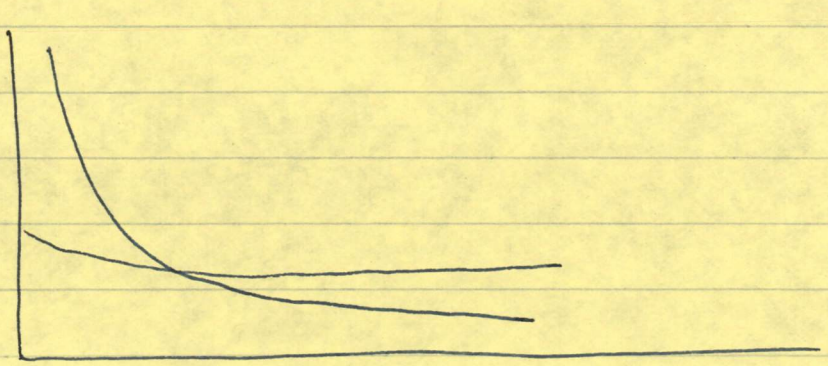
6. Don't meddle.
   E.g. max. price control.

Overdecentralize.

Good land: too little, too late. Hi-grading.
Mgnl. " too much, too soon.
Excess inventories
Inflexibility.

a. "Regnl Devnt".
b. New vs. old.
Intensive vs. extensive mgn.
"Slow-grading"
c. Giving vast reserves to allow for cum-n.





When to explore.

Intro

(uv. value. vs. liqu. value. (spot value)
Rent dissn. & rent-seeking.
"Dynamic programming".

Error of forced premature dev. by premature lease sales.

Discovery shd. not much precede dev. It only does so for acquisitive reasons. Rent-seeking.

1. Discovery not analogous to other prods.

a. Undiscovered minerals appreciate.
"Discovery" is a long process, not just an event.
Mineral leasing Act of ? allows prospecting on Fed. lands. Are also Indian, State, ocean bed, Arctic, Antarctic, 3d world, that are partly open. Anywhere that sellers are ignorant or corruptible. Prior approp.

Oil pools, ununitized.

Enormous outlays of oil cos. on preleasing explor., prepareing to bid. Public subsidies, eg. landsat.

How leasing works.
Bonus, delay rental. royalty.

Discounted usual. prod.

Fri 24 Oct. 89

1. IRR

a) $$i = a \frac{1 - I^{-n}}{P - D I^{-n}}$$

b) Divide P in 2 parts: ~~P and G~~ K and G

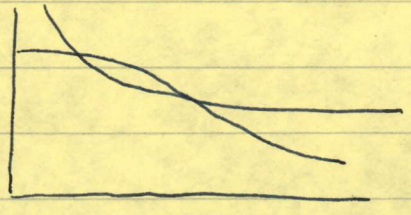
$$ROR = i = a \frac{1 - I^{-n}}{\cancel{(P + G_0) - G_n I^{-n}} \quad K + G_0 - G_n I^{-n}}$$

i) Presence of G lowers ROR

ii) Rise of G compensates

2. Leverage of i.r. on PVM

a)

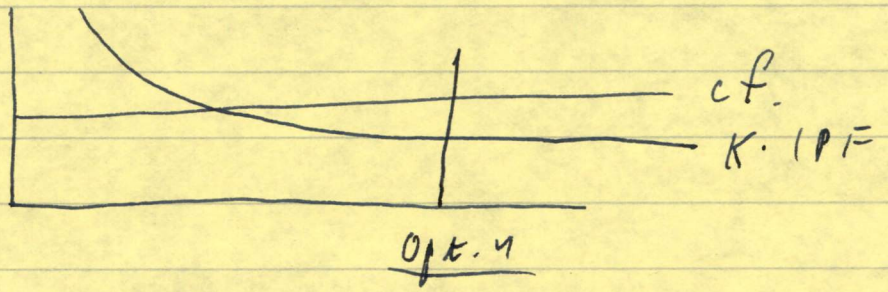


Δi has small effect on opt. n
large " " PVM.

6.) IPF approach.

c.f. tends to be const. bcs. capacity is fixed

Assume you already det. opt. u.



Use of $\frac{1}{u}$ instead of IPF, device to grab too much govt. land. p. 8, OGPLML

c) Effect of i on payback time. pp. 6, 7

i) Int. is a prior charge. R gets what's left.

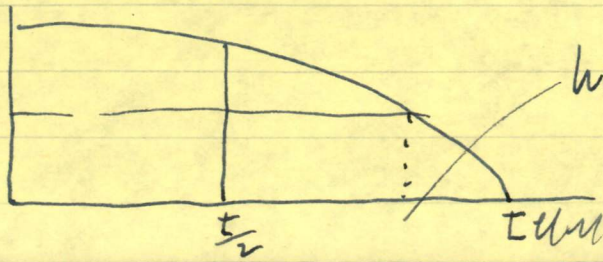
ii) If int. taken all payback is never.

iii) Higher int. means slower payback

iv) ~~iii~~) Naive payback ignores int., or $i = 0$. Invalid.

v) ~~iv~~) Actual payback is an ave. Total pd. is too long.

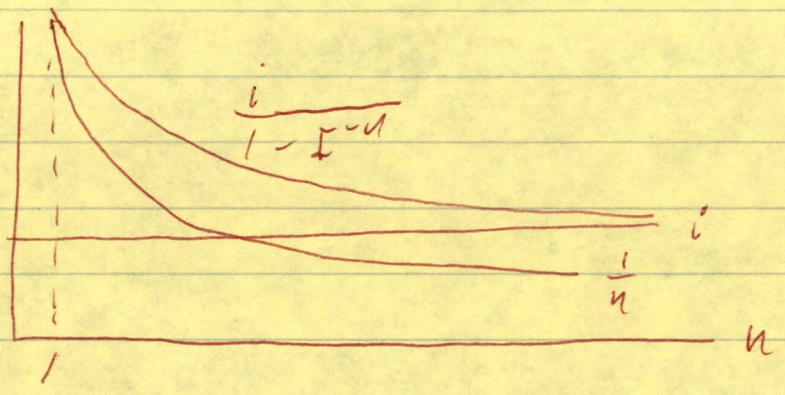
vi) Half pd. is too short. Comes back slower at first



pp. 6, 7

Ec. 177 Mon. 23 Oct. 89

p. 4



$n=1 \qquad IPF = \dfrac{i}{1-\frac{1}{1+i}} = \dfrac{i}{\frac{i}{1+i}} = 1+i$

$n=\infty \qquad IPF = i$

---

p. 6 $\qquad \dfrac{Pi}{a} = ? \qquad P = a\,\dfrac{1-v^n}{i}$

$\therefore \dfrac{Pi}{a} = 1-v^n$

1. '75 repeal of depln. allowance.
2. '81, Oxy pd. UK taxes, sold simplus tax credits,
3. 12.4% ave. tax rate, 26 largest energy firms.
   (46% basic rate)
4. Fed. gas tax, 4¢/gal. Earmarked.
5. WPT
   a price for decontrol. – just now extinct
6. U.S. taxes on oil are below world levels.
7. Growing size, now dominate top 10.
   20% of non-resid. construction, -- 83,000 wells '81
   188,000 acres leased,
   40% of land used for retail.
   1/3 wealth / employee

A. Twice told tales
   Expensing intangibles.
   Dry holes, tangible and intangible.
Dry holes on producing leases.
   I-TC
   % for pricing

B. Thru a glass backwards.
   % depln. basis.
   Lessors
   Small producers. $22m/yr.

Divide properties. Ltd. ptnsps.
Stripper wells. Averaging is ok.
Old oil, pp. 12-13

Cap. gains. (Bush = oil)
Even the oil is an inventory.

Mon. 20? Nov.

Prop. Taxes.

Exempt:

Discovery values not taxable, on public land. (Real = Regal)

Dry holes – bcs. they are valued one at a time, not as integral plan.

Access rds; r.o.w.

Geol. maps.

Enclave effect. Remote from pop., no prop. tax. N. Maine: Kennedy Cty. Ts; early Cal: resistance to forming cities. Hibbing the exception.

Fear of accelerating use?

a. Competing invts. pay.

b. Prodn. controlled by other means.

c. No one ever attacked depln. allowance on these grounds. Shows the bias.

Ak. reserves tax.

Claimstaking

"Nomination" system. At convenience of lessees. Bias to early staking.

Internalizing Earnings

Invest rents in the agency empire. Anti-diversion provisions.

BCPC lets producers have premium price for old gas if they reinvest in old gas.

Cheap Money Subsidy

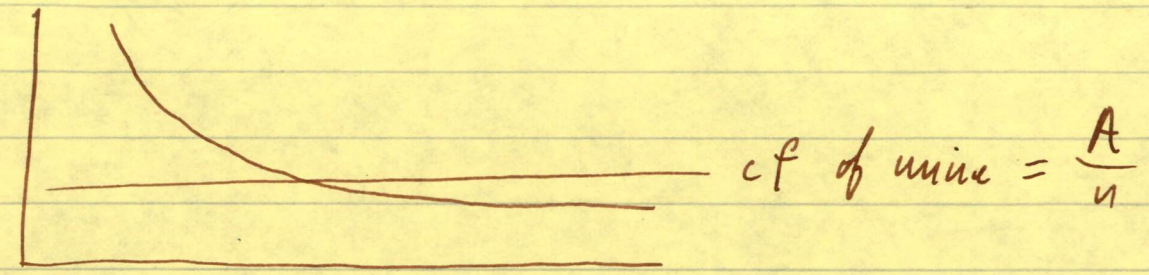
Lease on easy terms, to help lessee raise money.

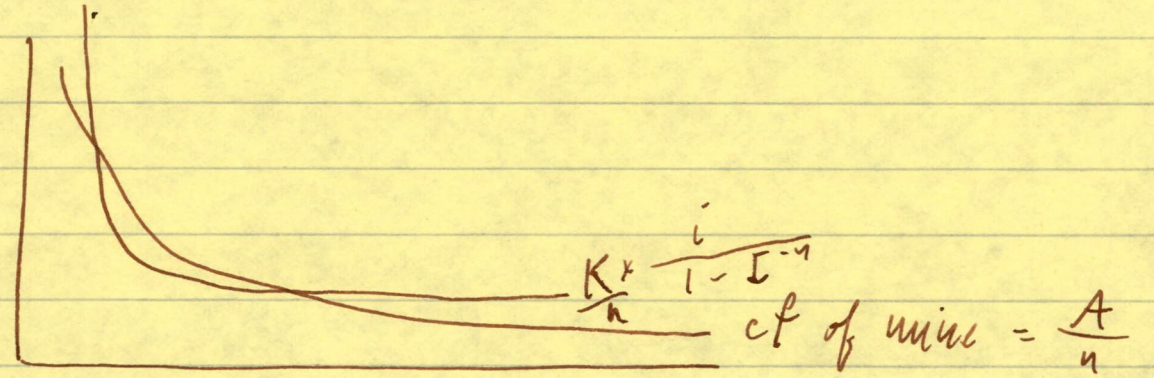
Reallocates economy's limited pool of K into mining.

Slows use of known deposits; advances finders, new ones. Raises R:P ratios, or ~~R~~ Life Index.

Valorization

"orderly marketing". New entry.





$$PVM = \frac{A}{n}\,\frac{1-I^{-n}}{i} - \frac{K}{n}$$

$$\text{annuity value of mine} = PVM\,\frac{i}{1-I^{-n}} = \frac{A}{n} - \frac{K}{n}\,\frac{i}{1-I^{-n}}$$

Don't max. annuity value, but PV.
However, a fallacy to refute is maxg. annuity value (Principles alone are trite: they become interesting when used to refute fallacies.)

IPF is a decrg fn. of $\underline{n}$. So

Reg Dev.

Mines are isolated, not semind. No great cities. Butte; Hibbing; Freeport; Brigham; a mun. city above Prince Rupert — Kitimat; Eagle Mt, CA; Borax; Lead, Deadwood; Danby Vt.

Ts. an exception?

Mines tie up energy. ~~A mun. city~~ Kitimat.
" degrade env. Kaiser. Made Fontana a slum.
" employ few people. Empl. is downstream.

Discrim. vs. old miner.

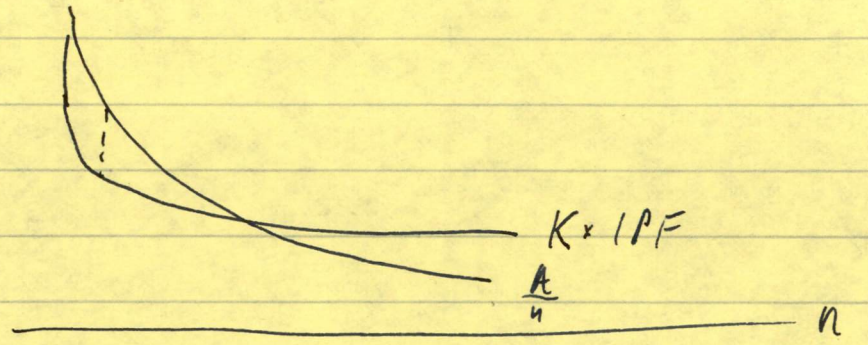
Hurts int. mgn.
Royalties: hi-grade load, + spread out.
Speak slightingly of all but "elephants".

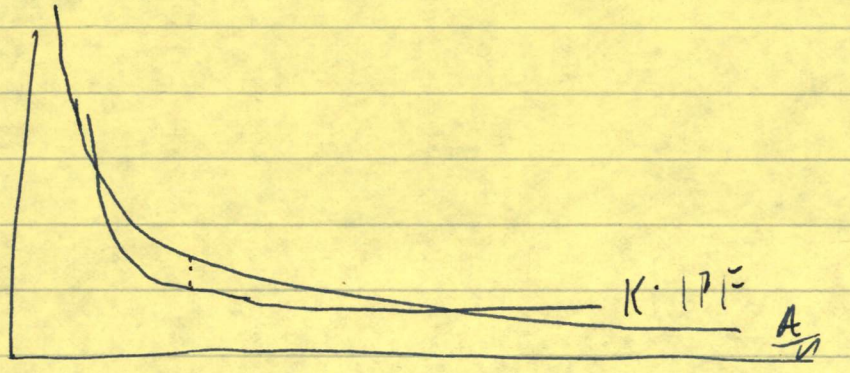
Overall allowance for cumin.

Leave units too large
Allow retention w. token activity

Tax bias

- Expensing
- Depn. allowance
- Cap. gains
- Leasehold abandonment


K × IPF
A/4
n


K · IPI
A/K

Extractive — non renewable

1. Gray area - quite renewable, but not always
   - Forest
   - Fish + game
   - Soil
   - Water

Ec. 177

Rdgs

(2) 1. ERT, M.S.
(1) 2. Soil Cons.
3. Cromwell paper
4. Ak. Rpt. OGLPA
5. Latin Ak. Testimony.
6. Scott Vol.
7. OGWTR (Al Church)
8. Sev. Tax Testimony
9. Paschall article
10. McLure book
11. Intergovt. sharing.
12. Oil control stuff - BMs, Engler, etc.
13 Wunderlich on ND oil
14 Kuhn AER 6-65
15 Hall & Hall
16 Barnett & Morse - Limits to Growth
17. Hays
18. New Res. Ecs article.

1. What i.r. for discounting?
2. Employment effects
   K in this form has min. effect
1. Manipulated i.r.
3. Mnpy. to conserve.
4. Does prop. tax accel. output?
5. Sev. tax to conserve.
6. Countervail; taxes.
7. Hi R:O shows excess capac., long lead times,
8. How much is rent.
   Rent is cf - ~~replint~~ hist. costs × I^n

Overmotivating Explm. pp. 391-99

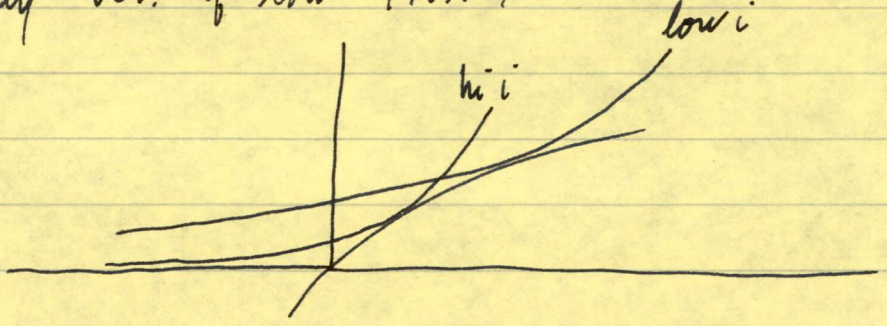
1. Open access to undiscovered min.
2. Preemption or preclusion
3. Vert. int. & duplm.
4. Artificially hi prices.
5. The need to replace the flexib. destroyed by prorationing.
6. Leverage of prt. over public invt.
7. Publicity value of discovery
8. Mgmt. self-aggrandizement
9. Tax favors

---

1. Open access, followed by closed.
   a. NE 20 ac. mining claims. Also BLM lands.
      Canada Free Mining per se, Geneva Conv. of 1958 not yet ratified,
   Meantime use is establishing tenure :: approp.
   b. Pre-prospecting "tickets" close access until opt. time. But mkt. has biases.
      1) ~~Ef~~. Unequal access to info.
         advance info. a fugacious resource.
   (Coupled w. min. performance provisos in leases)
         One gets advance info. to acquire when cheap. Acquiring is zero-sum. If the owner were just exploring his own land, wd. wait until ripe. But to acquire unripe land w. advance knowledge, one advances invt. This advances first use, bcs. of lease terms. But use is then slow.

Buys in anonymously thru straws, to hold down asking prices.

2) Unequal fncl. strength. Buyers buy early bcs. of low i.i.r.



Lean vs Fat

Men lease terms force early token start.

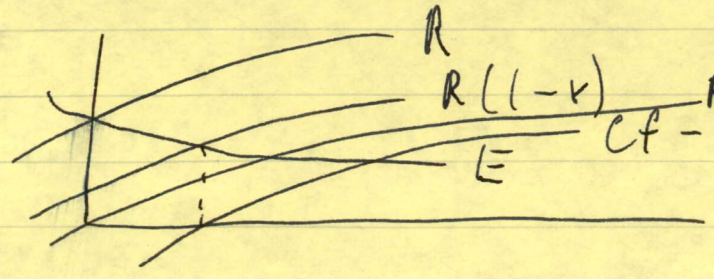
3) Lessee wants to start ~~early~~ but at slow rate, saving more for later.

Royalty adds to motive by leverage. Lowers c.f. by higher %.

$$C.f. = R - E \equiv \text{Revs} - \text{Expenses}.$$

$$\text{Cf after Royalty } (r) = R(1-r) - E$$

$$\frac{Cf - roy.}{Cf} = \frac{R(1-r) - E}{R - E} < 1 - r$$



Proof of pattern. Each yr's Δ "proved reserves" is mostly revaluation of old discoveries (Lovejoy + Homan)

Area under lease >> area producing oil.

1960, 19% of U.S. vs. 1%

1980, Rothschild figures:

20 majors have 188 m.a. under lease, of which 15% is devd. ‡

Lease holds up 35%, 1946-80.

Area of U.S.

Defn	Acres	Sq. Mi	Source
Incl. deps. & possns.	2.32 B	3.62 m	Webster
Ak.	.377 ~~BB~~ B	.59 m	Web.
Land area 48 states	1.901 ~~BB~~ B	2.97	Rand McN.
Water area 48 states		.11	" "
Water area, Outside 3 mi limit		?	

‡ 188 m.a. is = 9.9% of land area of 48 states; or 1.9 x area of Calif. But not all these acres are in land area of 48 states.

Summary: expln. is driven more by acqn. than discovery w. a view to early production.

2. Preclusion

a. Inv. funds w/o adding to current output.

b. Keep out interlopers.

c. Publicity value — collateral, & raise stock price.

d. Assets earn a return by growing w/o mgmt. input.

Case of Ts. Pac. Land Trust.

P/E = 57. Info a.: 8 employees. Employees are in NY & Dallas; land in W. Ts. 3.5 m shares, trade at $36/share, = $126 m, or $16 m/employee. (BW 16 Oct 89 p. 122)

e. Defer liqn.: defer tax liability.

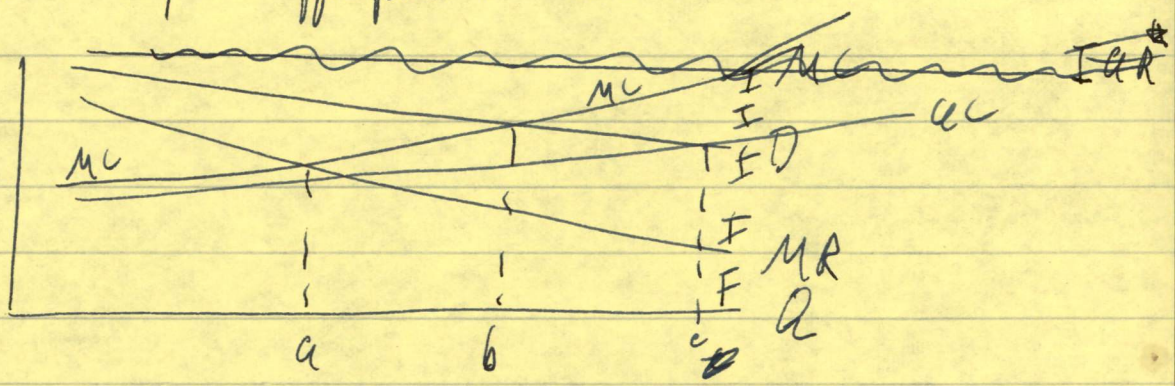
f. Mgmt. will pay premium — & hold out for premium price — to keep out compn.

Compn. is local. E.g. S.C. mkt. Until ARCO came there were Mobil, Chevron & Exxon (+ Shell?), big 3 w. most of mkt.

THUMS: Texaco, Humble (Exxon) Union, Mobil, Shell

(ARCO still has inferior sites)

Where there is compn., quest to establish mnpy. works same as prior appropn. to estab. tenure.



a. Eq. under mnpy.
b. Eq. " compn.
c. Eq. " open access (e.g. oil pool)

Law of cftv. dis advantage: go for ress. handiest to a rival.

3. Universal Vert. Intn.

Some firms must explore, even tho others hold idle reserves. No pooling, bcs. no free mkt. in reserves or in crude.

Same as urban land; and wtr. rts.

Retrn to discovery outlays is uncertain, w/in wide range. The smaller the firm the greater the range of uncertainty: pooling vs. law of small nos., gambler's ruin, etc.

∴ outlays are raised to be sure min.

~~* Indy Ave. Rev.~~

probable discoveries are adequate.

Gas ~~pip~~ utilities must have supplies under contract.

Ea. nation, too, integrates vertically. Policy of Provision — basis of mercantilism, particularism.

Secrecy — ~~it~~ ltd. sharing of info.

Some info. is pooled:

Geosat

Shot lines, for seismic (producing artificial shocks) studies.

Expl. drilling?

Geology jnls., schools. The Goose Step

In a few states, well logs

Key info. is "proprietary". (~~The Goo~~

"Tight holes". Discovery wells.

3-D mapping; computerized. Crown Jewels!

Info at borders

~~4.~~) Limits on export, to force home processing; or hold down price

Common in Canada. A way of semi-socializing. Unconst. in U.S. But Ak. fosters petro-chem.

U.S. limits imports of processed ores, to force processing in U.S. Case of bauxite.

4) Cartel price-umbrella syndrome

Reinforced by state laws allowing more produ. from high-cost wells; or "discovery" wells.

Expln. is irreversible.

5) Ltd. flexibility from wells under allowable control.

6) Leverage of pvt. over public invt.

U. S. armed forces. Another umbrella, the mily. one.

Close working relationship shown by NSC, State & Defense checking Justice & FTC, '53, vs. 5 majors

World Bank forces infrastructure - highways, pipelines.

Utilities x-subsidize subsec. extensions of gas, oil lines, to maintain rate base.

But utilities also ~~get into~~ acquire reserves too. Often by long term contract.

7) Leverage of publicity &/or appraisal over credit mkts.

b. Landowners advance date, to get land appraised for credit. - to reallocate pool of loanable funds.

a. Prefer glamorous new strikes to prorate dec. of old ones.

8) Corps. plowback, need invt. outlets.

Mgmt. self-aggrandizement, in corps. dominated by engrs.

Rent-yielding core yields earnings. "Cash Cow". These are invested in fringe & promotional outlays. "Internalize profits" — in the org., but not in the rent-yielding core.

To protect profits, conceal them:

from unions
customers & suppliers
shareholders
govts

Reinforces utility reg. bias referred to in (6) (should have its own heading.)

(9.) Tax bias reinforces. Expensing, otherwise justifiable, is biased for size.

Cap. gains. Favored way to store up wealth, untaxed.

Depln. allowance. Based on wellhead value. 27½% of wellhead is higher % of underground [in situ value-in-ground, undifted, unplaced]

might be > 100%. But see over.

N.D. state "policy of max. titillation" visions, small hopes of big strike, gambling fever, floating value, exciting hopes over max. area. By restricting output w/ taxing. ERT p. 227. Landowners not yet signed up.

Abandonment of leaseholds.

Limit on % depln. is 50% of "net". This means net of operating ~~cost~~ expenses, in practise. See note p. 398.