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Some Recent Developments in Labor Economics and Their Implications for Macroeconomics

AT LEAST SINCE THE RISE OF MASS UNEMPLOYMENT in Britain in the interwar years and the Great Depression in the United States, a major task of macroeconomics has been the explanation of unemployment, which is seemingly involuntary, often quite persistent at high levels, and varies cyclically with aggregate demand. The solution to this problem offered by Keynes in the 1930s was to postulate that nominal wages were sticky (or at least downward-rigid). In this case, the labor market will fail to clear when demand is low, and declines in demand lead to increases in unemployment and reductions in output. Postwar Keynesians modified this approach adding a Phillips curve relationship in which wages and prices adjusted gradually to unemployment. More recent versions have been amended such that in the long run the unemployment rate eventually moves back to a slowly evolving natural rate determined by the composition of the labor force and structure of the labor market.

The Keynesian synthesis has come under increasing scrutiny over the last fifteen to twenty years from those questioning its theoretical underpinnings. The Keynesian approach begged the questions of why wages are sticky and, in particular, of why unemployed workers are unwilling or unable to bid down the wages of seemingly comparable employed workers and gain jobs. The concepts of involuntary unemployment and the business cycle mechanism of slow wage and price adjustments to aggregate demand disturbances have both been severely

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criticized. This questioning has led to a great deal of work attempting to provide alternative equilibrium explanations for cyclical fluctuations in the labor market. Additionally, many researchers have tried to provide firmer microfoundations for apparent non-market clearing in the labor market.

This upheaval in academic macroeconomics has generated a number of interesting approaches to analyzing fluctuations: search models, new classical models, aggregate real business cycle models with fluctuations in employment driven by intertemporal substitution.¹ These approaches have all increased our knowledge of the operation of labor markets and the macroeconomy, but none have provided a fully satisfactory theoretical and/or empirical account of cyclical unemployment fluctuations and persistent high unemployment. In this paper, I examine several new contenders: models of sectoral shifts and unemployment, efficiency-wage models, and insider-outsider models of wage and employment determination.

A real business cycle approach with roots in the work of Ricardo is the view that cyclical fluctuations do not arise from aggregate shocks but from the slow reallocation of labor across sectors in response to intersectoral shifts in labor demand. This approach drops the view of the labor market as one large auction market and adopts a view of many spatially or informationally isolated markets. Changes in taste, shifts in terms of trade, and relative oil prices all require the major reallocations of labor that can lead to unemployment if labor mobility is costly and time-consuming.

Much work has taken the alternative approach of attempting to provide more coherent explanations for apparent non-market clearing in the labor market. Two new developments—efficiency-wage theories and insider-outsider models—provide complementary explanations for the existence of involuntary unemployment.² These theories argue that firms may find it in their interest to pay wages in excess of market clearing. In efficiency-wage models, firms may set wages above the level consistent with market clearing in order to retain, recruit, or motivate employees. In insider-outsider models, high wages and involuntary unemployment can arise from the bargaining power of incumbent workers generated by costs of turnover (hiring and firing costs). The bargaining power of insiders is likely to be highest when they can act collectively or threaten to take collective action. The insider-outsider models are closely related to models of union behavior. The models provide reasonable non-market clearing models of the labor market that may eventually be usefully integrated into “New Keynesian” macroeconomic models which currently tend to focus on imperfect competition and price rigidities in the product market.³

¹Hall and Lilien (1986) and Kniesner and Goldsmith (1987) survey these approaches and evaluate their abilities to explain aggregate labor market behavior.

²The concept of involuntary unemployment is clearly somewhat ambiguous in an economy in which jobs and workers are heterogeneous. I shall consider a worker to be involuntarily unemployed if he or she is willing to work at the same wage as comparably skilled employed workers and cannot get any offers to work at that wage.

³Blanchard (1987) and Rotemberg (1987) provide excellent surveys of New Keynesian models.

The rest of the paper is organized as follows. Section 1 discusses models of sectoral shifts and unemployment and empirical work trying to determine the importance of sectoral shifts in explaining unemployment fluctuations. Sections 2 and 3 analyze efficiency-wage and insider-outsider models respectively. Section 4 presents some concluding remarks.

1. SECTORAL SHIFTS AND UNEMPLOYMENT

Macroeconomists typically view aggregate fluctuations as arising from aggregate shocks. The aggregate models used by many macroeconomists do not account for the possibility that shifts in the sectoral composition of demand can have adverse macro aggregate consequences in an economy in which resources are not instantaneously mobile across sectors. Recently, Black (1982), Lilien (1982a, 1982b), Davis (1987), and others have put forth the argument that aggregate fluctuations may largely be the result of intersectoral shifts in labor demand and the slow process of labor reallocation across sectors. The basic idea is that periods of rapid technological change, shifts in product demand, or major changes in relative prices, such as from an oil price shock, require unusually large movements of labor across firms and possibly also across regions. If labor is slow to adjust to these shifts of labor demand, unemployment is likely to increase.

Sectoral-Shifts Models

The starting point for models of sectoral shifts is the notion that the natural or frictional rate of unemployment is intimately related to the process of labor reallocation in a dynamic economy. Changes in demand for their products and in input costs lead firms to be continually adjusting the size of their labor forces. Since it takes time for separated workers to be matched to new jobs, some positive level of unemployment (typically viewed as frictional unemployment) is inevitable. Several models of the equilibrium rate of unemployment generated by this process of labor reallocation and the job search behavior of the unemployed have been developed (e.g., Phelps et al. 1970). A good example is the model of Lucas and Prescott (1974) in which labor is exchanged on many spatially and informationally distinct "islands" and labor mobility between islands is time-consuming. Product demand in individual markets is subject to stochastic fluctuations. These intersectoral fluctuations in product demand lead to temporary wage differentials between islands and encourage workers in negatively bombarded islands to search for a better location. Since the process of swimming between islands (labor mobility) is time-consuming, a positive level of unemployment is generated. If the economy consists of a large number of islands and if these sector-specific shocks are distributed independently and identically over time and across islands, then the model yields a relatively constant equilibrium unemployment rate.

Lilien (1982a) has convincingly argued that there is little reason to believe that

the variance of firm-specific or market-specific shocks to product demand is constant over time. In some periods, product demand may grow fairly smoothly across sectors. In other periods, major allocative disturbances may arise from technological changes, changes in international competition, or changes in supply of intermediate inputs. The natural rate of unemployment will then vary over time with the required amount of labor reallocation. In this case, cyclical fluctuations in the unemployment rate may largely represent fluctuations in the pace of labor reallocation.⁴

An understanding of the empirical importance of fluctuations related to sectoral shifts is of importance for the design of stabilization policies. Traditional aggregate demand policies may not be terribly useful in combatting unemployment caused by structural changes (although high aggregate demand may facilitate labor reallocation and offset spillover effects from declining sectors to the rest of the economy). Policies designed to facilitate the adjustment of the labor force across industries and areas might have a high payoff if structural demand shifts are the key to cyclical fluctuations.

Empirical Work on Sectoral Shifts and Unemployment

A fair amount of empirical work in recent years has been devoted to determining the importance of sectoral shifts in explaining cyclical unemployment fluctuations and secularly rising unemployment rates. Lilien (1982a) argues that high unemployment in the United States in the 1970s relative to the 1960s can be explained by a series of dramatic sectoral shifts including a decline in military purchases, increased foreign competition and improved automation leading to shifts of labor out of manufacturing, and the oil price shocks. He presents formal time series evidence for the postwar United States relating changes in the sectoral composition of employment to the aggregate unemployment rate. Lilien finds that periods of greater dispersion in the rate of employment growth across sectors are associated with periods of high unemployment rates. He interprets his results as indicating that most of the cyclical unemployment fluctuations in the 1970s and much of postwar aggregate fluctuations can be explained by structural shifts.

A major problem in interpreting Lilien's time series finding is that a standard aggregate-demand-driven business cycle is likely to have an uneven impact across sectors and may easily generate a positive relationship between dispersion in employment growth across sectors and unemployment (Abraham and Katz 1986, Topel and Weiss 1985). For example, an economy with two sectors (manufacturing and services) in which the more rapidly growing sector (services) is less

⁴Lilien (1982b) develops a complementary model in which employment is set efficiently within each labor market sector, but in which labor flows across sectors are too slow to equate the marginal revenue product of labor across sectors. Aggregate employment falls in response to sectoral shifts since assumptions of (i) decreasing marginal productivity of labor in employment and (ii) decreasing marginal utility of leisure imply that employment falls more in declining sectors than it rises in expanding sectors. Under this scenario, some of the unemployment caused by sectoral shifts consists of temporary layoffs in the declining sector.

cyclically sensitive will generate exactly this relationship. In a boom, the growth rate of manufacturing relative to services rises and dispersion in growth rates falls, and in a recession the opposite occurs. Furthermore, if workers are unemployed in recessions since they are moving to new jobs in other sectors, one would expect high unemployment associated with pure sectoral shifts to be associated with high job vacancy rates. In fact, Abraham and Katz (1986) find that high employment growth dispersion is associated with low vacancies, and vacancies and unemployment move in opposite directions in the short run in both the United States and Britain. On the other hand, Hosios (1987) has developed a model of sectoral shifts consistent with a negative cyclical relationship between the job vacancy and unemployment rates.

The bottom line appears to be that sectoral-shifts and aggregate-shock models of cyclical unemployment fluctuations yield observationally equivalent predictions concerning aggregate variables. The key implication of sectoral-shifts models concerns the cyclical pattern of unemployment associated with the sectoral mobility of labor and this requires the analysis of microdata on individual and unemployment and mobility experiences.

Murphy and Topel (1987a) have analyzed microdata on the sectoral mobility of males for the United States over the 1970–1985 period.⁵ They find in contrast to the sectoral-shifts model that mobility across sectors appears to be procyclical. Sharp declines in mobility appear coincident with the recessions of 1975 and 1983. The pace of labor reallocation appears to be greater in booms than in recessions. A secular decline in sectoral mobility for adult males over this period is also apparent. Murphy and Topel find that most of the cyclical fluctuations in the incidence of unemployment are accounted for by individuals who do not switch industries.

These findings suggest that reasons for declining mobility may be important for explaining increases in unemployment. Murphy and Topel (1987a) speculate that the entry into the labor market of a large cohort of young workers and of women in the 1970s may have lowered the returns to mobility for prime-age males, thereby raising the relative return to waiting for reemployment. Casual evidence suggests that high unemployment in Britain and other European countries is associated with large regional variations in unemployment and little regional mobility (relative to the United States).

Declining employment in high-wage sectors such as manufacturing may play a role in rising unemployment. In the first place, lost specific human capital may lead to new employment relationships for displaced manufacturing that are less stable. The search for a new career job by displaced workers may generate multiple unemployment spells. Workers losing high-wage jobs are especially likely to wait for rehire, may have a difficult time accepting the job loss, and refuse to take available low-wage jobs. Summers (1986) presents evidence for the United States

⁵Murphy and Topel utilize March Current Population Survey data to calculate sectoral mobility rates. Industry switchers are defined as individuals whose two-digit industry classification has changed from the previous year.

that losses of high-wage jobs have a particularly large impact on state unemployment rates. Katz and Meyer (1987) find that workers who expected to be recalled by their employers at time of layoff and subsequently are not recalled tend to have extremely long unemployment spells. Kruse (1987) finds that workers displaced from high-wage industries tend to have longer spells of non-employment than workers with comparable demographic characteristics displaced from low-wage industries. The composition of employment growth and incentives facing unemployed workers appear to be important. This sets the stage for a discussion of recent work on models of wage determination, labor market segmentation and unemployment.

2. EFFICIENCY-WAGE MODELS

Efficiency-wage theories have in common the feature that in equilibrium (at least some) firms find it profitable to pay wages above the market clearing level. The basic idea is that workers' productivities (net of training and turnover costs) depend positively on the wage over some range. In this case, firms may be reluctant to cut wages even in the face of excess supply of labor since wage reductions may lower productivity proportionately more than they reduce the wage bill. Equilibrium can therefore be consistent with persistent involuntary unemployment in some versions of these models.

Alternative Rationales for Efficiency-Wage Payments

Several conceptually distinct, but complementary, rationales for the payment of above-market clearing wages have been developed in the efficiency-wage literature. I describe the mechanisms of four of the most relevant models briefly here. More detailed discussions of the models and references to the relevant literature can be found in Katz (1986), Stiglitz (1986), and Yellen (1984).⁶

The efficiency-wage model that has drawn the most attention is the so-called shirking model in which firms are postulated to pay high wages to raise workers' effort levels. The key idea is that firms can only imperfectly monitor the behavior of workers on the job. Firms do not have many legally permissible punishments for substandard employee performance beyond the threat of dismissal. Workers paid only their opportunity costs then have little incentive to work hard since losing their job would not be costly. By increasing wages, firms make it costly for workers to be fired for detected shirking and thereby encourage good worker performance. Unemployment serves as a worker discipline device in this model. High wages also have the further benefit of allowing firms to reduce their expenditures on monitoring worker effort.

A second model of efficiency wages postulates they are paid to reduce turn-

⁶Murphy and Topel (1987b) provide a much more skeptical review of the theory and evidence related to efficiency-wage models.

over. If firms must bear part of the costs of turnover and if quit rates are a decreasing function of wages paid, premium wages may minimize the costs per efficiency unit of labor by reducing the costs of hiring, recruiting, and training new workers.

A third model focuses on selection effects. High wages are likely to attract a better pool of job applicants since more productive workers have better outside opportunities. If firms have a difficult time evaluating worker quality, then high wages may be desirable.

A fourth variety of model postulates that morale, worker feelings of loyalty to the firm, and work norms depend on the perceived "fairness" of the wage. For example, Akerlof and Yellen (1987) present a model in which workers have a conception of a fair wage and in which workers reduce their effort when the actual wage is less than this fair wage. The model is based on the observation that when people don't get what they think they deserve, they try to get even. Unemployment then occurs when lay theories about the fair wage leave the fair wage above the market clearing wage. The key issue in these models is what determines notions of fair wages and how they evolve over time. Kahneman, Knetsch, and Thaler (1986) present survey evidence indicating important discrepancies between lay notions of fair wages and market clearing wages. In particular, individuals appear to place a great weight on firm profitability relative to labor market conditions in evaluating the fairness of wages and express a willingness to punish unfair economic behavior.

The primary theoretical criticism of efficiency-wage models is that performance bonds (or employment fees) can solve worker moral hazard and adverse selection problems in an efficient manner, allowing wages to adjust to eliminate non-competitive wage differentials and involuntary unemployment. The argument is that if jobs provide *ex ante* rents, workers should be willing to purchase them. Explicit performance bonds are rarely observed in practice. On the other hand, employment arrangements that may implicitly perform bonding functions such as upward sloping experience-earnings profiles, promotion ladders, and deferred payment schemes are observed in a large part of the labor market. It is an open empirical question whether these schemes provide full bonding or only represent a partial solution leaving room for the use of efficiency-wage premiums. Firms may choose not to extract all possible surplus from workers through bonding mechanisms because of the morale considerations stressed in the fair-wage versions of the efficiency-wage models.

Furthermore, Dickens, Katz, Lang, and Summers (1987) point out that unless bonding is limited or at least costly at the margin, firms should not engage in any monitoring of workers but instead deter shirking costlessly by having workers post large bonds. Since we do observe that firms monitor workers to control shirking, bonding must be directly limited or costly. Even if firms can extract all worker surplus with costly bonding devices and eliminate involuntary unemployment, the level of employment is inefficient and many of the policy conclusions of efficiency-wage models may survive.

Basic Implications of Efficiency-Wage Models

The following example from Solow (1979) illustrates the basic structure of efficiency-wage models. Suppose the economy is populated by identical, competitive firms with the profit for each firm given by $aF(e(w)L) - wL$, where e is the effort level of a worker, L is the number of employees, and w is the real wage. Workers are assumed to be identical and effort is assumed to be an increasing function of the real wage ($e' > 0$). A firm's optimal choice of w and L satisfies the first-order conditions:

$$e'(w)w/e(w) = 1 \quad (1)$$

and

$$e(w)aF'(e(w)L) = w . \quad (2)$$

The optimal wage satisfies the condition that the elasticity of effort with respect to the wage is unity. This wage is called the efficiency wage since it minimizes labor costs per efficiency unit of labor. Each firm hires labor up to the point where its marginal product equals the efficiency wage.

If aggregate demand for labor falls short of aggregate supply at the efficiency wage, then equilibrium will entail involuntary unemployment. Shifts in aggregate demand (shifts in a) leave the real wage rigid and generate employment fluctuations in this example.⁷

Variations on the efficiency-wage theme essentially involve adding other arguments to the effort extraction function such as the unemployment rate, level of unemployment benefits, and average wage level. When unemployment is low, firms want to pay above the average wage and if unemployment is high, they want to pay below it. If all firms are symmetric, the equilibrium unemployment rate occurs where each firm is happy to pay the prevailing wage (Johnson and Layard 1986, Summers 1988).

A basic implication of efficiency-wage models is that if the conditions necessitating the payment of efficiency-wage premiums (e.g., monitoring and turnover costs) differ across firms, then the optimal wage will differ among firms. This means that identical workers are paid differently depending on their firm (or industry) affiliation. These wage differentials need not be compensating differentials and may reflect firm or product market characteristics that don't directly affect worker utility. Segmented (or dual) labor markets of the type described by Doeringer and Piore (1971) can arise if the wage-productivity relationship is more important in some sectors than others.⁸ High wages and job rationing can arise in the sector where monitoring, turnover, and selection issues are salient,

⁷Real wage rigidity only arises in special versions of the efficiency-wage model. Most of the models tend to generate procyclical real wages.

⁸Bulow and Summers (1986) develop and analyze a dual labor market model based on a variant of the shirking model.

while a secondary sector, where efficiency-wage considerations are less important, may act as a competitive labor market. Segmented labor markets can generate queue (or wait) unemployment if workers find that it is easier to attain high-wage jobs from unemployment than from low-wage employment.

The predictions of efficiency-wage models concerning the existence of non-competitive wage differentials even in the absence of unions and other institutional constraints has generated a substantial empirical literature studying the interindustry wage structure (Dickens and Katz 1987, Krueger and Summers 1988, Murphy and Topel 1987b).⁹ These studies show that there are large interindustry wage differences for observationally equivalent workers and that these wage differentials are very persistent (for periods of nearly a century). Lower quit rates are observed in high-wage industries suggesting that workers in these industries are earning rents. Wage differentials are positively related to measures of industry profitability, monopoly power, capital intensity, and average education (holding own education constant). Industry changers appear to get wage changes similar to the estimated cross-section differentials. High-wage industries tend to pay all types of workers high wages. This pattern of findings is difficult to reconcile with standard competitive labor market models.

The evidence on the relationship between product market characteristics and wages and the similarity in differentials across occupations do support rent-sharing explanations of wage differentials. Rent sharing is an important aspect of the fair-wage efficiency-wage models and the insider-outsider models discussed in the next section. Rent sharing would also arise if firms must pay efficiency wages for effort elicitation, selection, or turnover reasons in some job categories and then face internal equity constraints that lead them to pay high wages even in job categories where efficiency-wage considerations are not important. Frank (1985) and Akerlof and Yellen (1987) provide a wide variety of evidence supporting the importance of such horizontal equity constraints. Rent-sharing firms may be able to survive where efficiency-wage considerations are important since wage increases lead to less than proportionate increases in labor costs.

Efficiency-wage models generate a number of interesting policy implications. If noncompetitive wage differentials arising from efficiency-wage considerations are important, then subsidizing high-wage industries so they expand to the point where the marginal product of labor equals its opportunity cost may be desirable.¹⁰ Generic efficiency-wage models also have the implication that if firms are offered a lump-sum subsidy for each worker they employ, financed by a proportional tax on the wage bill in the same market, this will increase employment since it makes it more expensive for firms to raise wages (Johnson and Layard

⁹An alternative empirical literature attempting to directly measure the trade-offs between wages, monitoring costs, and turnover costs postulated by efficiency-wage models is reviewed by Lang and Kahn (1988).

¹⁰Bulow and Summers (1986) discuss the implications of segmented labor markets arising from efficiency wages for industrial and trade policy. Their argument parallels the standard argument in the trade literature that subsidies can be desirable in an economy with factor market distortions. Serious potential objections to subsidies to high-wage industries are that they are inequitable and may generate greater incentives for wait unemployment.

1986). This suggests that equilibrium unemployment can be potentially reduced by restructuring payroll taxes into a more progressive form or through a tax-based incomes policy in which firms pay a tax per worker proportional to the excess of the wage over a permitted wage norm (Jackman, Layard, and Pissarides 1986).

Efficiency Wages and Cyclical Fluctuations

Efficiency-wage models also provide potential mechanisms through which cyclical fluctuations in output can be generated by aggregate demand shocks. A basic property of these models is that wages are set by firms to maximize profits as the interior solution to a maximization problem [see equation (1)]. In this case, the failure of firms to adjust wages to small shocks leads to only second-order losses. Akerlof and Yellen (1985) demonstrate that if firms are efficiency-wage setters in the product market, then inertial wage and price behavior in response to small shocks lead to only second-order losses to firms even though this behavior may generate a macroeconomic response with first-order welfare consequences.

New Keynesian models emphasizing imperfect competition in product markets and menu costs to generate real effects of nominal disturbances require quite high intertemporal labor supply elasticities—much higher than those found in micro or macro empirical work on labor supply. If labor supply elasticities are low and the labor market clears, then rigid nominal prices will not be an equilibrium in the face of nominal shocks (Ball and Romer 1987, Blanchard and Kiyotaki 1987). Thus the pure focus on product market rigidities of recent new Keynesian work is somewhat incomplete. Yet if efficiency-wage and/or insider-outsider model considerations lead to wages above the market clearing level, the standard labor supply constraint is no longer binding. Ball and Romer (1987) demonstrate that models with rigid real wages to shifts in real demand can yield fluctuations in response to nominal shocks with welfare costs much greater than the private costs of changing prices can be generated.

A problem arises since efficiency-wage considerations create incentives for long-term relationships in the labor market. In this case, the current wage may simply be an installment payment and not have much of an effect on firm's employment decisions. The existence of long-term employer-employee relationships indicates that employment adjustment costs may be large and somewhat vitiates the argument that sticky nominal wages from menu costs may play an important role in fluctuations.

If worker morale and effort depend positively on the actual wage paid relative to the perceived fair wage and the perceived fair wage adapts to actual conditions only gradually, then firms may not fully adjust wages to shocks such as a decline in productivity growth from an adverse oil price change.¹¹ Firms may also need to lay off some workers to convince others of the necessity of wage concessions. A

¹¹Johnson and Layard (1986) analyze a model of this type.

decline in productivity growth can lead to a sharp increase in unemployment that only gradually declines as perceived fair wages slowly adjust. This type of scenario may be relevant for explaining the large increase in unemployment and slow adjustment of real wage growth in Europe in the 1970s. An increase in the unemployment rate may not be self-correcting if each firm's desired wage policies depend much more strongly on its wage relative to average wages than on the unemployment rate.¹²

3. INSIDER-OUTSIDER MODELS AND HYSTERESIS IN UNEMPLOYMENT

Insider-outsider models are based on the two ideas that it is costly for firms to replace their incumbent employees (insiders) with unemployed workers (outsiders) and that insiders are able to influence the wage-setting process without taking into account the interests of the outsiders.¹³ Wages are viewed as the result of a bargain between insiders and the employer. The existence of turnover costs provides incumbent employees with bargaining power. Insiders may be able to exploit this bargaining power to raise wages to a level that generates unemployment. Outsiders may be unable to underbid and gain jobs since insiders are able to make underbidding costly for firms to accept and unpleasant for the unemployed to pursue. The costs of turnover that can be exploited by insiders are the direct costs of hiring, training, and firing (Solow 1985, Lindbeck and Snower 1986b) as well as the costs that arise when insiders are prepared to withhold effort and harass new entrants (Lindbeck and Snower 1988).

Important diseconomies of scale in the hiring and training of workers suggest that insiders are likely to have the greatest influence on wages when they act collectively through unions or when there is a legitimate threat of collective action. The implications of insider-outsider models for wage setting and employment are similar to those of standard models of wage determination under unions (e.g., McDonald and Solow 1981).

Insider-outsider models yield the prediction that turnover costs provide incumbent workers with leverage necessary to extract a share of the product market rents earned by firms. The evidence on the interindustry wage structure discussed in the previous section is strongly supportive of this prediction: high wages are positively associated with measures of product market rents and capital/labor ratios, high-wage industries have lower quit rates, and all types of workers in high-wage industries earn high wages.

The influence of insiders in wage setting can have important macroeconomic implications concerning the persistence of unemployment. Blanchard and Summers (1986) explore a model in which wages are set by bargains between

¹²See Summers (1988) for a discussion of the fragile nature of the equilibrium unemployment rate when firms are largely concerned with paying the same wage as other firms.

¹³Lindbeck and Snower (1986a) survey alternative insider-outsider models.

incumbent employed workers and firms with no influence of outsiders.¹⁴ In one version of the model, insiders are assumed to set the wage to make expected employment equal to the number of insiders (the membership) and after a shock is revealed, firms set employment on their static labor demand curve given the predetermined wage. An adverse shock that reduces employment causes some workers to lose their insider status and the new smaller group of insiders sets a higher wage to maintain the new lower level of employment. This model generates hysteresis (path-dependence) with employment and unemployment showing no tendency to return to their preshock values and instead, being determined by the past history of shocks. The equilibrium unemployment rate depends on history of the actual unemployment rate. If unemployed workers maintain their insider status for a while, then it may take a sequence of shocks in the same direction to get a persistent movement in the unemployment rate. If insider wage setting is influenced by the actual unemployment rate, then wage demands will tend to moderate with high unemployment and reduce these persistence effects. Gregory (1986) finds for Australia that the level of utilization of incumbent employees has a greater influence on the rate of wage growth than does the unemployment rate.

Models of unemployment hysteresis appear to be needed to explain high persistent unemployment combined with rapid real wage growth for incumbent employees in much of Europe since the early 1970s. An alternative model of hysteresis suggests that the long-term unemployed exert little pressure on wage setting because their skills depreciate, they become discouraged and search less intensely, or employers perceive them as undesirable workers. Layard and Nickell (1986) find in aggregate time series wage equations for Britain that little influence on wage is apparent from those unemployed one year or more.¹⁵ If firm-specific skills are important, sectoral declines can displace workers without good transferable skills who have a difficult time gaining reemployment and may prefer to wait for the chance of rehire in their old sector.

Freeman (1988) in a study analyzing OECD economies in the 1970s and 1980s provides evidence indicating that "flexible" decentralized labor markets such as the United States and centralized corporatist-style labor markets such as Sweden have produced better employment growth performance than noncorporatist, heavily unionized economies. This suggests that economies with less insider influence through unions or with highly centralized unions that are more likely to take into account the interests of the unemployed may be less susceptible to persistent extremely high unemployment. An important direction for future research is determining the importance of insider influence, union wage-setting policies, and

¹⁴A complementary model is developed by Lindbeck and Snower (1987).

¹⁵Franz (1987) similarly finds for Germany that the long-term unemployed have less influence on wage inflation than do the short-term unemployed and that an increase in the share of long-term unemployment is associated with an outward shift in the unemployment-vacancy relationship (the Beveridge curve).

other labor market institutions on the level and persistence of the unemployment rate and labor market performance in the face of adverse shocks.¹⁶

Insider-outsider models and other models of hysteresis suggest that economies shocked into high unemployment may have no easy self-correcting mechanism and persist at high unemployment if left to themselves. Expansionary policies that can temporarily decrease the actual unemployment rate may lead to a sustained reduction in the equilibrium unemployment rate in some versions of these models. They also suggest that job security laws that raise turnover costs may harm aggregate employment by increasing insider power. Policies aimed at getting the unemployed back to work before they become discouraged long-term unemployed workers may have substantial payoffs. Unemployment insurance systems benefits of several years to perpetual duration may reduce the pressure of the unemployed on wages and help sustain high unemployment.¹⁷

4. CONCLUSION

This paper has reviewed several recent developments in the study of labor markets and the macroeconomy. The basic conclusion is that the aggregate labor market cannot be viewed as a single competitive labor market. The labor market consists of many spatially and informationally distinct sectors. Movements by workers across sectors are only gradual. While sectoral shifts do not appear to be the major cause of employment fluctuations, adverse shocks to particular sectors and shocks necessitating labor reallocation can have important aggregate consequences that should be accounted for in macroeconomic analysis.

Noncompetitive wage-setting behavior from efficiency-wage considerations and insider power appear to be important in many sectors. Workers losing high-wage jobs tend to wait for reemployment in the high-wage sector and have quite long unemployment spells. This behavior may reflect attempts to preserve important firm- or industry-specific capital. Alternatively, it may arise from rent-seeking behavior in which workers queue for rationed high-wage jobs rather than accept available low-wage jobs. In either case shocks or policies that harm high-wage sectors can generate persistent structural unemployment that may be difficult to alleviate. The evaluation of stabilization policy options should include an analysis of their potential impacts on different sectors of the labor market.

¹⁶See Bruno and Sachs (1985) for an interesting start in this direction.

¹⁷Benjamin and Kochin (1979) present a collage of evidence indicating that generous unemployment benefits were the major cause of persistent, high unemployment in interwar Britain. Metcalf, Nickell, and Floras (1982) dispute this evidence. Burtless (1987) compares unemployment insurance systems in the United States and several European countries and evaluates the argument that generous jobless pay contributes to high European unemployment in the 1980s.

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Comment on SOME RECENT DEVELOPMENTS IN LABOR
ECONOMICS AND THEIR IMPLICATIONS FOR MACROECONOMICS,
by Robert H. Topel

Katz does an admirable job of surveying three popular labor market models that are of interest to macroeconomists. The common ground of these models is that they seek to rationalize "equilibrium" unemployment, that is, unemployment that is consistent with optimizing behavior by both buyers and sellers of labor services. Katz and I agree that these are (currently) the most widely discussed models of unemployment, though we probably disagree on their relative importance. My comments will focus on what I believe are the relative contributions of these models of understanding equilibrium unemployment generally, and how they relate to models of aggregate fluctuations.

I was attracted to the sectoral-shift hypothesis from early on, though not by the state of empirical evidence for or against it. The key idea is that demand or technological shocks may cause sudden changes in the relative marginal products of labor in different activities. These shifts call for reallocation of labor among "sectors," which will involve unemployment and reduced aggregate output because of imperfect information and other mobility costs. For example, because of relative factor intensities, durable goods manufacturing was more strongly affected by changes in energy prices that occurred in 1973 and 1979, which may lead to a permanent decline in the demand for labor in that sector. The beauty of the model is that aggregate fluctuations and unemployment are consistent with optimizing behavior of all agents, and there are no unexploited gains from trade. The theory is simple and clean and, in its simplest form, it generates strong predictions about the relation between mobility and unemployment. As I point out in my paper with Kevin M. Murphy (Murphy and Topel 1987), the bad news is that these predictions are baldly inconsistent with the facts. These facts are worth recounting.

First, the relation between labor mobility and unemployment is the opposite of what a simple sectoral mobility model predicts. The secular increase in unem-

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ployment that occurred in the 1970s and 1980s was accompanied by an important decline in the sectoral mobility of the labor force. This relation is also true over the cycle: interindustry mobility is sharply higher during expansions, and falls during recessions.

Second, in a typical year, about 80 percent of unemployment occurs among persons who do not end up leaving their original (two-digit) industry. Further, virtually all of the secular increase in unemployment is accounted for by these “stayers”; unemployed “movers” are not very important in accounting for total unemployment, and the amount of unemployment that they generate has been virtually constant through time. In fact, nonmovers account for virtually all of the cyclical and secular changes in unemployment that occurred since 1970.

Third, the secular increase in unemployment has been largely neutral among broadly defined sectors of the economy. Unemployment has risen by similar amounts in both declining and expanding industries. All of these points are inconsistent with the simplest model of sectoral shifts and sectoral mobility.

In spite of these points, I don't think that the evidence argues against an equilibrium model of unemployment that is based on the reallocation of labor among competing activities. Most of the unemployed do change jobs, but new jobs tend to occur in the same industry or sector as the old one. Clearly, however, the model will have to be somewhat more sophisticated in order to fit the data. I think the key ingredient in such a model is specific training. When relative labor demands are buffeted by permanent and transitory shocks, specifically trained workers will not move to new opportunities until uncertainty about the permanence of the shock is resolved. In this case, recessions may be periods of unusually low mobility even if they are generated by changes in relative marginal products. New jobs are not worth taking if they are only expected to last a short time. Unemployment spells may be prolonged because it is optimal for trained workers to wait for recovery. In fact, a prime feature of the data is that the previously mentioned secular decline in mobility has been accompanied by an important lengthening of unemployment spells and a shift of the incidence of unemployment toward more experienced workers (Murphy and Topel 1987).

Specific training also implies a form of hysteresis in aggregate unemployment data. Persons who become unemployed and eventually find new employment sacrifice previously accumulated skills in the transition. Thus after a large shock, the average amount of specific training in the labor force will be lower, so there is a larger pool of marginal workers who are susceptible to unemployment. Thus the “natural rate” is higher after a shock, and it declines over time as specific training accumulates. This type of model is capable of reproducing what I understand to be the key features of data on unemployment, and the fact that there are no unexploited gains from trade strikes me as a virtue.

Efficiency-wage and hysteresis models do not have this feature. A prime motivating factor that underlies these models is the intuitive notion that Keynes was right about involuntary unemployment, and so the goal of theory is to show why. While these models are ostensibly based on maximizing behavior by agents, in

each case there are unexploited gains from trade in the sense that some markets are closed by assumption. For example, in efficiency-wage models of unemployment, there is excess supply of labor because the wage is set above the competitive level for incentive purposes. In order to support this excess supply, optimal ex ante payments that would clear the market for jobs are ruled out by assumption. The argument is that bonds are rarely observed. (This may be the strongest evidence that there is no excess supply. The market clearing price of a job is zero.)

Even with this closure, however, other contractual arrangements are available that both clear the labor market and that are preferred by employers to an efficiency wage. For example, under reasonable conditions on technology, a rising wage profile over the duration of a job eliminates excess labor supply and provides greater profits to employers than does an efficiency wage contract (Murphy and Topel forthcoming). The resulting equilibrium is second best, but the labor market clears and there is no unemployment.

Even taken on their own terms, efficiency-wage models are only weakly related to any concept of unemployment, and virtually unrelated to what we know about aggregate fluctuations. They predict wage differentials (rents) among jobs and corresponding excess supply of labor, but these rents do not imply that workers who do not obtain high-wage jobs are unemployed. They will work in other jobs where efficiency-wage considerations are less important. One can tack on a theory of queuing in which workers must be unemployed in order to obtain a job paying a wage premium (for example, see Harris and Todaro 1970), but this addition is obviously contrived. My own view is that efficiency-wage considerations are of minor importance in understanding macroeconomic phenomena, unemployment in particular.

Insider-outsider models also assume that some markets are closed, but in this case the assumption seems more justified in light of important labor market institutions. In collective bargaining arrangements, wage negotiations usually involve only incumbent employees. Workers displaced from union jobs are effectively disenfranchised, which may lead to some ratcheting of wage settlement after a decline in demand. This is unlikely to be important in the United States, where private sector union coverage has fallen to 14 percent of the labor force (Freeman 1987), but it may play some role in European labor markets where coverage is dramatically higher (Blanchard and Summers 1986). I am nevertheless skeptical that these incentives are important enough to explain the divergent behavior of U.S. and European unemployment in the 1980s. This is especially true given the very low levels of European unemployment that held until 1975.

An alternative explanation for the sharp rise in youth unemployment in Europe is the advent of job security laws, which make it very costly to dismiss workers once they have been hired. Katz notes that these laws may have important effects in conjunction with an insider-outsider model. But they will surely have similar effects on hiring decisions, unemployment, and the duration of spells in any competitive model. Empirical evidence for these effects is provided

by Lazear (1988), who concludes that job security laws have important effects on levels of employment and unemployment.

The debate with regard to these models revolves around whether or not the labor market clears. Aside from the effects of obvious constraints such as minimum wages or job security legislation, I know of no important evidence that it does not. Because of this, I am uncomfortable with models based on ad hoc behavioral assumptions that are designed to generate involuntary unemployment. Our understanding of labor market phenomena and their connection to macroeconomics would be enhanced by a theory that is consistent with both maximizing behavior by all agents and with the facts about labor market performance in modern economies.

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Comment on SOME RECENT DEVELOPMENTS IN LABOR ECONOMICS AND THEIR IMPLICATIONS FOR MACROECONOMICS, by *Thomas J. Kniesner*

The typical postwar U.S. recession lasts about a year, during which real GNP falls two to three percent, nonfarm employment falls two to four percent, and the unemployment rate rises two to four percentage points. Moreover, some interesting relationships underlie these outcomes. The aggregate real wage does not seem

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to fluctuate along with cyclic movements in real output and unemployment. Cyclic movements in labor utilization are dominated by changes in the number of workers with jobs due to layoffs, rather than by greatly shortened workweeks and work-sharing arrangements. There is also a tendency for the average unemployment rate over the business cycle to rise with each successive cycle since the Korean War.

Keep these outcomes in mind because they are much like the peas in a shell game, where the three economic models Katz considers are the three shells. In judging the value of the Katz survey, we should check whether the above peas (macro facts) ever (re)appear in the models and empirical research he discusses.

I will touch on three areas. First, what do we learn from Katz's paper concerning how well the labor economics literature he discusses helps us understand the three cyclic relations I just mentioned? Second, what do we learn from Katz's paper concerning whether the models he discusses have actually been tested, as opposed to estimated? Put differently, does the theory have a clear null hypothesis, and has this null hypothesis survived careful empirical attempts to refute it? I am a proponent of using structural economic models for policy prescriptions. If the structural models have a sine qua non that has been carefully examined empirically, then I will be more inclined to accept the policy implications that flow from a model. Third, in evaluating Katz's paper, we should ask whether his survey omits significant developments that might currently interest labor economists?

Katz's survey has three focal points: (1) sectoral shifts in the pace of production and labor utilization, (2) the link between wage levels and worker productivity schedules, and (3) the economic substitutability of potential employees for currently employed workers. He refers to the latter two as nonclearing models, but that need not be the case, as I will emphasize in my comments. I make this point because it is an important issue in evaluating the insights that models can give into the economic linkages we would like to understand as well as in clarifying policy prescriptions.

Sectoral Shifts

I like the basic thrust of the research on sectoral shifts because it attempts to incorporate some additional microeconomics into the economy-wide outcomes that interest us. Sectoral shift models led to some important empirical research on labor mobility in general, and on the declining mobility of prime-age men in particular. However, I am convinced by the various papers Katz cites that aggregate demand and cyclical unemployment rate movements are probably causing the dispersion in employment growth rates rather than vice versa. However, this seems to be a prime area for some causality tests with sectoral panel data. To summarize, the core of the literature on sectoral shifts currently gives us little additional understanding of the relationships I noted in my introduction and, in my mind, no new policy prescriptions where cyclical unemployment is concerned. Now, on to efficiency wage models.

Efficiency Wages

The central issue here is that in the efficiency-wage models, for one reason or another, the firm's marginal product of labor *schedule* depends on the wage level. My remarks concerning the usefulness of the concept of efficiency wages are independent of the reason for any link between the marginal product of labor, worker effort, and wages. In fact, I am quite comfortable with the idea that effort can depend on relative pay levels and, in turn, affect the marginal product of labor. I also agree that formal performance bonds may be incomplete in reality and not totally obviate the need for alternative effort-inducing measures. However, recent evidence shows that workers who are covered by the typical defined-benefit pension plan suffer substantial losses of pension wealth when they change jobs during the middle of their working lives.

My main objection to the efficiency-wage model, as presented by Katz, is that it really does not deliver what its proponents promise; that is, it does not rationalize the payment of above-market clearing wages. The link between wages, effort, and the marginal product of labor schedule may simply redefine the firm's and the market's demands for labor, making them less elastic. To elaborate, consider a wage-taking firm with a marginal product of labor that depends on effort. If the firm takes the wage it must pay as given, then this firm's efficiency-wage demand curve is simply the locus of (parametric) possible wages and the profit-maximizing employment levels, *which incorporate changes in effort with the wage*. Now, aggregate them across firms and you get a market (efficiency-wage) labor-demand schedule. It will be less elastic than if effort did not depend on the wage level. Nonetheless, we still have a labor-demand schedule. Moreover, it is completely consistent with the statements found in the efficiency-wage papers that say something like, "Firms are reluctant to cut wages because productivity might drop and the overall net benefits are not as large as in a world where the wage does not affect labor productivity."

My point is very simple. If we append a supply curve to this story, then what we have are the scissors of supply and demand determining the wage, employment, *and effort*. So-called involuntary unemployment need not exist. Instead, in efficiency-wage models involuntary unemployment basically flows from some monopsony power, which lets some firms be wage setters (above equilibrium). This wage-setting power is what leads to so-called involuntary unemployment, not the fact that the marginal product of labor depends on effort which, in turn, depends on the wage.

More importantly, I know of no new argument in the efficiency-wage literature as to why this wage-setting power might exist, nor of any clear way to test the key links between this wage-setting power, where effort is a function of the wage, and cyclical unemployment. The basic supply and demand model of an auction setting yields refutable predictions concerning cyclical movements in labor market outcomes. Of course, many of these have been refuted, but I still do not see the equivalent testable hypotheses flowing from the efficiency-wage model. Is it wage-setting power, or the link between the marginal product of labor and the

cyclical movements in nominal (real) wages, that produces the observed macro labor market outcomes? Unfortunately, you can probably never test this.

Finally, the evidence developed by researchers on efficiency wages tends to be cross-sectional and concerns spatial differences in pay and other outcomes across industries. Many of these results are also what you would get in a hedonic equilibrium setting. This is not hypothesis or model testing, but a situation where a relationship with numerous possible conceptual origins has been quantified. While the points in the empirical efficiency-wage papers are interesting, and possibly helpful in refining the focus of our theoretical modeling efforts, they are certainly not a vehicle for public policy prescriptions, among other things, which is the focus of this conference.

Insider-Outsider Models

Of the three general models Katz discussed, the so-called insider-outsider models show the most promise, in my opinion. They are usually cast in terms of collective (union) action, with unionists able to take advantage of their insider (employed) status without having it competed away by nonmembers of the union. This is a realistic situation for certain heavily unionized European economies. Furthermore, such a dual model can certainly generate regularly observed macro outcomes, such as persistence in the unemployment rate.

For my tastes, though, Katz presents the insider-outsider story in a somewhat overly restrictive way because the dualism he is addressing can be consistent with competitive forces. It can, for example, result from a competitive labor market where there is firm-specific human capital leading to insiders who get a higher wage than outside, untrained, workers who offer little immediate competition for insiders' jobs. You also get this type of dualism from a competitive dynamic-factor-demand model, where there is a stock versus flow dimension of the labor input and there are fixed costs of adjusting the stock labor. For example, such a model implies overtime work versus hiring new (outside) employees during a cyclical expansion.

So, while I find insider-outsider models of the labor market interesting, there are many possible reasons for such a phenomenon, which have yet to be sorted out (and maybe never will be) in terms of their relative importance. For the moment, insider-outsider models do not give me much help in understanding the relationships among macro labor market outcomes that I noted at the beginning of my remarks. Moreover, because such models have not been subjected to much testing, as opposed to estimation, I do not want to base my policy prescriptions on them, yet.

Conclusion

In his final section, Katz notes that "the basic conclusion is that the aggregate labor market cannot be viewed as a single competitive labor market." I want to wind down by focusing on the adjectives "single" and "competitive." I and many

others have not yet given up on competitive models of the labor market. Here are a few examples in three areas. First, there is ongoing research on labor market spatial equilibrium and allocation dynamics across labor markets. Second, it is not difficult to argue that, despite all the articles to the contrary, the substitution hypothesis has *never* been tested. Fortunately, there is still important work in progress here. Third, recent efforts have demonstrated that a small-scale competitive GE model, including technology shocks, can mimic quite well many of the cyclical outcomes of the U.S. economy.

The point of citing these three ongoing research efforts is to urge us not to discard a competitive approach and its associated policy implications just yet. While I do not like to bring religion into economics, this situation reminds me of the TV commercials for religion that say, "Christianity hasn't been tried and failed, it's never been tried." Similarly, the competitive models of cyclical labor market outcomes have yet to be developed fully.

Along these lines, I wholeheartedly agree with Katz that we should move away from the representative-agent models of the aggregate labor market to more microbased analyses of aggregate outcomes. While the basic econometric literature on aggregation bias dates back at least to the 1950s, it is only recently that economists have worked on aggregating the behavior of individual agents into equations that are applicable to macro labor data. This is tough sledding, but very important if we are to advance our understanding of the patterns of wages, employment, and unemployment that I noted at the beginning of my remarks. This aggregation issue is also clearly important for policy, because as Katz notes in his last sentence, "the evaluation of stabilization policy options should include an analysis of their potential impacts on different sectors of the labor market."

To close, theory and evidence go hand in hand in establishing the state of knowledge in a scientific field. Theory helps us bring a sense of mental order to the facts. Uncovering empirical association guides us in refining our theoretical models. Indeed, many economists contend that some of our labor market theories are stalled awaiting key facts. In my opinion, most interesting current research in labor economics involves generating new empirical insights into labor market associations of interest. I refer here to the economists examining, among other things, the cyclical nature of real wages, completed job tenure, the factors underlying the full-employment unemployment rate, and the question of whether there is really any empirical difference between people who are reported as unemployed versus out of the labor force. In my judgment, it is the research involving competitive, microbased macromodels, and stylized fact generation that will clarify the empirical associations noted at the beginning of my remarks.