

Is Unemployment a Macroeconomic Problem?

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Rather than start directly on the sensitive issue of the economic role of unemployment, I would like to spend some time first on a parallel question of rather less social importance, and then draw some analogies to the problem of unemployment. The phenomenon I will examine is the time people spend idle at airports. Ultimately, I will compare the analysis of idle airport time with the analysis of idle time in the labor market.

In any airport at any time, numerous people are waiting for something to happen. These people are not doing anything particularly constructive with their time—they are waiting because they arrived early, because their planes have been delayed, or because they are in a queue for the next available flight. An observer who knew nothing about the purpose of an airport would be puzzled by the chronic idleness of most of the people there. The observer might gather data on airport idleness along the following lines. At any given time, 0.2 percent of the population is idle at the airport. The idle population turns over frequently—the median duration of a spell at the airport is 35 minutes. But long spells account for the bulk of idleness—half of all idleness occurs in the course of spells which will last 5 hours or more. Airport idleness is highly concentrated in the population. In a given year, three-quarters of the population are never idle at the airport; 5 percent of the population incurs half of all idleness. A predictable seasonal pattern is apparent—idleness reaches sharp peaks at Thanksgiving, Christmas, and Easter, plus a broad peak in the summer.

Were it quantitatively more significant, airport idleness would be a social issue. The airport idle are not usually engaged in useful activities. Few of them spend time trying to locate earlier flights, nor do many of them try to accelerate their movement by offering to pay a higher fare. A surprisingly large fraction do nothing more than sit. The opportunity cost of time spend idle at the airport is essentially zero, it would appear.

I. A Microeconomic Model of Airport Idleness

People come to airports because they plan to take a flight, or because they are picking up somebody. The flow to the airport is controlled rather closely by the demand for air travel. That demand can reasonably be taken as a function, $D(p, r)$, of air fares, p , and the utilization rate or load factor, r . A higher utilization rate repels travelers because it is more difficult when more flights are full to make convenient arrangements, to change plans, or to make up for a missed plane.

The supply of airline seats is also a function, $S(p, r)$, of the fare p , and the utilization rate r . In the long run, supply may reasonably be taken to be perfectly elastic—if revenue per seat, pr , equals long-run marginal cost, any number of seats will be supplied. In the shorter run, supply will be less elastic. In either case, there will be a downward-sloping schedule in $r-p$ space depicting all combinations of r and p which equate supply and demand, as shown in Figure 1. At the upper left, the market clears with high fares and low utilization; at the lower right, with low fares and high utilization.

Equilibrium would be indeterminate if airlines were price takers and utilization rate takers in the market. But they are not. If all the other airlines are charging p and the

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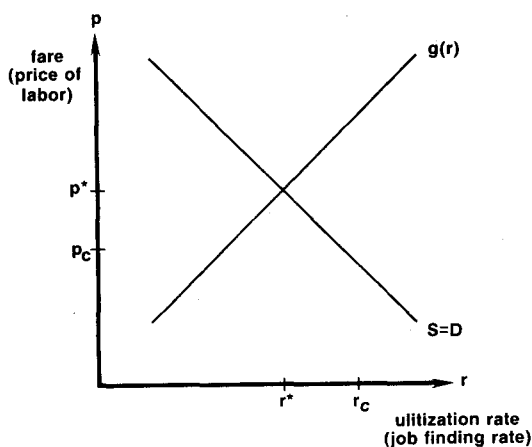


FIGURE 1

market is clearing with a utilization rate of r , it may be optimal for any given airline to set a fare different from p and achieve a utilization rate different from r . If prevailing fares are high and industry utilization is low, it may be attractive to set a lower fare and fill up seats. If fares are low and utilization is high, passengers will flock to an airline that has seats readily available at somewhat above prevailing fares. As a general matter, one airline ought to set its fare according to a function $\phi(p, r)$ of the fare set by all others, p , and the state of the market as measured by r . This function is increasing in p , but with derivative less than unity. It is increasing in r . In equilibrium, all airlines set the same fare, which means $p = \phi(p, r)$. We can solve this equation to obtain an upward-sloping schedule $g(r)$, also shown in Figure 1. At each point on this schedule, the profit-maximizing fares chosen by each airline, given the fares of others, and the prevailing utilization rate will be equal.

The intersection of the downward-sloping market-clearing schedule and the upward-sloping $g(r)$ schedule is the unique equilibrium in the market for airline seats. At fare p^* and utilization rate r^* , passengers are arriving at the airport at the same rate that airlines are serving them. Further, no airline can improve its profit by setting a fare different from the prevailing fare. Utilization may be well under 100 percent—were it that high,

many prospective passengers would be willing to pay higher fares in order to get seats at the last minute.

The equilibrium depicted in Figure 1 is robust, in the sense that it occurs at the intersection of upward- and downward-sloping schedules. In particular, modest shifts in either schedule do not bring large shifts in utilization rates. Were utilization to rise sharply, it would be a signal of a strong outside impulse, not a move generated internally by the market because of a nearly unstable equilibrium.

The equilibrium in Figure 1 assumes complete freedom on the part of airlines in setting fares to maximize profits. But the figure can also describe the outcome of fare controls. If the regulators prescribe a fare above the free-market level, the market will clear in a more limited sense at a point up and to the left along the $S = D$ schedule; utilization will be below its optimum. Similarly, the regulators can push the market down and to the right along $S = D$, in which case utilization will be too high.

What about airport idleness? Given the prevailing fare p and the utilization rate r , at any point along the $S = D$ schedule (not just the full equilibrium, p^* and r^*), the number of people waiting at the airport is given by the decisions of the public about how much extra time to allow between departure for the airport and flight time. For a number of reasons, the time is higher when utilization is higher. Check-in time is longer when utilization is high, for example. The optimal safety margin is higher when flights are crowded because the consequences of a missed plane are more serious when it will be difficult to line up an alternative flight. Further, airport idleness will rise in times of high utilization precisely because the wait for an available flight is longer after missing a plane.

II. Is Airport Idleness a Social Problem?

It strikes me as fair to say that the idleness at the full equilibrium in Figure 1 is not a social problem even though it probably means hundreds of millions of man- and woman-hours per years of almost completely wasted time. The idleness is a problem, in

the sense that it would be nice if air travel could be accomplished without idleness, but it is not a situation that calls for relief through intervention.

The more significant question is: how would we evaluate a substantial increase in airport idleness that persisted for a year or more? The analysis makes clear that the answer depends entirely on the source of the change. Nothing in the model tells us that every rise in idleness is a pure waste of people's time. For example, an exogenous drop in airline capacity (say from the airport controllers' strike) would shift the $S = D$ schedule up and to the right. The new equilibrium would involve higher fares and higher utilization, and so more airport idleness (at least more idleness per passenger mile). In this case, the market is making the best of a bad situation. Though it would be true that idleness could be depressed by putting an emergency tax on air travel, such a move would not be efficient.

On the other hand, it is clear that other forces could bring an increase in idleness that would be a social problem. Suppose that price controls were reinstated in the airline industry, and this time they depressed fares below equilibrium. The industry would operate at a point down and to the right along $S = D$, say at fare p_c and utilization rate r_c . Airport idleness would jump and now would represent a social problem, analogous to the social problem of long lines at gas stations in 1974 and 1979. The corrective policy needed is obvious—remove price controls and let prices rise and utilization fall.

Now suppose that demand increased, say through general inflation, but that airlines perversely kept their old fares. Then utilization would rise more than would be efficient, and excess airport idleness would follow. Again, higher idleness would be a social problem, but now it is much less obvious what is the appropriate corrective action. The imposition of price controls to force fares upward would do the job in theory, but few economists would trust the regulators to make such a deft intervention after decades of experience with controlled fares far above equilibrium. Economists still lack a good prescription for treating free markets that

fail to do what they are supposed to. About the best we can say about sticky airline fares is that it would be desirable to keep the macroeconomic background as stable as possible.

III. Unemployment

I hope the analogy between the airport and the labor market is reasonably obvious. The airport idle spend only a small fraction of their time checking with airlines for an earlier flight, just as the job seeker spends little time checking with employers about jobs that might start sooner. Both groups have a pretty clear idea about what is going to develop, and perceive that the right strategy is simply to wait.

The airport resembles the job market in handling a huge volume of traffic routinely at all times. Each week, around a million workers find jobs, just as several million passengers each week accomplish their purposes at airports. In both instances, the flows are stable. In the labor market, workers change jobs according to a stable life cycle pattern. Young people try one job after another until they find a good match, which may then last for decades. The flow into the market from life cycle turnover completely dominates the extra flow from job loss during a recession. Just as a theory of the incidence of airport idleness turns out to be a theory of optimal waiting time, a theory of the unemployment rate is largely a theory of the duration of job seeking. Of course, the time scale is completely different, which is why we worry about unemployment and not about airport idleness.

The model of the airport becomes a model of the labor market with a simple relabeling of the variables. Let p be the wage and r be the job-finding rate (the weekly probability that a seeker will find work); these take the place of the fare and the utilization rate. Exactly as before, there is a downward-sloping schedule showing all the alternative combinations of wages and job-finding rates that equate the supply and demand for labor. Higher p and higher r are each an attraction for workers and a disadvantage for employers. For an arbitrary wage, the market

will settle on the job-finding rate given by the $S = D$ schedule.

If the market is at a point up and to the left along the $S = D$ schedule, an employer can profit by departing from the prevailing terms. A wage below the prevailing wage will still attract workers, because job seekers will face less competition from their comrades when they apply. At points down and to the right, an employer can profit by offering above the prevailing wage—reduced recruiting effort will more than make up for the extra wage cost. Again, there is an upward-sloping schedule, $g(r)$, giving the wage level for each r such that the optimal wage offer for each employer is that wage level. There is a robust equilibrium at the intersection of the two schedules, with job-finding rate r^* and wage p^* .

Corresponding to the equilibrium job-finding rate r^* , is an equilibrium or natural unemployment rate u^* , which is the product of r^* and the stable rate of flow into the labor market. Again, only major outside influences can bring a big shift in unemployment. One obvious source of excess unemployment would be the imposition of a binding minimum wage, which would force the market up and to the left along the $S = D$ schedule. It is hard to think of any other event, comparable to the air controllers' strike, which would cause a year or more of high unemployment.

The United States is about to enter its third year of unemployment far above historical averages, and certainly no government intervention in wages has occurred over

the period to explain it. In terms of Figure 1, the economy is at a point above and to the left of the equilibrium, and the forces that should take us back to the equilibrium are working painfully slowly. Because I cannot think of any forces that might have shifted either $S = D$ or $g(r)$ in a way to make them intersect at a much lower r and higher rate of unemployment, I am forced to conclude that something is wrong—unemployment is a problem.

IV. Conclusion

Government intervention in wage setting has such a hopeless history in the United States and elsewhere that I cannot imagine recommending it, even though if by some magic we could coax wages down by 3 percent on January 1, unemployment would fall quickly to a more satisfactory level.

My analysis supports the prevailing consensus of monetarists and Keynesians, that disinflation is a costly process, as against the equilibrium view that the real consequences of price stabilization are transitory and insignificant. Deeply embedded inflationary momentum has pushed us up and to the left along the $S = D$ schedule; the process that will move us back to equilibrium at a low rate of inflation is a time consuming and costly one. To say in 1982 that unemployment is a major social problem is precisely to say that the decision to inflate the economy in the late 1960's and early 1970's was a costly one.