

ECON 110, Professor Hogendorn

Problem Set 7 Answers

1. *Movies_a.*

(a) We need to deflate the 2016 price back to the previous years.:

$$P_{1978} = \$8.60 \times \frac{196}{721.2} = \$2.33 \quad p_{1948} = \$8.60 \times \frac{72.2}{721.2} = \$0.86$$

(b) The 2016 CPI is obviously 100. For 1948, we just need to divide the 1967-base CPI for 1948, which is 72.2, by the 1967-base CPI for 2016, which is 721.2. This gives $72.2/721.2 = 0.10$, or a CPI of 10 when we express it in hundreds. For 1978, a similar operation yields $196/721.2 = 0.272$, so the index is 27.2.

(c) From 1948 to 1978, using the CPI and the actual movies prices gives, respectively:

$$72.2(1 + \pi)^{30} = 196 \Rightarrow \pi = 3.4\%$$

$$0.36(1 + \pi)^{30} = 2.34 \Rightarrow \pi = 6.4\%$$

From 1978 to 2016 is 38 years, so the corresponding average inflation rates are

$$196(1 + \pi)^{38} = 721.2 \Rightarrow \pi = 3.5\%$$

$$2.34(1 + \pi)^{38} = 8.60 \Rightarrow \pi = 3.5\%$$

(d) It is true that movie prices are a *component* of the CPI, so when they go up, they affect the CPI. But in addition to inflation, some of the movie price changes are *real* price changes, reflecting movies becoming more or less expensive relative

to other goods, rather than purely *nominal* price changes with respect to the value of the dollar only.

In this case, the *real* price of movies relative to other goods rose dramatically over the period 1948–78, and then stayed almost constant from 1978 to 2015. All other things equal, your own movie-going buying power is about the same as your parents', but much less than your grandparents'.

2. *SpanishBonds*. On April 19, 2012, the Spanish government sold about €2.5 billion of government bonds.

(a) The formula is

$$p = \frac{3}{1 + 0.346} + \frac{3}{(1 + 0.0346)^2} + \frac{100}{(1 + 0.0346)^2}$$

This solves to a price of €99.12.

(b) The higher yield on the Spanish government bond says that it is more risky to lend to the Spanish government than to a typical US car buyer. This is pretty amazing since governments have the authority to raise taxes and are thus considered super low risk. Bond traders must believe there is a high enough probability that Spain will default on its bonds or leave the Euro.

3. *SW25.2_a* The balance sheet is:

Assets	Liabilities
\$6 million bonds and reserves	\$40 million deposits
\$36 million loans	\$2 million net worth
\$42 million	\$42 million

4. *AIG_a*.

Assets	Liabilities
\$400 financial securities	\$913 general liabilities \$38 government loan
\$622 \$572 other assets	\$71 \$21 net worth
\$1022 \$972	\$1022 \$972

- (a) Subtracting \$50 from assets also requires subtracting \$50 from net worth:
- (b) Now the financial securities fall in value to \$360 and the liability side is bigger. As a result, net worth has to fall to \$ - 54 to balance the balance sheet.

Assets	Liabilities
\$400 \$360 financial securities	\$913 general liabilities \$38 government loan \$35 credit default swaps
\$572 other assets	\$21 -\$54 net worth
\$972 \$932	\$972 \$932

- (c) This part of the government bailout adds \$50 in cash to the asset side. The corresponding change in the liability side is a \$50 increase in net worth.

Assets	Liabilities
\$360 financial securities \$50 cash	\$913 general liabilities \$38 government loan \$35 credit default swaps
\$572 other assets	-\$54 -\$4 net worth
\$932 \$982	\$932 \$982

- (d) On the asset side, AIG got new cash from both parts of the government plan, \$60 and \$40, but they used up \$35 of it paying off the credit default swaps. On the liability side, they have a new government loan, new net worth, and they got rid of the liability. On the whole, net worth is now positive again.

Assets	Liabilities
\$360 financial securities	\$913 general liabilities
\$50 cash	\$38 government loan
+\$60+\$40-\$35 cash	\$35 credit default swaps
	\$60 government loan
\$572 other assets	-\$4 \$36 net worth
\$982 \$1047	\$932 \$1047