Baumol: Carter

Forget naive "Break-even Point"
Forget $n = \frac{P}{a}$
Meeting the Payroll!

Valuation

Purpose: Define a performance standard.
Max PV in Pup, or PVP

BF 2

If $n = 10$, $i = .04$ } DCF = 8.11 a
RV = 16.9 b

$i = .12$ } DCF = 4.83 a
RV = 1.42 b

Discount $F I^{-4} - K.$
Annualize $P \cdot IPF$
Capitalize $PVP = \frac{P \cdot IPF}{i}$

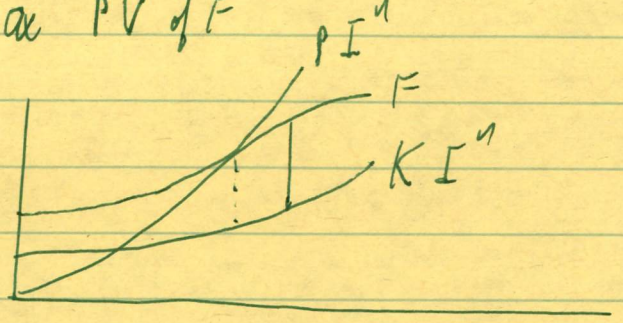
Maximize

Tues. 30 May

Performance standards

A. $B(B0$ e.g. 1. Max F, $i = 0$: rent $= 0$.

2. Max PV of F



a. Max $F - KI^n$

at this $\underline{n}$, $F'/F < i$, bcs curves are //

Not same as max $FI^{-n} - K$

Faults

1. Unaffected by K
2. Oversensitive to $\underline{i}$

E.g. if $i \to 0$, max PV when $F'/F = 0$. This ignores time of land – yet, when $i = 0$, land rent goes very high. A time-slot becomes more valuable. Max's surplus per tree, rather than per year.

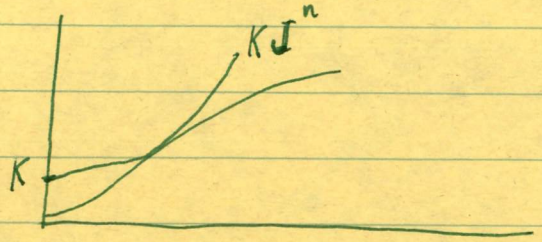
3. Ignores all future generations

4. Tells you PV of $P > K$, in equilibrium

5. Unaffected by l.v.

6. Ignores surplus.

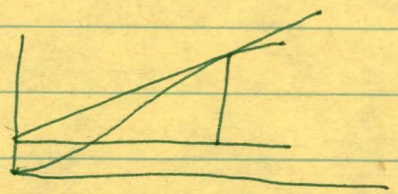
3. Max ROR $\equiv J$



Faults

1. Tells you to min. or eliminate K, to get $J = \infty$
2. Unaffected by Δi
3. Says can't [illegible] for land, "Arrogation",

4. Max $\frac{F-K}{n}$



Faults.

1. Unaffected by i.r.
1. Intuitively, comp. int. curve straightens out, suggests $i = 0$

5. Max "Egg" annualized

$$\left[F - K I^n\right] \frac{i}{I^n - 1}$$

Virtues

1. Is same as max income.
2. Is same as max annualized value, with $i \geq 0$

If $i \simeq 0$, Max $\left(F - K\right) \frac{1}{n}$

6. Min $\underline{n}$?

Comes in 1st yr you recover K w. int.
Miss out on fast growth; reach of surplus.

Thurs 11 Mar.

1. Vol B, Fri

2. Quiz
   A. DCF, 33 yrs. 7% 12.25
      1. What fraction comes from 1st $\frac{1}{3}$? .59
      2. " " " " 2nd $\frac{1}{3}$? .28

   B. How does 1st answer change ~~if~~ @ ~~9%~~, 14% .774

3. IRR
   a. Is a "time-ave." Not same as $\frac{1}{n}$.
   b. Is how you co-msre IE and $\underline{a}$.
      E.g. in AFC curve.

4. $F = a\frac{I^n - 1}{i}$

   a. $F > na \quad (i > 0)$
      E.g. @ 1.2%, $n = 40$, $a = 1$
      $na = 40$
      $\frac{I^n - 1}{i} = \frac{15}{.012} = \frac{1500}{7.2} \cong 213$

      $\frac{213}{40} \cong 5.26$

      Of this, 4.26 is capd. int.

Ec. 162

Census survey: Americans' home debt high in '80s

By Corrie M. Anders
San Francisco Examiner

Most homeowners couldn't have been happier about their homes during the rip-roaring 1980s, but they often moaned about the heavy financial strain every time they wrote the monthly check for the mortgage.

Now, for the first time, the federal government has offered incontrovertible proof that the nation's homeowners indeed were up to their eyeballs in mortgage debt.

In 1991, single-family, owner-occupied properties carried $1.7 trillion worth of debt, 45 percent higher than the $675 billion homeowners owed in 1981, according to a report released last week by the Census Bureau.

The high debt load was among several findings in an exhaustive survey into how residential real estate is financed in the United States.

The survey also ratified the immense popularity of adjustable rate mortgages and the boom among investors for rental properties, and found that savings and loan associations remained a major mortgage lender despite their financial troubles of the '80s.

Though it carried the stuffy, bureaucratic title, "Residential Finance Survey Series 1991," the study was important because it solidified data that had come in dribs and drabs over the last 10 years, said co-author Peter Fronczek.

"It takes a lot of information that we knew about anecdotally or where there was some data available . . . and gives it a firmness it didn't have before," he said.

One surprising highlight was the in-

Please see **DEBT, G-2**

Continued from **G-1**

crease in mortgage debt, which was adjusted for both inflation and a rise in the number of properties.

"We saw the real explosion in mortgage debt," Fronczek said. "That (increase) was higher than might have been expected."

One reason for the increase was attributed to easy-to-get home equity loans, an '80s phenomenon that was just starting to take off early in the decade. Before then, homeowners primarily took out second mortgages on their homes when they needed cash.

"People are using the equity in their house for a lot of things: To send their kids to school, to take vacations, or buy consumer products," Fronczek said. "You've got people using that equity more than they did in the past."

The survey also revealed a big jump in the number of people owning homes. There were 47.6 million single-family, owner-occupied properties in 1991, a 15 percent increase over the 41.2 million reported in 1981.

And more of them were opting to finance their homes with ARMs, which generally are less expensive initially than fixed-rate mortgages.

Homeowners snatched up 3.8 million ARMs in 1991 compared with 900,000 just 10 years earlier, representing an explosive four-fold increase.

Real estate investors also were busy during the '80s, a high inflationary decade that saw boom-bust residential cycles throughout the country.

There were 622,000 rental properties with five or more units in 1991, up from 577,000 the previous decade. While the actual number of rentals rose only 7.8 percent, the amount of debt rose 149 percent, to $329 billion from $132 billion.

Fronczek speculated that the higher debt load for investment properties might have resulted from a combination of substantially higher prices and smaller down payments.

The report said that the financial crisis that ruined many S&Ls had had a definite impact on which institutions held first mortgages during the decade.

Mortgage companies nearly quadrupled their share of first mortgage loans, picking up 2.2 million of them in 1991 compared with only 628,000 in 1981.

Mortgages held by S&Ls decreased 36 percent during the decade, the survey showed. The associations still make billions in loans, however.

"Though they had their rough times, they're still a key player in the game," Fronczek said.

Find 4 errors in math. in above article; and why is the headline misleading?

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