

Unemployment and Inflation

Chapter 9

We've concentrated so far on how various economic factors determine output and prices, unemployment, and inflation. Now we turn to the insides of unemployment and inflation. Both inflation and unemployment should be avoided as much as possible. But since short-run tradeoffs between inflation and unemployment exist, it is also important to get a better understanding of the relative economic costs of inflation and unemployment. This information provides the input for policymakers' evaluation of the tradeoffs.

This chapter focuses on the details of the costs of unemployment and inflation.

- *There are two main costs of unemployment: lost production and undesirable effects on the distribution of income.*
- *The costs of anticipated inflation are small. The costs of unanticipated inflation are probably small on net, but unanticipated inflation may cause significant redistributions of wealth within the economy.*

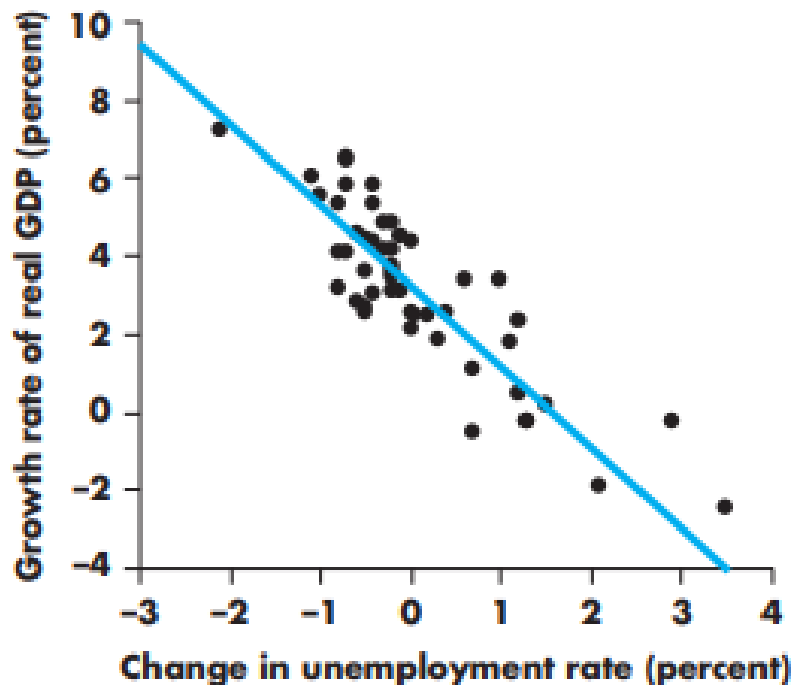
UNEMPLOYMENT

The largest single cost of unemployment is lost production. People who can't work don't produce—high unemployment makes the social pie smaller.

The cost of lost output is very high: A recession can easily cost 3 to 5 percent of GDP, amounting to losses measured in hundreds of billions of dollars.

Arthur Okun codified an empirical relation between unemployment and output over the business cycle. ***Okun's law*** states that 1 extra point of unemployment costs 2 percent of GDP.

Figure 7-1 plots real GDP growth against the change in unemployment, showing that Okun's law gives an excellent account of the unemployment-output relation in the United States.



The costs of unemployment are borne very unfairly. There are large distributional consequences. In other words, the costs of a recession are borne disproportionately by those individuals who lose their jobs. For example, college students who have the bad luck to graduate during a recession face enormous difficulty in starting a career. The same students, if they had had the good fortune to graduate during a boom, would have gotten off to a much quicker start. Workers just entering the labor force, teenagers, and residents of urban ghettos are among the groups most vulnerable to increased unemployment.

THE ANATOMY OF UNEMPLOYMENT

Research on the labor market has revealed five key characteristics of unemployment:

- There are large variations in unemployment rates across groups defined by age, race, or experience.
- There is high turnover in the labor market. Flows into and out of employment and unemployment are high relative to the numbers of employed or unemployed.
- A significant part of this turnover is cyclical: Layoffs and separations are high during recessions, and voluntary quits are high during booms.
- Most people who become unemployed in any given month remain unemployed for only a short time.
- Much of unemployment consists of people who will be unemployed for quite a long time.

The ***labor force*** consists of people who respond that they are unemployed as well as those who say they are employed.

An ***unemployed person*** is defined as one who is out of work and who (1) has actively looked for work during the previous 4 weeks or (2) is waiting to be recalled to a job after having been laid off. The condition of having looked for a job in the past 4 weeks tests that the person is actively interested in working

Labor force = unemployed (U) + employed (E)

Unemployed is one who is out of work and who either

- 1. Has actively looked for work during the previous 4 weeks
OR**
- 2. Is waiting to be recalled to a job after having been laid off**

An **employed person** is defined as one who, during the reference week (the week including the 12th of the month),

- did any work at all (at least 1 hour) as a paid employee, worked in his or her own business, profession, or on his or her own farm, or worked 15 hours or more as an unpaid worker in an enterprise operated by a member of the family, or
- was not working but who had a job or business from which he or she was temporarily absent because of vacation, illness, bad weather, child care problems, maternity or paternity leave, a labor-management dispute, job training, or other family or personal reasons, whether or not he or she was paid for the time off or was seeking another job. Even if a worker has more than one job, he or she is only counted as one employed person. Persons for whom the only activity was work around their own house (painting, repairing, or own home housework) or volunteer work (i.e., for charitable organizations) are not considered employed.

Employed person is one who during the reference week:

- 1. Did at least one hour of work for pay in the last week**
- 2. Worked at least 15 hours as an unpaid worker for an enterprise owned by a family member OR**
- 3. Was not working, but only temporarily absent from work (ex. vacation or maturity leave)**

THE UNEMPLOYMENT POOL

At any point in time there is a given number, or pool, of unemployed people, and there are flows in and out of the unemployment pool. ***A person may become unemployed for one of four reasons:***

1. He or she may be a new entrant into the labor force—someone looking for work for the first time—or may be a reentrant—someone returning to the labor force after not having looked for work for more than 4 weeks.

2. The person may quit a job in order to look for other employment and may register as unemployed while searching.

3. The person may be laid off. The definition of layoff is a suspension without pay lasting or expected to last more than 7 consecutive days, initiated by the employer “without prejudice to the worker.”

4. The worker may lose a job, either by being fired or because the firm closes down.

There are essentially three ways of moving out of the unemployment pool:

1. A person may be hired into a new job.
2. Someone laid off may be recalled to his or her employer.
3. An unemployed person may stop looking for a job and thus, by definition, leave the labor force.

The concept of the unemployment pool gives a good way of thinking about changes in unemployment. Unemployment is rising when more people are entering the pool than leaving. Thus, other things equal, increases in quits and layoffs increase unemployment, as does an increase in the flow of new entrants into the labor market. Job loss accounts for about half of new unemployment. Voluntary separations, new entrants, and reentrants into the labor force together account for the other half.

The contemporaneous link between unemployment and output embodied in Okun's law and Figure 9-1 is an accurate first approximation, but the dynamics of the output-unemployment link are somewhat more complicated.

Consider the typical adjustment pattern of labor use during a recession. Employers first adjust hours per worker—for example, by cutting overtime—and only then trim their workforce. Next, layoffs and firings increase, increasing the flow into unemployment. But, at the same time, quits decrease, as workers sensibly decide to hold on to their current job.

During a prolonged recession, many of the unemployed become discouraged and leave the labor force, making the reported unemployment rate lower than it would otherwise be. As a result of all these effects, unemployment changes usually lag behind output changes at the trough of the business cycle.

Variation in Unemployment Across Groups

- The aggregate unemployment rate tells us the share of the labor force that is unemployed
 - The aggregate number conceals wide variations across various segments of the population
 - Teenagers have much higher unemployment rates than older workers
 - Black unemployment is higher than that of their white partners
 - Female unemployment was higher than male unemployment
- The relationship between the aggregate unemployment rate, u , and that of groups is: $u = w_1u_1 + w_2u_2 + \dots + w_nu_n$ (1), where w_i are the fraction of the civilian LF that falls within a specific group

$$u = w_1 u_1 + w_2 u_2 + \dots + w_n u_n \quad (1)$$

Equation (1) shows that the overall unemployment rate can change for two reasons:

- (1) The unemployment rate changes for all groups; or
- (2) the weights shift toward a group with higher- (or lower-) than-average unemployment.

CYCLICAL AND FRICTIONAL UNEMPLOYMENT

There is an important distinction between cyclical and frictional unemployment.

Frictional unemployment is the unemployment that exists when the economy is at full employment.

Frictional unemployment results from the structure of the labor market—from the nature of jobs in the economy and from the social habits and labor market institutions (e.g., unemployment benefits) that affect the behavior of workers and firms.

The frictional unemployment rate is the same as the natural unemployment rate.

Cyclical unemployment is unemployment in excess of frictional unemployment: It occurs when output is below its full-employment level.

Duration of Unemployment

Another way of looking at flows into and out of unemployment is to consider the **duration of spells of unemployment**.

A spell of unemployment is a period in which an individual remains continuously unemployed.

The duration of unemployment is the average length of time a person remains unemployed.

By looking at the duration of unemployment, we get an idea of whether unemployment is typically short-term, with people moving quickly into and between jobs, and whether long-term unemployment is a major problem.

DETERMINANTS OF THE NATURAL RATE

The determinants of the natural rate of unemployment, u^* , can be thought of in terms of the duration and frequency of unemployment. **The duration of unemployment depends on cyclical factors and, in addition, on the following structural characteristics of the labor market:**

- The organization of the labor market, including the presence or absence of employment agencies, youth employment services, and the like.
- The demographic makeup of the labor force.
- The ability and desire of the unemployed to keep looking for a better job, which depends in part on the availability of unemployment benefits.

The last point deserves special notice. A person may quit a job to have more time to look for a new and better one. We refer to this kind of unemployment as **search unemployment**. If all jobs are the same, an unemployed person will take the first one offered. If some jobs are better than others, it is worthwhile searching and waiting for a good one. The higher the unemployment benefits, the more likely people are to keep searching for a better job, and the more likely they are to quit their current job to try to find a better one. Thus, an increase in unemployment benefits will increase the natural rate of unemployment.

The behavior of workers who have been laid off is also important when considering the duration of unemployment. Typically, a worker who has been laid off returns to his or her original job and does not search much for another job. The reason is quite simple: A worker who has been with a firm for a long time has special expertise in the way that firm works and may have built up seniority rights, including a pension. Hence, such an individual is unlikely to find a better-paying job by searching. The best course of action may be to wait to be recalled, particularly if the individual is eligible for unemployment benefits while waiting.

FREQUENCY OF UNEMPLOYMENT

The frequency of unemployment is the average number of times, per period, that workers become unemployed.

There are two basic determinants of the frequency of unemployment.

- The first is the variability of the demand for labor across different firms in the economy. Even when aggregate demand is constant, some firms are growing and some are contracting. The contracting firms lose labor, and the growing firms hire more labor—so turnover and the frequency of unemployment is greater. The greater the variability of the demand for labor across different firms, the higher the unemployment rate.
- The second determinant is the rate at which new workers enter the labor force, since new potential workers start out as unemployed. The more rapidly new workers enter the labor force—that is, the faster the growth rate of the labor force—the higher the natural rate of unemployment.

The three factors affecting duration and the two factors affecting frequency of unemployment are the basic determinants of the natural rate of unemployment. These factors obviously change over time. The structure of the labor market and the labor force can change. The variability of the demand for labor by differing firms can shift.

Estimates of the Natural Rate

- The equation for the natural rate of unemployment is similar to equation (1):
$$u = w_1 u_1 + w_2 u_2 + \dots + w_n u_n$$

$$u^* = w_1 u_1^* + w_2 u_2^* + \dots + w_n u_n^* \quad (2)$$

- Equation (2) says that the natural rate is the weighted average of the natural rates of unemployment of the subgroups in the LF
- Several adjustments are needed to account for:
 - Changing composition of the LF, including increasing share of teenagers
 - Changes in the fundamental determinants of the natural rate, including unemployment benefits

Remember:

- If actual unemployment rate is above natural rate, $u > u^*$, $Y < Y^*$
- If actual unemployment rate is below natural rate, $u < u^*$, $Y > Y^*$

Unemployment Benefits

We come next to the implication of unemployment benefits for unemployment.

A key concept is the **replacement ratio**.

The replacement ratio is the ratio of after-tax income while unemployed to after-tax income while employed.

Unemployment benefits increase the rate of unemployment in two ways.

1. First, unemployment benefits allow longer job search. The higher the replacement ratio, the less urgent it is for an unemployed person to take a job.
2. The second channel is employment stability. With unemployment insurance, the consequences of being in and out of jobs are less severe. Accordingly, it is argued, workers and firms do not find it as much in their interest to create highly stable employment, and firms are more willing to lay off workers temporarily than to attempt to keep them on the job. The employment stability effect is lightened by experience rating. The unemployment insurance tax is raised on firms whose employees have high unemployment rates, giving firms an incentive toward more stable employment. However, experience rating does not make firms bear the entire cost of unemployment insurance, so the lightening, is only partial.

In addition to changes in real unemployment, unemployment benefits raise the measured unemployment rate through **reporting effects**. To collect unemployment benefits, people have to be “in the labor force,” looking for work even if they do not really want a job. They therefore get counted as unemployed. One estimate suggests that reporting effects raise the unemployment rate by about half a percentage point.

The Costs of Unemployment

The unemployed as individuals suffer both from their income loss while unemployed and from the related social problems that long periods of unemployment cause. Society on the whole loses from unemployment because total output is below its potential level.

This section provides some estimates of the costs of forgone output resulting from unemployment, and it clarifies some of the issues connected with the costs of unemployment and the potential benefits from reducing unemployment.

We emphasize costs of cyclical unemployment, which is associated with short-run deviations of the unemployment rate from the natural rate.

A first measure of the costs of cyclical unemployment is the output lost because the economy is not at full employment. We can obtain an estimate of this loss by using Okun's law, illustrated in Figure 7-1 .

According to Okun's law, the economy loses about 2 percent of output for each 1 percent that the unemployment rate exceeds the natural rate.

Distributional Impact of Unemployment

While the Okun's law estimate provides the basic measure of the overall costs of cyclical unemployment, the distributional impact of unemployment also has to be taken into account. Typically a 1-percentage-point increase in the overall unemployment rate is accompanied by a 2-percentage-point increase in the unemployment rate among blacks for example. In general, unemployment hits poorer people harder than it hits the rich, and this aspect should increase concern about the problem.

The Okun's law estimate involves all the lost income, including that of all individuals who lose their jobs. That total loss could, in principle, be distributed among different people in the economy in many different ways. For instance, one could imagine that the unemployed would continue to receive benefit payments totaling close to what their income had been while employed, with the benefit payments financed through taxes on working individuals. In that case, the unemployed would not suffer an income loss from being unemployed, but society would still lose from the reduction in total output. The unemployment compensation system partially, but by no means fully, spreads the burden of unemployment.

Other Costs and Benefits

A possible offsetting benefit occurs because the unemployed, by not working, have more leisure. However, the value that can be placed on that leisure is small. In the first place, much of it is unwanted leisure.

Second, because people pay taxes on their wages, society in general receives a benefit in the form of tax revenue when workers are employed. When a worker loses a job, society at large and the worker share the cost of lost output—society loses tax revenue and the worker loses her take-home pay. This is an additional reason that the benefit of increased leisure provides only a partial offset to the Okun's law estimate of the cost of cyclical unemployment.

The Costs of Unemployment

- Unemployed persons suffer both from their income loss and from the related social problems that long periods of unemployment cause
 - Costs of cyclical unemployment:
 - Okun's law tells us that every 1 point increase in unemployment reduces output by 2 % points
 - Distributional impact of unemployment may be more dire for some groups than others (Ex. Teenagers vs. older workers)
 - In addition to lost output from unemployment, there is reduced tax revenues
 - Social costs of unemployment:
 - Include increased divorce rates, suicide rates, and depression

INFLATION

The costs of extremely high inflation are easy to see. Money lubricates the economy. In countries where prices double every month, money stops being a useful medium of exchange, and sometimes output drops dramatically. But at the low, single-digit levels of inflation typical in the United States, the costs of inflation are more difficult to identify.

Unexpected inflation has an easily seen distributional cost: Debtors benefit by repaying in cheaper dollars, and creditors suffer by being repaid in cheaper dollars. Economists have a hard time understanding why low levels of more-or-less predictable inflation are more than a minor pain. However, economists aside, it is clear that the public has a very strong dislike of inflation that policymakers ignore at their own risk.

The Costs of Inflation

There is no direct loss of output from inflation, as there is from unemployment. In considering the costs of inflation, it is important to distinguish between inflation that is perfectly anticipated, and taken into account in economic transactions, and imperfectly anticipated, or unexpected, inflation. We start with perfectly anticipated inflation.

PERFECTLY ANTICIPATED INFLATION

Suppose that an economy has been experiencing a given rate of inflation, say, 5 percent, for a long time and that everyone correctly anticipates that the rate of inflation will continue to be 5 percent. In such an economy, all contracts would build in the expected 5 percent inflation.

Borrowers and lenders would know and agree that the dollars in which a loan is repaid will be worth less than the dollars given up by the lender when making the loan. Nominal interest rates would be raised 5 percent to compensate for the inflation. Long-term labor contracts would increase wages at 5 percent per year to take account of the inflation and would then build in whatever changes in real wages are agreed to. Long-term leases would take account of the inflation. In brief, any contracts in which the passage of time is involved would take the 5 percent inflation into account. In that category we include the tax laws, which we are assuming would be indexed. The tax brackets themselves would be increased at the rate of 5 percent per year.

In such an economy, inflation has no real costs—except for two qualifications.

1. The first qualification arises because **no interest is paid on currency**—notes and coins—not least because it is very difficult to do so. This means that the costs of holding currency rise along with the inflation rate. The cost to the individual of holding currency is the interest forgone by not holding an interest-bearing asset.

When the inflation rate rises → the nominal interest rate rises → the interest lost by holding currency increases → the cost of holding currency therefore increases → the demand for currency falls.

Individuals have to make do with less currency, making more trips to the bank to cash smaller checks than they did before. The costs of these trips to the bank are often described as the “**shoe-leather costs of inflation**.” They are related to the amount by which the demand for currency is reduced by an increase in the anticipated inflation rate, and they are estimated to be small.

Shoeleather Costs: Shoeleather cost refers to the cost of time and effort that people spend trying to counteract the effects of inflation, such as holding less cash, investing in different currencies with lower levels of inflation, and having to make additional trips to the bank. The term comes from the fact that more walking is required (historically, although the rise of the Internet has reduced it) to go to the bank and get cash and spend it, thus wearing out shoes more quickly. A significant cost of reducing money holdings is the additional time and convenience that must be sacrificed to keep less money on hand than would be required if there were less or no inflation.

2. The second qualification is the **menu costs of inflation**. These arise from the fact that with inflation—as opposed to price stability—people have to devote real resources to marking up prices and changing pay telephones and vending machines as well as cash registers.

Those costs are there, but one cannot get too excited about them. We should add that we are assuming here reasonable inflation rates, say, in the single or low double digits, that are low enough not to disrupt the payments system. At such low to moderate inflation rates, the costs of fully anticipated inflation are small.

***Menu Costs:** In economics, a menu cost is the cost to a firm resulting from changing its prices. The name stems from the cost of restaurants literally printing new menus, but economists use it to refer to the costs of changing nominal prices in general. With high inflation, firms must change their prices often in order to keep up with economy-wide changes, and this can be a costly activity: explicitly, as with the need to print new menus, and implicitly, as with the extra time and effort needed to change prices constantly.*

IMPERFECTLY ANTICIPATED INFLATION

The full adjustment to inflation does not describe economies in the real world. Modern economies include a variety of institutional features representing different degrees of adjustment to inflation. Economies with long inflationary histories, such as those of Brazil and Israel in the 1970s and 1980s, made substantial adjustments to inflation through the use of indexing.

- Imperfectly anticipated inflation: full adjustment to inflation does not describe economies in the real world → imperfectly anticipated
- Most contracts are written in nominal terms
 - If inflation is unexpectedly high, debtors repay loans in cheaper dollars
 - If inflation is unexpectedly low, debtors repay loans in more valuable dollars (take a loss)
 - The possibility of unexpected inflation introduces an element of risk, which might prevent some from making some exchanges they otherwise would undertake
 - Unanticipated inflation redistributes wealth and income

Redistribution effect operates with respect to all assets fixed in nominal terms, in particular, money, bonds, savings accounts, insurance contracts, and some pensions. It implies that realized real interest rates are lower than nominal interest rates on assets, and even possibly negative. Obviously, it is an extremely important effect, since it can wipe out the purchasing power of a lifetime's saving that is supposed to finance retirement consumption.

Inflation and Indexation

Two kinds of contracts are especially affected by inflation: *long-term loan contracts and wage contracts*. We discuss the possibility of reducing people's vulnerability to inflation by indexation, which ties the terms of contracts to the behavior of the price level.

In countries where inflation rates are high and uncertain, long-term borrowing using nominal debt becomes impossible: lenders are simply too uncertain about the real value of the repayments they will receive. In such countries governments issue ***indexed debt***: a bond is indexed to the price level when either the interest rate or the principle or both are adjusted for inflation.

- The holder of the indexed bond will typically receive interest equal to the stated real rate plus the actual inflation rate → risk reducing
- Some formal labor contracts include cost of living adjustment (COLA) provisions
 - Link increases in money wages to increases in the price level

- Suppose real material prices increase, and firms pass these cost increases on as higher prices of final goods
 - Consumer prices will increase
 - Under a system of wage indexation, wages will also rise → this leads to further price, materials-cost, and wage increases
 - *Indexation in this example feeds an inflation spiral*
- Need to differentiate between supply and demand shocks to understand the consequences of wage indexation
 - In the case of a demand shock, there is a “pure” inflation disturbance and firms can afford to pay the same real wages and will not be affected by indexation
 - In the case of a supply shock, real wages fall, and full indexation prevents this from happening
 - *Wage indexation complicates the adjustment of an economy to supply shocks*

- Many have argued that the government should adopt indexation on a broad scale, including bonds and the tax system because:
 - Inflation would be easier to live with
 - Costs of unanticipated inflation would disappear
- **Governments have been reluctant to index for three reasons:**
 1. Indexing makes it harder for the economy to adjust to shocks whenever changes in relative prices are needed
 2. Indexing adds another layer of calculation to most contracts
 3. Indexation will weaken the political will to fight inflation, lead to higher inflation, and perhaps make the economy worse off