Ec 1936. Keynes

Problem Set 1. Say's Law and the Determinants of Investment and Saving.
Due Monday, September 27, 2021 (11.59 pm)

Say's Law and the Determinants of Investment and Saving. (This question has 4 parts.)

John Stuart Mill, the 19th century philosopher and economist, gave a clear statement of "Say's Law":

> [If we could] suddenly double the productive powers of the country, we should double the supply of commodities in every market; but we should, by the same stroke, double the purchasing power. Everybody would bring a double demand as well as a supply: everybody would be able to buy twice as much, because everyone would have twice as much to offer in exchange. (*Principles of Political Economy*, 1961 [1848], Book III, Ch. XIV, ¶ 2)

Keynes thought he had identified a fatal flaw in Mill's argument that aggregate demand would always equal aggregate supply, regardless of the level of output:

> An act of individual saving means—so to speak—a decision not to have dinner to-day. But it does not necessitate a decision to have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date. Thus it depresses the business of preparing to-day's dinner without stimulating the business of making ready for some future act of consumption. (*The General Theory,* p 210)

Now read the attached discussion of "Saving, Investment, and Financial Markets" from *Principles of Economics* (3e), a textbook written by two leading economists, Robert Frank and Ben Bernanke (yes, the same Ben Bernanke who headed the Federal Reserve until February, 2014). Copy Figure 22.7 into your answer paper.

1. How do Frank and Bernanke argue the interest rate is determined? In this view what happens if the interest rate is not at equilibrium?
2. For Frank and Bernanke, in equilibrium Saving = Investment. Show, according to the logic of Frank and Bernanke's argument, what would happen to the rate of interest and to saving and investment if firms suddenly decide to invest less (because, say, Lehman Brothers goes bust and firms, fearing for their economic futures, postpone capital expenditures). How does the relationship between investment and saving expounded by Frank and Bernanke *support* Say's Law?
3. How does the Frank-Bernanke argument you have given in Parts 1 and 2 answer Keynes's "fatal flaw"?
4. For Keynes, as for Frank and Bernanke, in equilibrium, S = I. Show, according to the logic of *The General Theory*, what would happen to the rate of interest and to saving and investment if firms suddenly decide to invest less (because, say, Lehman Brothers goes bust, and firms, fearing for their economic futures, postpone capital expenditures). How do the *General Theory's* arguments about how the new equilibrium comes about *undermine* Say's Law?

RECAP	FACTORS THAT AFFECT INVESTMENT

Any of the following factors will increase the willingness of firms to invest in new capital:

1. A decline in the price of new capital goods.

2. A decline in the real interest rate.

3. Technological improvement that raises the marginal product of capital.

4. Lower taxes on the revenues generated by capital.

5. A higher relative price for the firm's output.

SAVING, INVESTMENT, AND FINANCIAL MARKETS

Saving and investment are determined by different forces. Ultimately, though, in an economy without international borrowing and lending, national saving must equal investment. The supply of saving (by households, firms, and the government) and the demand for saving (by firms that want to purchase or construct new capital) are equalized through the workings of *financial markets*. Figure 22.7 illustrates this process. Quantities of national saving and investment are measured on the horizontal axis; the real interest rate is shown on the vertical axis. As we will see, in the market for saving, the real interest rate functions as the "price."

FIGURE 22.7

The Supply of and Demand for Saving.

Saving is supplied by households, firms, and the government and demanded by borrowers wishing to invest in new capital goods. The supply of saving (S) increases with the real interest rate, and the demand for saving by investors (I) decreases with the real interest rate. In financial market equilibrium, the real interest rate takes the value that equates the quantity of saving supplied and demanded.
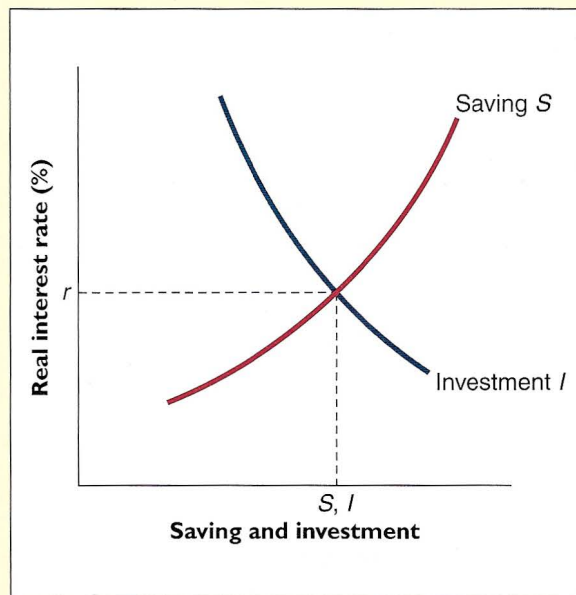
In the figure the supply of saving is shown by the upward-sloping curve marked S. This curve shows the quantity of national saving that households, firms, and the government are willing to supply at each value of the real interest rate. The saving curve is upward-sloping because empirical evidence suggests that increases in the real interest rate stimulate saving. The demand for saving is given by the downward-sloping curve marked I. This curve shows the quantity of investment in new capital that firms would choose and hence the amount they would need to borrow in financial markets, at each value of the real interest rate. Because higher real interest rates raise the cost of borrowing and reduce firms' willingness to invest, the demand for saving curve is downward-sloping.

Putting aside the possibility of borrowing from foreigners (discussed in the chapter "International Trade"), a country can invest only those resources that its savers make available. In equilibrium, then, desired investment (the demand for saving) and desired national saving (the supply of saving) must be equal. As Figure 22.7 suggests, desired saving is equated with desired investment through adjustments in the real interest rate, which functions as the "price" of saving. The movements of the real interest rate clear the market for saving in much the same way that the price of apples clears the market for apples. In Figure 22.7, the real interest rate that clears the market for saving is r, the real interest rate that corresponds to the intersection of the supply and demand curves.

The forces that push the real interest rate toward its equilibrium level are similar to the forces that lead to equilibrium in any other supply and demand situation. Suppose, for example, that the real interest rate exceeded r. At a higher real interest rate, savers would provide more funds than firms would want to invest. As lenders (savers) competed among themselves to attract borrowers (investors), the real interest rate would be bid down. The real interest rate would fall until it equaled r, the only interest rate at which both borrowers and lenders are satisfied, and no opportunities are left unexploited in the financial market (recall Chapter 3's *equilibrium principle*). What would happen if the real interest rate were *lower* than r?

Changes in factors *other than the real interest rate* that affect the supply of or demand for saving will shift the curves, leading to a new equilibrium in the financial market. Changes in the real interest rate cannot shift the supply or demand curves, just as a change in the price of apples cannot shift the supply or demand for apples, because the effects of the real interest rate on saving are already incorporated in the slopes of the curves. A few examples will illustrate the use of the supply and demand model of financial markets.