**Answers to Textbook Questions and Problems**

**CHAPTER 1 The Science of Macroeconomics**

**Questions for Review**

1. *Microeconomics* is the study of how individual firms and households make decisions and how they interact with one another. Microeconomic models of firms and households are based on principles of optimization: firms and households do the best they can, given the constraints they face. For example, households choose which goods to purchase to maximize their utility, whereas firms choose inputs and outputs to maximize profits. In contrast, *macroeconomics* is the study of the economy as a whole; it focuses on issues such as how total output, total employment, and the overall price level are determined. These economy-wide variables are based on the interaction of many households and many firms; therefore, microeconomics forms the basis for macroeconomics.

2. Economists build models as a means of summarizing the relationships among economic variables. Models are useful because they abstract from the many details in the economy and allow one to focus on the most important economic connections.

3. A market-clearing model is a model in which prices adjust to equilibrate supply and demand. Market-clearing models are useful in situations where prices are flexible. Yet, in many situations, flexible prices may not be a realistic assumption. For example, labor contracts often set wages for up to three years, and firms such as magazine publishers may change their prices only every few years. Most macroeconomists believe that price flexibility is a reasonable assumption for studying long-run issues. Over the long run, prices respond to changes in demand or supply, even though in the short run they may be slow to adjust.

**Problems and Applications**

1. First, monetary policy in the United States continues to be a major topic of conversation in 2018. The Federal Reserve must decide how quickly to raise the federal funds rate. It watches for wage and price increases as it does so. Second, the United States is implementing more protectionist policies, restricting international trade and immigration. There is continuing uncertainty regarding how this will affect consumers, workers, and firms and how other countries will respond. Third, the United States has enacted tax reforms that will affect the entire economy, altering households’ and firms’ decisions and posing issues for the federal budget.

2. Many philosophers of science believe that the defining characteristic of a science is the use of the scientific method of inquiry to establish stable relationships. Scientists examine data, often provided by controlled experiments, to support or disprove a hypothesis. Economists are more limited in their use of experiments. They cannot conduct controlled experiments on the economy; they must instead rely on the natural course of developments in the economy to collect data. To the extent that economists use the scientific method of inquiry—that is, developing hypotheses and testing them—economics has the characteristics of a science.

3. We can use a simple variant of the supply-and-demand model for pizza to answer this question. Assume that the quantity of ice cream demanded depends not only on the price of ice cream and income but also on the price of frozen yogurt:

*Q*d = *D*(*P*IC, *P*FY, *Y*).

We expect that demand for ice cream will rise when the price of frozen yogurt rises because ice cream and frozen yogurt are substitutes. That is, when the price of frozen yogurt goes up, households will consume less of it and instead fulfill more of their frozen dessert desires with ice cream. The next part of the model is the supply function for ice cream, *Q*s = *S*(*P*IC). Finally, in equilibrium, supply must equal demand, so that *Q*s = *Q*d. The exogenous variables are *Y* and *P*FY, and the endogenous variables are *Q* and *P*IC. Figure 1-1 uses this model to show that a fall in the price of frozen yogurt results in an inward shift of the demand curve for ice cream. The new equilibrium has a lower price and quantity of ice cream.

A graph plots quantity of ice cream along the horizontal axis and price of ice cream along the vertical axis.
The graph has three curves. The curves labeled D1 and D2 have negative slope and the curve labeled S has a positive slope. A dotted line is drawn from the horizontal axis and vertical axis to a point where the curve S intersects the curves D1 and D2. A leftward arrow emerges from the projection point on the horizontal axis where curve S and D1 intersect. The arrow points to the projection point on the horizontal axis where curve S and D2 intersect. Another arrow emerges from the curve D1 and points to D2.

4. The price of haircuts changes rather infrequently. From casual observation, hairstylists tend to charge the same price over a one- or two-year period, regardless of the demand for haircuts or the supply of cutters. A market-clearing model for analyzing the market for haircuts has the unrealistic assumption of flexible prices. Such an assumption is unrealistic in the short run, when we observe that prices are inflexible. Over the long run, however, the price of haircuts does tend to adjust; a market-clearing model is therefore appropriate.