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The Work Behind the Nobel Prize

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This year's Nobel Memorial Prize in Economic Science (formally the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel) was awarded today to Peter A. Diamond, Dale T. Mortensen and Christopher A. Pissarides for their research on "markets with search frictions," which means any setting where buyers and sellers don't automatically find each other. Search models are relevant in many settings, including dating, used cars and housing, but above all, these models help us make sense of unemployment.

As the United States unemployment rate has remained above 9.4 percent since May 2009, the prize manages both to honor timeless research on core economic questions and to highlight the ways in which economics addresses a most timely global problem.

The most traditional economic model of the labor market assumes a labor supply schedule, which reflects the number of workers willing to work at a given wage, and a labor demand schedule, which describes the number of workers that companies are willing to hire at a given wage. At some wage, supply equals demand and that's the market equilibrium, which is where traditional economics predicts the world will end up. In markets with undifferentiated products — like copper or winter wheat — that model works pretty well, but it has some pretty obvious failings when it comes to labor or housing markets.

In particular, the Economics 101 model does an awful job explaining an American civilian labor force where nearly one-tenth say they want a job and can't find one. Die-hard supporters of the basic model sometimes argue that wage floors, like the minimum wage, keep wages too high for the market to clear. But American minimum wages are low, and only a small fraction of jobs are affected by that barrier. Another attempt to save the old model is to argue that unemployed workers just value their time too highly to take a job at current market rates. But the view that the unemployed are just having a swell time hanging out watching cable is wildly at odds with the real world. New paradigms emerge when reality crashes against theory, and that's what brought us the search theory of Professors Diamond, Mortensen and Pissarides.

Search models don't just assume that buyers and sellers face a market-clearing price

— they try to actually describe the process that determines that price. The ur-search paper, "The Economics of Information," was published in 1961 by George Stigler (who won his Nobel in 1982). Professor Stigler modeled a product market where consumers kept searching for lower prices until the point where "the cost of search is equated to its expected marginal return," in the form of lower prices. Professor Stigler then applied search theory to the labor market in 1962, focusing on the dispersion of wages, which he argued should be higher when search was more difficult. He said little about unemployment and didn't really address the pricing behavior of companies.

Dale Mortensen's 1970 paper on "Job Search, the Duration of Unemployment and the Philips Curve," formalized and extended Professor Stigler's ideas. In Professor Mortensen's paper, companies offer jobs, each of which requires a certain amount of skill. Jobs with the same skill requirements offer the same wage. Workers then interview for jobs, and if they are qualified, they can either take the job or move along. More skilled workers will be qualified for more jobs, which perhaps explains why the unemployment rate among college graduates is about one-third the unemployment rate for high school dropouts, but they will also be pickier. Pickiness among the more skilled also leads to unemployment, as workers hold out for a better job. In a sense, unemployment does reflect the fact that workers have something better to do than accept a low-paying job. That something is searching for a better-paying job.

But Professor Mortensen's 1970 paper was still pretty modest in its treatment of the company side of the problem, which Peter Diamond remedied in his 1971 search model, "A Model of Price Adjustment," published in The Journal of Economic Theory. Professor Diamond began writing about information a few years later, with an article about the "role of the stock market," in the transmission of knowledge. The 1971 search paper produces a somewhat surprising result: if there are a number of otherwise identical stores, which fix their prices, then competition can lead to high monopoly prices, not low competitive pricing or Stiglerian price dispersion. If consumers think that companies are all charging the same price, then they won't bother searching. If consumers don't bother searching, then the only reasonable thing for companies to do is to charge the monopoly price. This result, which is known as the Diamond Paradox, can be weakened if price-cutting companies are able to advertise, but it suggests the enormous ability of search frictions to distort markets.

In the late 1970s, Professors Diamond, Mortensen and Pissarides all turned to the public policy implications of search models. In a 1977 article "Unemployment Insurance and Job Search Decisions," Professor Mortensen examined the implication of unemployment benefits for unemployment rates. He concluded that the effects were more ambiguous than previously thought, because workers who aren't currently receiving unemployment insurance benefits will be more likely to take on a low-wage, risky job if they know they can get unemployment insurance if the job doesn't work out.

The core of Professor Diamond's work on search models appeared in a three-year

window between 1979 and 1982. His work was distinguished both by elegant modeling — building the theoretical tools needed to make sense of labor turnover—and important insights. Perhaps the key idea is the "search externality," the idea that each "additional worker makes it easier for vacancies to find workers and harder for other workers to find jobs." In a sense, a flood of unemployed workers can congest the labor market just as a flood of extra drivers can congest a highway. Whenever one worker passes up a job, that worker makes finding a job easier for other workers. This insight led to Professor Diamond's conclusion that higher levels of unemployment insurance could improve the workings of the labor market by making some workers pass up marginal jobs.

Professor Pissarides had also begun working on job search models in the late 1970s, but he published his masterpiece "Job Creation and Job Destruction in the Theory of Unemployment," together with Professor Mortensen, in The Review of Economic Studies in 1994. In this model, workers make decisions about searching for jobs. Companies make decisions about creating job openings. When they meet, a worker is hired if both parties benefit from the match. There is an implied negative relationship between the level of vacancies (the number of jobs needing to be filled) and the level of unemployment, which is called the Beveridge Curve. Most importantly, a cyclical downturn can cause the system to go seriously haywire, at least for a while, as the number of jobs destroyed soars and the number of jobs created drops.

The work of these economists does not tell us how to fix our current high unemployment levels, but it does help us to make some sense of our current distress. Their models tell us that common wisdom — like the belief that higher unemployment benefits always increase unemployment — may be wrong and that policies that improve matching may have great value. Rarely has the prize committee been better able to match the honored work with the moment.