

Chapter 14 Selected Answers

Problem 14.1.

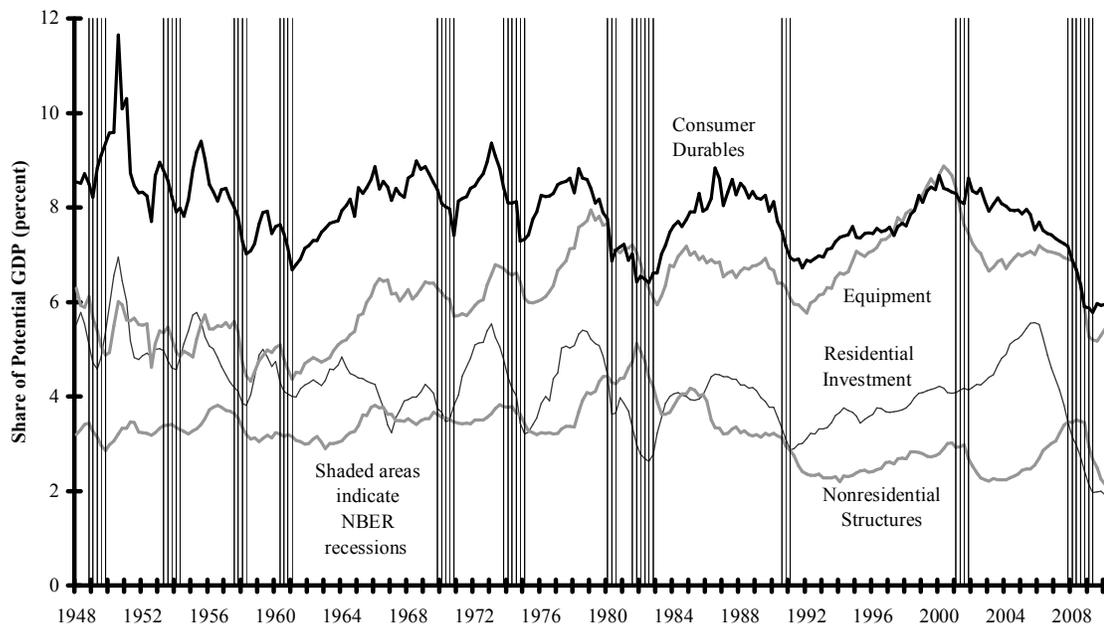
Table 14.1.1
Elements of Consumption
(percentage of potential GDP)

| <i>C</i> | <i>YD^P</i> | <i>S^P</i> | <i>S</i> |
|----------|-----------------------|----------------------|----------|
| 57.8 | 64.1 | 4.6 | 16.5 |

Consumption is on average 90.2 percent of disposable personal income. Personal savings is 4.6 percent of potential GDP; while gross savings is 11.9 percentage points larger at 16.5 percent. The difference represents the fact that the corporate and government sectors – as well as individual people – contribute to savings.

Problem 14.5:

Figure 14.5.1
Types of Investment and the Business Cycle



The cyclical patterns of investment are not perfectly uniform. But the series in Figure 14.5.1 mostly follow a pattern of rising in the boom, starting their upswings close to the cyclical trough, reaching a peak before the cyclical peak, falling slowly at first, but then falling sharply at the cyclical peak through the slump. Nonresidential structures deviates most from this pattern, in that it often remains low after the cyclical trough,

and only begins to rise in mid-cycle. The expansion from 2001 to 2007 is anomalous in that consumer durables fell throughout the boom, though they did (as in the past) fall more sharply in the recession after 2007. Equipment was also slow to recover in that expansion. Residential investment did not fall in the 2001 recession and nonresidential structures did not begin to fall until late in the recession. (It is worth recalling that the 2001 recession was really a *growth recession* in which GDP never actually fell, though other indicators such as employment, unemployment, and industrial production showed their typical recessionary behavior.) Rising GDP can cause investment through an accelerator process in which higher GDP both raises expectations of future profitability of firms and raises the need for a larger capital stock to maintain production levels to capture those expected profits. Investment can also cause GDP through the consumption multiplier – both accentuating the boom and precipitating the slump. When investment slows down in the middle of the cycle, very likely it is reduced investment opportunities as the current needs for capital are fulfilled. But then the fall in investment itself brings on a downward multiplier that drags both GDP and expected profitability down with it, which in turn further lowers investment. Firms cut back on investment in the slump, but after some time they find even the lower levels of production require restocking of inventories and replacing worn out equipment, which again may set off a multiplier process in which the higher GDP once again raises expectations of future profitability, so that the cycle repeats itself.

Problem 14.7:

- a) $PV = \$14,603$; don't invest;
- b) $PV = \$15,556$; invest.
- c) $PV = \$16,463$; invest.

Problem 14.9.

- (b) $\rho = 7.13$ percent; invest if $r = 5$ percent; don't invest if $r = 8$ percent.

Problem 14.11: The internal rate of return on the project is 7.49 percent. Thus, if market rates are 5 percent, then the power company should build the reactor; if 8 percent, it should not. The main consideration omitted are the risks that either the costs of construction will exceed expectations or that the net returns when it is in operation will fall short. If these risks were accounted for, the company would most likely require an internal rate of return much greater than 7.49 percent to justify investment, even when market rates were 5 percent.

Problem 14.13.

- b) a shortage of steel resulting in a large increase in its price on international markets raises the cost of production, reducing expected future profits and lowering the expected return on investment. It would lower investment and hence aggregate demand.
- d) a prolonged period of low investment during a deep recession would probably all the capital stock to depreciate; a growing shortage of capital both relative to current needs and to expected future post-recession demand would raise the expected future profits from new investment and, therefore, raise the expected returns, increasing both investment and aggregate demand.