LGFW&IB 3/95

Effect of taxes – harder when $\bar{F} \to 0$.

Reg

$\bar{F} = P$

$L = 0$

$K = 10$

$n = 8$

$P = 100$

$F = 100$ $\qquad$ $\bar{F} = 0$

e/p 00 $\quad a = 20$

$s = 0$

01 $\quad t = .6$

$RRAT = .20 \qquad = .117$

$RRAT = .140 \qquad = .025$

Note how 60% tax wipes out so much of ROR to depreciating inst., but much less of durable (or land-based) inst.

In my paper, I shd. have played around more with $\bar{F} = 0$, and $\bar{F} < P$.

Not too late!.

To set up problems where students solve for RRAT, need to solve for P. This is done below.

$$P = a(1-t)\frac{1-I^{-n}}{i} + P[\ ] + F(1-s)I^{-n} + P\,Ls\,I^{-n}$$

$$P - P(\ ) - P\,Ls\,I^{-n} = a(1-t)\frac{1-I^{-n}}{i} + F(1-s)I^{-n}$$

$$P = \frac{a(1-t)\frac{1-I^{-n}}{i} + F(1-s)I^{-n}}{1 - \frac{t}{x}\left(\frac{1-I^{-x}}{i}\right)(1-L) - Ls\,I^{-n}}$$

Example follows:-

$$= \frac{482.63 + 42.14 \times .40}{1 - .0572 - .0336} = \frac{499.5}{.919} = 543.50$$

#11.
$i = .01$

$$P = \frac{100(.65)\cdot 6.52 + 200(.78)(.544}{1 - .0140(11.65).70 - .544 \cdot .0660} = \frac{508.66}{.85} =$$

598.48

Re negative ROR:

$$RRAT = \frac{a/p(1-t)(1-I^{-n}) + (1-I^{-x})\,t(1-L)/x}{1-[F/p(1-s)+Ls]\,I^{-n}}$$

If $F=0$, denom. $= 1-[Ls]\,I^{-n} \to 1$

How can RRAT be negative here?

Let $t = s = 0 = F$

$$ROR = \frac{a/p(1-I^{-n})}{1-}$$

~~I left something out?~~

$$p = a\frac{1-I^{-n}}{i} + FI^{-n}$$

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

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

If $F=0$, $i = a\frac{1-I^{-n}}{p}$

If $i=0$, $i = a\frac{1-1}{p}$

If $i<0$, rt. side also <0

Tax bias vs. depreciable K. 3 cases.
F = 0; F = P; F = 2P

00	a/β	a	10				
		β	100				
01		t	~~10~~ 0	0	0	.4	
05		L	0				
07	F/P	F	0	100	200	0	100	200
08		s	0	0	0	.2	
03		n	10				
04		x	5				
		i	0	.1	.1494	0?	.096	.1434

$$RRaT = \frac{.6(1-.4)(1-I^{-10}) + .4(1-0)(1-I^{-5})/5}{1-[0+.2]I^{-10}}$$

Let $i = 0$

$$0 \stackrel{?}{=} \frac{.1(.6).0}{1-1} + 0 = \frac{0}{0} = 0$$

Try solve for P when $F=0$, $i=0$

$$P = a(1-t)\frac{1-I^{-n}}{i} + \frac{P}{x}t\frac{1-I^{-x}}{i} + [F(1-s)+LPs]I^{-n}$$

$$100 \stackrel{?}{=} 10(.6)\frac{1-I^{-10}}{i} + 20\times.4\times\frac{1-I^{-x}}{i} + 0$$

$$100 \stackrel{?}{=} 60 + 40 = 100$$

When $i = 0$, the time-advantage of $x < n$ is wiped out.

Ergo, to show my point I must use TYPIS method

PVAT

Reg					
00	a	10			
01	t	0	.5	0	.5
02	i	.00001		.12	.12
03	n	10			
04	F	0			
05	s	0			
06	x	5			10
07	L	0			
08	I^{-n}				
09	$a(1-t)\frac{1-I^{-n}}{i}$				
10	Num				
11	$\frac{F}{s}\left(\frac{1-I^{-x}}{i}\right)(1-L)$				
12	Denom				
P =		100	100	56.5	44.2 39

Best approach is solve for L.V. (TYPES)

$$G = -K + a(1-t)\frac{1-I^{-n}}{i} + \frac{K}{x}t\frac{1-I^{-x}}{i} + F(1-s)I^{-n} + G s I^{-n}$$

$$G(1-sI^{-n}) = -K + a(1-t)\frac{1-I^{-n}}{i} + \frac{K}{x}t\frac{1-I^{-x}}{i} + F(1-s)I^{-n}$$

$$G = \frac{-K\left[1 - \frac{t}{i}\frac{1-I^{-x}}{x}\right] + a(1-t)\frac{1-I^{-n}}{i} + F(1-s)I^{-n}}{1-sI^{-n}}$$

PVUT. q = 10

	1	2	3	4	5	6	7	8	9	
t = 1	0	.5	0	.5	.5		.5	0	0	.5
i = 2	.00001		.12	.12	.12					
n = 3	10									
F = 4	0						30		100	100
s = 5	0									
x = 6	5									
L = 7	0				0	1			.5	.5
P = 8	100.0	100.0	56.5	44.2	39.4	28.3	38	66.2	88.7	70.4

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