Explaining Long-Term Unemployment:
A New Piece To An Old Puzzle

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At each stage of the business cycle, there are individuals of all descriptions who want to work but who fail to find jobs for weeks or even months. Indeed, several studies find that this long-term unemployment accounts for most measured joblessness.

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Such unemployment has long been a focus of policymakers, because it raises several especially nettlesome social concerns. From an economic perspective, protracted unemployment means lost output as the skills and efforts of productive individuals go unused for months at a time. From a broader social perspective, lengthy unemployment means a higher incidence of psychological and health problems, not only among the unemployed but also among the members of their families. Several studies, for example,

have associated increases in the U.S. unemployment rate with increases in suicides, increases in homicides and other crime, increases in heart, kidney, and liver disease, increases in admissions to state mental hospitals, and increases in the incidence of child abuse.[1]

In order to address those concerns, policymakers need a thorough understanding of why long-term unemployment exists. Unfortunately, the underlying causes of persistent joblessness have remained something of a mystery. Recently, though, economists have begun to rethink their traditional notions of how labor markets work. In the process, they have provided novel insights into the sources of long-term joblessness. Empirical investigation into this new line of thought, known generally as the "efficiency wage hypothesis," is still at a relatively early stage. But the evidence that is available suggests that this new perspective has some validity.

LONG-TERM UNEMPLOYMENT PRESENTS A PUZZLE

Economists traditionally describe labor markets as they do auction markets for any other commodity, in terms of supply and demand. On the supply side of the market are individuals with a set of skills who voluntarily offer their time in return for the going wage. Economists generally believe that the number of people who wish to work falls as the wage does. On the demand side of the market are firms which need workers to produce output. In contrast to the quantity of workers supplied, the quantity of labor demanded usually rises when the wage falls, because falling wages make it increasingly profitable to hire more workers. The interaction of labor supply and demand determines the level of wages and employment that are actually observed.

Lengthy unemployment, where individuals go many months without a job, does not fit easily into that basic market description. If unemployment arises, the reasoning goes, competitive forces will quickly and automatically guide the wage to a level at which full employment prevails, that is, a situation in which everyone who wants a job has one. Specifically, unemployment encourages competitive job seekers to offer to work for less than other similar workers in an effort to obtain one of the relatively scarce jobs. Employers readily accept those offers since, in the simple market setting, lower wages mean higher profits. Thus as wages get bid down, unemployment declines through two channels. First, the wage reductions spark some employers to hire more workers. Second, the wage reductions lead some job seekers to abandon their search. Job seekers will continue to bid down the wage until all individuals who want a job have one, that is, until unemployment vanishes. At that point no one has an incentive to undercut the wage offer of another, and all similar workers will be receiving the same market-clearing wage.

This scenario permits abbreviated unemployment due to frictions in the economy, such as incomplete information about job possibilities, that prevent instantaneous market adjustment to changing circumstances. Individuals simply may need some time to collect and assess their options before acting. But once that information is obtained, the competitive bidding process, if fully operative, should guarantee quick access to a job and rule out anything like the protracted unemployment experiences that actually occur.

No official statistics exist on the length of individuals' completed episodes of unemployment, although independent estimates have been made (see UNEMPLOYMENT CAN BE QUITE LENGTHY). Those estimates show that even during periods when real gross national product (GNP) grows rapidly, such as 1962 to 1968, 1971 to 1973, and 1976 to 1978, a person counted as unemployed can, on average, remain jobless for six to eight months. Studies also reveal that

[1]The figures on the adverse health consequences of unemployment are cited in Robert J. Gordon, *Macroeconomics* (Boston: Little, Brown and Company, 1984) pp. 353-354.

Unemployment Can Be Quite Lengthy

Year	Real GNP Growth[a]	Average Total Number of Weeks That a Currently Unemployed Person Remains Jobless	
		Akerlof and Main[b]	Sider[c]
1959	5.8	28.8	na
1960	2.2	25.6	na
1961	2.6	31.2	na
1962	5.3	29.4	na
1963	4.1	28.0	na
1964	5.3	26.6	na
1965	5.8	23.6	na
1966	5.8	20.8	na
1967	2.9	17.6	na
1968	4.1	16.8	18.2
1969	2.4	15.8	17.4
1970	-0.3	17.4	20.1
1971	2.8	22.6	25.1
1972	5.0	24.0	25.0
1973	5.2	20.0	20.6
1974	-0.5	19.4	21.3
1975	-1.3	28.2	32.7
1976	4.9	31.6	32.4
1977	4.7	28.6	28.3
1978	5.3	26.2	24.1
1979	2.5	na	23.1
1980	-0.2	na	26.4
1981	1.9	na	29.2
1982	-2.5	na	35.9

The above figures represent estimates of the total time a person counted as unemployed in the indicated year remained jobless, on average. If in 1982, for example, a person had been unemployed for the preceding 17 weeks when counted, he or she remained without a job during the next 18.9 weeks, on average, for a total duration of 35.9 weeks.

NOTE: "na" = not available for the indicated year.

[a]Year-over-year percent change.

[b]George A. Akerlof and Brian G. M. Main, "An Experience-Weighted Measure of Employment and Unemployment Durations," *American Economic Review* (December 1981) Table 4, pp. 1003-1011.

[c]Hal Sider, "Unemployment Duration and Incidence: 1968-82," *American Economic Review* (June 1985) Table 3, pp. 461-472.

protracted unemployment is fairly pervasive, in that it is experienced by all demographic groups, and that it may account for a significant fraction of measured unemployment. For example, one estimate that focused on 1974 suggested that half of all unemployment that year was accounted for by episodes lasting more than three months.[2]

Economists have puzzled over the inconsistency between the short unemployment durations predicted by the auction market model and the extended durations that actually occur. In trying to reconcile the two, they generally have retained their emphasis on the basic market paradigm, while focusing on exogenous—that is, externally imposed—factors that might prolong or even prevent complete labor market adjustment after unemployment arises. Three commonly cited examples are minimum wage laws, unions, and unemployment insurance. Minimum wage laws and unions, it is argued, fix wages at levels that are too high to clear the labor market. Unemployment insurance potentially lengthens the duration of unemployment by defraying the cost of remaining jobless. But not only does theory suggest that such explanations of long-term unemployment are incomplete, those explanations also lack convincing empirical support. For instance, studies find that minimum wage laws lead to higher *teenage* unemployment, but have little or no impact on *aggregate* unemployment.[3] At best, those exogenous factors appear to provide a partial accounting.

Persistent unemployment is also sometimes identified with unskilled individuals and people who are displaced by structural change, such as former steel workers. But the pervasiveness of lengthy unemployment suggests that long-term joblessness cannot be accounted for totally by the problems of a few particular groups. Moreover, the question remains as to why such structurally unemployed individuals cannot simply bid down wages in order to get jobs.

This partial accounting has led some economists to question the usefulness of the basic market-clearing paradigm as a description of the labor market, and hence as a basis for understanding long-term unemployment. Rather than looking for an exogenous factor that might be interfering with an otherwise smooth-working market, those analysts have asked whether something inherent in labor markets prevents their clearing. This inquiry has produced a new view of the labor market, the "efficiency wage hypothesis," that affords an alternative explanation of long-term unemployment.

THE EFFICIENCY WAGE HYPOTHESIS: A NEW PIECE IN THE PUZZLE

The efficiency wage hypothesis concentrates on the possibility that by increasing a worker's wage, an employer may increase that worker's productivity. The basic market model, in contrast, ignores this potential side benefit of a pay raise. Rather, it assumes that a worker's productivity is fixed by her existing skills; a worker's productivity helps determine her wages, but wages do not, in turn, influence a worker's productivity.

The efficiency wage view, if accurate, has a striking implication: a firm might actually increase its profits by paying its workers more. The reasoning behind that implication is fairly straightforward. Increases in productivity mean that each worker produces more output. That is, as productivity rises, labor costs per unit of output fall. Wage increases, by boosting produc-

[2]Kim B. Clark and Lawrence H. Summers, "Labor Market Dynamics and Unemployment: A Reconsideration," *Brookings Papers on Economic Activity* (Volume I, 1979) pp.13-72.

[3]For a thorough discussion of the theoretical and empirical issues regarding those explanations, see Kim B. Clark and Lawrence H. Summers, "Labor Market Dynamics..." and Lester C. Thurow, *Dangerous Currents: The State of Economics* (New York: Vintage Books, 1984) chapter 7. For related discussions, see Charles Brown, Curtis Gilroy, and Andrew Kohen, "The Effect of the Minimum Wage on Employment and Unemployment," *Journal of Economic Literature* (June 1982) pp. 487-528, and Daniel S. Hamermesh, *Jobless Pay and the Economy* (Baltimore: The Johns Hopkins University Press, 1977).

tivity, thus appear as a two-edged sword for profits. Higher wages directly raise labor costs and thereby contribute to lower profits, but they might also raise productivity, thereby cutting labor costs and contributing to greater profits. If the boost to productivity is large enough, profits will rise.

The potential profitability of wage increases suggests a possible source of lengthy unemployment. Employers will continue raising wages if doing so leads to maximum profits. By raising wages they will induce their existing workers to become more productive, but they will also induce additional people to enter the labor force and begin looking for jobs. Depending on how responsive productivity is to wage changes, firms could ultimately raise wages so high that the labor market does not clear, leaving some workers unemployed. And if they do, any subsequent unemployment will not quickly and automatically vanish as it would in the auction market arrangement, because people will not be able to bid the wage down to get a job.

Unemployed individuals, whether they have quit, have been fired, or have entered the labor force for the first time, might try to get jobs by bidding down the wages of current workers. But in contrast to the simple competitive market situation, firms will not accept those offers. Firms have already weighed the benefits and costs of lower wages and decided that keeping wages high yields them their greatest profit. And because the unemployed cannot bid their way into jobs, they must instead wait until new openings arise from quits, firings, or increases in firms' demand for workers. They must then hope to be chosen over other jobless persons. On the whole, unemployed persons might remain jobless for quite some time.

The potentially beneficial impact of wage increases on productivity provides a coherent explanation of lengthy unemployment. But the question of why such an impact on productivity might arise still remains. Efficiency wage theorists have offered several possibly complementary answers.[4]

Higher Wages Might Reduce Shirking. One answer stems from the difficulties employers have monitoring workers' efforts. For a variety of jobs, individuals participate in groups, such as when researchers coauthor studies or when construction crews erect a building. On other occasions, employees have some discretion over the pace of work, or work at a location physically distant from an immediate supervisor. Such is the case, for example, when employees go on business trips. Additionally, most jobs allow workers a certain amount of sick leave and time away for personal reasons. In those cases, managers typically know only imperfectly either how hard each person works, or whether an absence from work was legitimate. Workers, as a consequence, have some chance to decrease their efforts without being detected.

According to the "shirking" model, workers decide whether or not to reduce their efforts by weighing the costs and benefits of doing so.[5] The model presumes that workers are fired if caught shirking, so the expected cost of shirking reflects their lost wage less any public or private assistance they might receive while unemployed, the length of time they remain unemployed, and the probability that they will be detected. The expected benefit of shirking is, of course, the value of on-the-job leisure the workers receive. Workers choose to shirk if the expected benefits exceed the expected costs.

In such a scenario, wage increases boost productivity because they reduce workers' incen-

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[4]Accessible surveys of particular variants of the efficiency wage hypothesis are found in Lawrence F. Katz, "Efficiency Wage Theories: A Partial Evaluation," National Bureau of Economic Research Working Paper no. 1906, Cambridge, MA (April 1986), and Janet Yellen, "Efficiency Wage Models of Unemployment," *American Economic Review* (May 1984) pp. 200-205.

[5]Formal characterizations of the shirking model are described in Carl Shapiro and Joseph E. Stiglitz, "Equilibrium Unemployment as a Worker Discipline Device," *American Economic Review* (June 1984) pp. 433-444, and Samuel Bowles, "The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian and Marxian Models," *American Economic Review* (March 1985) pp. 16-36.

tives to shirk. By raising wages, employers raise the perceived cost to workers of being fired when caught shirking. Higher wages might tip the scale in favor of less shirking and, thus, greater productivity.

Higher Wages Might Reduce Job Turnover. A related perspective emphasizes the job turnover that wage increases might reduce. When individuals join a firm they rarely commit to stay for an extended period. At a minimum, they retain a passive interest in their outside options, and their curiosity will likely grow if they perceive that their current employment situation is deteriorating. If they feel particularly short-changed, they might quit and devote all their efforts to obtaining a new job, convinced they can improve their current lot.

Quits result in net productivity losses to firms. When workers quit, firms must operate with a reduced work force until suitable replacements are found. In addition, firms must devote possibly substantial amounts of resources to finding those replacements, such as time taken to review applications, to interview candidates, and to decide to whom offers will be made.[6] Productivity will also be lowered during an initial "start-up" period in which new employees learn the particulars of their jobs.

A firm might succeed in reducing the quit rate of its work force, and thus raise productivity, by increasing wages. An employee's wage represents an important facet of his or her job, and probably figures in the decision whether to quit. By raising employees' salaries, the firm increases the relative attractiveness of their jobs, which might reduce the frequency of turnover.[7]

Higher Wages Might Boost Employee Morale. The productivity of employees can also depend on how fairly they think their employers treat them. Most firms understand the importance of good worker morale and firm loyalty for productivity, and often actively strive to promote internal harmony. A firm's wage structure represents an important concern in this regard.

Workers typically have some notion of what constitutes a "fair day's work for a fair day's pay." They have some perception of where they stand relative to other workers both in their own firm and in other firms, and also have some perception of what constitutes an appropriate pay differential. Those feelings of what is an appropriate wage are partly molded by observing the treatment of other workers in positions similar to theirs.

Although firms might find that "fair wages" are quite high, paying them is worth their while.[8] Firms might be able to pay lower wages and still retain their employees, but those employees might be less productive. Employees who feel cheated, for instance, will not "go the extra yard" for the firm, and might spend valuable time griping to coworkers. By generally increasing wages to levels considered fair, or by raising certain workers' wages to maintain internal pay relationships that are deemed equitable, firms might enjoy a more satisfied and more productive work force.

But Other Factors Might Render Higher Wages Unnecessary. The preceding considerations make a link between higher wages and greater productivity appear plausible. Thus, they leave open the possibility that a wage-productivity link contributes to persistent unemployment. But even if such a link exists, firms still might not

[6]Charles L. Schultze, "Microeconomic Efficiency and Nominal Wage Stickiness," *American Economic Review* (March 1985) pp. 1-15, presents some evidence on the magnitude of turnover costs. He cites a study of Los Angeles firms which shows that costs of turnover (exit costs plus replacement costs) averaged $3,600, $2,300, and $10,400 for production, clerical, and professional and managerial workers, respectively.

[7]A mathematical exposition of the turnover model can be found in Steven Salop, "A Model of the Natural Rate of Unemployment," *American Economic Review* (March 1979) pp. 117-125, and Guillermo Calvo, "Quasi-Walrasian Theories of Unemployment," *American Economic Review* (May 1979) pp. 102-107.

[8]A sociological model is rigorously developed in George A. Akerlof, "Labor Contracts as Partial Gift Exchange," *Quarterly Journal of Economics* (November 1982) pp. 543-569.

use wage increases to raise productivity. Factors either internal or external to firms might render higher wages unnecessary, or diminish their use. If so, the cause of persistent unemployment lies elsewhere.

An important internal factor is that firms can use other productivity-enhancing techniques.[9] Firms can, for instance, deter shirking in ways other than by paying higher wages. One strategy involves raising the chances that workers will be caught by monitoring them closely. That might entail hiring supervisors or devising sophisticated accountability schemes. Firms might also discourage shirking by using piece-rates, tying pay to demonstrated performance. Firms likewise might use approaches other than raising wages to reduce their turnover costs. As in apprenticeship programs, for example, firms initially might pay new employees less than they are "worth" in an effort to defray, partially or totally, the costs of any needed training.[10] Some firms might find that although wage increases raise profits, such alternatives increase profits more. If so, those firms will opt for the alternatives.

Firms might also find that external factors already reduce shirking, quits, and bad morale to the point where attempts to reduce these problems further by *any* approach are uneconomical. Quit rates might remain low even without a firm's intervention because workers have strong personal attachments to their jobs, or because the financial costs to workers of searching for another job and relocating to another area are very high. Similarly, workers might already have sufficient incentives not to shirk because of the bad reputation they acquire if fired for lapses in diligence.

The potential importance of those internal and external factors cannot be dismissed, at least not at the conceptual level. Nor can the possibility that pay raises simply do not boost productivity to begin with. Thus, whether or not a wage-productivity link *actually* plays a significant role in explaining long-lasting unemployment must be settled empirically.

EMPIRICAL EVIDENCE SUGGESTS THE NEW PIECE MIGHT FIT

Empirical evidence on the question is sparse, often inferential, and reflects a variety of methodologies. Some analysts have directly examined whether the basic premise of the theory, namely, that wage increases lead to higher productivity, is valid. In doing so, they have relied mainly on case studies of employer and employee behavior in the workplace. Several other authors have taken a more indirect approach: they develop the logical implications of the theory and then test statistically whether those are borne out by actual labor market experience.

Support Comes from Case Studies... George Akerlof has provided perhaps the most direct evidence. In a series of articles, he reviews sociological and psychological case studies of how wages influence worker productivity.[11] He notes, for instance, an experiment in which students were hired for proofreading. "One group was told that they were not qualified, but would be paid the usual rate. Another group was told that they were qualified and were also paid the usual rate. Those who were led to believe they were overpaid produced...more output per hour...than those who were told they were qualified..." (p. 82). Akerlof argues that such studies show that increased job satisfaction resulting from higher wages results in greater worker effort, as stressed by the sociological theory. He also discusses studies which he claims reveal that employers actually use wage in-

[9]These alternatives have been analyzed at length by various authors. Lawrence F. Katz, "Efficiency Wage Theories..." contains a good summary of those discussions.

[10]This possibility was suggested in Gary S. Becker, *Investment in Human Capital: A Theoretical and Empirical Analysis, With Special Reference to Education* (New York: National Bureau of Economic Research, 1964).

[11]Those reviews are presented in George A. Akerlof, "Labor Contracts...," and George A. Akerlof, "Gift Exchange and Efficiency Wages: Four Views," *American Economic Review* (May 1984) pp. 79-83.

creases to raise morale and achieve productivity gains.

Jeremy Bulow and Lawrence Summers presented some evidence that gives credence to the efficiency wage hypothesis in general, and the shirking model in particular.[12] They focused on historical accounts of the Ford Motor Company's pay policy, and found changes implemented in 1914 particularly noteworthy. At that time, the Ford Motor Company began paying employees $5 a day, while other manufacturers were paying their workers between $2 and $3 a day. Bulow and Summers note that observers of the change claim that it led to large increases in productivity, reductions in absenteeism, and fewer discharges for cause. They cite, for example, a contemporary engineering study which explains that, "The high Ford wage does away with all of the inertia and living force resistance... The workingmen are absolutely docile, and it is safe to say that since the last day of 1913, every single day has seen major reductions in Ford shops [sic] labor costs" (p. 378).

...And from Formal Statistical Tests. Other, less direct examinations of the efficiency wage hypothesis are also available. Those generally rely on statistical analyses which find that similar workers persistently receive different compensation solely by virtue of their industry affiliation or occupation.[13] The auction view of labor markets cannot easily explain such differentials; competition among similar workers for the higher paying jobs should quickly eliminate differences in pay. The efficiency wage hypothesis, in contrast, permits wage differentials for similar workers to exist as a result of different industry and occupational characteristics. One industry might find turnover to be more costly than another industry, and thus might need to keep wages higher in order to contain the problem. Similarly, differences across occupations in shirking problems and the ability to monitor shirking could also give rise to different wage levels.

As a test of the efficiency wage hypothesis, analysts have examined whether those wage differentials vary consistently with the dictates of the particular efficiency wage theories. The turnover view, for instance, argues that employers use wage differentials to reduce costly, productivity-reducing quits. In fact, several studies have found that higher wage premiums tend to be associated with lower quit rates, both at the industry and individual level, after controlling for other factors that might influence quits.[14] Further studies reveal that higher wage differentials coincide with lower absenteeism rates (again, after controlling for other factors), which may give some support to the shirking model.[15] Because absenteeism can be monitored with little difficulty, but the reasons for it cannot, absenteeism may reflect shirking.

Researchers have also found that when one occupational group in an industry receives a sizable wage premium relative to wages paid similar workers in other industries, it is likely that all occupational groups in an industry receive a wage premium.[16] This result is consistent with the idea that internal wage structures

[12]Jeremy I. Bulow and Lawrence H. Summers," A Theory of Dual Labor Markets With Application to Industrial Policy, Discrimination, and Keynesian Unemployment," *Journal of Labor Economics* (August 1986) pp. 376-414.

[13]Lawrence F. Katz, "Efficiency Wage Theories..." presents a comprehensive survey of empirical studies of the efficiency wage hypothesis.

[14]Examples of such studies are Richard B. Freeman, "The Exit-Voice Tradeoff in the Labor Market, Unionism, Job Tenure, Quits, and Separations," *Quarterly Journal of Economics* (June 1980) pp. 643-673, and Alan B. Krueger and Lawrence H. Summers, "Efficiency Wages and the Wage Structure," National Bureau of Economic Research Working Paper no. 1952, Cambridge, MA (June 1986).

[15]Such results are presented in Steven Allen, "Trade Unions, Absenteeism, and Exit-Voice," *Industrial and Labor Relations Review* (April 1984) pp. 331-345, and Alan B. Krueger and Lawrence H. Summers, "Efficiency Wages and...".

[16]Evidence on the occupational wage structure can be found in Lawrence F. Katz, "Efficiency Wage Theories...," and William T. Dickens and Lawrence F. Katz, "Industry Wage Patterns and Theories of Wage Determination," Mimeo, University of California, Berkeley (March 1986).

figure importantly in firms' wage-setting decisions, as emphasized by the sociological model.

Although case studies and statistical analyses offer some support for the efficiency wage hypothesis, the question of its validity is by no means settled. Case studies, while informative about particular work settings at particular times, fail to indicate how widespread the discovered behavioral patterns are. And while statistical studies examine behavior across a much wider cross section of workers and firms, none of them directly links wage increases to productivity increases. They find a correlation between higher wages and their presumed benefits, but fail to establish either purposeful behavior on the part of firms or a causal link. Thus, the relations they uncover could be spurious or could arise for some other independent reason.

THE PUZZLE IS NOT YET COMPLETE

The efficiency wage hypothesis offers a simple insight into the operation of labor markets: by raising a worker's wage, a firm may succeed in raising a worker's productivity. That idea, while simple, also appears quite powerful because it provides a logically coherent explanation for persistent unemployment. Adding to the idea's strength is the initial empirical support it receives.

A potentially important contribution this research can make is the guidance it gives policymakers in dealing with unemployment. At present, the policy implications of efficiency wage theories are largely undeveloped. Few conclusions have been drawn, and those often hinge critically on the particular model studied. Nonetheless, the theories do seem to leave some scope for policies to influence unemployment.

Each model ties persistent unemployment to structural aspects of labor markets. Thus, policies that affect those aspects may also affect unemployment. Some researchers, for example, have discussed the possible impact of increasing unemployment insurance in the context of the shirking model.[17] According to their logic, the increase in unemployment insurance might induce workers to shirk more, since it reduces the penalty for being caught. This results in firms having to raise their wages to reduce the shirking, which in turn could lead to higher unemployment because it draws more people into the labor force. Studies indicate that efficiency wage theories might have implications for other structural labor market policies as well, such as manpower training and regulations regarding job security.[18] For instance, regulations that increase job security can reduce the expected cost of being caught shirking. Thus, they might induce firms to pay higher wages, which might increase unemployment.

Efficiency wage theorists have examined the cyclical behavior of unemployment, in addition to its structural sources. They have found that, under certain circumstances, the wage "stickiness" implied by efficiency wage theories allows variations in aggregate demand to cause swings in the unemployment rate.[19] That suggests a role for monetary and fiscal stabilization policy to dampen those fluctuations in unemployment.

Long-term unemployment obviously represents a complex issue. And not surprisingly, many important conceptual and empirical questions regarding its causes and cures remain unanswered. But while much work is yet to be done, the research to date on efficiency wage theories does seem to have yielded a productive step toward understanding a major social ill.

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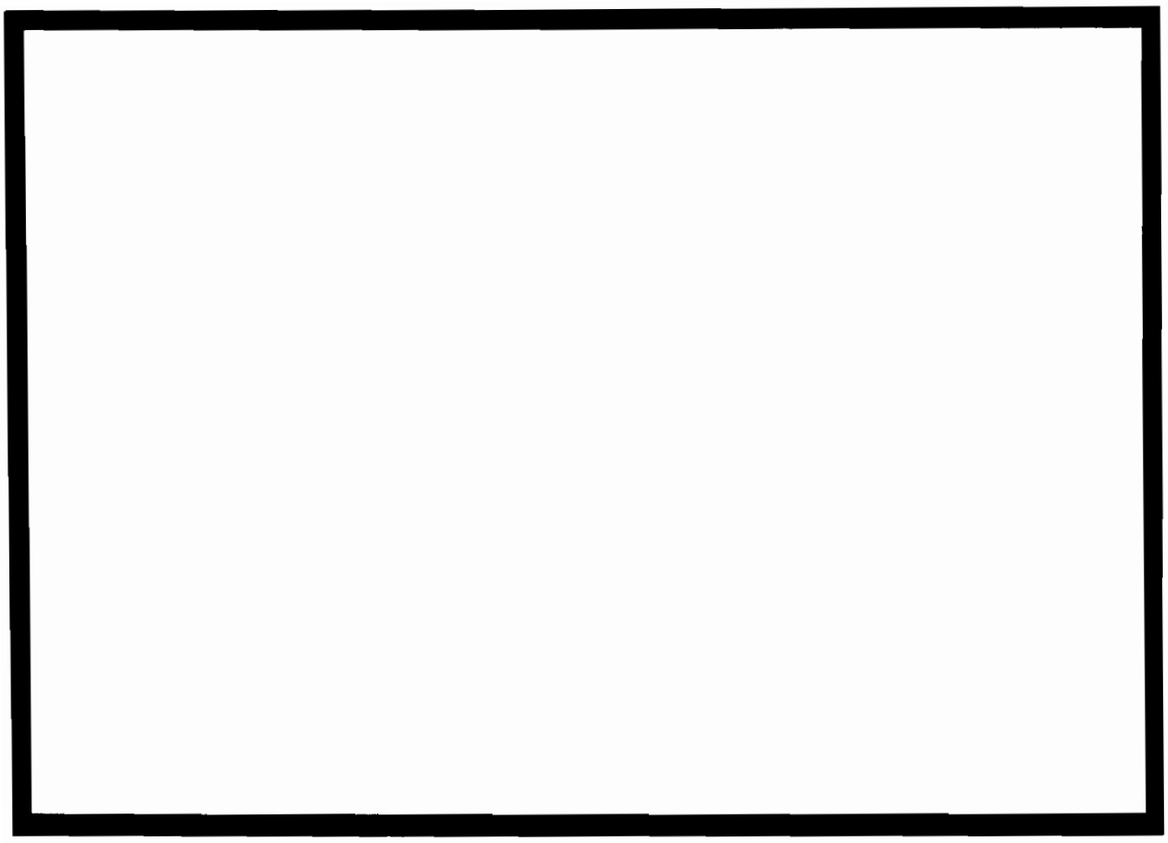
[17]See, in particular, Joseph E. Stiglitz, "Theories of Wage Rigidity," National Bureau of Economic Research Working Paper no. 1442. Jeremy I. Bulow and Lawrence H. Summers, "A Theory of Dual...," presents a somewhat different analysis, but arrives at a similar conclusion.

[18]See Jeremy I. Bulow and Lawrence H. Summers, "A Theory of Dual...," for a discussion of the implications of some other structural labor market policies using a variant of the shirking model.

[19]Both Joseph E. Stiglitz, "Theories of Wage Rigidity," and George A. Akerlof and Janet Yellen, "A Near Rational Model of the Business Cycle, With Wage and Price Inertia," *Quarterly Journal of Economics* (August 1985) pp. 823-838, analyze that possibility.



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