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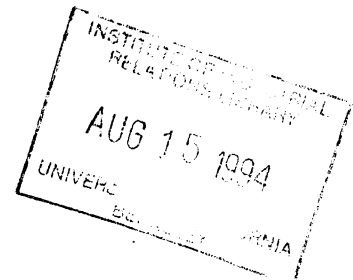
LABOR MARKET REGULATION, FLEXIBILITY:
AND EMPLOYMENT

by

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Abstract

Chronic unemployment and slow employment growth in some countries have led to calls for more labor-market "flexibility." Often, however, the definition of flexibility is unclear. And many elements of flexibility, while important to some aspects of the employment relationship, are not especially relevant to employment or unemployment trends.

This paper defines the flexibility issue in terms of legally-mandated "severance," a generalized employment cost linked to seniority. A mandated severance benefit can stand for a variety of programs including employer-provided employment guarantees, payments which must be made to laid-off workers, and compensation for wrongful discharge. Such a mandated cost can be seen as a payroll tax on the employer, raising the issue of tax incidence.

The literature on tax incidence, although quite varied, suggests that a significant portion of "employer-paid" payroll taxes are in fact shifted to labor in the form of lower wages. Such shifting should reduce the dis-employment effects attributed to severance. The micro view, often taken by employers, is that labor costs are given and that mandated costs are simply add ons to pre-existing cost levels. However, the tax incidence literature suggests that a more macro view must be taken to account for cost shifting.

A model is provided of a firm upon which a severance mandate is imposed. Even at the micro level, the firm can shift some of the cost of severance to employees by lowering wages - although at the expense of higher turnover costs associated with increased quit rates. At the macro level, to the extent that firms reduce employment, there could be still further downward wage adjustments which would shift the severance burden to labor and mitigate the dis-employment effect. Moreover, previous models have been developed under which certain types of mandated severance benefits might in fact decrease the unemployment rate.

Ultimately, if the natural rate of unemployment is raised by severance inflexibility, the age-old question is raised of why wages do not fall in the face of labor surpluses. The true inflexibility to be explained, therefore, is in aggregate wage determination. And the appropriate remedies must focus on that issue.

Contents

- I. Some Excluded Definitions of Flexibility**
- II. Compensation and Entitlement-Linked Versions of Labor-Market Flexibility**
- III. Sorting Out and Narrowing the Issues**
- IV. Examples of Seniority-Linked Entitlements**
- V. The Incidence of Labor-Market Mandates: Analysis**
- VI. The Incidence of Labor-Market Mandates: Empirical Evidence**
- VII. A Simple Model of Severance, Wages, and Employment**
- VIII. The Macro Context**
- IX. The Bottom Line on Flexibility and Employment**

Figures

Footnotes

The rise in unemployment rates in the 1970s and 1980s, especially in Europe, has produced growing concern over lack of labor-market "flexibility".¹ More rapid job creation in the U.S. than in Europe led Europeans to toy with the idea - often uncomfortably - of deregulating the labor market along lines perceived as the American model.² While both the employment-to-population ratio and the labor-force participation rate rose in the U.S. during the 1970s and 1980s, they fell in such countries as France, (West) Germany, and Italy. And since the mid 1980s, the OECD has produced both general and country-specific research studies on the subject, generally urging policies encouraging more flexibility.³ Related studies have been published by the ILO.⁴ Some governments have also established task forces to examine issues of national labor-market flexibility.⁵ However, exactly what is meant by flexibility is not always clear. And the conclusions reached, in part because of the uncertainty, tend to be vague. One report, for example, ends with the hardly-controversial statement that "dynamic economies bent on sustainable growth will have to be flexible. Labour market flexibility is one of the conditions for their success."⁶

In this study, flexibility is defined to encompass programs, such as government-mandated job security protections, which reward seniority. It is often argued that such arrangements, by constraining employer flexibility and making new hires potentially more expensive, discourage employment and lead to chronic unemployment. But such arguments are commonly based on a very micro view of the firm and its reaction to mandates. The thrust of this paper is that such mandates are unlikely, by themselves, to be root causes of chronic unemployment because firms could offset mandated costs via lower wages. Thus, the inflexibility which must be examined is the old riddle of labor economics: why downward wage adjustments do not clear a labor market characterized by surplus workers.

I. Some Excluded Definitions of Flexibility

Because so many definitions of flexibility have been offered in the

literature, it is important to make clear what versions are excluded in this paper. As with much of the policy-oriented literature, the concern here is with possible adverse employment effects of inflexibilities, especially those mandated by law. Not all of the limits on flexibility cited in recent studies in fact link directly to that concern.

Sometimes, the idea of flexibility appears to merge with concepts related to the internal workings of enterprises, e.g., flexible specialization techniques in production, autonomous work teams, and multiskilling of employees.⁷ At this very micro level, flexible techniques may be seen by proponents as making the enterprise more competitive, thus creating jobs. Often flexibility is identified either with small firms and entrepreneurialism or with decentralization of control within large firms.⁸ Opponents, on the other side, see a dark side of unchecked management authority and job instability or will argue that small firms are not as beautiful as they seem.⁹

As in much of the micro-oriented approach, the macro connection to aggregate employment is unclear. For example, if an enterprise becomes more competitive via internal flexibility, it must have made other enterprises less competitive in relative terms; what appears to be job creation in one firm may be matched by job destruction in another. Partly for that reason, this paper does not include such internal firm issues - important though they may be in other contexts - as an element of flexibility relevant for overall employment effects.

Sometimes, flexibility is taken down to the individual employee level and used to refer to devices such as "flextime" working hours, use of part-time arrangements, and employment of temporaries. These devices may meet the needs of certain employees (often women with child care responsibilities).¹⁰ Growth in the number of jobs characterized by what Europeans call "atypical" working arrangements might thus be seen as a possible route to job creation, attracting individuals into the labor market.

However, again, the macro perspective suggests that the growth in such jobs may simply represent conversion of "regular" jobs to such flexible arrangements rather than net new job creation. And employment in part-time or temporary jobs may reflect employer, rather than employee, preferences and be symptomatic of a labor surplus. Moreover, even when employee preferences dominate, attracting more individuals into the labor market will increase employment only if jobs are available. So, again, individually-desired flexibility is excluded from the discussion that follows since its emphasis is adding to the supply of labor. In the face of job insufficiency, such flexibility-induced additions would increase - rather than decrease - unemployment.

Flexibility can refer to the micro wage determination process, i.e., the setting of occupational or other wage differentials. In some countries with centralized systems of wage setting, wage differentials may become frozen and unresponsive to local conditions, thus producing allocation inefficiencies. The advantages in terms of holding down inflation in such systems gradually are overwhelmed by the problems associated with inflexible differentials. It has been argued that pressures will eventually arise for increase differential flexibility through wage drift away from the official wage rates and the system may slide toward decentralization.¹¹ But since the main concern in this paper is aggregate employment, wage differential inflexibilities are not further discussed.

II. Compensation and Entitlement-Linked Versions of Labor-Market Flexibility

There is a body of thought connecting the idea of flexibility and job creation to labor compensation and working conditions. The linkage here is through direct or ersatz forms of wage adjustment. Classical labor market theory going back to the 1920s and 1930s emphasized wage flexibility to clear the labor market in times of high unemployment, reasoning at the macro level from the analogy of a micro labor market. Employers would hire more people, it was assumed, if labor costs were lower. Keynesian analysis, beginning in

the mid 1930s, took the emphasis off wages, especially nominal wages, and placed the responsibility for clearing the market on monetary and fiscal policy.¹² But the 1970s and 1980s saw something of a classical revival.

The rapid growth and full employment of the "four-tiger" countries of Asia has sometimes been attributed to moderate wage repression, a classical explanation since it presupposes a tendency for wages - absent repression - to settle at too-high levels.¹³ Sluggish job creation in Europe, particularly relative to the U.S. in the 1980s, was linked to "too-high" real wages, perhaps triggered in the 1970s by oil price shocks.¹⁴ Various notions were then attached to the general idea of a classical "Euroclerosis."

Job skills among the unemployed were thought to deteriorate, making them less employable at going wages and perpetuating their unemployment. Or the lucky incumbent workers who still had jobs ("insiders") were seen as perpetuating too-high wage levels because of lack of concern for unemployed outsiders.¹⁵ Under these stories, unemployment - once created - tended to continue ("hysteresis"), a classical variant of the old Keynesian idea of low-level traps.

At the level of policy, there developed the notion of using profit sharing as a partial substitute for the normal time-based or piece-based wage, put forward by Martin Weitzman and others.¹⁶ Reducing the share bonus would represent an alternative to layoffs in response to negative demand shocks. And the lower base wage would lead to higher levels of employment throughout the business cycle. Indeed, under the Weitzman model, the economy would operate in a continual labor shortage, thus dampening the business cycle if not eliminating its effect on employment.

It will be seen below that classical inflexibility is a necessary element linking employment insufficiency to job security mandates and similar policies. That conclusion implies that proposals to deal with classically-generated joblessness - such as the Weitzman share economy plan - are relevant

to the discussion that follows. Also implied is that countries have a wider range of options to impose job security mandates than is often suggested in recent literature, provided they also act to ensure adequate aggregate wage flexibility.

The type of initial flexibility or inflexibility with which this paper deals primarily stems from the regulation of workplace practices in terms of compensation and conditions of work, especially those related to job security. Such legal mandates are certainly not intended to reduce employment; if such effects occur, they are accidental byproducts or perverse impacts. Nonetheless, the argument often is made that legal mandates increase the cost of workers, thereby decreasing their use. So a critical issue is whether, or by how much, costs are actually raised.

Much of the current opposition in the U.S. to creating a national mandate for employer-paid-and-provided health insurance stems from the fear of dis-employment effects. Opponents argue that the higher costs induced by the health insurance mandate will lead to fewer jobs, particularly at smaller firms.¹⁷ European concerns about the impact of job security regulations are similar. Each employee hired involves a potential risk to the employer; there could be a decline in demand for labor in the future and difficulty in shedding employees in that event. If there are firing costs, these automatically become hiring costs, thus reducing hiring, according to a common line of thinking already cited. While anti-layoff regulations might not be harmful if the economy starts out at full employment and is growing rapidly, a shock toward higher unemployment and slow growth will tend to persist since employment will remain "stabilized" at the new low level.¹⁸

III. Sorting Out and Narrowing the Issues

In this paper as previously noted, the focus is on employment and unemployment. It is important to emphasize this point because many other issues surround the question of labor-market mandates and entitlements. For

example, a job security entitlement might lead to inefficiency if incompetent or insubordinate employees can not be dismissed (or if great costs attend such dismissals).¹⁹ Or, in the face of a downward demand shock to a particular firm, a job entitlement might prevent layoffs of redundant workers who could be better used elsewhere. From the enterprise or micro perspective, such effects can be viewed as inefficiencies and lowered productivity. But would they cut the number of jobs?

Other things equal, since lower productivity means more jobs per unit of output, such inefficiencies might raise employment. If output falls 1% but productivity falls 3%, there will be 2% more jobs. The actual result depends on various factors such as the degree to which output falls and - an issue stressed below - the ability of employers to shift the costs of such programs to workers in the form of lower wages. In addition, since overall employment is a macro matter, the responses of monetary and fiscal policy must also be considered.

A major problem with the flexibility debate is that the various potential goals of policy are not sorted out. For example, mandated social security pensions might have a long-term effect on saving behavior, depending on the financing mechanism. Perhaps unfunded pensions reduce private saving without an offsetting increase in public saving, thus reducing domestic investment. Eventually, reduced investment might produce slower growth in real incomes.

Particular social security pension formulas may also distort labor-market decisions of males vs. females or old vs. young. Mandated health insurance may shield patients from the true costs of alternative health services, thus producing overconsumption of such services and inefficient service delivery. Alternatively, there may be certain economies of administration in mandated national health insurance. Employees may have greater mobility under such national arrangements since "job lock" (inability to change jobs due to possible loss of health insurance) does not arise.

It will not be possible to make progress in the flexibility debate unless definitions are provided and issues are isolated and dealt with separately. Ultimately, everything in the economy is interrelated but acknowledging that fact does not produce an operational approach to analyzing the flexibility issue. Thus, in this paper the focus will be only on costs and employment impacts of labor-market entitlements which increase in value with seniority in the case of involuntary termination of employment by the employer.

IV. Examples of Seniority-Linked Entitlements

Various kinds of entitlement programs and legal arrangements provide increased benefits related to seniority in the case of involuntary separation. Among such entitlements are job-security guarantees and protections, since such guarantees tend to be stronger for longer-service workers. These protections may involve obtaining permission for layoffs from official bodies or tribunals or delays in negotiating such layoffs with internal enterprise councils. Or they may involve cash payments to laid-off workers. Apart from legally-required procedures, there may simply be public and political controversy in some countries when layoffs occur. Such policies and political pressures characterize many European countries.

However, examples can be cited outside Europe. Unemployment insurance in the U.S. is conditioned on a worker receiving minimum accumulated wage earnings over a specified period so that continuity of employment (seniority) is effectively required. Employers are charged for these benefits in relation to their contributions to a laid-off employee's total wages. But voluntary quits generally do not entitle a worker to benefits.²⁰ In the case of arbitration of discharges in the (relatively small) union sector of the American economy or in the growing area of wrongful discharge lawsuits by nonunion employees, American arbitrators, judges, and juries tend to give weight to worker seniority. Greater sympathy and awards go to long-service employees.²¹

Taiwanese laws require payments of large severance bonuses linked to past seniority to employees who are terminated. However, voluntary quits eliminate the severance entitlement.²² Thus, as in the previous examples, employees accumulate an entitlement of potential cost to the employer. The cost of the entitlement can be reduced only by shifting the expense to employees or following strategies which reduce the proportion of higher-seniority workers in the workforce.

As these examples make clear, there is a wide array of public policies which can be depicted for modeling purposes as a potential cost to the employer which rises with seniority. In later analysis, this cost will be termed "severance." An important question is the degree to which the severance cost may be shifted by the employer - or by all employers acting collectively as demanders of labor - to employees. Employment effects will depend critically on the degree of shifting that is possible.

Note, however, that simply asking employers what adjustment in public policy is needed to expand employment will produce a predictable, but potentially misleading, answer. An employer representative will almost always say that if a particular costly mandate were reduced, or even if a privately-negotiated labor cost were reduced, the firm would thereby have a competitive advantage and would tend to expand output and employment. For example, Lee Iacocca, the former CEO of Chrysler Corporation, was well known for dispensing data on the cost of health insurance imbedded in the average car his firm produced.²³ The implication was that if those costs were somehow reduced, Chrysler could have produced more cars at a lower price and hired more workers.

The problem with such reasoning is that while reducing the cost for one firm might well have that job-creating result, reducing it for all firms (including competitors), might well have another.²⁴ Reasoning from the single employer perspective is not likely to incorporate such all-firm consequences. It is unlikely to make clear how wages might react since the determinants of a

particular employer's wage policy could be changed by a general mandate affecting all firms. And it certainly will not incorporate assumptions about how the central bank might react. Later in this paper, these issues will be explored.

V. The Incidence of Labor-Market Mandates: Analysis

The cost argument concerning labor-market entitlements is simply that if workers are made more expensive, employers will use fewer of them. Put another way, the demand curve of the representative employer is downward sloping. However, as previously stressed, a critical question is the degree to which a mandated cost can be shifted to labor. A complete shift will eliminate the adverse employment effect. There is a literature on payroll tax incidence which is quite relevant to the employer-mandate/flexibility issue.

At the simplest level, the potential shift to labor can be depicted in terms of demand and supply analysis.²⁵ For example, Figure 1 shows a downward-sloping demand for labor and an upward-sloping labor supply curve. If the mandate's cost is translated into the equivalent of a payroll tax rate T , imposition of T raises the cost to the employer from W_1 to W_2 , an increment less than T .²⁶ The more inelastic is the supply curve, the less the margin by which W_2 exceeds W_1 , and the less is the employment displacement effect (the drop from E_1 to E_2). With a totally inelastic labor supply curve, there is no increase in labor costs at all when T is imposed and no disemployment effect.²⁷ Indeed, a payroll tax imposed in the face of a backward-bending (negatively sloped) labor supply curve would reduce labor costs and increase employment.²⁸

Even the analysis of Figure 1 can understate the degree to which a payroll tax type expense can be shifted back to labor. Figure 1 implicitly assumes that the expense represented by the tax provides no incremental gain for labor. Typically, however, employees do gain some entitlement as the result of the imposed expense. Much depends on what value employees place on the entitlement and the degree to which receiving it is conditional on

employment.²⁹

Consider, for example, a hypothetical mandate that employees receive a cash bonus equal to 1% of any wage payment made by the employer. Since bonus and wage are perfect substitutes (both are cash), the slope of the labor supply curve becomes irrelevant. Wages would simply fall by 1%, an amount completely offset by the bonus, leaving employees and employers effectively in the same position. No change in employment or net labor cost would occur. In short, simple demand/supply analysis predicts that the result of a mandate would be somewhere between the type of incidence depicted on Figure 1 and a complete shift to labor, depending on the value of the entitlement to labor.³⁰

Demand/supply analysis often assumes a competitive, clearing labor market characterized by the "law of one price." In such a labor market, there is full employment and firms do not have their own wage policies. Rather, they simply pay the one going wage rate for a particular grade of labor. Thus, there are three objections to the kind of analysis embodied in Figure 1.

First, real-world firms do have wage policies and may pay above or below the market average. A firm which lowers its wage relative to the average wage prevailing in the labor market will experience an increase in quits and higher turnover costs. However, it can choose to maintain its level of employment in the face of higher quits by increasing its rate of new hiring. In effect, there is a possibility of substituting turnover or hiring costs for wage costs. If mandated costs are imposed on the firm, it might choose to reduce its wage and put up with higher turnover. This possibility is discussed in more detail later.

Second, in union bargaining situations, there may be a significant pay premium relative to the market-clearing wage. Workers may queue for high-wage union job openings. That is, there may be an excess supply of labor. The supply curve of Figure 1 is not strictly relevant to such a situation since the wage is set off the supply curve.³¹ Indeed, the very shape of the supply

curve is distorted by the existence of excess supply.³²

If a costly mandate is imposed in such a negotiated, excess-supply-of-labor case, does the union successfully insist on maintaining the pre-mandate level of wages and benefits? Even in the long run? The answer is not clear, but the possibility of some absorption of the mandated cost by labor remains. In effect, the employer may bargain on a total compensation basis so that added costs come out of the workers' "pot".

Third, the flexibility discussion has occurred in the context of generalized unemployment in many countries. Unionization rates vary quite widely in Europe so a purely union story is not appropriate. In some cases real wages were maintained in the 1980s in the face of chronic unemployment among predominantly nonunion workers, e.g., in France. Hence, it would be inappropriate to consider the question of mandate incidence in the face of excess labor supply only in the context of collective bargaining.

The existence of a non-clearing labor market makes complicated even seemingly straight forward remedies for unemployment based on adjusting payroll taxes. For example, there has been a proposal to cut payroll taxes in European countries just for certain groups particularly subject to high unemployment.³³ Even a relatively simple model, allowing for substitution between categories of workers, would suggest that such implicit tax subsidies could increase employment of the targeted group. But jobs for the targeted group might simply come at the expense of other workers. Such a process may occur - even without a targeting policy - through selective evasion of payroll taxes (working "off the books"). In Spain, for example, certain groups are more prone to tax evasion, but the economy remains characterized by very high unemployment rates.³⁴

It is fashionable in macroeconomic circles to consider the mysteries of why wages do not fall in the case of chronic excess labor supply to be explainable by various concepts developed in the past two decades. Often

cited are implicit contracts, efficiency wages, and related similar micro constructs based on traditional economic notions of rationality. But in fact the riddle of pay inflexibility remains.³⁵ Elements of fairness geared to nominal wages seem to be components of the story as are other factors that promote nominalist thinking.³⁶ Aggregate wage equations (modified Phillips curves) can be estimated empirically, but these are basically descriptive. There is no simple theory to predict whether wage rigidity in the face of a benefit mandate means wage-plus-mandate rigidity, i.e., absorption of the mandate cost by labor, or whether it means wage-only rigidity, i.e., full payment of the mandate by the employer, or some in-between solution.

VI. The Incidence of Labor-Market Mandates: Empirical Evidence

Although the possibility exists that labor bears some or all of the costs of mandated benefits, there are political advantages in obscuring that fact. But there can also be political liabilities. Mandated programs and benefits may be more popular with workers when it appears that someone else (the employer) is paying the cost. Thus, as previously noted, much of the political battling in the U.S. concerning health care reform has involved whether or not employers should be mandated to provide "employer-paid" health insurance. Proposals to mandate that individuals (including employees) pay for health insurance if their employer does not have not been popular.

Although the U.S. Congressional Budget Office in fact assumes that the cost of employer-paid health insurance is "almost entirely offset by a decrease" in pay or other benefits, the political debate assumes the opposite, i.e., that all costs are borne by the employer.³⁷ But while the idea that employers pay may be appealing to employees, it also sets up employer opposition. That is, once it is insisted by program proponents that the mandate is paid for by the employer, the mandate can then be criticized by employers as job destroying.

Despite the heat of the health insurance debate in the U.S., there have been surprisingly few empirical estimates of the incidence of mandates. One

approach is to estimate labor demand and supply curves and then to apply the type of analysis of Figure 1 to calculate the impact. Alan Krueger took such an approach to the Clinton health care proposals, using relatively low supply elasticities culled from various other studies.³⁸ Workers were found to absorb about two thirds of the added cost of the program.³⁹ A similar study by Aaron and Bosworth estimated that about three fourths of the added cost would be shifted to workers.⁴⁰

Since the Clinton proposal for health insurance is not in effect, it is perhaps inevitable that its potential impact would be estimated using demand/supply analysis. A second approach, however, is to examine the impacts of mandates that have already been implemented. In the early 1970s, John Brittain examined data on a cross-section of 64 countries' manufacturing wages and payroll taxes.⁴¹ On the assumption that a constant elasticity of substitution (CES) production function could describe output, he estimated that all of the payroll tax was absorbed by labor. A tax-shift-to-labor parameter was consistently found equal to unity across his various data sets.

However, as Feldstein pointed out, given the CES interpretation, Brittain's results were predetermined. The real wage excluding the tax will differ from the marginal product of labor by the amount of the tax, regardless of the degree to which the tax is shifted to labor.⁴² Brittain responded to this criticism by noting that his data need not be interpreted only as reflections of a CES production function.⁴³

The issue dividing Brittain and Feldstein was essentially whether it was possible to estimate what the wage would have been in the hypothetical absence of the payroll tax and compare it with the actual wage. That is, is there a counterfactual wage built into the methodology? Brittain's approach, when rationalized in CES terms, essentially standardized for labor demand across countries, but not for the supply of labor. A looser interpretation - just that wages could typically be predicted by some general measure of living standards (Brittain used the output/labor ratio) - would give the Brittain test more meaning.

However, even the loose interpretation is open to question on empirical grounds. Seemingly minor differences in specification of Brittain's estimating equations and the time period used for estimation were found by Vroman to lead to wide differences in the shift coefficient. On the other hand, an alternative data base tested by Vroman was found to produce estimates which coincided with Brittain's original estimates and conclusion.⁴⁴

The Brittain approach, minus its CES interpretation, continues to suggest that much of the impact of employer-paid social insurance costs are shifted back to labor. Figure 2 shows the 1990 percentage of manufacturing compensation received by production workers which went for social insurance in 27 countries. The proportions range from below 5% to above 30%. In most cases, the proportions have increased since the mid 1970s, although some countries have reduced their tax rates, partly out of employment concerns.

Note that there is no simple relation between living standards and the proportion of compensation expended on social insurance. For example, Luxembourg, Singapore, and Sri Lanka all spent about the same percentage. This is because although there may well be a connection between the percent of GDP allocated to social insurance, countries may choose to finance such spending out of general taxation rather than labor compensation, e.g., Denmark.

With all estimates converted to U.S. dollars, a simple regression across the countries in 1990 standardizing only for GDP per capita suggests that each \$1 of labor compensation expended for social insurance raises total labor compensation by \$0.28. Taken literally, this would mean that labor absorbed 72% of the cost. However, regression analysis suggests that take-home pay, which should decrease in that case, instead rose by \$0.16 per dollar of social insurance. Thus, there is a spurious positive correlation that accounts for \$0.16 of the \$0.28, suggesting that the "true" impact of an added \$1 of social insurance is about \$0.12 on total compensation. That estimate indicates that labor absorbs about nine tenths of the cost of "employer-paid" benefits.⁴⁵

An alternative methodology applied by Hamermesh took advantage of the upper limit on U.S. social security taxes which create different average tax rates across individuals.⁴⁶ Using individual wage data, Hamermesh found that about a third of the payroll tax was shifted back to labor, almost all in the first year.⁴⁷ However, the approach seems quite sensitive to the method of estimating the payroll tax owed for each employee. Actual payroll taxes were not indicated in the Hamermesh data set; they were approximated based on reported earnings (which may be in error) or estimated earnings (which may also be in error). It is unclear that any of the techniques used would avoid the classic problem of bias toward zero of regression coefficients when there are errors in independent variables.⁴⁸

More recent work has used variation in the cost of mandates across industries and occupations or demographic groups. Workers' Compensation programs are mandated by state law in the U.S. to compensate for on-the-job injuries or work-related diseases. Cross-state costs vary within occupational groups, although the amount of absorption by occupation of the cost varies substantially. Overall, however, more than 85% of the cost was found to be shifted to labor.⁴⁹ A related study focused on the costs of a mandate that employer-provided health insurance plans in the U.S. (which are not themselves mandated) must provide maternity care. A similar result was estimated.⁵⁰ The cost of mandated maternity care was largely shifted to the wages of women of childbearing age or to the wages of husbands of such women.

Time-series evidence is yet another potential approach. Holmlund estimated annual wage-change equations for Sweden including a term for payroll tax rate changes. He found that about half of a payroll tax increase was absorbed by labor in the initial year. His equations could not determine the long-term impact since lagged payroll taxes were not used as independent variables. However, Holmlund noted that it was likely in the long run that full absorption by labor would occur.⁵¹

Generally, U.S. data suggest that payroll tax increases initially boost labor costs but are eventually absorbed by labor. An annual regression of the

change in labor's percentage share of GDP (including employer contributions and taxes for social insurance) against current and lagged values of the change in employer contributions and taxes for social insurance will produce positive coefficients for current and recent years. But these coefficients shift to negative for years further in the past. However, the precise results are very sensitive to specification.⁵²

VII. A Simple Model of Severance, Wages, and Employment

As previously noted, a mandated benefit of seniority-related entitlement can be used as a proxy for a variety of legally-required programs related to job security. Of course, employers might provide such benefits without a mandate, since seniority-linked entitlements could reduce turnover (quit and hiring) costs by attaching "golden handcuffs" to employees. So to model the impact of an effective mandate, it is necessary to assume that a law is imposed requiring the firm to go beyond what it would voluntarily offer.

Consider a two-period model in which a firm, which uses labor as its only input to production, has a level-of-employment policy, a wage policy, and a severance policy. In period (1), it hires E workers at wage W , offering a potential severance entitlement S . If those workers quit at the end of period (1), they do not accrue any entitlement. But if they stay with the firm into the second period, they accrue a benefit which might be viewed as severance pay S received at the end of period (2). S could be a function of the wage but for simplicity consider it to be a fixed payment.

The firm can follow a low-wage or high-wage policy and maintain its level of employment E (holding S constant). However, the quit rate (quits/employee or q , where q is bounded by zero and unity) will be higher at a lower wage, as shown on Figure 3. Thus, the firm will have to replace workers who quit at a hiring cost of h per worker. A similar relation between the severance offering and the quit rate also holds; given a wage level, the higher the level of severance, the lower the quit rate and its associated

costs.³³ Figure 3 also can represent the severance-quit relationship.

In period (1), the firm has three kinds of labor costs: a) ongoing employment costs (WE), b) hiring costs (hqE), and c) severance costs ($S[1-q]E = SE - SqE$). To maximize profits in period (1), the firm must adjust E , W , and S , its three policy instruments, optimally. It will set its level of employment E so that:

(1) Marginal revenue product of labor = marginal employment cost
+ marginal hiring cost + marginal severance cost, or:

$$(1') \text{MRP}_L = W + hq + S(1-q)$$

as shown on Figure 4 at E_1 .³⁴ Equations (1) and (1') are simply generalizations of the textbook rule that wage = marginal revenue product of labor.

Since, by construction, E is not a function of W (because the firm substitutes a higher hiring intake with attendant higher hiring costs for the wage to keep E at the desired level), the optimum, profit-maximizing wage decision is to set W such that:

(2) marginal employment cost associated with a 1 unit wage increase =
net saving on severance - hiring cost associated with the reduction
in quits brought about by the 1 unit wage increase, or:

$$(2') (S-h)q_w' = 1$$

where q_w' is the marginal (partial) effect of W on the quit rate. The cost of severance per worker rises with the wage, since raising the wage lowers quits and because a higher fraction of the firm's workforce become entitled to severance. Employment cost (as defined above) per worker is simply the wage W . But hiring costs fall as the wage increases, since quits drop and fewer

workers need to be replaced.

Figure 5 illustrates the three elements of labor cost per worker as a function of the wage (given optimal S). The employment cost W is shown by the 45° degree line through the origin. The severance cost rises as W increases because fewer quits translate into more workers eligible for severance. And the hiring cost falls for the same reason; higher wages reduce quits which reduce the need for replacement hiring. The firm sets the wage (given the severance payment discussed below) so as to minimize total labor costs per worker $([\text{employment cost} + \text{severance cost} + \text{hiring cost}]/E)$ as at W_1 on Figure 6.

Finally, the firm sets its voluntary level of severance such that:

- (3) the marginal cost of increasing the severance payment =
the marginal saving due to lower quits, or

$$(3') (1-q) + Sq_s' = hq_s'$$

where q_s' is the partial derivative of the quit rate with respect to S . We will assume that the mandated severance level is above the optimal voluntary level for the representative firm.

Consider the firm alone, i.e., neglecting the macro effects of the mandate on other employers. If the firm is in profit-maximizing equilibrium and a government mandate now requires higher-than-voluntarily-provided severance per eligible worker, labor costs will increase. Quits will fall due to the extra severance and that will reduce hiring costs. But the saving in hiring costs will not be enough to compensate the firm for higher severance, otherwise the firm would have raised severance voluntarily.⁵⁵ As shown on Figure 4, the firm reacts on the employment side by reducing the labor input to E_2 . The optimum wage falls to W_2 on Figure 6, as the firm tries to stimulate some quits in order to reduce severance eligibility.⁵⁶

Up to this point, the analysis has neglected economy-wide (macro) repercussions of the mandate. But it is very important to consider such macro developments in analyzing the overall impact of the mandate; the final effects will reflect the actions of all affected employers, not just those of a single firm. If all firms react in a similar fashion to the firm modeled above, then real wages should fall. The reduction in labor demand - absent some form of wage rigidity - should drop the wage until the labor market again clears.

That simple point brings the analysis back to the earlier discussion of payroll tax incidence. The severance cost is an implicit "tax" on employment. With a totally inelastic labor supply, real wages should fall throughout the labor market. The fall should continue until firms had their profitability restored to the level consistent with full employment, a point that would be reached when all of the added severance cost was shifted to labor as a lower real wage.⁵⁷

If labor supply is elastic and positive, some of the burden of added severance should fall on labor and some on the employer, as in the payroll tax case. However, the labor market would still clear. Employment would be lower than before the mandate but unemployment should not be higher. That is, workers willing to accept going wages would find jobs, although some would choose leisure rather than work because of lower wages. This outcome is manifestly not what has been observed in many countries, especially in Europe, with chronically high unemployment levels. Ultimately, therefore, the explanation of unemployment as due to inflexibility associated with severance-like job security mandates is at best incomplete. If an increased job-security mandate brings about increase unemployment, it is because wages do not fall to offset the cost of the mandate. The inflexibility to be explained, in short, is the old labor market puzzle - going back to pre-Keynesian times - of why wages do not fall (or fall sufficiently) in the face of unemployment.

VIII. The Macro Context

The concept of the cost of severance can be modified to include changes in the economic environment as well as the monetary value of the severance payment. In the model above, severance was paid to any worker who did not quit at the end of period (1). However, severance could be reinterpreted as an insurance benefit based on a contingency in period (2): the possibility of a layoff. That is, the benefit could be an employment or income guarantee that would take on value in period (2) only if the worker would otherwise be involuntarily terminated due to a business downturn.

In effect, the severance benefit could be seen as an option which could be exercised by the worker during Bad Times in period (2). Should the worker's value to the firm fall to the point of layoff, the worker could exercise the option and collect income from the employer in the form of severance, a continuing income payment, or continued employment at the existing wage. The cost to the employer of providing such options increases, as with financial options, with the variance of the underlying contingency. If employers perceive that economic conditions have become more uncertain, the cost of severance will rise, even if there is no change in the terms of the legal mandate. That is, the level of S and the rules governing eligibility might not change and yet a more uncertain environment could increase the expected cost of the severance mandate to the firm.

There are many factors which could have contributed to employer perceptions of increased risk and uncertainty beginning in the 1970s and 1980s. These include the move to flexible exchange rates, the rise of new foreign competitors (in Asia and now eastern Europe), de-regulation and privatization in domestic markets, OPEC and Persian Gulf oil price shocks, new technology, etc. In some instances, especially when a mandate is relatively new, employers may have difficulty estimating just what the risks are.

American employers, for example, can obtain insurance policies against wrongful discharge lawsuits which cover litigation expenses and adverse verdicts for economic damages. However, court awards of punitive damages can

not be recompensed by insurance. And there may be internal costs to the firm, not included in direct litigation costs, such as supervisors becoming overly cautious in disciplining employees. One study found that California employers cut back hiring by more than could be justified by direct expected litigation expenses in wrongful discharge suits, suggesting either significant risk aversion or indirect expenses.⁵⁸

But even though risk aversion and hidden costs easily cited, and even though they could contribute to the expected cost of severance, the wage flexibility issue must remain at the heart of the discussion. Higher unemployment can arise from increased costs of severance only if wages do not fall to offset the added expected costs. Discussion of labor-market inflexibility and dis-employment has too often proceeded on the assumption that existing labor costs are given and any added costs simply are one-for-one add ons. Although that is the micro perspective, i.e., the view of the individual employer, it is an excessively narrow and partial equilibrium analysis,

Figure 7 provides a wider analysis at the macro level, drawing on the Mitchell-Zaidi model of the determination of the "natural" rate of unemployment.⁵⁹ The unemployment rate U tends to weaken labor's bargaining position, other things equal, so that target W/P , wages divided by a price index (the real wage) tends to be lower at higher unemployment rates. This labor-market relation is shown by downward-sloping line LL . In the product market, firms mark up prices P over their labor costs W so that P/W represents the target profit margin. Other things equal, high unemployment (economic slackness) will reduce the ability to maintain high profit margins so target P/W will be lower at higher as unemployment rates. But P/W is simply the inverse of W/P and is graphed on Figure 7 as upward-sloping line PP .

Clearly, the inverse of target P/W from the product market must equal target W/P in the labor market for equilibrium to prevail, as at U^* on Figure 7. U^* is the natural rate of unemployment because it harmonizes labor and

product market targets. If U falls temporarily below U^* , workers will try to obtain a higher W/P in the labor market and firms in the product market will try to obtain a higher P/W (lower W/P). It is not possible for W/P and P/W to go up simultaneously. A wage-price spiral will therefore accelerate at point to the left of U^* on Figure 7.

Conversely, to the right of U^* , a zone of disinflation exists. At U^* , whatever rate of inflation currently exists will tend to continue. Assuming the macro authority (the central bank) is content with current inflation rate, it will follow policies to hold unemployment at level U^* . And departures from U^* will be unsustainable in the long run.

Other things equal, any exogenous influence that causes firms to seek higher profit margins (a lower PP line and a lower W/P , holding LL constant) curve will tend to raise the natural rate of unemployment. Any influence that increases labor's militancy in seeking a higher real wage (a higher LL and a higher W/P , holding PP constant) will also raise the natural unemployment rate. If the expected cost of severance is raised, either because of a tighter mandate or because employers feel severance has become more expensive due to increased economic uncertainty, PP will shift down (to $P'P'$) on Figure 7. By itself, this shift will raise the natural rate of unemployment (to U^{**}). Only if LL shifted down sufficiently to compensate employers for the increased cost of severance, i.e., only if the burden of the added cost of severance is shifted to labor, will the natural unemployment rate remain as low as U^* .

There is a second important interpretation of employment determination under certain mandated severance benefits in the macro context, based on a model developed by David Levine, extending work by Shapiro and Stiglitz.⁶⁰ If the severance benefits under question are just-cause employment policies, requiring that firms have a mandated level of cause before being able to fire employees, and if the macro unemployment rate affects workers' rate of effort, then mandating just-cause employment policies might actually reduce

unemployment. The intuition is that the choice of harsh severance policies by some firms will increase hiring rates at these firms and thus decrease the expected duration of unemployment for all workers. This may have an effect on the motivation of workers employed elsewhere, which results in a high equilibrium unemployment rate. Mandating that firms can't follow such harsh severance policies therefore reduces equilibrium unemployment, but at the cost of higher expected duration of unemployment.

IX. The Bottom Line on Flexibility and Employment

It is popular to point to mandated employment security devices as departures from needed flexibility in the labor market. But labeling such inflexibility as the culprit for chronically high unemployment in some European and other countries can at best be only a part of the story. Limits on the firm's right to lay off do raise costs to employers, but other elements of compensation, especially wages, could adjust to offset the extra costs. The micro-level employer view that labor costs are given and mandates add to costs on a one-for-one basis exaggerates the dis-employment effect. Hence, the inflexibility to be blamed is not the mandated employment security policy but whatever it is in the labor market that prevents downward real wage adjustments in the face of high unemployment.

The potential policy remedies recommended should target the wage flexibility issue. A focus exclusively on job security policies will produce only limited remedies. Among the approaches which focus on wage flexibility is the Weitzman proposal for encouraging widespread use of profit sharing, effectively using the variable share bonus as a substitute for wage flexibility.

Absent increased wage flexibility, employers will seek employment contracts which avoid the cost of job guarantees. In the U.S. and elsewhere where it is permitted, there has been a substantial growth in the use of contingent workers (temporaries, self-employed contractors, consultants,

workers on limited-duration contracts, etc.). Alternatively, if wages cannot be lowered to offset mandated costs, employers may seek higher productivity through the various forms of employee involvement techniques that have evolved over the past two decades. However, as interesting as the various internal-to-the-firm options are for offsetting costs, it is important not to lose sight of the macro wage rigidity that underlies these developments.

Figure 1: Effect of Payroll Tax

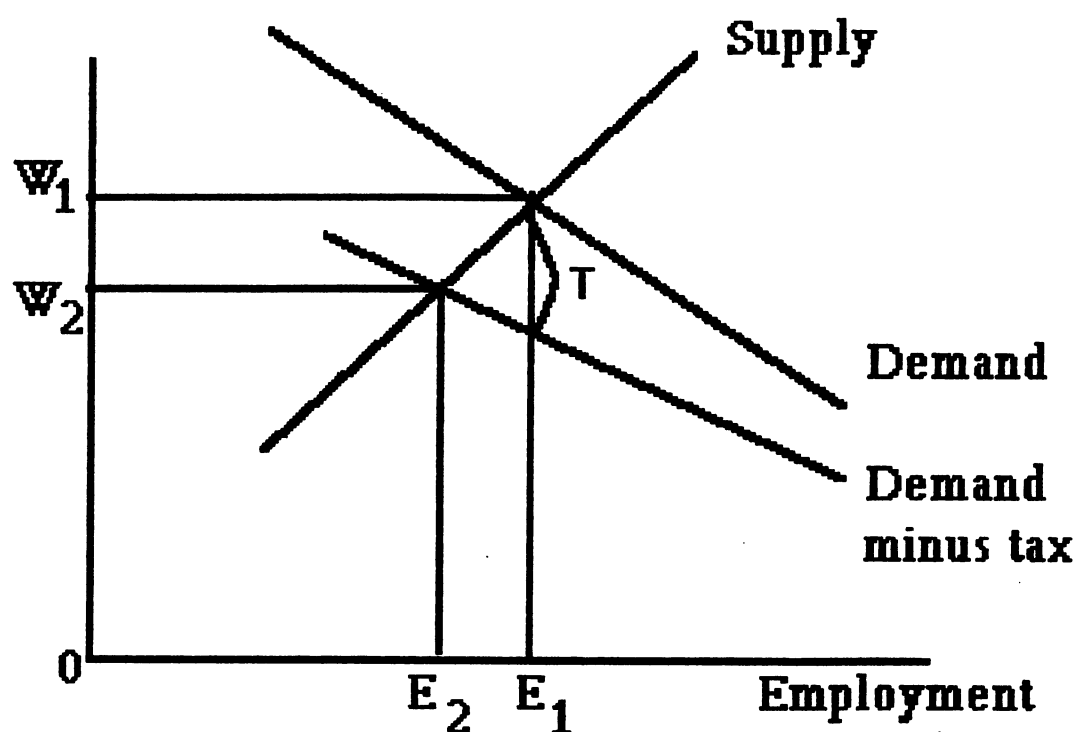
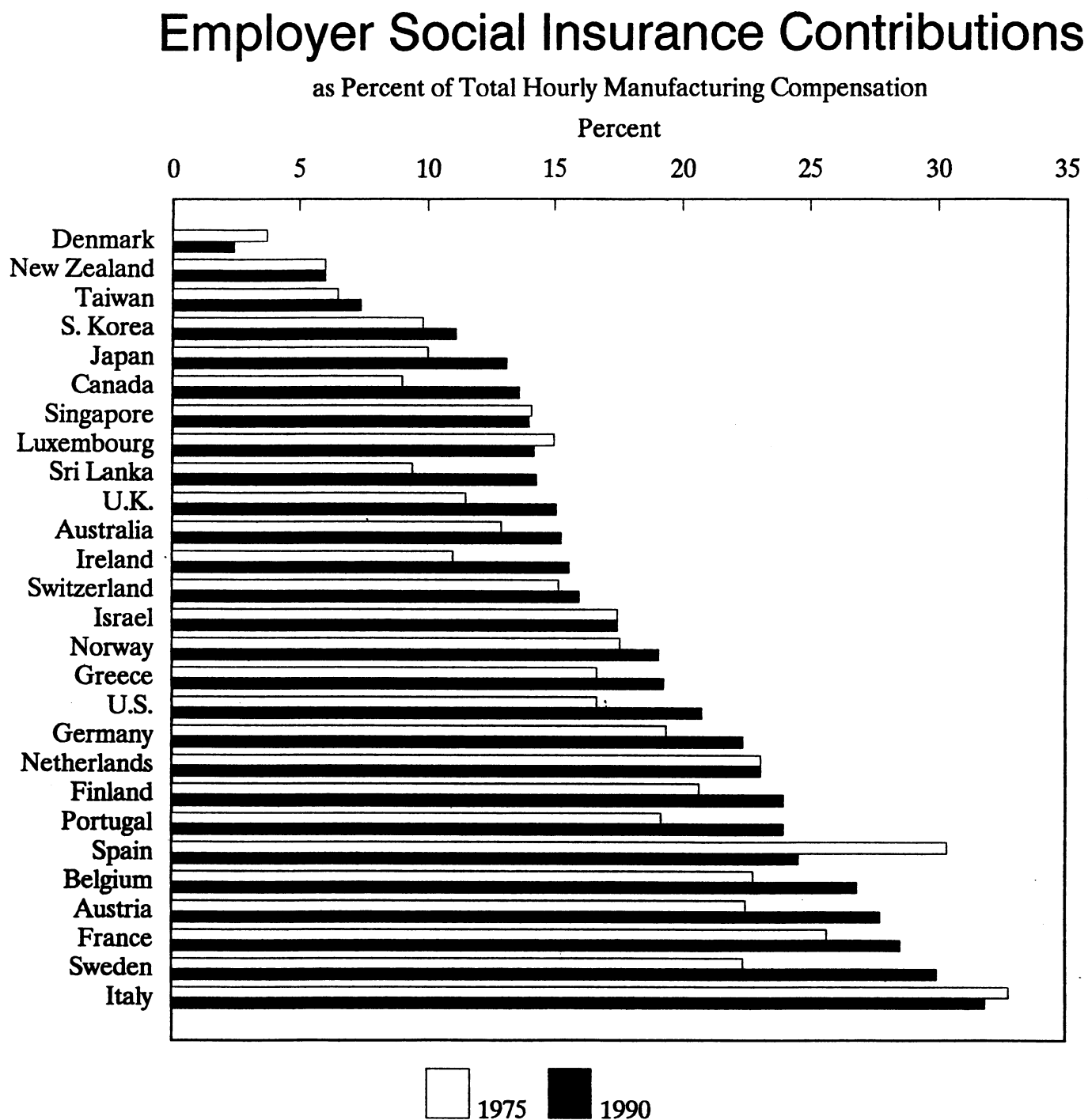


Figure 2:



Note: Data refer to production workers.

Source: U.S. Bureau of Labor Statistics

**Figure 3: Effect of Wage
and Severance
on Quit Rate**

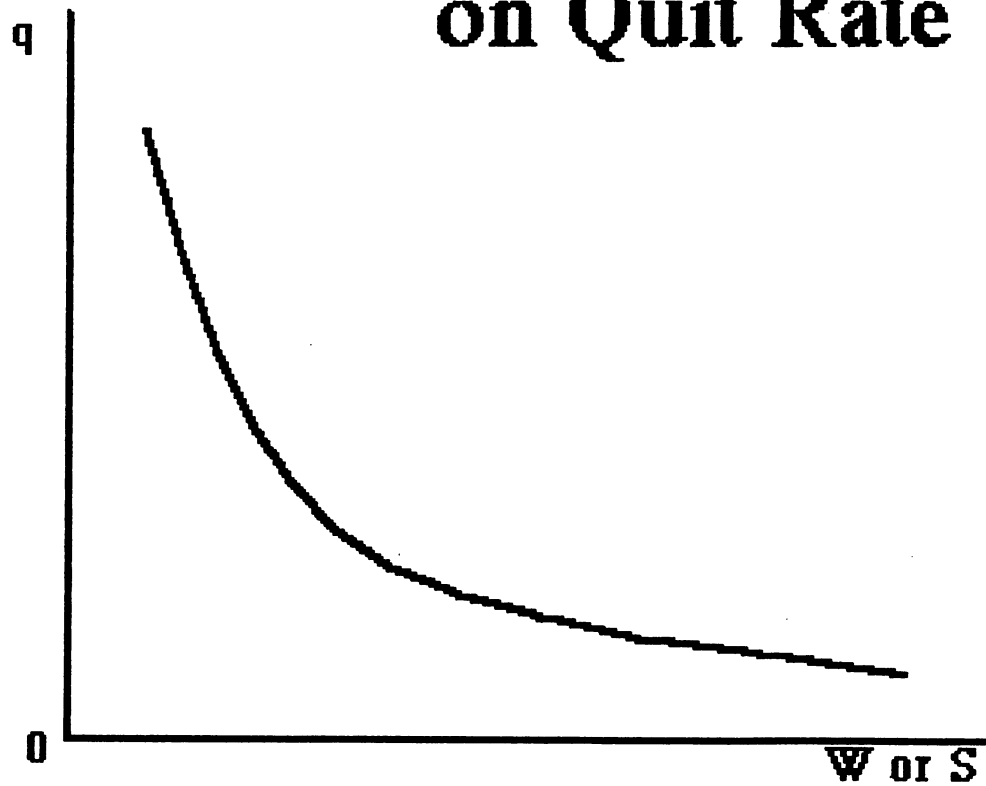


Figure 4: Employment Determination

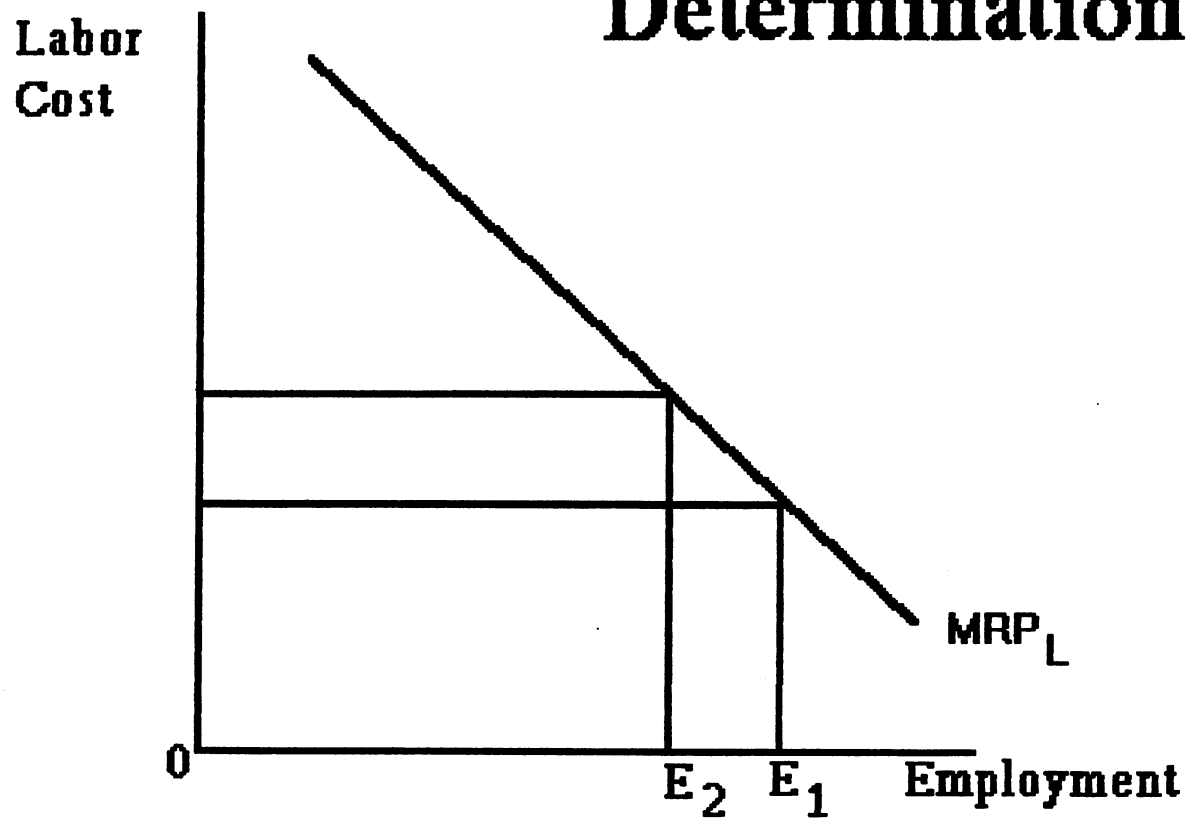


Figure 5: Wage Effect on Cost

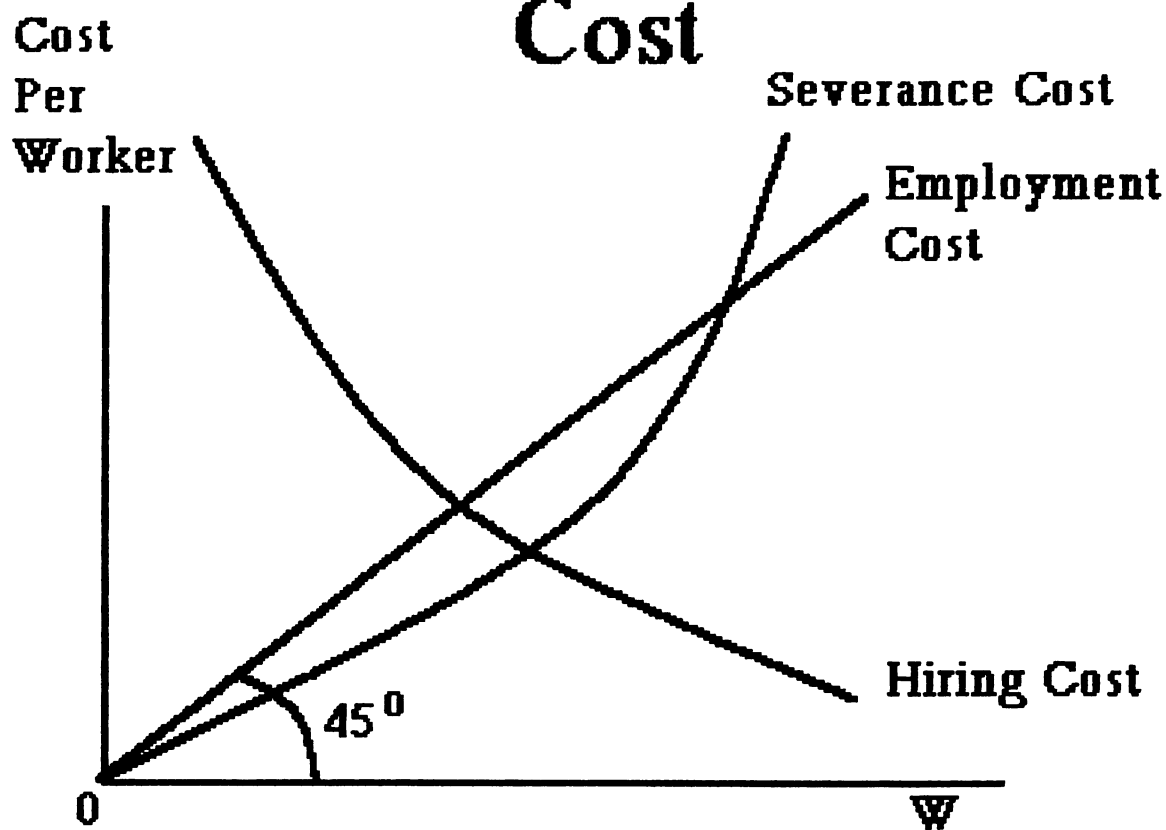


Figure 6: Wage Determination

Labor Cost
Per Worker

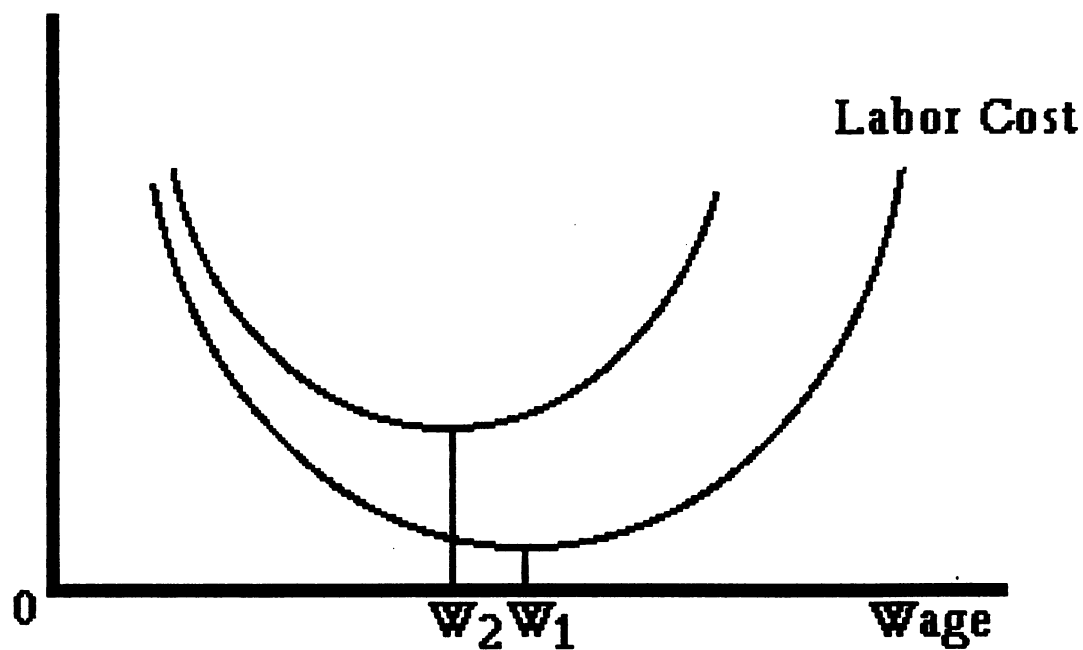
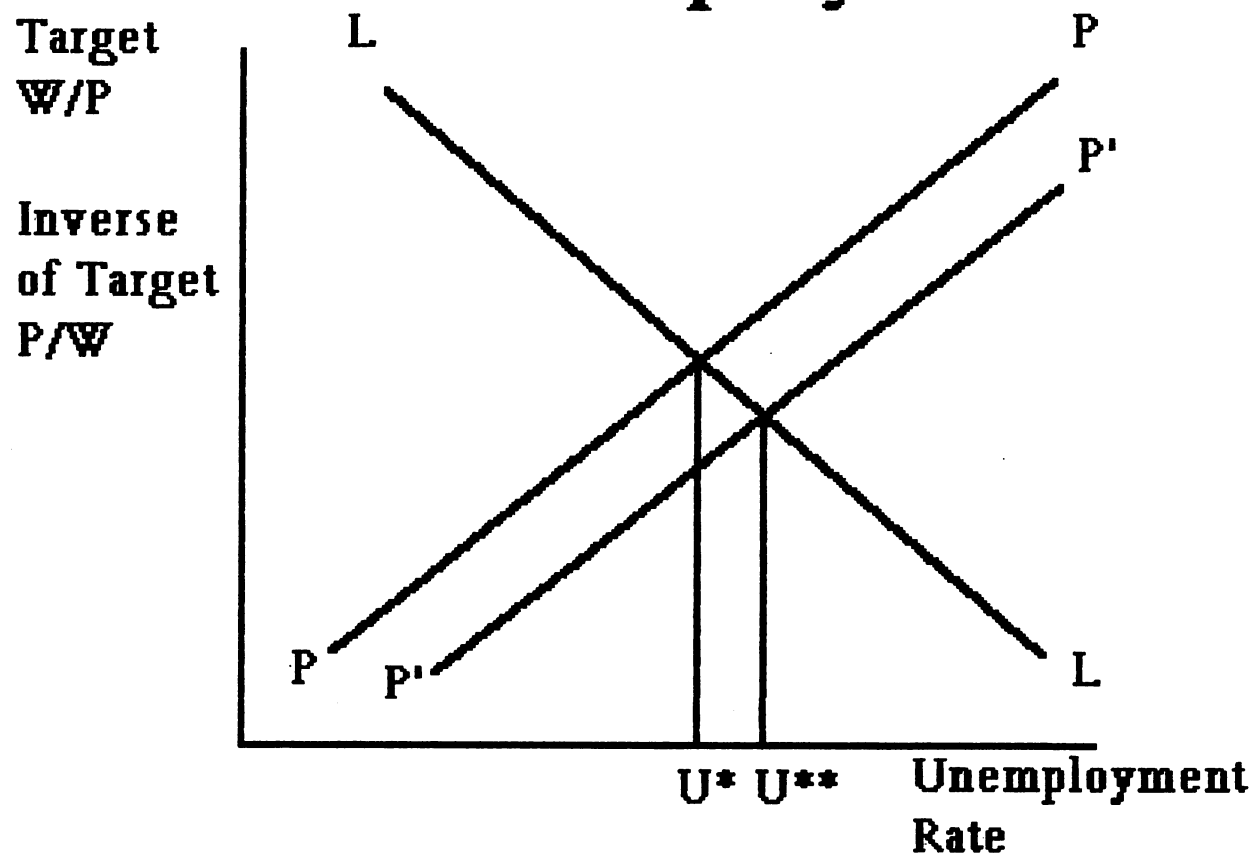


Figure 7: Determination of Unemployment



Footnotes

1. Tiziano Treu, "Labour Flexibility in Europe," International Labour Review, vol. 131 (4-5:1992), pp. 497-512.
2. Michael Emerson, "Regulation or Deregulation of the Labour Market: Policy Regimes for the Recruitment and Dismissal of Employees in the Industrialised Countries," European Economic Review, vol. 32 (1988), pp. 775-817; Organisation for Economic Co-operation and Development, Mechanisms for Job Creation: Lessons from the United States (Paris: OECD, 1989).
3. Organisation for Economic Co-operation and Development, The OECD Jobs Study: Facts, Analysis, Strategies (Paris: OECD, 1994); Organisation for Economic Co-operation and Development, Labour Market Flexibility: Trends in Enterprises (Paris: OECD, 1989); Organisation for Economic Co-operation and Development, Economies in Transition: Structural Adjustment in OECD Countries (Paris: OECD, 1989), chapter 2; Organisation for Economic Co-operation and Development, Flexibility in the Labour Market: The Current Debate (Paris: OECD, 1986).
4. For example, Guy Standing, Unemployment and Labour Market Flexibility: The United Kingdom (Geneva: International Labour Office, 1986); Guy Standing, Unemployment and Labour Market Flexibility: Sweden (Geneva: International Labour Office, 1988), Chris de Neubourg, Unemployment and Labour Market Flexibility: The Netherlands (Geneva: International Labour Office, 1990).
5. Australia, National Labour Consultative Council, Labour Market Flexibility in the Australian Setting (Canberra: Commonwealth Government Printer, 1987).
6. Organisation for Economic Co-operation and Development, Labour Market Flexibility: Report by a High-Level Group of Experts to the Secretary-General (Paris: OECD, 1986), p. 22.
7. Björn Gustavsen, "Evolving Patterns of Enterprise Organisation: The Move Towards Greater Flexibility," International Labour Review, vol. 125 (July-August, 1986), pp. 367-382; Michael J. Piore and Charles F. Sabel, The Second Industrial Divide: Possibilities for Prosperity (New York: Basic Books, 1984).
8. Werner Sengenberger, Gary W. Loveman, and Michael J. Piore, eds., The Re-Emergence of Small Enterprises: Industrial Restructuring in Industrialised Countries (Geneva: International Institute for Labour Studies, 1990).
9. Solomon Barkin, "The Flexibility Debate in Western Europe: The Current Drive to Restore Managements' Rights Over Personnel and Wages," Relations Industrielles 9. vol. 42 (1:1987), pp. 12-43; Charles Brown, James Hamilton, and James Medoff, Employers Large and Small (Cambridge, Mass.: Harvard University Press, 1990).
10. The various issues of The Work Flexibility Review are heavily devoted to articles on such working arrangements in various countries. See also Joseph E. Thurman and Gabriele Trah, "Part-Time Work in International Perspective," International Labour Review, vol. 129 (1:1990), pp. 23-40; Sheila B. Kamerman and Alfred J. Kahn, The Responsive Workplace: Employers and a Changing Labor Force (New York: Columbia University Press, 1987).
11. Richard B. Freeman and Robert Gibbons, "Getting Together and Breaking Apart: The Decline of Centralised Collective Bargaining," working paper no. 4464, National Bureau of Economic Research, September 1993.
12. Daniel J.B. Mitchell, "Wages and Keynes: Lessons from the Past," Eastern Economic Journal, vol. 12 (July/September 1986), pp. 199-208.

13. International Bank for Reconstruction and Development (World Bank), The East Asia Miracle: Economic Growth and Public Policy (New York: Oxford University Press, 1993), pp. 261-273.
14. Friedrich Klau and Axel Mittelstädt, "Labour Market Flexibility and External Price Shocks," working paper no. 24, Department of Economics and Statistics, OECD, September 1985.
15. Charles R. Bean, "European Unemployment: A Survey," Journal of Economic Literature, vol. 32 (June 1994), pp. 573-619.
16. Martin L. Weitzman, The Share Economy: Conquering Stagflation (Cambridge, Mass.: Harvard University Press, 1984).
17. The National Federation of Independent Businesses, a small business trade association, has been particularly active in seeking to avert mandated employer-provided health insurance. See its official statement in U.S. Congress, House Committee on Small Business, Payroll Taxes, Health Insurance, and SBA Budget Proposals, hearings of March 29, 1990 (Washington: GPO, 1991), pp. 59-81.
18. Assar Lindbeck, "The Welfare State and the Employment Problem," American Economic Review, vol. 84 (May 1994), pp. 71-75.
19. On the other hand, as will be discussed below, there are plausible circumstances under which a job security entitlement might lead to both increased employment and increased efficiency.
20. The precise provisions of unemployment insurance vary from state to state. See National Foundation for Unemployment Compensation and Workers' Compensation, Highlights of State Unemployment Compensation Laws, January 1994 (Washington: NFUCWC, 1994).
21. Wrongful discharge litigation mainly developed in the 1970s and 1980s in the U.S. On the development of the wrongful discharge concept in American law, see Alan B. Krueger, "The Evolution of Unjust-Dismissal Legislation in the United States," Industrial and Labor Relations Review, vol. 44 (July 1991), pp. 644-660.
22. Daniel J.B. Mitchell, Hsueh-Yu Peng, and Mahmood A. Zaidi, "Public Policy Towards Employee Benefits in the United States, Canada, and Taiwan: Lessons for European Integration," Labour, vol. 7 (Spring 1993), pp. 125-156, especially pp. 151-152.
23. Lee A. Iacocca, Talking Straight (New York: Bantam, 1988), p. 260.
24. Mark V. Pauly, "The Incidence of Health Insurance Costs: Is Everyone Out of Step But Economists?" in Barbara D. Dennis, ed., Proceedings of the Forty-First Annual Meeting, December 28-30, 1988, Industrial Relations Research Association (Madison, Wisc.: IRRRA, 1989), pp. 387-397.
25. The analysis below can be found in standard textbooks. See, for example, Ronald G. Ehrenberg and Robert S. Smith, Modern Labor Economics: Theory and Public Policy, fifth edition (New York: HarperCollins, 1994), pp. 69-71; Daniel J.B. Mitchell, Human Resource Management: An Economic Approach (Boston: PWS-Kent, 1989), pp. 421-425.
26. The text assumes that the employer is mandated to pay the tax or cost of the benefit. There can also be mandates under which employees pay for, or share in the costs. The implications of taxes which are legally-paid by employers may not be identical to those legally-paid by the employer. These distinctions are not considered here. See Bertil Holmlund, "A Note on Changes in Payroll Taxes - Does Legal Incidence Matter?," National Tax Journal, vol. 34 (December 1981), pp. 479-482. As Holmlund shows if payroll taxes on employer and employer are already in effect, both based on the employee's official wage, a given increment to the

employer tax will have a different employment and wage effect than the same increment added to the employee tax. This result stems from the gap in labor costs to the employer and the net wage received by the employee. A 1 percentage point tax increment will be larger for the employee relative to take-home pay (wage minus previous employee tax) than relative to the employer's labor cost (wage plus previous employer tax). The differential effect is widened by the addition of income taxes applicable to the employee.

27. Phelps, advocacy of a wage subsidy (in effect, a negative payroll tax) for low-wage workers to increase their employment treats the supply response in terms of reduced shirking, absenteeism, and quitting rather than employment. See Edmund S. Phelps, "Low-Wage Employment Subsidies Versus the Welfare State," American Economic Review, vol. 84 (May 1994), pp. 54-58.

28. Certain kinds of benefits, attached to the tax or expense of the program, could theoretically increase labor supply. For example, it has been argued in the U.S. that mandated paid maternity leave would reduce the tendency of women to reduce labor supply by quitting at the time of childbirth. See Olivia S. Mitchell, "The Effects of Mandating Benefits Packages" in Laurie J. Bassi and David L. Crawford, eds., Research in Labor Economics, vol. 11 (Greenwich, Conn.: JAI Press, 1990), p. 306.

29. Lawrence H. Summers, "Some Simple Economics of Mandated Benefits," American Economic Review, vol. 79 (May 1989), pp. 177-183, especially p. 180.

30. If the entitlement is not conditioned on employment, i.e., if the worker would receive the benefit whether employed or not, then even if the benefit is valuable, the analysis of Figure 1 would apply. For example, if a country creates a health care system for all members of the population, employed or not, financed (perhaps partially) by a payroll tax, the employee experiences no gain of health insurance by working. In that case, the effect is no different than if the government had simply imposed the payroll tax as a source of general revenue.

31. The text assumes that a wage is negotiated and then the employer chooses the employment level along its demand curve. In truly efficient wage bargaining, the wage may be set off both the demand and supply curves, i.e., negotiations take place over both the wage and the employment level. Although that case is not discussed here, the same issues arise as in the case of operating along the demand curve.

32. Job-seekers must decide whether to wait for job openings in the union sector or to take a nonunion job. The decision depends on the perceived probability of an opening within a given time period and worker risk preferences.

33. Roger Blanpain, Will I Still Have a Job Tomorrow? Reflections on a New Strategy from Routine Jobs to Creativity (Leuven: Peeters, 1994), p. 117.

34. Rebecca Blank, "Does a Larger Social Safety Net Mean Less Economic Flexibility?" in Richard B. Freeman, ed., Working Under Different Rules (New York: Russell Sage, 1994), pp. 167-168.

35. David C. Colander, "The Macrofoundations of Micro," Eastern Economic Journal, vol. 19 (Fall 1993), pp. 447-457.

36. Alan S. Blinder and Don H. Choi, "A Shred of Evidence on Theories of Wage Stickiness," Quarterly Journal of Economics, vol. 105 (November 1990), pp. 1003-1015; Daniel J.B. Mitchell, "Keynesian, Old Keynesian, and New Keynesian Wage Nominalism," Industrial Relations, vol. 32 (Winter 1993), pp. 1-29.

37. U.S. Congressional Budget Office, "Estimates of Health Care Proposals from the 102nd Congress," CBO paper, July 1993, p. 3. A little-noticed analysis from the President's Council of Economic Advisors makes much the same assumption. See

U.S. President, Economic Report of the President, February 1994 (Washington: GPO, 1994), pp. 148-149.

38. Alan B. Krueger, "Observations on Employment-Based Government Mandates, With Particular Reference to Health Insurance," working paper no. 323, Industrial Relations Section, Princeton University, January 1994.

39. Krueger used a two-sector model of currently insured and currently uninsured workers. Costs rise in the latter and drop in the former sector.

40. Henry J. Aaron and Barry P. Bosworth, "Economic Issues in Reform of Health Care Financing," Brookings Papers on Economic Activity (Micro: 1994), pp. 249-286, especially p. 263.

41. John A. Brittain, "The Incidence of Social Security Payroll Taxes," American Economic Review, vol. 61 (March 1971), pp. 110-125; John A. Brittain, The Payroll Tax for Social Security (Washington: Brookings Institution, 1972).

42. Martin S. Feldstein, "The Incidence of the Social Security Payroll Tax: Comment," American Economic Review, vol. 62 (December 1972). pp. 735-738.

43. John A. Brittain, "The Incidence of the Social Security Payroll Tax: Reply," American Economic Review, vol. 62 (December 1972), pp. 739-742.

44. Wayne Vroman, "Employer Payroll Tax Incidence: Empirical Tests With Cross-Country Data," Public Finance, vol. 29 (2:1974), pp. 184-200.

45. The relevant regressions, with all variables expressed as natural logs and t-statistics in parentheses, are:

- (1) $COMP = -4.58 + .71 \text{ GDP/Capita} + .28 \text{ Soc Ins}$ Adjusted $R^2 = .94$
(-5.70)* (8.18)* (4.41)*
- (2) $TAKE = -5.70 + .81 \text{ GDP/Capita} + .16 \text{ Soc Ins}$ Adjusted $R^2 = .92$
(-6.40)* (8.45)* (2.35)**
- (3) $ADJ = -4.58 + .71 \text{ GDP/Capita} + .11 \text{ Soc Ins}$ Adjusted $R^2 = .90$
(-5.70)* (8.18)* (1.81)***

*significant at 1% level

*significant at 5% level

***significant at 10% level

where:

COMP = hourly compensation (including social insurance) of manufacturing production workers
TAKE = hourly compensation excluding social insurance of manufacturing production workers
ADJ = COMP - .16 Soc Ins (from equation [2])
Soc Ins = hourly employer expenditure on social insurance for manufacturing production workers

Similar results were obtained for year 1981 although the coefficient of Soc Ins in equation (3) fell below significance.

46. Daniel S. Hamermesh, "New Estimates of the Incidence of the Payroll Tax," Southern Economic Journal, vol. 45 (April 1979), pp. 1208-1219.

47. Only one report appears to have produced a lower estimate of the shift to labor, a 1980 study by the U.S. Congressional Budget Office (CBO) concerning a proposal to limit social security payroll tax increases for anti-inflation reasons. The CBO assumed that the shift to labor amounted to only one fourth of the tax over 2 years. However, the CBO does not cite any source or methodology

for deriving this estimate and may have simply made it up for illustrative purposes. See U.S. Congress, Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Economic Stabilization, Economic Impact of Payroll Taxes, hearings of March 13, 1980 (Washington: GPO, 1980), pp. 3-9, especially p. 4. Note that the CBO's assumption in this document is inconsistent with its later position cited earlier in the text.

48. In addition, when there is a kink in the payroll tax formula, odd labor supply responses are possible for which it may be difficult to standardize. See C. Duncan MacRae and Elizabeth Chase MacRae, "Labor Supply and the Payroll Tax," American Economic Review, vol. 66 (June 1976), pp. 408-409; Robert A. Moffit, "Labor Supply and the Payroll Tax: Note," American Economic Review, vol. 67 (December 1977), pp. 1004-1005.

49. Jonathan Gruber and Alan B. Krueger, "The Incidence of Mandated Employer-Provided Insurance: Lessons from Workers' Compensation Insurance," working paper 3557, National Bureau of Economic Research, December 1990.

50. The study looked at states which imposed such mandates in the mid 1970s before federal law required maternity benefits in all employer-provided health plans. See Jonathan Gruber, "The Efficiency of a Group-Specific Mandated Benefit: Evidence from Health Insurance Benefits for Maternity," working paper no. 4157, National Bureau of Economic Research, September 1992.

51. Bertil Holmlund, "Payroll Taxes and Wage Inflation: The Swedish Experience," Scandinavian Journal of Economics, vol. 85 (1:1983), pp. 1-15.

52. Over the period 1953 to 1993, a regression with second degree, unconstrained polynomial lags produces the following results:

$$\begin{aligned} \text{DLBRSH} = & .00 + 1.85 \text{DLBRTX} + .72 \text{DLBRTX}[-1] - .14 \text{DLBRTX}[-2] - .72 \text{DLBRTX}[-3] \\ & (.62) \quad (2.28) \quad (1.70) \quad (-.28) \quad (-1.42) \\ & -1.03 \text{DLBRTX}[-4] -1.07 \text{DLBRTX}[-5] \\ & (-2.58) \quad (-1.61) \end{aligned}$$

Adjusted $R^2 = .20$ (t-statistics in parentheses)
[variable lag in brackets]

DLBRSH = annual change in labor's percentage share of GDP (total labor compensation/GDP)
DLBRTX = annual change in employer contributions to and taxes for social insurance as percentage of GDP

53. There is a well-known inverse relationship between pay and quit rates. Some researchers, however, have questioned the importance of the turnover cost savings that might be associated with quit reduction. See, for example, Irene Powell, Mark Montgomery, and James Cosgrove, "Compensation Structure and Establishment Quit and Fire Rates," Industrial Relations, vol. 33 (April 1994), pp. 229-248. However, other kinds of efficiency-wage benefits to the employer, such as increased productivity, reduced absenteeism or tardiness, etc., might also be engendered by higher pay. The model described in the text requires only that there be some form of cost saving linked to higher pay (wage or severance). Hiring costs are simply an example for expositional purposes.

54. Profits are equal to revenue - costs = revenue - employment cost + hiring cost + severance cost. Profits will be maximized by setting the partial derivatives of this equation with respect to $E = 0$. The terms of equation (1') are those partial derivatives.

55. There are market failure arguments applicable to discharges for misconduct or incompetence under which firms have insufficient incentives to provide optimal just-cause review absent a government mandate. In such cases, a mandate (more severance) might improve efficiency and profitability because it applies to all

firms. For example, suppose workers value just-cause review rights linked to seniority. If a single firm offers it, it will attract a disproportionate workforce of poor performers through adverse selection, which will raise the cost of offering just-cause review. However, if all firms are compelled to offer just cause, each firm's workforce will reflect only the proportion of poor performers in the overall labor force; there will be no adverse selection. Under this argument, a just-cause mandate might raise overall productivity and raise real wages. The employment effect could be positive if labor supply had a positive elasticity. See David I. Levine, "Just-Cause Employment Policies in the Presence of Workers Adverse Selection," Journal of Labor Economics, vol. 9 (July 1991), pp. 294-305.

56. The labor cost function of Figure 6 shifts up (because of the net cost increase due to severance) and to the right. The rightward motion is due to the fact that the severance function shifts up more than the hiring function shifts down, i.e., the involuntary departure from the profit-maximizing equilibrium means that the severance cost increase outweighs the hiring cost saving, as explained in the text.

57. The firm in the model above experiences higher quit rates at lower wages. But if all firms are lowering the wage, the quit rate need not rise.

58. James N. Dertouzos and Lynn A. Karoly, Labor-Market Responses to Employer Liability (Santa Monica, Calif.: Rand, 1992), especially chapter 4.

59. Daniel J.B. Mitchell and Mahmood A. Zaidi, "International Pressures on Industrial Relations: Macroeconomics and Social Concertation" in Tiziano Treu, ed., Participation in Public Policy-Making: The Role of Trade Unions and Employers' Associations (Berlin: de Gruyter, 1992), pp. 59-72.

60. David I. Levine, "Just-Cause Employment Policies When Unemployment is a Worker Discipline Device," American Economic Review, vol. 79 (1989), pp. 902-905; Carl Shapiro and Joseph Stiglitz, "Equilibrium Unemployment as a Worker Discipline Device," American Economic Review, vol. 72 (1984), pp. 433-444.