

Answers to Questions: Chapter 10

1. The misery index is the sum of the inflation and unemployment rates. A criticism is that it weighs one percentage point of inflation as equal to one percentage point of unemployment, whereas the costs of one percentage point of inflation and unemployment are unsettled issues and are not likely to be equal.
2. A hyperinflation is a very rapid rate of inflation; Gordon defines it as at least 1,000 percent per year. A moderate (or creeping) inflation, on the other hand, implies a “moderate” rate of inflation, presumably an inflation rate less than 1,000 percent per year.
3. Yes, simple percentage changes are misleading as measures of inflation at high rates inflation; in particular, they overstate the rate of inflation. If inflation is a continuous process (i.e., prices rising daily or even hourly, as in a hyperinflation), calculating inflation rates at discrete intervals (such as months, quarters, or years) may be misleading. As Gordon says in Footnote 1, a simple percentage rate of change at 50 percent per month compounds to an annual rate of 12,975 percent, whereas the very same implied absolute price increase when compounded continuously produces an inflation rate of 40.5 percent per month or 487 percent per year. End-of-chapter Problems 1 and 2 also deal with this issue.
4. Excess nominal GDP growth relative to natural real GDP growth is simply the difference between nominal GDP growth and natural real GDP growth, or $x - y^N$. It is equal to the inflation rate when actual real GDP growth is equal to natural real GDP growth, or when $y - y^N = 0$. (See Footnote 4.)
5. The four main reasons for inflation are the temptation of demand stimulation to reduce unemployment, the fear of the recession and job loss needed to reduce inflation, an adverse supply shock, and financing government deficits by printing money. The temptation to reduce unemployment results in an excessive growth rate of nominal GDP because in the short run, the excessive growth does result in an increase in the output ratio and therefore a decline in the unemployment rate. It is only in the long run that the excessive growth results in no change in the unemployment rate. A permanent reduction in inflation requires a reduction in the growth rate of nominal GDP. That reduction results in a recession in the short run as the output ratio falls and the unemployment rate rises. It is the fear of that recession which often results in excessive nominal GDP growth and inflation. If there is an adverse supply shock, then even in the short run, inflation rises unless nominal GDP growth is reduced via an extinguishing policy.

Finally, government deficits are often financed by printing money or increasing the money supply, particularly if countries do not have well-developed financial markets in which the government can sell its bonds. Also recall from Chapter 7 that in a small open economy with a fixed exchange-rate system, a fiscal expansion must result in an increase in the money supply. Therefore, that fiscal expansion results in excessive nominal GDP growth no matter how well developed the economy's financial markets are.

6. The nominal interest rate (i) is the rate actually paid in the financial markets. The expected real interest rate ($r^e = i - p^e$) is what people expect to pay on borrowings or earn on their savings after deducting expected inflation. The actual real interest rate ($r = i - p$) is what people actually pay or earn after taking into account the actual inflation rate. The rate that people expect to exist affects their borrowing and saving decisions, and the actual real interest rate determines what people actually pay or earn.
7. In an unanticipated inflation, whether a person is a net debtor or net creditor determines whether he wins or loses. Net debtors gain because their debts shrink in real terms, while their real and financial assets are not indexed for inflation. Wealthy individuals are net creditors, so they tend to lose. Middle-income homeowners and farmers are net debtors; they own assets that can vary in price (e.g., homes and land) and debts that are fixed in nominal terms (e.g., mortgages), so they tend to gain. The poor are neither net creditors nor net debtors because they neither save nor borrow much. They don't save for obvious reasons, and they can't borrow because they lack collateral. Poor people near retirement who rely entirely on Social Security are protected by the indexation of Social Security benefits.
8. The nominal interest rate:
 - a. falls;
 - b. rises;
 - c. falls;
 - d. falls.
9. The Fisher equation states that the nominal interest rate is the sum of the expected real rate of interest and the expected inflation rate. The Fisher Effect states that the nominal interest rate changes by the same number of percentage points that the expected rate of inflation changes. The Fisher equation is true by its definition, whereas the Fisher Effect is a testable hypothesis. Figure 10-1 shows that in the period 1975–76, the rise in the nominal interest rate was much less than the rise in the expected rate of inflation, whereas in the early 1980s, the rise in the nominal interest rate was much larger than the rise in the expected rate of inflation. Figure 10-1 also shows that between 1983 and 1985, the nominal interest rate rose during a period when the expected inflation rate was falling, and that during the early 1990s, the decline in the nominal interest rate was much larger

than the decline in the expected rate of inflation. Therefore, the data presented in Figure 10-1 refute the Fisher Effect. The graph in the box on page 329 shows that the gap between real and nominal interest rates on 10-year Treasury bonds widened considerably during 2002–04. This could be consistent with the Fisher Effect if at the same time the real interest rate was falling, expected inflation was rising. But falling real interest rates typically are associated with a weakening economy, which would lead to a lower, not a higher inflation rate. The other explanation of a falling real interest rate and a stable nominal interest rate that is consistent with a Fisher Effect is that the TIPS bonds were overbought. But if that were the case, then the return on the un-indexed bonds would have been high relative to the indexed bonds, which should have resulted in a narrowing of the prices and therefore the two interest rates on the two types of bonds. The data in the box do not show that happening. Therefore, the data in the box on page 329 do not provide support for the Fisher Effect.

10. The shoe-leather cost of inflation is due to higher inflation resulting in higher interest rates. Those higher interest rates cause people to hold less of their funds in cash and more in interest-bearing accounts. Therefore, higher inflation causes people to make more trips to banks and ATMs to withdraw cash from these accounts. The menu costs of inflation are the costs of changing prices, such as restaurants printing new menus or mail-order firms publishing new catalogs or Internet companies updating the prices listed on their websites. In addition, the prices of goods and services subject to menu costs don't change as rapidly as those not subject to menu costs, resulting in changes in the relative prices of goods and services in the different categories. Those changes in relative prices create economic inefficiencies and unfair redistribution of incomes.

The amount of shoe-leather and menu costs increase as the rate of inflation increases. For example, at low inflation rates, households are not likely to consider the amount of interest lost in deciding how often to go to the bank to withdraw cash. But at high rates of inflation, significant interest income could be lost by carrying around more than the minimum amount of cash needed to meet daily expenses.

Similarly at low rates of inflation, the cost to a restaurant of printing a new menu is likely to outweigh the additional revenue obtained by higher prices listed on the new menu. New menus are likely to be printed up only when the items on the menu change. However, as the inflation rate rises, the additional revenues eventually outweigh the additional printing costs.

11. If real interest income is taxed, whereas nominal interest expense is allowed as a deduction, then the tax laws are subsidizing borrowing in the sense that borrowers are paying less after taxes than lenders are receiving. That results in too much borrowing, not enough saving, and too much spending.

12. In Equation (10.8), the left-hand side represents governmental expenditures. It consists of the real “basic deficit,” that is, $G - T$, or real government expenditures on goods and services minus real net taxes (taxes minus transfers), plus real interest payments on government bonds outstanding. The right-hand side represents government revenue sources (exclusive of T , which is subtracted from G on the left-hand side). It consists of the real value of new bond issues and the real value of new issues of high-powered money.
13. The conditions for a “steady state” are that nominal government bonds, B , nominal high-powered money, H , and the price level, P , all grow at the same rate. This implies that real government bonds, B/P , and real high-powered money, H/P , are constant. If this is so, then the government budget constraint can be written as Equation (10.11). This equation shows that the government benefits from inflation in two ways. First, when the government raises the amount of high-powered money, it receives revenue called seignorage or the inflation tax. Second, when the government raises the amount of real bonds outstanding, it pays only real, rather than nominal, interest on its bonds; in addition, if the nominal interest rate does not rise one percentage point for every percentage-point increase in inflation, then the real interest rate falls, and the government gains by financing its debt with a lower real interest rate.
14. The deficit must be financed by either an increase in the government debt held by the public or an increase in the government debt held by the Fed (which results in the creation of high-powered money). If the economy starts at Y^N and there is no change in monetary policy, then the increase in high-powered money would lead to increased growth in the money supply and in nominal GDP, which would be inflationary. If the government adjusted its monetary policy and kept the growth of nominal GDP constant, however, there would be no inflationary pressures.
15. A mild inflation can be converted into a hyperinflation by frequent wage indexation. Wage indexation leads to wage increases, which set off further price increases. At a given exchange rate, price increases will reduce the demand for the country’s exports. The reduced demand for exports will reduce the demand for the country’s currency, which will cause depreciation in the exchange rate. A decrease in the exchange rate will raise the domestic-currency price of imports, which acts as an adverse supply shock and further exacerbates inflation.
16. To stop a hyperinflation, a government should do several or all of the following depending on its circumstances: reduce its budget deficit by cutting its expenditures and transfers and by raising taxes; reduce the growth of the money supply; reform its tax system if tax evasion is a problem and if there is no broad-based tax that is easy to collect, such as a value-added tax; stop or slow wage increases by mandating a wage

freeze, introducing a wage control policy, or reducing the frequency of indexation; seek an international agreement to suspend interest payments on its international debt; and move from a flexible exchange rate to a fixed exchange rate.

17. Each dollar gives certain advantages, such as purchasing convenience, to the holder; these advantages are called extra convenience services (ECS). Holding a dollar, however, means that an individual is foregoing the interest he could be earning. A rational individual would hold money only until the last dollar held gives ECS greater than or equal to the nominal interest rate. If an expected inflation occurs and the nominal interest rate rises, people will give up holding some amount of money for which the ECS is less than the nominal interest rate. As a result, society is “losing” the extra convenience services of this additional amount of money.
18. No. Expansionary monetary policy would increase the ratio, Y/Y^N , and therefore lower actual unemployment. This will have no effect on the natural rate of unemployment, however. The natural rate of unemployment is sensitive to long-run, supply-oriented policies.
19. If workers do not have the necessary skills, they do not know about vacancies, or they are not in the correct geographic locations, they can remain unemployed even while vacancies exist. If policymakers follow an expansionary policy, output will increase, requiring more workers. If the labor supply is fixed, the number of unemployed workers will decrease. If the labor supply increases (e.g., due to an influx of previously “discouraged” workers), the total number of unemployed could actually increase. Eventually, however, continued expansionary policy will lead to a decrease in unemployed workers. Expansionary policy will also lead to an increase in the number of vacancies. It is likely that the increased demand for some types of goods will not be filled due to a shortage of workers who can produce that type of good.
20. As real output increases, there occur serious shortages of labor in some occupations or in some geographic locations. These shortages cause wage rates to be bid up. A continuing expansion causes these shortages to become relatively more severe and wages to rise at a relatively faster rate.
21. If the worker faces turnover unemployment, that worker can find a suitable job in the local community after a relatively short “job search.” On the other hand, if the worker faces mismatch unemployment, that worker may have to be retrained or move to another location. In this case, the time before work is found will be much longer.
22. Turnover unemployment is due to people who have quit their jobs, are re-entering the labor force, or are looking for their first jobs. People who quit their jobs do so because they feel they are better off spending their time looking for what they hope will be a

better job rather than working at their current job. Similarly people who re-enter the work force do so because they feel they will be better off working than continuing to do whatever it was they were doing while they were out of the work force. Similarly, people who enter the work force for the first time do so because they feel they will be better off working than continuing to do whatever they were doing prior to entering the workforce. To summarize, the benefits of turnover unemployment are that people spend time searching for jobs that will result in a better use of their time than previously.

A mismatch of skills requires that people first acquire skills that are in demand and then find particular employers who need the new skills the people have acquired. That may or may not require people to relocate. On the other hand, the problem of mismatch of location “simply” requires that people find particular employers in a new location that need the skills that they already have. Thus, at the conceptual level, the problem of mismatch of location is less severe than the mismatch of skills. The complicating factor is that a person who needs to acquire new skills may be able to do so without relocating his or her family. On the other hand, if a family must relocate, then the problem of overcoming a mismatch of location could be quite high if a spouse must find a new job and/or children must give up old friends and schools and find new ones. Finally, A mismatch of locations may present difficulties on finding new employment if a poor housing market where the unemployed are located makes it difficult for the unemployed to sell their homes before relocating. This issue will be discussed in greater detail in Question 28.

Being able to use the Internet to obtain information concerning employment opportunities reduces the cost of searching for a new job, particularly a job in a distant geographical area. That results in a reduction in the amounts of turnover unemployment and unemployment due to a mismatch of location. The only possible way that the Internet could reduce the amount of unemployment due to a mismatch of skills is if people are able to obtain better information concerning which skills are most in demand via the Internet. If so, then they might be able to find a job more quickly once they have acquired those new skills.

23. People who are unemployed for a long period of time often find their skills eroding as they remain unemployed. For example, office workers who have been out of work for long periods of time are less likely to be familiar with the latest versions of the software used in office jobs. This illustrates how long-term unemployment can contribute to the amount of structural unemployment caused by a mismatch of skills.
24. Monetary policy in 1981–82 was aimed at reducing inflation. The cost of this battle against inflation was that the unemployment rate rose to its highest level since the Great Depression, a level not reached even during the Global Economic Crisis. However,

reversal of that tight monetary policy in the summer of 1982 resulted in a 3.3 percentage point drop in the unemployment rate within a year-and-a-half of the end of the 1981–82 recession.

25. The “new normal” refers to a substantial rise in the natural unemployment rate to a level not seen in the last 50 years. This pessimistic view of the future path of unemployment is based on first, the longer workers remain unemployed, the greater is their erosion of skills, resulting in a rise in the amount of unemployment due to a mismatch of skills and second, the experience of Europe from 1985–98 when the idea took hold that if actual unemployment remains high for long enough, the natural unemployment rate rises to meet the actual rate of unemployment.
26. There are at least five aspects of the human costs of persistently high unemployment. The first is that the loss of income for a sufficiently long period of time can result in the losses of homes and/or cars and that the loss of either would mark the end of a middle class lifestyle which is a hallmark of American identity. Second, young people find it very difficult to find jobs, which leaves gaps in their resumes as well as making it hard for them to move away from their parents or to marry and start families. Third, those over 50 who have been unemployed for a long period of time may find themselves subject to age discrimination or be concerned as to whether they will ever work again. Fourth, persistently high unemployment results in higher rates of suicide and homicide, increased incidences of physical and mental illnesses, and an increase in the prison population. Finally, our society values work highly, as exemplified by the first question that is often asked when meeting a person for the first time concerns what is person’s occupation. As a result many of the long-term unemployed find themselves losing their self-esteem as well.
27. The difference in the behaviors of unemployment rates in Germany and the United States was not the result of a difference in the behavior of the output gaps in the two countries, as they fall by almost the same amounts between 2007 and 2009. Rather, German firms reduced hours of work rather than the number of employees as did American businesses. Part of the behavior is the result of subsidies provided to Germany firms by the German government for such “work-sharing” agreements and part of the behavior is caused by greater cooperation between German firms and unions that is the result of Germany’s labor markets and its laws.
28. The collapse of the housing bubble made the problem of solving high mismatch of unemployment more difficult in two ways. First, the collapse of the housing bubble left many unemployed people unable to either make their mortgage payments or allow them to sell their homes at a price that would enable them to pay off their mortgages. Therefore if those unemployed wished to move to where they could find work, they

would have to default on their mortgages which would prevent them from buying houses or perhaps even renting in their desired locations. Second, the collapse of the housing bubble added to the number of construction workers who were unemployed and these workers did not have the skills that were in demand, such as in the provision of health care. Therefore the collapse of the housing bubble contributed to structural unemployment due to both a mismatch of locations and a mismatch of skills.