

Who Actually Pays for Workers' Compensation?

by James R. Chelius and John F. Burton, Jr.

Editor's introduction. James R. Chelius is Chair as well as a professor in the Department of Industrial Relations and Human Resources, Institute of Management and Labor Relations, Rutgers University, where he has taught since 1982. Jim previously served on the faculty of the Krannert Graduate School of Management, Purdue University (from 1972 to 1981), and has taught as well at George Washington University and the New York State School of Industrial and Labor Relations, Cornell University.

He has written extensively on workers' compensation and occupational safety; his current research includes the following topics: exclusive state funds and workers' compensation incidence rates; a comparison of incentives under various experience-rating formulas; an examination of the New Zealand workers' compensation reforms of 1991; and the economics of workers' compensation cost sharing.

His previous publications, which have taken a variety of forms (including books; book chapters; journal articles; and technical reports for government agencies, trade associations, and insurers), have been geared toward workers' compensation practitioners as well as the academic community. Some examples of his earlier writings include: *Small Business and The Financing of Workers' Compensation: Issues, Evidence, and Options*, "The Impact of Experience Rating on Employer Behavior: The Case of Washington State," "Workers' Compensation in New Jersey," "The Status and Direction of Workers' Compensation," "An Empirical Analysis of Safety Reg-

ulation," and "Economic and Demographic Aspects of the Occupational Injury Problem."

Jim's interest and involvement in the workers' compensation and safety areas are also evident in the assistance he has provided to federal and state agencies. He has, for example, helped evaluate the veterans' disability program, the Occupational Safety and Health Administration inspection program, and various job training programs. Jim has also served as a consultant to organized labor, trade associations, and the employer community.

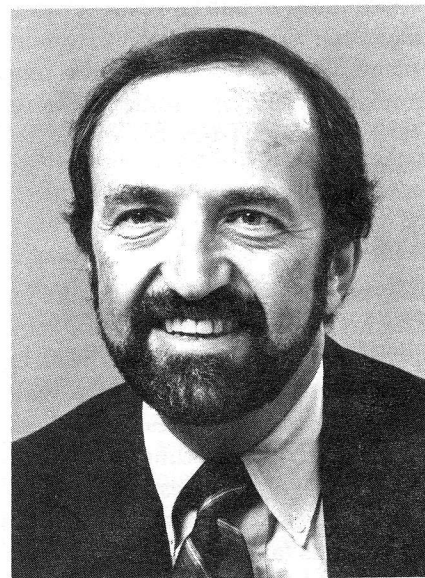
He did his undergraduate work at the University of Illinois, where he also received a M.B.A. degree.

He received his Ph.D. from the University of Chicago; I served as his dissertation advisor. Jim and I also worked together twenty years ago when we were associated with the National Commission on State Workmen's Compensation Laws. Though we have collaborated on a variety of activities over the years, this two-part series of *Monitor* articles is the first time we have ever served as co-authors! I trust that *Monitor* readers will derive some benefit from this joint effort, and express my appreciation to Jim for his major contribution to these articles.

(J.B., Jr.)

The lead article in the May/June 1992 issue of the *Workers' Compensation Monitor* provided preliminary data for 1991 indicating that the employers' costs of workers' compensation in the U.S. exceeded \$60 billion for the first time. The article also presented estimates showing that the employers' costs of workers' compensation represented 2.646 percent of payroll in 1991.¹ Both of these cost figures were all-time highs, and will probably stand only until 1992 data establish new records for the employers' costs of workers' compensation.

A spate of recent press accounts have documented the financial burdens imposed on employers in various jurisdictions as a result of these escalating workers' compensation costs, and have noted the resultant threats by some firms to relocate or



James R. Chelius

cease operations.² We do not doubt the increasing difficulties many employers have encountered as a result of these costs trends.

We also think, however, that it is important to inquire whether employers who **nominally** pay for these rising workers' compensation costs do in fact **actually** pay for them. Or do other participants in the economy pay at least some portion of the costs? This is not merely an academic issue. As we note later in the article, perceptions as to who "bears the burden" of workers' compensation reforms have a direct bearing on reactions to legislative proposals. Furthermore, perceptions about who actually pays for workers' compensation costs have resulted in the exclusion of certain employee groups from insurance coverage.

Our analysis of the question "who actually pays for workers' compensation?" is divided into two components. In a subsequent issue of the *Monitor*, we will review and critique the empirical evidence on this topic. These findings may best be understood, however, only after an introduction to the economic theory that undergirds such research. A review of the economic theory is presented in this issue of the *Monitor*. We have endeavored in this two-part series to make the analysis accessible to non-economists, while at the same time not oversimplifying some of the recent findings from economic research.

Possible Payers

Who are the possible candidates for bearing the costs of the workers' compensation program? Three leading contenders can be found in a wide variety of commentaries on workers' compensation, including judicial decisions, legal treatises, and the research literature; several additional candidates (albeit — for purposes of this discussion — of secondary importance) may also be identified.

Employers

The notion that employers pay for workers' compensation is reflected in many articles dealing with recent economic developments for the program. For example, the latest annual Social Security Administration article summarizing coverage, benefit, and cost trends in workers' compensation states: "the total costs to employers to protect their workers against financial loss resulting from work-related disabilities in 1989 was \$48.0 billion."³ The lead article in both the May/June 1992 and March/April 1992 issues of the *Monitor* also referred to the employers' costs of the program.⁴ Surely the *Monitor* would not mislead its readers about who pays for workers' compensation.

The notion that employers bear at least a portion of the costs of the workers' compensation program is reinforced by the landmark 1917 Supreme Court case that upheld the constitutionality of the New York law (*New York Central Railroad Company v. White*, 243 U.S. 188). Justice Pitney, author of the Supreme Court's decision, posed a question similar to the title of this article and provided an answer (at 203-04):

Who is to bear the charge? It is plain that, on grounds of natural justice, it is not unreasonable for the State, while relieving the employer from responsibility for damages measured by common-law standards and payable in cases where he or those for whose conduct he is answerable are found to be at fault, to require him to contribute a reasonable amount, and according to a reasonable and definite scale, by way of compensation for the loss of earning power incurred in the common enterprise, irrespective of the question of negligence, instead of leaving the entire loss to rest where it may

chance to fall — that is, upon the injured employee or his dependents.

If the Supreme Court pronounces that employers bear the charge for workers' compensation, who can disagree?

Consumers

Despite the position adopted at least implicitly by various authors and explicitly by the Supreme Court that employers bear much of the charges for the workers' compensation program, there is another view about who pays for the program that has substantial support. In his initial paragraph in the leading legal treatise on workers' compensation law, Arthur Larson states:

Workmen's compensation is a mechanism for providing cash-wage benefits and medical care to victims of work-connected injuries, and for placing the cost of these injuries ultimately on the consumer, through the medium of insurance, whose premiums are passed on in the cost of the product.⁵

The notion that consumers are the ultimate payers of the workers' compensation program has undoubtedly the most memorable supporting statement, which is attributed to former British Prime Minister David Lloyd George: "the price of the product should bear the blood of the workman."⁶

Surely if Arthur Larson and Lloyd George agree that consumers pay for the workers' compensation program, that must end the argument.

Workers

Yet another view exists about who actually pays for workers' compensation. This position, largely espoused by economists, is that workers — rather than employers or consumers

— pay for much of the workers' compensation program. Employees indirectly pay for the costs of workers' compensation by receiving lower wages than they would have received in the absence of workers' compensation. We will develop this position at length here and in our later article; for starters, we will simply quote a succinct statement of the notion that the presence of workers' compensation results in lower wages:

And just as the employee's assumption of ordinary risks at common law presumably was taken into account in fixing the rate of wages, so the fixed responsibility of the employer, and the modified assumption of risk by the employee under the new system, presumably will be reflected in the wage scale.⁷

Surely if Justice Pitney could foretell in his 1917 Supreme Court opinion the essence of the modern economists' position about who pays for workers' compensation, the idea that workers pay for much of the program in the form of lower wages must be correct.

Other Candidates

There are still other candidates who, it may be asserted, bear some of the costs of the workers' compensation program. To the extent that workers' compensation programs receive subsidies from state or federal general revenues — perhaps to pay for a portion of the delivery system for workers' compensation — then part of the program is paid for by taxpayers. And to the extent that insurance carriers do not receive premiums that cover all of their expenses — a phenomenon examined in an exchange of views by Robert Klein and Ronald Retterath in a recent issue of the *Monitor*⁸ — then part of the costs of the workers' compensation program are borne by these carriers or their shareholders and owners. We do deny that taxpayers and insurers may pay part of the costs of workers'

compensation.⁹ Nonetheless, in the interests of presenting articles that are neither too long nor overly complex, we confine our primary attention to consumers, employers, and workers as the potential payers of the workers' compensation program.

Who Cares Who Pays?

The "who pays" issue is important because it has a direct bearing on public policy. Knowledge of (or at least perceptions about) who actually pays for the workers' compensation program influences the attitudes of workers (and their representatives, including union leaders) and of employers (and their representatives, including insurance carriers) towards statutory revisions that may increase the costs of workers' compensation insurance. If the parties assume that employers or customers bear most or all of the increased costs, then workers are more likely to pursue "expensive" reforms and employers are more likely to resist these reform proposals.¹⁰ Conversely, if the parties assume that higher workers' compensation benefits are paid for in large part by workers in the form of lower wages, then workers may be less likely to seek improved benefits and employers may be less inclined to oppose the reforms.

Another, perhaps less obvious, reason for the importance of knowing who pays for the workers' compensation program is that "who pays" has a bearing on what employee groups are excluded from workers' compensation coverage. Perhaps the most notable example concerns the argument sometimes made about why coverage for household workers is inappropriate. This argument proceeds from the premise that the purpose of workers' compensation is to shift the cost of the program from the employer to the consumer (consistent with the Arthur Larson position stated above).¹¹ This premise is then used to challenge the appropriateness of covering house-

hold workers since there is no customer to whom the employer (i.e., homeowner) can shift the costs of the program. If, however, the premise is wrong because workers pay for the workers' compensation program in the form of lower wages, then this argument for not covering household workers is specious.

Given our review of the arguments concerning who may actually pay for workers' compensation — and the importance of knowing who pays — we discuss in the remainder of this article economic theory relevant to this issue. As previously noted, such theory will assist *Monitor* readers in understanding our follow-up article, which will provide a non-technical summary of the empirical evidence concerning who actually pays for workers' compensation.

The Theory of Payroll Tax Incidence

The labor market is an exchange between employers (demanders — or buyers — of labor) and employees (suppliers — or sellers — of labor); the concerns (and thus the behavior) of each of these groups are driven by distinct sets of interests. As such, it is useful to examine initially the employees' side of this exchange separately from the employers' side. Since the final form of the exchange relationship results from the interaction of employees and employers, these separate components must ultimately be combined to determine the market outcome. These interactions and the effect of outside forces such as workers' compensation premiums can best be understood if, as a first step, the market is analyzed abstractly, using a theory (or model) predicated on several assumptions about employee and employer behavior.

Of course, real world marketplaces do not act as precisely or quickly as one might infer from the abstractions, but such a theoretical analysis is useful because it structures our thinking (by providing a general framework or model for analyzing a very complex

Figure 1A — Labor Market

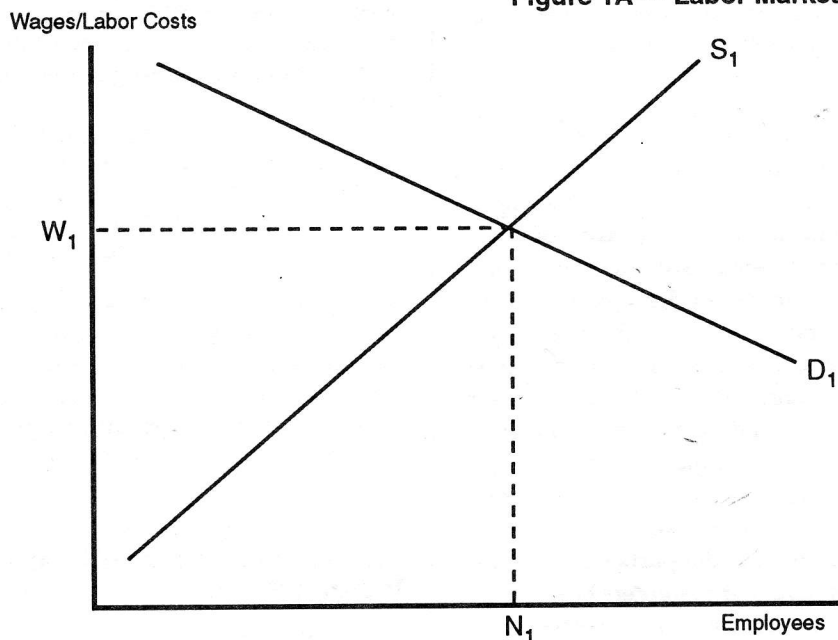
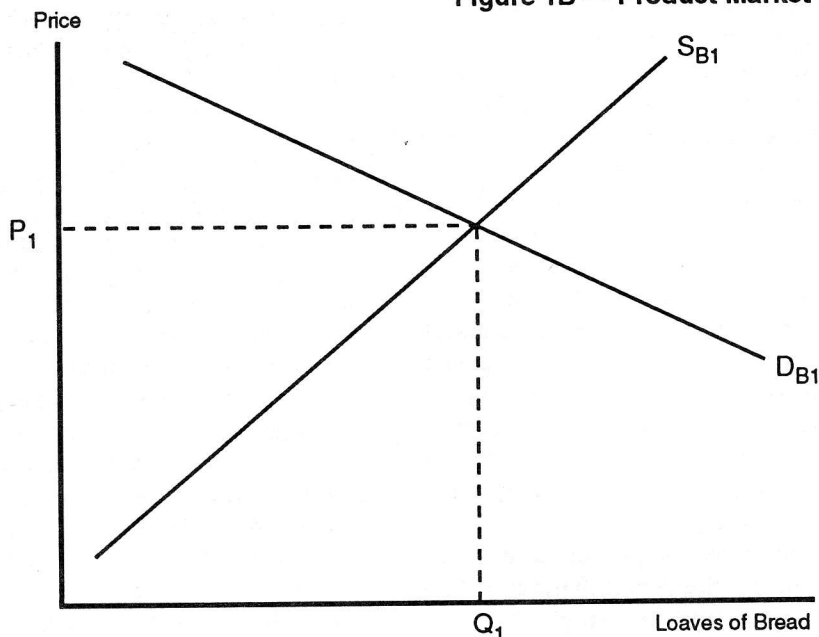


Figure 1B — Product Market



and detailed array of real world market exchanges) and directs us to the right questions. The ultimate answers to these questions, however, depend on the evidence generated by empirical examinations of actual labor market operations — a subject to be addressed in our next article.

Our focus in the remainder of this article is on reviewing the economic theory germane to the topic of who actually pays for workers' compensation. Since the traditional treatment in the economics literature of the "who pays" issue concerns the imposition of a payroll tax and because workers' compensation premiums are economically analogous to such a tax, our analysis begins with a consideration of the impact of imposing a payroll tax.¹²

Basic Market Theory

Figure 1A represents a labor market for an industry (e.g., the baking industry) prior to the introduction of a payroll tax.¹³ Its axes are the two basic dimensions of a market exchange — quantity and price. The horizontal axis measures the number of workers per unit of time (such as a year); the further to the right, the larger the number of workers. The vertical axis measures wages or labor costs per employee per unit of time, including all forms of remuneration (such as employer-paid health insurance), with higher points in the figure representing higher remuneration per employee.

The supply of labor curve (S_1) represents the number of potential employees to the industry at different levels of wages. This curve slopes up to the right, which reflects the simple truism that more workers are willing to supply their services to an industry as the wage in that industry (i.e., for bakers) increases (assuming that wages in other occupations/industries are held constant). The demand for labor curve (D_1) represents the perspective of industry employers and their reaction to differing wage levels. The downward slope of this

Figure 2A — The Labor Market with a Payroll Tax
"Paid" by the Employer

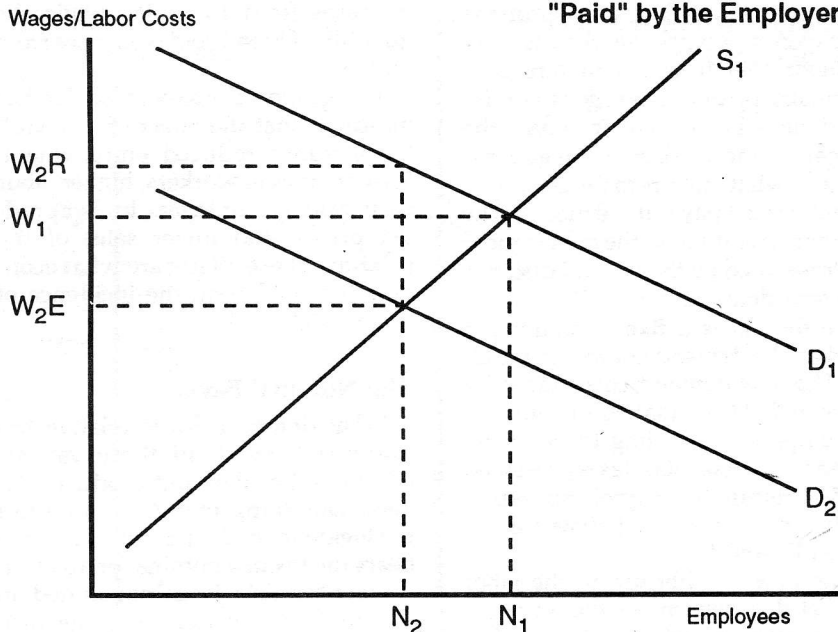
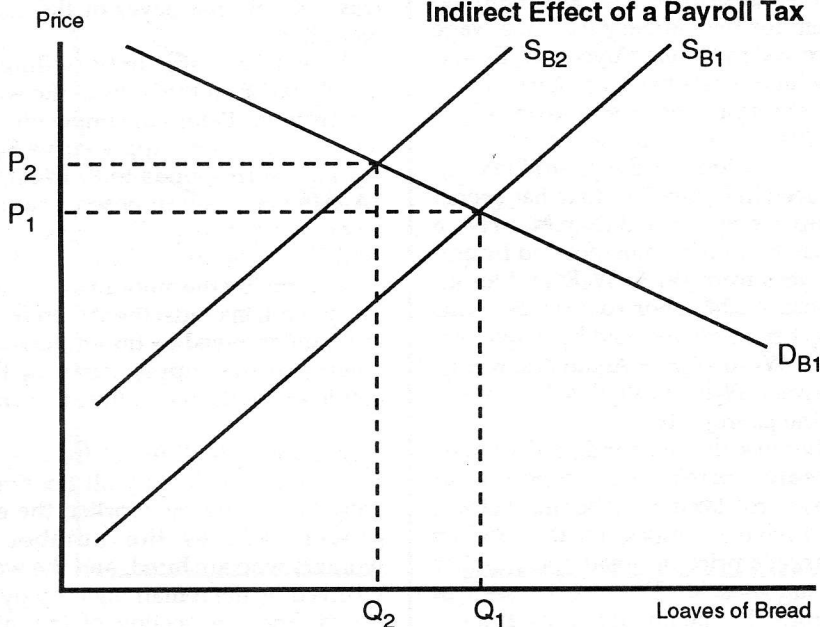


Figure 2B — The Product Market Showing the
Indirect Effect of a Payroll Tax



curve shows that employers are willing to hire more employees as wages decline.¹⁴

Since the intersection of the supply and demand curves is the only point at which both employers and employees are mutually satisfied (that is, they are on their respective curves), there is a tendency for the labor market to move toward and settle at the intersection of supply and demand. This intersection thus represents the equilibrium industry wage (W_1) and employment level (N_1). That is, at this particular point, there is not a shortage of labor (a shortage would have occurred had the wage been less than the equilibrium wage, in which case employers would have had to increase wages in order to attract job applicants), nor is there a surplus of labor (a surplus would have occurred had the wage been higher than the equilibrium wage, in which case there would have been more job applicants than openings and employers could lower wages and still fill their openings). Since both employers and employees are satisfied with the equilibrium wage, this wage will remain in effect until there are shifts in the demand or supply curves; we discuss these shifts (and the factors causing these shifts) later in this article.

Figure 1B represents the product market for the same industry (baking). The axes again are the two basic dimensions of a market exchange — quantity and price. The horizontal axis measures the number of loaves of bread per unit of time (such as a year); the further to the right, the larger the number of loaves. The vertical axis measures the price per loaf of bread; higher points in the figure represent a higher price. The product market participants are the sellers and buyers of bread. As with the baking industry labor market, it is useful initially to consider the market participants separately and then examine their interaction.

The supply of bread curve (S_{B1}) represents the perspective of bread sellers and their reaction to differing prices of bread. This curve slopes up to the right, which shows that sellers are willing to sell more bread as the

price per loaf increases. Consumer preferences are represented by the demand curve (D_{B1}), and their willingness to purchase more bread as the price decreases is reflected in the downward slope of this curve. The intersection of the curves representing the buyers and sellers yields an equilibrium price (P_1) and quantity (Q_1) of bread.

The labor and product markets shown in Figures 1A and 1B are interrelated. For example, anything that affects the equilibrium level of compensation in the labor market will influence the cost of production and thus the supply curve for bread in the product market (at a given price of bread, higher production costs would result in a smaller supply of bread).¹⁵ Likewise, an increase in the demand for bread (a shift right in the product market demand curve as the result, for example, of increased consumers' incomes or greater consumer 'tastes' for the good) will lead to a higher price and a larger number of sold loaves, which will in turn increase the demand for workers in the labor market (cause a shift right in the labor market demand curve as a result of this change in product demand). There will thus be a series of "adjustments" in both the product market and labor market, and new equilibriums (points of intersection between the respective supply and demand curves) will be achieved.

The Introduction of a Payroll Tax

With this brief explanation of labor and product markets and their interrelationships as background, we now examine what happens when a payroll tax is introduced. In order to simplify the analysis, we assume the tax is a fixed amount per worker per year (rather than some type of proportional tax) and that the employer is required to pay the tax in addition to any wages paid to the employee: that is, the payroll tax is nominally "paid" by the employer. In the first phase of our analysis, we assume that the tax is not used to purchase anything that is valued by employees.

The effect of the payroll tax on the labor market is shown in Figure 2A. The employer is only willing to pay a total remuneration package (in-

clusive of the payroll tax and the worker's wage) that corresponds to the labor demand curve D_1 in Figure 2A, which is identical to the labor demand curve D_1 in Figure 1A. From the employer's perspective, the quantity of labor that it wants to hire at a particular price of labor does not depend on who actually receives the money — the worker or the government — what matters to the employer is that it must pay out the money. The tax that is remitted to the government is represented by the vertical distance between demand curves D_1 and D_2 ; since the tax is a fixed amount per worker, the demand curves are parallel. The new demand curve faced by workers is D_2 — that is, the amount the employer is willing to pay for a given amount of labor (as represented by D_1) minus the payroll tax represented by the vertical distance between D_1 and D_2 .

The new equilibrium in the labor market that determines the wage actually received by the employees after the imposition of the payroll tax occurs at the intersection of the supply curve S_1 and the demand curve as seen by workers D_2 (that is, the workers are not aware of demand curve D_1). The intersection of the two curves determines the total employment for the industry (N_2), the wage received by the employees (W_2E), and the labor costs per employee (wages plus tax) paid by the employer (W_2R).

The impact on the labor market of the imposition of the payroll tax can be seen in Figure 2A: there has been a drop in employment from N_1 to N_2 ; a decrease in the wage received by employees from W_1 to W_2E ; and an increase in the labor cost (wages plus tax) per employee paid by employers from W_1 to W_2R .¹⁶ Again, the wedge between W_2E and W_2R is the amount of the payroll tax.

Because the labor and product markets are interrelated, the imposition of the payroll tax in the labor market will also have an impact on the product market's price of bread and number of loaves sold. This can be seen in Figure 2B. The initial supply and demand curves for bread are S_{B1} and D_{B1} , which are identical to the corresponding curves in Figure 1B. The payroll tax increases the per employee labor cost paid by employers,

which in turn increases the costs of producing bread and thus causes the supply curve to shift from S_{B1} to S_{B2} . The result is that the price of bread increases from P_1 to P_2 , while the quantity of bread sold decreases from Q_1 to Q_2 .

The graphical analysis so far has indicated that the effect of a payroll tax includes reduced employment, lower wages to workers, higher labor costs paid by employers, higher product prices, and lower sales of the product. These effects are what economists would term the incidence of the payroll tax.¹⁷

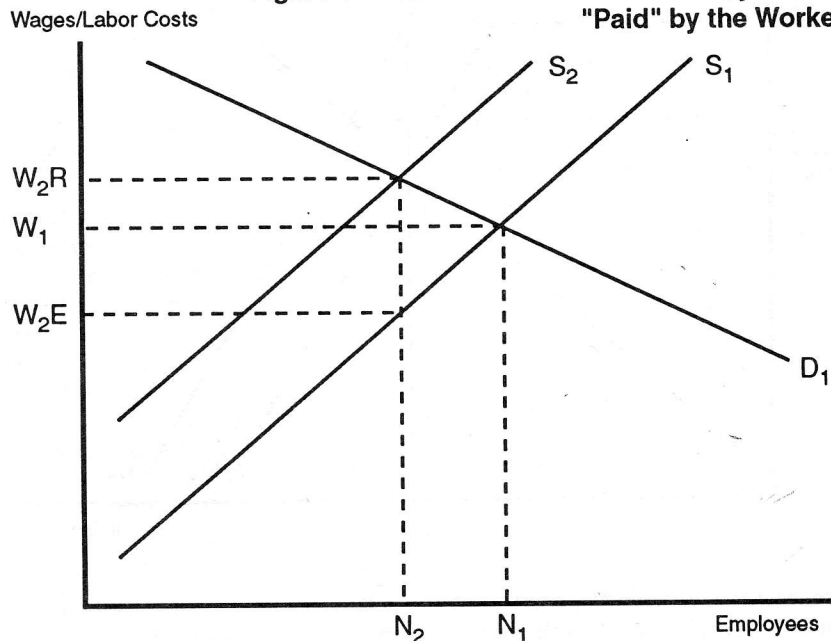
The Nominal Payer

What determines the relative importance (extent) of these various effects in the labor and product markets? One thing that does not affect the incidence of the payroll tax is who bears the tax in a nominal or accounting sense. This is demonstrated in Figure 3, which examines the incidence of the payroll tax when workers are required to have the tax withheld from their pay and thus become the nominal payers of the tax. (In the previous section, the employer had to pay a fixed amount per employee in addition to wages and thus was the nominal payer of the entire payroll tax.)

Workers are still only willing to supply labor on the basis of the wage they receive. Before the imposition of the tax, the labor supply curve S_1 in Figure 3 corresponds to S_1 in Figure 1A. After the tax is imposed, to attract any given quantity of labor, the wage paid by the employer will then have to be more (by the amount of the tax). The payroll tax must then be added to the wage received by the employee to determine the supply curve S_2 that employers will face in the labor market.

Because S_2 is different from S_1 by the amount of the payroll tax nominally "paid" by the worker, the employer reduces the number of workers who are hired, and the wage received by the remaining employees drops. The intersection of the labor demand curve D_1 with the labor supply curve S_2 determines the total employment for the industry (N_2), the wage received by the employees (W_2E), and the total labor cost paid by

Figure 3 — The Labor Market with a Payroll Tax "Paid" by the Worker



the employer (W_2R). The astute reader will instantly (or at least quickly) recognize that N_2 , W_2E , and W_2R are identical in Figures 2A and 3 — that is, the effects of a payroll tax on incidence are unaffected by whether the nominal (or accounting) bearer of the payroll tax is the employer (Figure 2A) or the employees (Figure 3).

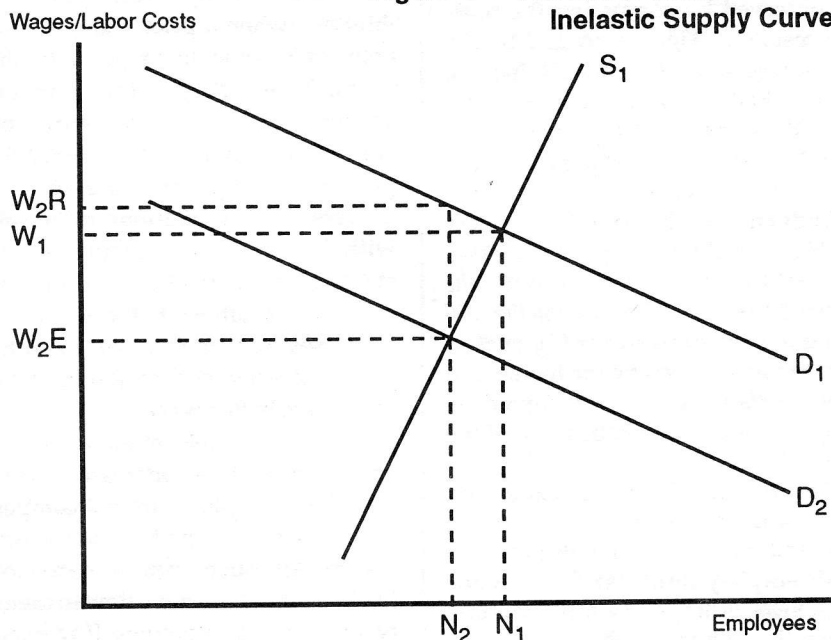
The Role of Elasticity

If who is the nominal payer of the payroll tax does not affect the incidence of the payroll tax (that is, the changes in wages, employment, product prices, and product sales resulting from the imposition of the tax), what does determine the incidence (that is, who **actually** pays)? The answer in large part depends on the relative elasticities of demand and supply curves, where elasticity is a measure of the responsiveness of quantity changes (employment or product sales, depending on the market) to changes in price (wages or product prices, depending on the market).

As a rough guide, a supply or demand curve is elastic if the curve is relatively flat (horizontal); in other words, if there is a relatively large change in quantity (employment or product sales) in response to a relatively small change in the price of labor or the product. A supply or demand curve is inelastic if the curve is relatively steep (vertical), that is, a relatively large change in price yields only a small change in quantity.¹⁸

In order to appreciate how differences in the elasticity of supply affect payroll tax incidence, consider Figure 4.¹⁹ This figure is drawn with an inelastic labor supply curve (that is, the curve is relatively steep), while the labor demand curves are identical to those used in Figure 2A. As in Figure 2A, we will assume that the payroll tax is nominally paid by the employer and that the service purchased with the tax receipts are of no direct value to employees. As in our previous figures, the supply and demand curves for labor prior to the introduction of the payroll tax are denoted as S_1 and D_1 , while the effect of

Figure 4 — The Labor Market with an Inelastic Supply Curve



the payroll tax is to create a demand curve D_2 that is parallel to and lower than D_1 by the amount of the payroll tax. Figure 4 is drawn so that the equilibrium wage and quantity of labor prior to the imposition of the payroll tax (W_1 and N_1) are identical to the corresponding pre-tax quantity and wage shown in Figure 2A, and is also drawn so that the amount of the payroll tax (shown by the vertical distance between D_1 and D_2) is the same in Figures 2A and 4.

The effect of a relatively inelastic supply curve in the market can be observed by comparing the post-tax results in Figures 2A and 4. The new equilibrium wage received by workers (W_2R) and the new labor cost paid by employers (W_2E) are lower in Figure 4 than are the corresponding wages and labor costs in Figure 2A, while the drop in employment resulting from the introduction of the payroll tax (from N_1 to N_2) is less in Figure 2A. As a generalization, *the more inelastic the supply curve for labor, the greater will be the drop in wages received by workers and the smaller will be the increase in labor costs per employee (wages plus tax) paid by employers from the imposition of the payroll tax.*²⁰ Also, *the more inelastic the labor market supply curve, the smaller will be the decline in employment from the imposition of the payroll tax.*

The incidence of the payroll tax also depends on the elasticity of the demand curve for labor. Figure 5 is drawn with the labor supply curve identical to that shown in Figure 2A, while the demand curves D_1 and D_2 are more inelastic than the corresponding curves in Figure 2A. Figures 2A and 5 are drawn so that the equilibrium wage and quantity of labor prior to the payroll tax are identical. (W_1 and N_1 are the same in both figures.) In both figures, the imposition of the payroll tax results in a demand curve for labor expressed in terms of wages received by employees (D_2), which is parallel to D_1 and lower than D_1 by the amount of the payroll tax. The intersection of D_2 and S_1 in Figures 2A and 5 produces a

Wages/Labor Costs

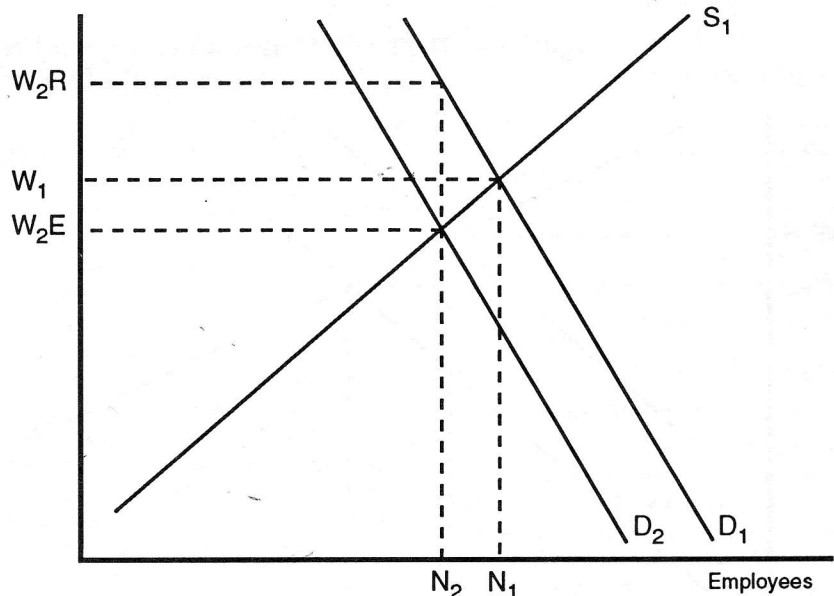


Figure 5 — The Labor Market with an Inelastic Demand Curve

level of employment N_2 , a wage received by employees of W_2E , and labor costs (wages plus tax) paid by employers of W_2R .

The effect of a relatively inelastic demand curve in the labor market can be observed by comparing the post-tax results in Figures 2A and 5. The wage received by workers (after the tax) — W_2E — is higher in Figure 5 than the corresponding wage in Figure 2A, while the drop in employment (N_1 to N_2) resulting from the introduction of the payroll tax is less in Figure 5 than in Figure 2A. As a generalization, *the more inelastic the demand curve for labor, the smaller will be the drop in wages received by workers and the greater will be the increase in labor costs (wages plus tax) paid by employers from the imposition of the payroll tax.*

The relationships just examined (among the elasticities of supply and demand, the tradeoff between wages and employment, and the consequences of imposing a payroll tax) mean that the larger the effect of the payroll tax on employment, the smaller will be the effect of the payroll tax on the wages received by workers. Conversely, the smaller the effect of the payroll tax on employment, the

larger the effect of the payroll tax on wages received by workers.

Influences on Elasticities

What influences elasticity? Elasticity is essentially a concept of flexibility — when a price changes, how able are people to respond to that change? For example, if the price of a particular product increases, can consumers switch to a less expensive product? If wages increase, can employers move operations to an area with less expensive labor, or substitute more capital (for example, machinery) for labor? If the wage rate decreases, can workers find another job in another occupation/industry that offers better wages?

One obvious determinant of the responsiveness to an increase in price (say, for example, workers' compensation) is the length of the adjustment period. Any such responses are more likely after people have time to identify and adopt alternatives. If workers' compensation premium rates are increased, there will not be much of a response on the day the rate changes are implemented, but over time employers, employees, and consumers

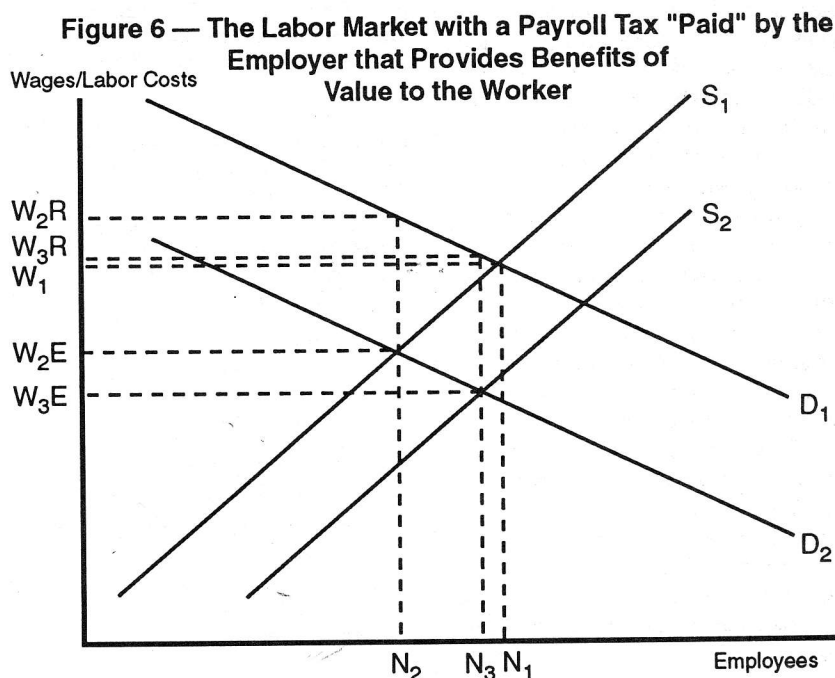
may develop alternatives and respond. Thus, demand curves in the product and labor markets will tend to become more elastic in the long run.²¹

The level of aggregation in an analysis also influences the flexibility of the response. If our analysis focused on a single firm, the demand for labor would be more elastic than if we included the whole industry (which would, in turn, be more elastic than if we included the entire economy).²² Price increases in just one firm will lead to more of a loss of business (decreased quantity demanded) than if the increases occurred across all firms in the industry. With just one firm increasing prices, consumers have more readily available alternatives (other firms in the industry) than if all firms increased prices. Similarly, if wages decreased across all firms, the worker would have less flexibility to change jobs than if just one firm had decreased wages.

Value to the Worker

The nature of the workers' compensation program requires a supplement to the standard theory of payroll tax incidence.²³ As noted above, the traditional analysis assumes that the payroll tax is used for purposes that have no direct benefit to workers. Workers' compensation premiums, however, are used to pay for job-specific insurance that certainly has some direct value to workers. As a result of this value to workers, the labor supply associated with any given level of wages in an industry with such insurance is greater than it would be if the payroll tax were simply funneled into the general revenues.

The situation is analogous to the greater supply associated with a remuneration of \$100 in wages plus \$20 in fringe benefits compared to a remuneration of only \$100 in wages — as long as the fringe benefits have some value to aspiring job applicants who are deciding where to work. Of course, the extent to which supply is greater is a function of how valuable the fringes (or workers' compensa-



tion) are to employees. (The more the fringe benefits are valued, the greater will be the increase (shift) in the labor supply curve.)

The effect of this resultant greater supply is illustrated in Figure 6. Prior to the introduction of the payroll tax, the intersection of S_1 and D_1 produced a wage of W_1 and an employment level of N_1 . Then the equilibrium conditions with a payroll tax not valued by employees (such as represented in Figure 2A) — the intersection of D_2 and S_1 — implies a wage received by employees of W_2E , a labor cost to the employer of W_2R , and an employment level of N_2 . This equilibrium will change, however, if the insurance is valued by workers, as more people will want to work in the industry offering this "fringe benefit." Thus, the labor supply curve will shift right (increase), with the amount of the shift depending on the value employees place on the insurance provided by workers' compensation.

Compared to the situation where employees do not value the insurance, the new equilibrium point — the intersection of S_2 and D_2 — implies lower wage received by the employees (W_3E), greater employment (N_3 rather than N_2), and a lower labor

cost to the employer (W_3R) than the corresponding values for the labor market equilibrium with a payroll tax of no value to workers (shown by the intersection of D_2 and S_1).

Conclusion

The thrust of the labor market theory of payroll taxes should now be crystal clear! Hopefully, the formalization of these basic notions into a graphical format has served to clarify rather than obfuscate. Our review of economic theory has presented five fundamental points. **First**, payroll taxes (including workers' compensation) evoke responses in the marketplace that must be taken into account if we are to understand their impact (incidence, or effect on "who pays"). While these responses are surely not instantaneous or precise, the theory does point out the market's long-run tendencies. **Second**, these "taxes" are best viewed as being imposed on the employment relationship rather than on the nominal payer of the fees.

Third, a key influence as to who is the ultimate payer of the tax is the

flexibility both employers and employees have in responding to the imposition of such a tax — a party's inflexible (inelastic) response will result in them bearing more of the burden in the form of lower wages received by workers or higher labor costs paid by employers. **Fourth**, since there is a tradeoff between the level of employment and wages, a greater impact on wages results in a lesser impact on employment. **Fifth**, the degree to which employees value what is purchased with the tax is another key influence on the tax's impact. If, for example, a dollar of payroll tax purchases insurance that is worth a dollar to employees, the tax will result in wages that are a dollar less than they otherwise would be.

As noted above, the theory of tax incidence structures our thinking and helps us formulate the appropriate questions about who actually pays for workers' compensation, but ultimately it is evidence from the real world that must inform us about who pays for workers' compensation and how those payments are made. This evidence is the subject of our next article, which will appear in a forthcoming issue of the *Monitor*.

ENDNOTES

1. John F. Burton, Jr., "Workers' Compensation Costs in 1991," *Workers' Compensation Monitor* 5, No. 3 (May/June 1992): 1-3, 18.

The cost figure (in billions) includes workers' compensation premiums paid to private carriers; premiums paid to state funds and for federal programs; and self-insurance costs. As noted in the May/June 1992 article, cost figures for 1990 and 1991 were estimated because of the lag in the availability of data from the Social Security Administration.

The adjusted manual rate (percent of payroll) computations take into consideration a variety of factors (including premium discounts for quantity purchases, dividends received from insurance companies, and manual rate modifications due to the employer's own compensable experience) and are based on a methodology developed and refined by Burton over the past twenty-seven years. The adjusted manual rate estimates, which are for forty-seven states, pertain to firms that purchase insurance from private carriers and (in some states) to competitive state funds.

2. See, for example: Peter Kerr, "A Show-down on Workers' Compensation in Maine," *New York Times* (August 9, 1992); Stuart Silverstein, "Workers' Comp Blues," *Los Angeles Times* (March 25, 1992); and Roger Thompson, "Workers' Comp Costs: Out of Control," *Nation's Business* 80, No. 7 (July 1992).

3. William J. Nelson, Jr., "Workers' Compensation: Coverage, Benefits, and Costs, 1989," *Social Security Bulletin* 55, No. 1 (Spring 1992): 55.

4. The second sentence in the lead article in the March/April 1992 issue was: "Figures prepared by the Social Security Administration indicate that the total dollars for benefits to workers and for costs to employers reached all-time highs." See: John F. Burton, Jr., "Workers' Compensation Benefits and Costs: New Records," *Workers' Compensation Monitor* 5, No. 2 (March/April 1992): 1-6. See also: John F. Burton, Jr., "Workers' Compensation Costs in 1991," *Workers' Compensation Monitor* 5, No. 3 (May/June 1992): 1-3, 18.

5. Arthur Larson, *Workmen's Compensation Desk Edition*, 1992, Sec. 1.00.

6. The Lloyd George statement is quoted in Herman M. Somers and Anne R. Somers, *Workmen's Compensation*, (New York: John Wiley & Sons, 1954), at p. 282. Lloyd George served as British Prime Minister between 1916 and 1922.

7. *New York Central Railroad Company v. White*, 243 U.S. 188 at 201-202 (U.S. Supreme Court 1917).

The Supreme Court is thus asserting that, in the absence of workers' compensation programs, employers had to pay a relatively higher wage in order to induce individuals to work for that employer and assume the risk of being injured — particularly since injured workers' only other option for receiving payment for their income losses and medical care (negligence suits against employers) were frequently unsuccessful, given courts' acceptance of the three principal employers' defenses (assumption of risk, fellow worker rule, contributory negligence).

It is also asserted that when employers have to provide workers' compensation coverage, the employers' workers' compensation insurance premium costs are passed along to workers in the form of wages that are lower than the wages would be in the absence of workers' compensation. Wage levels obviously are also influenced by a variety of other factors; the empirical studies reviewed in our follow-up article attempt to statistically control for many of these influences.

If workers not covered by workers' compensation were otherwise compensated through the form of higher wages, why, then, were workers' compensation programs ever established? The workers' compensation program was designed to overcome some of the deficiencies of the common law approach, such as the general lack of recovery by employees, the occasional substantial award against employers, and the delays and costs of excessive litigation. The workers' compensation principle included liability of the employer without fault. The

other side of the workers' compensation principle was that the benefits in the program were the employer's only liability to his or her employees. This limited liability/no-fault system involved a "quid pro quo."

8. Robert W. Klein, "Regulation, Competition, and Profitability in Workers' Compensation Insurance," and Ronald C. Retterath, "Regulation, Competition, and Profitability in Workers' Compensation Insurance: A Response" *Workers' Compensation Monitor* 5, No. 2 (March/April 1992): 7-24.

9. Indeed, the loss ratio data referred to in the "Digest of Important Publications" section of the last issue of the *Monitor* suggest that workers' compensation insurers are not covering all of their expenses.

10. We do not mean to imply that workers who assume that employers or customers bear much of the costs of the workers' compensation program are oblivious to the financial viability of their employer. The nature of the product market (whether, for example, the employer is a monopoly) and the overall state of the economy (whether, for example, there is a recession) may also have a bearing on workers' attitudes towards workers' compensation reforms.

11. The argument made in the text about why coverage of household workers may be inappropriate is provided by Arthur Larson in *Workmen's Compensation Desk Edition*, (1992), Sec. 50.25:

"From the humanitarian point of view, it has often been urged that the ultimate goal should be protection of all employees, since the plight of the worker injured while in nonbusiness or domestic work is no less serious than that of the injured industrial worker. The argument is aimed both at judicial action and at legislative action to eliminate the various specific nonbusiness exemptions such as domestic service. However desirable such a step may be, it should not be undertaken without a realization that something more is involved than a mere numerical increase in the number of employees protected."

"It has always been assumed, rightly or wrongly, that the cost of compensation protection did not become a burden upon the employer directly, since he was expected to pass the cost along to the consumer in the price of the product. There are those who argue that this does not go to the essence of the compensation idea, and perhaps does not really work out at all, but the fact remains that for decades the compensation principle has been made acceptable to employers (and, to some extent, also to skeptical courts) on the argument that the cost could be passed along through the medium of insurance whose premiums are reflected in the cost accounts on which the price is based.... When a similar liability is imposed upon the householder, however, who produces and sells no goods or services that can bear the cost of compensation insurance, the law has gone one step further and said that any employer, solely because he stands in the

employment relation to an employee, is liable without fault for the latter's injuries and must assume and absorb the entire ultimate cost himself."

12. Payroll taxes are mandatory contributions by employers (and, sometimes, employees) of a portion of employees' wages, to various social insurance trust funds. Payroll taxes in this country are used to finance the federal Social Security (OASDHI) program, as well as state unemployment insurance programs.

13. For the purposes of brevity and simplicity, we analyze market behavior at the industry (rather than the firm) level. Our analysis incorporates the standard neoclassical assumptions of a competitive market.

14. This employment-wage relationship (or 'movement along the demand curve') assumes that other factors which may cause the demand curve to move — or shift — are held constant. Examples of factors which may cause a 'shift' in the demand curve include a change in: demand for the product, the price of capital and other resources, and technological/productivity changes. We discuss in the next section 'shifts' in the demand (and supply) curves.

As two prominent labor economists note, "it is important to distinguish between a shift in a demand curve and movement along a curve. A labor demand curve graphically shows the labor desired as a function of the wage rate (the wage is on one axis and the number employed is on the other). When the wage changes and other forces are held unchanged, one moves along the curve. However, when one of the other forces changes, the labor demand curve shifts. Unlike wages, these forces are not directly shown when the demand curve for labor is drawn. Thus, when they change, a different relationship between wages and employment prevails, and this shows up as a shift of the demand curve. If more labor is desired at any given wage rate, then the curve has shifted to the right. If less labor is demanded at each wage rate that might prevail, then the demand curve has shifted left." (Emphasis in the original.) Ronald G. Ehrenberg and Robert S. Smith, *Modern Labor Economics: Theory and Public Policy*, 4th ed. (New York: Harper Collins Publishers, Inc., 1991), p. 36.

15. The product market supply curve will shift as a result of changes in such factors as the price of inputs (including labor) used in producing the good. Higher production costs, for example, will cause the product market supply curve to shift left and thus, at a given price of bread, there will be a smaller supply of bread than was the case before production costs increased.

16. Labor costs per employee paid by the employer increase because, while employees have absorbed part of the cost of the payroll tax (through lower wages), employees have not absorbed all of the cost (since the amount of wage 'cut' (W_1 minus W_2E) is less than the size of the payroll tax (W_2R minus W_2E)). In

actual experience, wages might not go down, but rather over time they would not go up as much as they would have gone up without the tax.

17. "The term incidence as commonly used refers to the location of the 'ultimate' or the 'direct' money burden of the 'tax as such.' It is said to occur whenever a particular piece of the tax comes to 'rest' with the 'final' payee...." (Emphasis in original; citations omitted.) Richard A. Musgrave, *The Theory of Public Finance: A Study in Public Economy* (New York: McGraw-Hill Book Company, 1959), p. 227.

18. For example, elasticity of demand for labor may be defined as the percentage change in employment resulting from a small change (say, one percent) in the wage rate for labor. A one percent increase in the wage rate will result in a greater change (decrease) in employment with an elastic demand curve than would a one percent increase in the wage rate with an inelastic demand curve. Readers may be curious at this point about why demand or supply curves are relatively elastic or inelastic; we discuss in a later section of this paper some of the factors that affect elasticity.

19. For purposes of simplification, we discuss elasticity only in terms of the labor market, and not in terms of either the product market or the interaction of the labor and product markets.

20. If the labor supply curve was perfectly (completely) inelastic — that is, parallel to the wages axis of the graph — there would be no increase in labor costs per employee paid by the employer, as the wage cut sustained by workers would equal the entire amount of the payroll tax.

21. The relative elasticity of the demand and supply curves in labor and product markets are thus not immutable. Labor unions, for example, may attempt by various means to make the demand curve for labor more inelastic.

22. Elasticities of the demand for labor also vary across industries. For a review of studies in this area, see: Ronald G. Ehrenberg and Robert S. Smith, *Modern Labor Economics: Theory and Public Policy*, 4th ed. (New York: Harper Collins Publishers, Inc., 1991), p. 117.

23. The discussion in this section draws upon Lawrence H. Summers, "Some Simple Economics of Mandated Benefits," *American Economic Review* 79, No. 2 (May 1989): 177-183. ■

Forthcoming Conferences and Meetings

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Southern Association IAIABC Annual Conference. July 6-10, 1993. Held at Hyatt Regency, Albuquerque, New Mexico. Additional information: Toby Wright (505/841-6006).

National Symposium on Workers' Compensation. July 11-14, 1993. Held at New Brunswick, New Jersey. Seventeenth annual symposium, directed by John F. Burton, Jr. and Edward P. Welch in conjunction with the Rutgers University Center for Management Development. Additional information: Gail Allen at CMD (908/932-5639).

Eastern Association IAIABC Annual Conference. September 19-23, 1993. Held at Radisson Hotel, Cromwell, CT. Additional information: Anthony Skiff (203/789-7783).

IAIABC 79th Annual Convention. October 3-6, 1993. Held at Portland Hilton, Portland, OR. Additional information: Bob Collyer, IAIABC Executive Director, 1575 Aviation Center Parkway, Suite 512, Daytona Beach, FL 32114 (904/252-2915). ■