

Ec. 162

Nature of Course

Demanding.

Math. + Applications.

Weekly quiz. Fri.

No make-ups

One forgiven - then F

No text.

Notes in RBR, from wk. 2

Listen in class, esp. this wk.

Optimizing

Subtr. - profit

Mult - revs

Divide - discount

Add - PV flow + ~~sp~~ sppv

162 Wed. 4 Apr. 90

1. Calc. req. Must work. No borrowing.
2. Review Mon - optimizing.
3. Compounding.
 $(1+i) \cdot (1+i) = (1+i)(1+i)$
4. Power of compounding
Doubling time
Rule of 72
Cf. simple int: $1 + ni$

Notation

$$\frac{(1.072)^{60}}{1 + 60 \times .072} = \frac{64}{1 + 6 \times .72} = \frac{64}{1 + 4.32}$$
$$= \frac{64}{5.32}$$

5. 1% rate of exch. betw. pts. in time.
"Time value of money"
6. Curve of exp. growth.

Wed., 11 Apr. 90, Ec. 162

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~~VIII~~ Complex point values.

$$\cancel{F + G} = \cancel{(P + G)} I^n$$

$$(P + G) I^n = F + G$$

$$G(I^n - 1) = F - P I^n$$

$$G = \frac{F - P I^n}{I^n - 1}$$

Fannstmann

a. Num. is PV of G, -- after mult. top & bot by I^{-n}

~~is~~

$$\frac{1}{1 - I^{-n}}$$

is "LV mult."

Values at $i = .072$

$n =$	10	20	30
$I^{-n} =$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$
Mult =	2	1.33	$1\frac{1}{5}$

b. $n = 1$

$$G = \frac{F - P(1+i)}{1+i-1} = \frac{a}{i}$$

$$c. PI^n = \frac{F + G(1 - I^{-n})}{I^n}$$

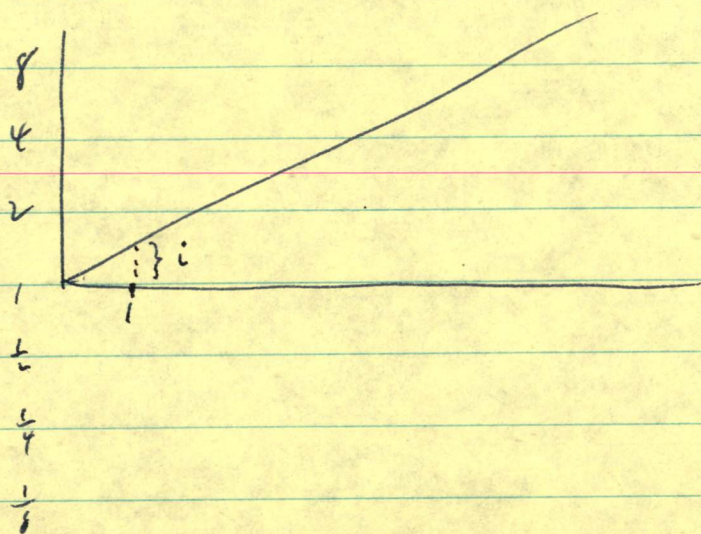
$$P = F I^{-n} + G(I^{-n} - 1) = F I^{-n} - G(1 - I^{-n})$$

Mon. 7 Apr.

Ec. 162

1

Log Scale,



1. Given vert. dist. = given % change.
2. Const % growth = str. line.
3. At lower i , curve has lower slope, Δ
 $\Delta \propto i$. ~~test~~

a) $n = 1$, rise = i . Δ is i .

b) $(1+i)^n = 2$ $1.072^{10} = 2$

Let time unit = 6 mos., $1.036^{20} = 2$

But $1.072^{10} = 4$

4. $\frac{1}{2} I^n$ is 11 and const. distance below

5. ^{sensitive, anal.} Curve is locus of pts. whose PV = 1, at .072
But at .036 they have diff. PV. Future ones
become worth more.

At higher i , r, future worth less.

"Arrow Model"

~~Set~~

6. Disc. curve is mirror image.

Ec. 162 Mon. 16 Apr 90

1. Review Quiz.

2. Distr. Syllabi.
Note Rdr.

Typo.
3. Solve Faustmann for P

$$P = F I^{-n} - G(1 - I^{-n})$$

Explain. Rt. side is share of G from 1st gen.

Locnl. obsolescence: effect of higher G .

Prior claim of G .

Leverage of i . "Fixity Obsolescence".

$$P = (F + G) I^{-n} - G$$

4. Seniority of claims.

A. G comes first -

- pay or get off.

If yr. own land, same logic. Demolish
whatever can't pay the rent.

- land has o.c. K. loses most of it.

B. Int. comes next.

Contracts specify. City Charter
Has to be. If debt retmt. came first, unpaid
int. wd. be added back into debt.

C. Debt retirement comes last.

5. Prop. flows.

A. Cash flow - know how to define.
Service flow
3d kind of flow: apprecy.

B. Rising flows.

$$\frac{1}{1+i} + \frac{1+g}{(1+i)^2} + \dots$$

$$= \frac{1}{1+i} \cdot \frac{1}{1 - \frac{1+g}{1+i}} = \frac{1}{1+i-1-g} = \frac{1}{i-g}$$

Let ~~one~~ one be a. i.e. start w. a

$$(1) \quad G = \frac{a}{i-g}$$

$$(2) \quad G = \frac{a + gG}{i} = \frac{a + gG}{i}$$

$$(3) G_i = a + \Delta G$$

~~$$a = G_i - \Delta G$$~~

It takes both a and ΔG to pay int. on G . No something for Nothing.
Neg. Cash Flow, if

borrow to buy G

$$(4) NCF = G_i - a = \Delta G$$

6. Finite Flows.

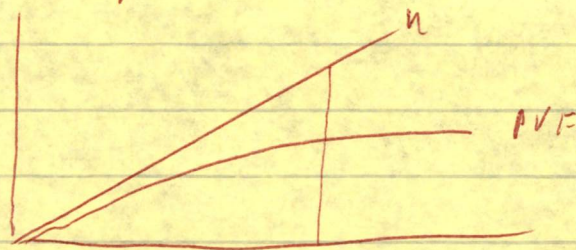
Mon. 23 Apr. 90

1. Doubling n in PVF

n	PVF	Δ	% Δ	$\frac{PVF}{n}$
1	.93			.93
2	1.78	.85	91	.89
4	3.31	1.53	86	
8	5.75	2.44	74	
16	8.85	3.10	54	
32	11.43	2.58	29	
64	12.41	.98	9	.19

2. Cf. PVF to n

A. Graphically



B. Numerically $\frac{PVF}{n}$

3. Cf. PVF to $\frac{1}{i}$, its asymptote.

Ec. 162 Wed, 25 Apr 90

1. Syllabus copies
Key

2. Exams to be returned 9:50

a. One has no name

b. Regarding #1 in program.

c. Afana - Fujiwara

Gutierrez - ~~Leung~~ Lin

Macian ~~McHugh~~ - Russell

Sandow - Yoon

3. Learn your names.

4. Absentees from 2nd Wed.

Hayashi

Mason

Cheng

Moore

Kelly

Wing

Rudack

Davis

Castellanos

Alfred

Tanya Vinipri (?)

5. $1PF$

a. How level installments are figured, "Rept Service" Int. + Princip.

b. How a mgr. figures what an invt. must yield to justify K_0 .

c. How it acts.

$$n = \infty, \quad 1PF = i$$

$$n = 1, \quad 1PF = \frac{i}{1+i-1} = 1+i > \frac{1}{n}$$



~~b.~~ d. Values