
ANALYSIS MODEL OF UNEMPLOYMENT IN THE CONTEXT OF THE LABOR MARKET

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Abstract

In this paper the authors analyzed and presented the determinants of the unemployment rate, i.e., the average unemployment rate around which the economy fluctuates. In this sense, some equations were used, such as the steady state condition to highlight the steady state unemployment rate, thus showing that the higher the separation rate, the higher the unemployment rate, and the higher the job finding rate, the lower the unemployment rate. Of course, frictional and structural unemployment, which are inevitable in a changing economy, and government policies, which among other things seek solutions to reduce the unemployment rate through effective measures, have been taken into account. Wage rigidity, which is practically influenced by unions and collective bargaining, was also taken into account.

Key words: *unemployment, equilibrium, factors, government policy, crises, developments.*

JEL classification: *C10, E20*

Introductions

Unemployment is the macroeconomic problem that most affects people directly and severely. For most people, losing a job means a reduction in living standards and psychological distress. Unsurprisingly, unemployment is a frequent topic of political debate and politicians often claim that their proposed policies would help create jobs.

Although the problem is perennial, it became especially important after the financial crisis and recession of 2008-2009, when the unemployment rate hovered around 9% for several years before falling to around 6% in 2014. Of course, the alarming rise in unemployment it was also found after the

outbreak of the pandemic crisis, reaching the maximum in 2020, after which a slight decrease followed, but with some oscillations due to the accumulation of crises that preceded the covid19 crisis.

Economists study unemployment to identify causes and help improve public policies that affect the unemployed. Some of these policies, such as vocational training programs, help people find work. Others, such as insurance, alleviate some of the hardships faced by the unemployed. High minimum wage laws are believed to increase unemployment among the less skilled and less experienced population.

Literature review

The study of the unemployment rate has been the subject of study by several researchers. Thus, Bijak J. and others (2007), Beadey D. and Hodge A. (2009) paid attention in their studies to the analysis from multiple aspects of the evolution of the world population and the role of the population in ensuring labor force reserves. Anghelache C. and others (2020) did a study where they highlighted the negative effect that the increase in unemployment has under the conditions of the Covid 19 crisis. Couch K.A. and others (2013) analyzed the long-term consequences of unemployment. Kroft K. and Notowidigdo M.J. (2016) presented significant elements regarding unemployment insurance. Nekoei A. and Weber A. (2017) tried to identify how job quality is improved by extending unemployment benefits. Oster E. et al. (2013) analyzed the relationship between limited life expectancy, human capital and health investments. Walker A. and Maltby T. (2012) published a study on the strategy of matching demographics as a workforce resource.

Data, Results and Discussion

In this paper the authors examined the determinants of the natural rate of unemployment, that is, the average rate of unemployment around which the economy fluctuates. The natural rate is the unemployment rate toward which the economy gravitates in the long run, given all labor market imperfections that prevent workers from instantly finding jobs.

Every day some workers lose or quit their jobs and other workers who are unemployed are hired. This perpetual ebb and flow determine the fraction of the labor force that is unemployed. In this paper I developed a model of labor force dynamics that shows what determines the natural rate of unemployment.

We will make the following notations: let L represent the labor force, E the number of employed workers, and U the number of unemployed workers.

Because each worker is either employed or unemployed, the labor force is the sum of employed and unemployed:

$$L = E + U.$$

According to these notations, the unemployment rate is U/L .

To see what factors, determine the unemployment rate, we assume that the labor force L is fixed and focus on the transition of individuals into the labor force between employment E and unemployment U .

We will note the job separation rate, the fraction of employed people who lose or leave their jobs each month. Thus, let f be the job finding rate, i.e., the fraction of unemployed people who find a job each month. Together, the separation rate s and the job finding rate f determine the unemployment rate.

If the unemployment rate is neither increasing nor decreasing, i.e., if the labor force in the market is in a state of equilibrium, then the number of people finding jobs fU must equal the number of people losing them sE jobs. Thus, we can write the steady state condition as $fU = sE$.

In each period, a fraction of s workers loses their jobs and a fraction f of the unemployed find jobs. The rates of job separation and job finding determine the unemployment rate.

We can use this equation to find the steady state unemployment rate. According to the definition of labor force, we know that $E = L - U$, that is, the number of employees equals the number of labor force minus the number of unemployed. If we replace E by $(L - U)$ in the steady state, we will have the following relationship:

$$fU = s(L - U)$$

If we divide both sides of this equation by L we get:

$$U/L = 1 + f/(f+s)$$

This equation shows that the steady state unemployment rate U/L depends on the job separation rates s and job finding f . The higher the separation rate, the higher the unemployment rate. The higher the job finding rate, the lower the unemployment rate.

Consequently, any policy aimed at lowering the natural rate of unemployment must either reduce the job separation rate or increase the job finding rate. Similarly, any policy that affects the rate of job separation or job finding also changes the natural rate of unemployment.

Although this model is useful in the relationship between the unemployment rate and job separation and job finding, it still begs the question: why does unemployment exist in the first place? If a person could

always find a job quickly, then the job finding rate would be very high and the unemployment rate would be close to zero.

In the following we will consider two reasons underlying unemployment, namely the search for a job and wage rigidity.

One reason for unemployment is that it takes time to match workers and jobs.

The equilibrium model of the aggregate labor market assumes that all workers and all jobs are identical, and therefore that all workers are equally suited to all jobs. If this were true and the labor market were in equilibrium, then job loss would not cause unemployment: a laid-off worker would immediately find a new job at the market wage.

In fact, workers have different preferences and skills, and jobs have different attributes. Furthermore, the flow of information about job candidates and job vacancies is imperfect, and the geographic mobility of workers is not instantaneous. For these reasons, searching for a suitable job takes time and effort, and this tends to reduce the rate of finding a job. Indeed, because different jobs require different skills and offer different wages, the unemployed may not take the first job offer they receive. Unemployment caused by the time it takes workers to look for a job is called frictional unemployment.

Frictional unemployment is inevitable in a changing economy. For many reasons, the types of goods that firms and households demand vary over time. As the demand for goods changes, so does the demand for labor that produces those goods. For example, the invention of the personal computer reduced the demand for typewriters and the demand for labor in the production of typewriters. At the same time, the demand for labor in the electronics industry increased. Similarly, because different regions produce different goods, the demand for labor may be increasing in one region of the country and decreasing in another. An increase in the price of oil may cause the demand for labor to increase in the oil-producing states, but because expensive oil means expensive gasoline, it makes driving less attractive and may decrease the demand for labor in the auto-producing states.

Economists call a change in the composition of demand between industries or regions a sectoral shift. Because sectoral changes always occur and because it takes time for workers to change sectors, there is always frictional unemployment.

Sectoral changes are not the only cause of job separation and frictional unemployment. In addition, workers find themselves unexpectedly out of work when their firms fail, when their job performance is deemed unacceptable, or when their specific skills are no longer needed. Workers may also quit their jobs to change careers or move to different parts of the country. Regardless of

the cause of job loss, the worker will need time and effort to find a new job. As long as the demand and supply of labor among firms changes, frictional unemployment is inevitable.

Many government policies seek to lower the natural rate of unemployment by reducing frictional unemployment. Thus, government employment agencies disseminate job vacancies to more effectively match jobs. Publicly funded reskilling programs are designed to ease the transition of workers from declining to growing industries. If these programs succeed in increasing the rate of finding a job, they lower the natural rate of unemployment.

Other government programs inadvertently increase the amount of frictional unemployment. One of these is unemployment insurance. Under this program, unemployed people receive a portion of their wages for a certain period of time after losing their job. Although the exact terms of the program differ from year to year and from state to state, the average worker covered by unemployment insurance in the United States receives roughly half of his previous salary for more than half the year. In many European countries, unemployment insurance programs are significantly more generous.

The fact that unemployment insurance increases the natural rate of unemployment does not necessarily imply that the policy measure is wrong. The program has the advantage of reducing workers' uncertainty about their income. Furthermore, inducing workers to reject unattractive job offers can lead to better matches between workers and jobs. Evaluating the costs and benefits of different unemployment insurance systems is a difficult task that continues to be the subject of much research.

Economists often propose reforms to the unemployment insurance system that would reduce unemployment. A common proposal is to require a firm that lays off a worker to bear the full cost of unemployment. Such a system is called 100% experience-rated because the rate each firm pays into the unemployment insurance system fully reflects the unemployment experience of its own workers. Most current programs are partially experience assessed. Under this system, when a firm lays off a worker, it is taxed for only a portion of the worker's unemployment benefits, with the rest coming from general revenue. Because a firm pays only a fraction of the cost of the unemployment it causes, it has an incentive to lay off workers when labor demand is temporarily low. By reducing this incentive, the proposed reform may reduce the prevalence of layoffs.

Another reason for unemployment is wage rigidity. The wage level adjusts to a level where labor supply equals labor demand. In the equilibrium labor market model, the real wage adjusts to the balance between labor supply and demand. However, wages are not always flexible.

Sometimes the real wage is locked above the market clearing level. When the real wage is above the level that balances demand and supply, the quantity of labor supplied exceeds the quantity demanded. Firms must somehow ration limited jobs among workers. Real wage rigidity reduces the rate of finding a job and increases the unemployment rate.

Unemployment resulting from wage rigidity and job rationalization is sometimes called structural unemployment. Workers are unemployed not because they are actively looking for the jobs that best suit their individual skills, but because there is a fundamental mismatch between the number of people who want to work and the number of jobs available.

When the real wage exceeds the equilibrium level and the supply of workers exceeds the demand, we might expect firms to lower the wages they pay. Structural unemployment occurs because firms fail to cut wages despite a surplus of labor supply. Here we identify three causes of wage rigidity: minimum wage laws, union monopoly power, and efficiency wages.

Economists believe the minimum wage has the biggest impact on teen unemployment. The equilibrium wages of teenagers tend to be low for two reasons. First, because teenagers are among the least skilled and least experienced members of the labor force, and they tend to have low marginal productivity. The second aspect is that teenagers often receive part of their income as compensation for on-the-job training.

Many economists have studied the impact of the minimum wage on teenage employment. These researchers compare the change over time in the minimum wage with the change in the number of teenagers in the workplace.

The minimum wage is a perennial source of political debate. Proponents of a higher minimum wage see it as a way to raise the incomes of the working poor. Opponents of a higher minimum wage argue that it is not the best way to help the working poor.

Many economists and policy makers believe that tax credits are a better way to raise the incomes of the working poor. The Earned Income Tax Credit is the amount that working poor families are allowed to deduct from the taxes they owe.

In most European countries, trade unions play an important role. The wages of unionized workers are determined not by the balance between supply and demand, but by negotiations between union leaders and company management. Often the final agreement raises the wage above the equilibrium level and allows the firm to decide how many workers to hire, the result being a reduction in the number of workers employed, i.e., a lower rate of finding a job and an increase in structural unemployment.

Unions can also influence the wages paid by firms whose labor is not unionized because the threat of unionization can keep wages above the equilibrium level. Unions not only increase wages, but also increase the bargaining power of the workforce on many other issues, such as hours of employment and working conditions. A firm may choose to pay its workers high wages to keep them happy and discourage them from forming a union.

Unemployment caused by unions and the threat of unionization is an example of conflict between different groups of workers, i.e., insiders and outsiders. Those workers already employed by a firm, the insiders, usually try to keep their wages high. The unemployed, the outsiders, can accept a lower salary in order to be employed.

Efficiency-wage theories also propose a third cause of wage rigidity in minimum wage laws and unionization. These theories argue that high wages make workers more productive. The influence of wages on worker efficiency may explain the failure of firms to cut wages despite a surplus of labor supply.

Even though a wage cut would decrease a firm's wage bill, if these theories are correct, it would lead to lower worker productivity and lower profits for the firm.

Economists have proposed various theories to explain how wage levels affect worker productivity. An efficiency-wage theory, which applies mainly to poorer countries, argues that wages influence nutrition. Better-paid workers can afford a more nutritious diet, and healthier workers are more productive.

A second efficiency wage theory, which is more relevant to developed countries, argues that high wages reduce labor turnover. Workers left their jobs for many reasons such as accepting better positions at other firms, changing careers, or moving to other parts of the country. The more a firm pays its workers, the greater their incentive to stay with the firm. By paying a high wage, a firm reduces the frequency with which its workers quit, thereby reducing the time and money spent on hiring and training new workers.

A third efficiency wage theory holds that the average quality of a firm's labor force depends on the wages it pays its employees. If a firm cut pay, the best-trained employees may take jobs at other companies, leaving the firm with inferior employees who have fewer opportunities and alternatives. By paying a wage above the equilibrium level, the firm can reduce adverse selection, improve the average quality of the labor force, and thereby increase productivity.

A fourth efficiency wage theory holds that a high wage improves worker effort. This theory assumes that firms cannot perfectly monitor the work effort of their employees and that employees must decide for themselves

how hard they will work. Workers can choose to work hard or they can choose to shirk and risk being caught and fired. Economists recognize this possibility as an example of moral hazard, that is, the tendency of people to behave inappropriately when their behavior is imperfectly monitored. The firm can reduce the moral hazard problem by paying a high salary.

Conclusions

Some conclusions can be drawn from the study done by the authors and presented in this article. A first conclusion that emerges from the study is that unemployment represents wasted resources in the sense that the unemployed have the potential to contribute to the national income through employment, but do not. Those who search for jobs that match their skills are happy when the search ends, and those who wait for jobs at firms that pay above-equilibrium wages are happy when those positions open up on the market.

Another conclusion that emerges from this study is that by mitigating the economic burden of unemployment, unemployment insurance increases the level of frictional unemployment and increases the natural rate of unemployment. Unemployed people receiving unemployment benefits are less pressured to look for new jobs and do not follow up on unattractive job offers. These changes in the behavior of the unemployed reduce the rate of finding a job. Furthermore, because workers know that their income is partially secured by unemployment insurance, they are less likely to seek jobs with stable employment prospects and less likely to negotiate for job security guarantees, and these changes in behavior lower the employment rate.

Another conclusion is that the rigidity of the real wage leads to the rationing of jobs, and if the real wage is stuck above the equilibrium level, then the supply of labor exceeds the demand and the result is structural unemployment. The government can also cause wage rigidity when it prevents wages from reaching the equilibrium level, and minimum wage laws must set a legal minimum for the wages that firms pay their employees.

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