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Communiqué

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Changes in payroll tax needed to spur job creation, says C.D. Howe Institute study

Employer contributions to the employment insurance (EI) program need to be restructured, concludes a *C.D. Howe Institute Commentary* released today. Specifically, the study suggests reducing the payroll tax employers pay for hiring low-wage workers and increasing the tax they pay for hiring high-wage workers.

The study, *A Job-Creation Strategy for Governments with No Money*, by William Scarth, Professor of Economics at McMaster University in Hamilton, Ont., and an Adjunct Scholar of the C.D. Howe Institute, was prompted by dual concerns: Canada's continuing high unemployment rate, and necessary fiscal constraints.

Scarth notes that, since the payroll tax is seen as a "tax on jobs" and is regularly referred to as a "job killer," there have been widespread calls for large cuts in EI contributions. Ottawa offered a small reduction in its most recent budget and has promised larger cuts in the future. But both the current and anticipated payroll tax cuts are across the board, the wisdom of which Scarth questions, for three reasons.

First, government funds are limited, so job-creation initiatives must be concentrated in areas where they have the biggest impact on unemployment. Second, inequality of market earnings between high- and low-wage workers has increased over the past 20 years; as a result, equity objectives need to be emphasized when promoting jobs. Third, Scarth argues, there is a fundamental difference in the way that markets for skilled and unskilled workers operate.

In skilled labor markets, the employer payroll tax affects both demand and supply. On the demand side, it reduces firms' ability to pay for workers. But since employees base wage claims on their employer's ability to pay, this tax also decreases the wage claims workers make. Empirical studies confirm that the net result is lower wages, not lower employment. In unskilled labor markets, on the other hand, institutions such as minimum-wage laws keep wages from falling, so there is nothing to counteract the depressing effect of the employer payroll tax on employment. As a result, Scarth says, while the payroll tax imposed on the employers of skilled labor is not a job killer, the tax imposed on the employers of unskilled labor does qualify for this discouraging label.

Scarth's job-creation strategy is based on this basic insight. The idea is to cut a tax that is a job killer, and to make up for the lost government revenue by raising a tax that is not a job killer.

The proposal is self-financing — that is, revenue neutral — an important consideration since the "fiscal dividend" that will emerge gradually as deficit reduction proceeds has not yet arrived. Scarth addresses concerns critics may raise about its effect on capital investment and the wages of skilled workers. After all, when firms hire more of one input (unskilled labor) to produce a fixed level of output, they need less of the other inputs (capital and skilled labor). Such a decreased demand for these other inputs, if it accompanies the proposed restructuring of EI contributions, would lead to the undesirable effects critics fear. Scarth argues, however, that this concern overlooks the fact that firms have no reason to feel constrained to produce the same level of output. Since the overall effect of the proposal is expansionary, the demand for all inputs should rise.

Scarth points out an interesting parallel between his proposal and personal income tax provisions that exempt interest earnings from tax (such as Registered Retirement Savings Plans — RRSPs). While it is mostly high-income individuals who benefit directly from these provisions, the fact that they lead to unskilled labor's having more complementary factors of production with which to work means that benefits "trickle down" to these other individuals. Scarth says that the same spreading of higher productivity benefits occurs with his proposal — only in this case, the direct benefits go to the unskilled and the indirect benefits "percolate up" to others. Given this parallel, defenders of RRSPs should have no difficulty with his proposal, Scarth argues. His analysis shows that it raises both the general level of wages and investment, while reducing unemployment.

Scarth argues that his proposal is an appealing option for any government that wants to maintain a hard head (by living within its fiscal means, respecting the principle that the private economy is the basic creator of jobs, and fostering capital accumulation), while reasserting its reputation for a soft heart (by actively supporting the disadvantaged).

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Communiqué

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Il faudrait modifier les cotisations sociales pour encourager la création d'emplois, affirme une étude de l'Institut C.D. Howe

Il importe de restructurer les cotisations patronales au programme d'assurance-emploi, conclut un *Commentaire de l'Institut C.D. Howe* publié aujourd'hui. L'étude recommande plus particulièrement que l'on réduise les charges sociales des employeurs pour les gagne-petit et que l'on augmente celles-ci pour les employeurs qui engagent des travailleurs à salaire élevé.

L'étude, intitulée *A Job-Creation Strategy for Governments with No Money (Une stratégie de création d'emplois pour les gouvernements à court d'argent)* et rédigée par William Scarth, professeur d'économique à l'Université McMaster de Hamilton (Ontario) et attaché de recherche à l'Institut C.D. Howe, est animée par une double préoccupation : le taux de chômage élevé qui persiste au Canada et les restrictions financières en vigueur.

Selon M. Scarth, on réclame de manière générale d'importantes réductions des cotisations d'assurance-emploi; en effet, on perçoit celles-ci comme un « impôt sur l'emploi » et y on fait souvent allusion en les appelant des « tueuses d'emplois ». Dans son récent budget, Ottawa proposait une modeste réduction, tout en promettant des coupures plus importantes dans l'avenir. Cependant, ces réductions, tant actuelles que prévues, sont générales, et c'est ce point que M. Scarth remet en question, pour trois raisons.

En premier lieu, le gouvernement dispose de fonds limités; il faut donc diriger les initiatives de créations d'emplois vers des domaines où elles exerceront les répercussions les plus importantes sur le chômage. En second lieu, l'inégalité des revenus entre les travailleurs à salaire élevé et ceux à salaire modeste s'est accrue au cours des 20 dernières années; en conséquence, il importe de mettre l'accent sur les objectifs d'équité dans la promotion d'emplois. Troisièmement, soutient M. Scarth, il existe une différence fondamentale dans la façon dont les marchés fonctionnent pour les travailleurs qualifiés et ceux qui ne le sont pas.

Dans le cas du marché de l'emploi pour les travailleurs qualifiés, les charges sociales de l'employeur influent tant sur l'offre que sur la demande. Du côté de la demande, elles restreignent la capacité des entreprises à payer pour des employés. Mais étant donné que les employés fondent leurs prétentions salariales sur la capacité de paiement de leur employeur, cette taxe réduit du même coup les revendications salariales des employés. Selon des études concrètes, il en résulte une réduction des salaires et non une réduction des emplois. Par contre,

dans le marché de l'emploi pour les travailleurs non qualifiés, des institutions comme les lois sur le salaire minimum empêchent cette baisse des salaires de se produire, et il n'y a donc pas moyen d'obvier aux effets négatifs des charges sociales de l'employeur sur l'emploi. En conséquence, explique M. Scarth, alors que les charges sociales perçues auprès des employeurs de main-d'œuvre qualifiée ne sont pas des tueuses d'emplois, les charges sociales que l'on impose aux employeurs de main-d'œuvre non qualifiée, elles, peuvent être cataloguées comme telles.

M. Scarth propose une stratégie de création d'emplois qui découle de cette théorie. Son idée consiste donc à éliminer les charges sociales qui nuisent à l'emploi, et de récupérer le manque à gagner par le biais d'une hausse des charges sociales qui elles, n'y nuisent pas.

Cette proposition est autofinancée — donc sans incidence sur les recettes — et il s'agit là d'une considération importante, puisque le « dividende fiscal » qui devrait faire son apparition graduellement avec la réduction du déficit ne s'est pas encore manifesté. M. Scarth aborde les préoccupations que pourraient soulever les détracteurs vis-à-vis des répercussions sur l'investissement des capitaux et les salaires des travailleurs qualifiés. Après tout, lorsque les entreprises engagent plus d'intrants (soit de main-d'œuvre non qualifiée) pour produire un niveau donné d'extrants, leur besoin des autres intrants (soit le capital et la main-d'œuvre qualifiée) diminue. Si la restructuration proposée des cotisations d'assurance-emploi s'assortit d'une telle baisse de la demande pour les autres intrants, elle produira les effets indésirables que redoutent les détracteurs. Toutefois, soutient M. Scarth, cette préoccupation ne tient pas compte du fait que les entreprises n'ont aucun raison de s'en tenir au même niveau d'extrants. Étant donné que l'effet global de cette proposition est expansionniste, il devrait en fait s'ensuivre une hausse de la demande de tous les intrants.

M. Scarth souligne un intéressant parallèle entre sa proposition et les dispositions relatives à l'impôt sur les particuliers qui exemptent de l'impôt certains intérêts créditeurs (comme ceux des régimes enregistrés d'épargne-retraite — les REER). Bien que ces dispositions profitent surtout directement aux individus à revenus élevés, elles entraînent aussi une hausse des facteurs complémentaires de production chez la main-d'œuvre non qualifiée, et elles démontrent ainsi que ces gains ont des retombées sur ces individus. M. Scarth indique que sa proposition entraîne un étalement similaire des gains de productivité plus élevée — sauf que dans ce cas, c'est la main-d'œuvre non qualifiée qui perçoit les gains directs et les autres qui en profitent indirectement. Compte tenu de ce parallèle, les défenseurs des REER ne devraient donc pas éprouver de difficultés avec cette proposition, soutient M. Scarth. Son analyse démontre qu'elle hausse le niveau général des salaires et des investissements, tout en réduisant le chômage.

M. Scarth ajoute que sa proposition constitue une option attrayante pour tout gouvernement qui veut prouver qu'il garde la tête sur les épaules (en vivant selon ses moyens financiers, en respectant le principe selon lequel le secteur privé est le principal créateur d'emplois et en favorisant l'accumulation de capitaux), tout en montrant qu'il a le cœur tendre (en soutenant activement les groupes défavorisés).

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A Job-Creation Strategy for Governments with No Money

by

William Scarth

With the national unemployment rate hovering near double digits and a federal election on the horizon, Canadians are recalling the 1993 election promise of "jobs, jobs, jobs." Since Ottawa's deficit-reduction targets are being met, many commentators argue that it is time to spend some of its fiscal dividend. Those on the right call for a tax cut — particularly in the payroll tax, a levy regularly called a job killer. Those who favor more active government call for retraining programs or wage and employment subsidies.

The best option is a wage subsidy for low-income workers, one provided as a payroll tax cut for employers, but only for their low-wage workers.

The main benefit would be lower unemployment, but other outcomes should be a rise in both wages and investment, so the proposal should meet no political resistance from those interested in protecting the wages of the already employed or the level of new capital investment. Moreover, no new bureaucracy would be needed.

All this can be accomplished without abandoning deficit reduction. No significant fiscal dividend will appear until the ratio of government debt to gross domestic product falls, an event that will not occur before 2000. The recommendation here, however, does not require a fiscal dividend. Rather, the payroll tax cut for low-wage workers can be financed by a payroll tax increase for higher-wage workers without jeopardizing *any* of the benefits.

All in all, this policy seems an appealing option for a government that wants to maintain a hard head (by living within its fiscal means, respecting the principle that the private economy is the basic creator of jobs, and by fostering capital accumulation) while reasserting its reputation for a soft heart (by actively supporting the disadvantaged).

Main Findings of the Commentary

- In recent years, skills-based technological change has led to both higher unemployment, especially in Europe, and increased income inequality, especially in the United States. Canada needs a policy initiative that helps to limit similar outcomes. This initiative must respect the ongoing need for fiscal retrenchment and the fact that the private sector is the economy's basic generator of jobs.
- Employment insurance (EI) contributions are a form of payroll tax often called a job killer. These contributions have four components: taxes paid by (1) firms for employing high-wage individuals; (2) firms for employing low-wage individuals; (3) high-wage employees; and (4) low-wage employees. The analysis in this Commentary indicates that only (2) and (3) are job killers.
- If policy is to stimulate employment and lessen income inequality, only a cut in tax (2) is warranted. A one percentage point cut in the employer payroll tax on low-wage employees can reduce the unemployment rate of unskilled workers by four-fifths of a percentage point.
- For additional job creation, the employer contribution to EI for low-wage employees may have to become negative. In that case, the tax should be relabeled a general wage subsidy paid to firms for all low-wage employees. Given that the Commentary's recommendation is for both a tax cut (favored by the right) and a low-wage subsidy (favored by the left), it may draw widespread political support.
- Some argue against wage subsidies on the grounds that they might lead to downward pressure on the wages of those already employed and on firms' incentive to invest in new capital equipment. But the analysis here shows that wages and investment can be expected to rise, not fall, when the recommended policy is implemented.
- Any responsible proposal for government policy must be accompanied by an explanation of how it can be financed.
- The federal government's set of deficit-ratio targets was based on the assumption that funds saved through EI reform would be kept within the employment envelope. If Ottawa maintains this commitment, some $4 billion is now available, an amount more than enough to finance elimination of the employer EI contributions for all employees earning less than $30,000 annually.
- If, instead, the government now intends to put all of these funds toward deficit reduction, some other tax must be increased to finance the recommended initiative. The analysis shows that a small increase in the employer payroll tax on high-wage employees would be sufficient to pay for the proposed initiative, leaving positive effects on employment, wages, and investment.

Canada's recent macroeconomic policy has been based on three objectives: to reduce inflation (and thereby achieve a corresponding reduction in nominal interest rates); to eliminate the deficit (and thereby achieve higher future living standards); and to facilitate higher levels of employment.

The federal government has adopted explicit numerical targets for both the inflation rate and the budget deficit. Has employment really been an objective? Critics question this point, and demand an explicit target for reducing the unemployment rate, which would put some flesh on the 1993 election promise of "jobs, jobs, jobs."

Ottawa has set no specific unemployment target, however, perhaps in part because it feels it has insufficient policy instruments at its disposal. After all, government has just two aggregate instruments — fiscal and monetary policy — and with these earmarked for deficit reduction and inflation control, nothing seems available left in the short term for the employment objective.

Is this sense of impotence justified? I believe it is not, given that unemployment can be divided into cyclical and structural components (see the box on p. 4), which have quite different causes and respond differently to various government policies, and given that the federal government has some freedom in choosing the specific details of monetary and fiscal policy.

On the monetary policy front, for example, more than one implementation strategy is available for controlling the average inflation rate. The Bank of Canada should choose the strategy that is also best for limiting fluctuations in cyclical unemployment, which, as I argue elsewhere,[1] may involve using a target for the nominal gross domestic product (GDP), an approach that could help to stabilize employment without fostering inflationary expectations.[2]

As for the use of fiscal policy, deficit reduction simply requires limiting the difference between the overall levels of spending and taxation; the government can still alter the relative sizes of individual expenditure programs and particular taxes with a view to reducing structural unemployment. Ottawa's initial plan of reducing employment insurance (EI) benefits and using the savings to spend more on retraining is just one of many possible revenue-neutral switches.

I applaud this general strategy, but I argue that there is a preferred revenue-neutral policy package — one that focuses on altering the structure of the employer payroll tax without affecting its overall yield. The fundamental advantage of this alternative is that it could reduce structural unemployment without the introduction any new government program.

Another advantage is that this initiative would simultaneously raise the general level of wage incomes and the level of investment in new capital. As Saint-Paul argues,[3] proposals to lower unemployment that would hurt others (such as the employed who suffer if wages are reduced) are of limited interest, given the political constraint that the employed outnumber the unemployed. Also, future prosperity is threatened if capital investment is pushed down. Thus, the increases in both real wages and investment are significant parts of the proposal recommended here.

Popular debate on payroll taxation seems restricted to whether or not Canada can afford a cut in the overall payroll tax rate. Yet the payroll tax system has four components — levies on employers and on employees and for high-wage and for low-wage workers — and their economic effects differ substantially. My analysis supports cutting the employer payroll tax levied on low-wage workers and financing this tax cut by increasing the employer payroll tax on high-wage individuals. This initiative would be equivalent to providing a wage subsidy for low-wage individuals. I consider other initiatives, but conclude that these options are dominated by the suggested change in the payroll tax system.

Outline of the *Commentary*

The paper proceeds as follows. In the first section, I present the standard, graphical analysis of payroll taxation. Then, I move to a general-

Cyclical and Structural Unemployment

Analysts divide unemployment into two categories, cyclical and structural unemployment, which have quite different underlying causes.

Cyclical unemployment is caused by the fact that all market-oriented economies experience business cycles. The conventional analysis of cycles relies on sticky prices and wages. For example, when the demand for goods and services falls, firms and workers are slow to adjust their prices to lower levels. When the pre-existing level of prices is too high to clear markets, firms reduce output and lay off some workers. Thus, cyclical unemployment emerges as the economy moves into recession.

Eventually, a recession induces workers to lower their wage claims. As a result, employers find it profitable to rehire workers, and cyclical unemployment is gradually eliminated.

Structural unemployment exists even when wages and prices adjust completely to demand. The overall level of demand may be adequate to create enough job vacancies, but the skills of job aspirants may be poorly matched with these opportunities. Even without misalignments in skills, industries, or locations, structural unemployment can still occur as a result of imperfect competition and incomplete information.

Competition can be limited both by government policy (through such initiatives as minimum wage laws) and by private market power. Either form of departure from competition can leave wages at such a level that it is not in firms' profit interest to employ all those who would like work.

Incomplete information can also lead to unemployment. In many industries, upper-level managers cannot measure the differential effort expended by each individual employee. These managers may turn to indirectly inducing workers to limit shirking on the job by making the prospect of losing a job particularly unappealing. One way to do so is to pay a wage higher than would otherwise be profitable, so that the gap between what is received on the job and what is received if the worker is fired becomes a significant magnitude. But when many firms follow this strategy, the overall level of wages settles at too high a value to generate full employment. Readers can think of this component of structural unemployment as existing because wages cannot perform two market-clearing tasks at the same time. If wages are set to clear the market in worker effort, they cannot also be set to clear the market for all the individuals who want work. This incomplete-information rationale for structural unemployment is known as the efficiency-wage theory (since it focuses on the proposition that employers use high wages to elicit a higher level of efficiency and effort from workers). It is a modern, more formal version of the Marxian notion that firms use a hoard of unemployed at the factory gate to keep workers on their toes.

level discussion of a more involved but more realistic labor market setting, and I defend my proposal in that setting.

In the following section, I sharpen the analysis of the extended labor market setting by returning to the use of simple supply and demand graphs. I then turn to consideration of alternative policies for reducing unemployment and show that mine is both the most equitable and the most immediately practical. A brief conclusion reinforces the argument.

Readers who want a more rigorous defense of the proposal can consult the appendix, which offers a mathematical treatment of the issues.

Supply and Demand

Figures 1 and 2 illustrate the traditional economic analysis of wages, employment, and payroll taxes. They describe a competitive labor market: firms, which demand labor, like a low wage, while households, which supply labor, like a high wage. These competing desires are incorporated in figures by having the demand curve negatively sloped and the supply curve positively sloped.

Point A in Figure 1 is the equilibrium point. It is the market outcome since it is the only combination of wages and employment that satisfies the desires of both sides of the market. Payroll taxes are analyzed by determining how their imposition changes the location of this point.

If the tax is a levy on employers, firms' willingness to pay for labor is reduced, a change shown in Figure 2 as a downward shift in the labor demand curve (by the amount of the per unit tax). The new equilibrium is point B.

Figure 1: ***The Labor Market***

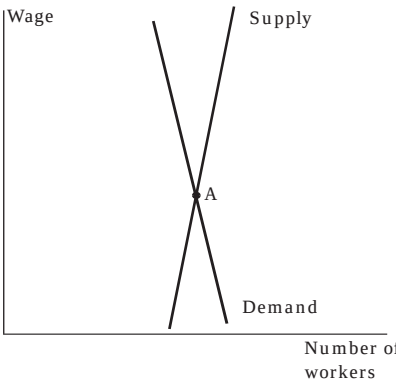


Figure 2: ***A Payroll Tax's Effect on the Labor Market***

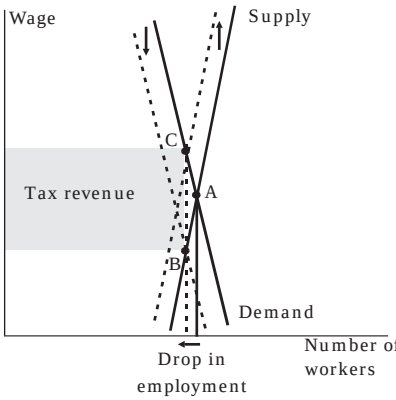
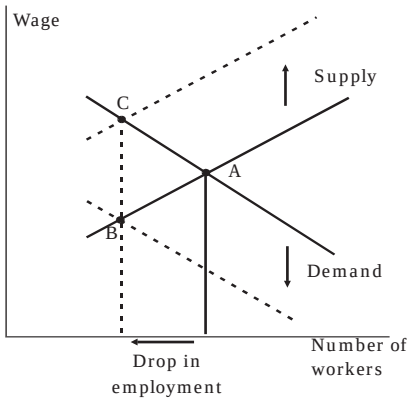


Figure 3: ***A Payroll Tax's Effect When Wage Elasticities Are High***



By comparing points A and B, the analyst can see that the tax causes employment to fall.

If, on the other hand, the payroll tax is a levy on employees, their wage claims increase, so the supply curve shifts up by the amount of the tax. The new equilibrium in this case is point C; once again, employment is reduced.

From this standard analysis, two fundamental points follow:

- the effects of the payroll tax do not depend on which side of the market it is levied;
- the loss of jobs that accompanies the payroll tax is small when the supply and demand curves are inelastic and large when these curves are elastic.

The first proposition follows from the fact that points B and C lie along the same vertical line in Figure 2. The total revenue collected from the tax is the shaded rectangle, whether it is the employers or the employees who actually transfer these funds to the government. The drop in employment is the same in each case as well.

The second proposition can be appreciated by comparing Figures 2 and 3. In Figure 2, labor supply and demand are both rather unresponsive to wage changes, and the drop in employment caused by payroll taxation is small. In Figure 3, however, labor supply and demand respond dramatically to wage changes; the same vertical shift in either of these flatter curves causes a much bigger drop in employment.

What does the empirical evidence suggest about the wage elasticity of labor supply and demand? Looking at the labor force as a whole, most analysts are comfortable with the proposition that labor supply is almost completely inelastic (vertical).[4] The implication is that payroll taxes have only a very small effect on employment; employees bear most of the burden of such taxes, whether they are nominally levied on employers or employees. Thus, the standard analysis does not support the proposition that payroll taxes are the job killers they are sometimes called.

The picture changes, however, when this method of investigation is applied specifically to the unskilled labor market, a setting in which both the supply and demand curves are much more elastic. On the supply side, the availability of welfare for these individuals is a tempting alternative, so wage cuts evoke a significant withdrawal of labor supply. On the demand side, most production processes can involve readily available substitutes for unskilled labor, so wage increases generate a significant reduction in labor demand. Thus, for low-wage workers, the impact of payroll taxes is much more like that of Figure 3 — large employment effects.

The analyses of the last two paragraphs combine to demonstrate that a cut in the payroll tax levied on low-wage workers can be expected to raise employment by more than an increase in the payroll tax on high-wage workers that involved the same revenue would reduce employment. Thus, if the structure of the (EI) contribution system were changed in this way, Canada could have a self-financing initiative that raised employment. This policy package is exactly what I advocate in this Commentary.

The defense of my proposal could be very brief if the simple supply and demand analysis above were completely convincing. However, it involves several controversial assumptions: that labor markets are competitive, that workers and employers have access to the same information, and (perhaps most alarming) that there is no unemployment.

As I clarify in later sections of the paper, some of the key propositions that follow from the simplified analysis do not carry over to an extended model of the labor market. For example, it does matter whether it is employers or employees who are taxed. But other propositions continue to hold. In particular, the core proposal of this Commentary receives further support. And because this support is general, I we have confidence in advancing it at the policy level.

Unemployment and Wage Inequality

The debate about alternative forms of capitalism is currently drawing much interest.[5] Over the past two decades, technological change has been decidedly skills based, with the result (in developed countries) that the demand for skilled workers has risen while that for the unskilled has fallen.

Standard supply and demand analysis suggests that this development can be expected to bid up wages for skilled individuals and to lower the payments firms can profitably make to unskilled workers. In other words, without government intervention, wage inequality must rise following skills-based technological change.

The United States and Europe are often cited as illustrations of the rather different outcomes that are possible. The United States has only a limited welfare state, so there is little to stop increased wage inequality from emerging, as indeed it has over the past 20 years.

Europe, on the other hand, has much more developed welfare states that maintain floors below which the wages of the unskilled cannot be pushed. Workers can simply opt for state support if it exceeds what they can generate from market employment. When technological change decreases the demand for unskilled labor, firms have no freedom to do anything but sharply reduce their employment of unskilled individuals. Thus, Europe has avoided big increases in wage inequality, but the unemployment rate has been very high there for many years now.

The policy initiative I advocate in this Commentary is a compromise, an attempt to have less wage inequality than in the United States and lower unemployment than in Europe.

Payroll Taxes

As already noted, payroll taxes can be levied on both employers and employees and on both skilled (high-wage) and unskilled (low-wage) workers. How do each of these components of Canada's payroll tax system affect the level of employment of high-wage and low-wage individuals? I consider each category in turn.

An Employer Tax for High-Wage Workers

A payroll tax levied on employers for hiring high-wage individuals decreases firms' willingness to pay for skilled labor. Workers recognize this fact and so generally reduce their wage claims in line with firms' decreased ability to pay. As a result, most empirical studies find that this tax is, for all intents and purposes, fully passed on to employees in the form of lower wages,[6] so this payroll tax is a wage killer, not a job killer.

To put the point in reverse, a cut in this tax would not raise employment in Canada's skilled-worker sector; it would only raise the wages of those who already have jobs.

As far as overall employment is concerned, such a tax cut would actually be worse than useless since it would have an indirect downward effect on the level of employment for unskilled individuals. As noted previously, much of the unemployment among the unskilled stems from the fact that the welfare state blocks the downward adjustment of their wages. Think of a minimum wage law. The value of the minimum wage is customarily tied to the general level of wages being earned in the economy. Since a payroll tax cut for skilled workers would raise their wages, it would push up the minimum wage. As a result, more unskilled workers would lose their jobs, and the overall unemployment rate rise.

This kind of payroll tax cut would thus prove a job-reduction measure, and so must be rejected.

An Employer Tax for Low-Wage Workers

A payroll tax levied on employers for their low-wage workers decreases firms' willingness to pay for unskilled labor. Unskilled workers recognize this fact, but minimum-wage laws preclude their decreasing their wage claims in line with firms' decreased ability to pay. Thus, this particular payroll tax is a job killer.

This fact is the basic reason that I call for a cut in just this component of the payroll tax. If the tax were cut overall — without distinguishing between high-wage and low-wage employees — the level of employment among the unskilled would suffer competing effects. Firms' willingness to hire would be bolstered by the reduction in the tax itself, but lessened by the rise in the wage firms must pay the unskilled (which, recall, would be pulled up by the fact that a general employer tax cut raises the level of wages paid to skilled workers, and by the fact that state support levels rise in phase in any society that defines the low-income problem in relative terms).

In the specific model of this process discussed more fully in the appendix, these competing effects exactly cancel each other out. As a result, I do not recommend a general payroll tax cut. Indeed, I recommend a cut in the tax levied for hiring low-wage individuals and (if necessary to finance the incentive) an increase in the tax levied for hiring high-wage workers.

An Employee Tax on High-Income Workers

A payroll tax levied on employees who are high-income workers raises their wage claims. As the wage employers must pay rises, firms react by hiring fewer skilled workers. Eventually, since the increase in wages is reflected in a higher minimum wage, firms also hire fewer unskilled workers.

Clearly, cutting this component of the payroll tax would be good for Canadian employment. But such an initiative would be unappealing in equity terms. Moreover, cutting a levy that had been falling on higher-income individuals would mean a loss of revenue.

An Employee Tax on Low-Income Workers

A payroll tax levied on employees who are low-income workers raises their wage claims. But these claims are not the factor that is limiting employment in the unskilled sector; rather, it is the availability of the welfare state, which imposes the floor on wages and, therefore, a ceiling on employment. Since the tax does not affect this constraint, a cut has no effect on employment. Thus, while the employee payroll tax levied on high-income individuals is a job killer, that levied on low-income individuals is not.

Yet, if the employee payroll tax is to be cut with a view to job creation, surely equity considerations would force the government to exercise the cut overall, not just for high-income earners. Given the forgone revenue, such an initiative would be expensive.

Recommendation

Consideration of all the possibilities for payroll tax cuts makes it clear that employment could best be raised by a selective payroll tax cut on the employer side of the market. The employer tax for hiring low-wage individuals should be reduced, and to make the change revenue-neutral, I recommend simultaneously raising the employer tax for high-wage employees.

This package of changes would raise employment without jeopardizing deficit reduction or offending common tenets concerning equity. It would be equivalent to raising the level of the existing employer payroll tax across the board to finance a wage subsidy paid to firms for each employee whose wage is below a certain amount, and implementation would not require new administrative machinery.

The policy would also have a beneficial effect on productivity. The three main inputs to the production process — skilled labor, unskilled labor, and physical capital — share an important interaction. When firms hire more of one input — say, unskilled labor — the other inputs have more of this complementary factor with which to work, an outcome that raises their productivity. If firms respond to these higher productivity levels by hiring additional quantities of these complementary inputs, then the productivity of the first factor — in this case, unskilled labor — is enhanced as well.

This virtuous circle of each factor's complementing the others' productivity plays an important role in the analysis of my proposal. The higher level of employment among low-skilled individuals that would accompany a low-wage subsidy would raise the productivity of the other inputs. For capital equipment, it is appropriate to assume a high degree of mobility in this age of globalization; thus, I expect that the increased demand for capital would be met by an increased supply. This higher use of capital would raise the productivity of, and therefore the wages paid to, skilled workers.

Overall, then, the low-wage subsidy would have favorable effects on both the general level of wages and investment in new capital.[7]

My proposal is, therefore, an example of what has been called "percolate up" — as opposed to "trickle down" — economics. While some of the induced increases in investment and the wages of skilled workers may take time, quite general benefits can be expected.

A Quantitative Estimate

How large is the favorable effect on unemployment to be expected from my proposal? In the appendix, I explain that the reduction in the unemployment rate for unskilled workers that follows a one percentage point cut in the payroll tax levied on firms for employing unskilled labor is approximated by

$$\frac{(1 - \text{unemployment rate})}{(1 + \text{payroll tax rate})}.$$

Substituting representative values into this formula yields the conclusion that a one percentage point reduction in the tax can lead to a reduction of four-fifths of a percentage point in the unemployment rate for low-wage individuals — a significant effect.

To look at the outcome in dollar amounts, EI contributions bring Ottawa roughly $18 billion in revenue annually, $10.5 billion of which comes from levies on employers. About $3.6 billion of this $10.5 billion is paid by employers for their employees with annual incomes below $30,000.[8] The $4 billion annual surplus that now exists in the EI account could be used to completely eliminate the levy for employing low-income workers. Alternatively, that surplus could continue and the employer contribution rate for employees with incomes above $30,000 could be raised from 2 to 3 percent.

A Possible Problem

One difficulty with raising the employer payroll tax levied on skilled workers is that such a tax hike could increase the amount of cyclical unemployment more than the cut in the tax for low-wage workers would decrease it.

This concern stems from the Keynesian theory of business cycles. In the textbook macro-

economic model (which involves sticky wages and flexible goods prices in the short run), an increase in the employer payroll tax lowers employment. Too much can be made of this caveat, however, for two reasons. First, the textbook analysis does not distinguish between skilled and unskilled workers, and (taking both groups together) my proposal does not involve any increase in payroll taxes. Second, in a Keynesian analysis of generalized disequilibrium (with both wages and prices sticky in the short run), the employer payroll tax does not have any job-destruction effect.

In any event, this concern can be alleviated if the introduction of the proposed policy package is accompanied by a one-time accommodation in monetary policy. In the past, Bank of Canada officials have been comfortable accommodating an adverse supply-side shock with a one-time increase in bank liquidity. Indeed, they clarify current policy as follows: "We distinguish between developments that affect the price level once and for all and those that affect the rate of inflation."[9] Thus, if skeptics are correct in thinking that the proposed policy package might involve an adverse effect in the short run, they must push the Bank to maintain this response — while adopting (not rejecting) my proposal.

In general, such a policy on the Bank's part goes some distance toward meeting Osberg's general critique of supply-side initiatives: that the benefits of policies designed to lower structural unemployment are delayed when cyclical unemployment exists.[10]

An Extended Analysis

Supply and demand graphs can be used to clarify the rationale behind the reallocation of employer EI contributions that I propose.[11]

The Graphs Explained

Figures 4 and 5 depict the markets for skilled and unskilled labor, respectively. As usual, the wage levels for each group are calibrated on the vertical axes, while the level of employment and the number of available workers are measured along the horizontal axes.

Supply

The vertical line in each graph represents the number of individuals who would like work. At the aggregate level, these numbers do not depend on the level of wages.[12]

It is important to appreciate, however, that the line labeled "available workers" does not constitute the labor supply curve in the case of skilled workers. Skills give these individuals some bargaining power. Sometimes this power is reflected through a union that imposes a set of wage claims on the employer, a practice illustrated by the positively sloped curve in Figure 4. This curve summarizes the stand typically taken by a union: that it will withhold labor unless its members are compensated with a higher wage settlement. A similar wage-claim schedule emerges for skilled workers who do not have unions. Firms still have to raise wages to elicit better work effort and lower turnover from their employees. The bigger the difference between wages received on the job and the unemployment benefits available if employees are let go, the less employees can afford to risk being fired so the more seriously they treat their work obligations. Firms secure this increase in effective labor supplied by offering higher wages.

However the wage-claim line is rationalized, its existence means the market-outcome point is to the left of the available- workers line, and this gap represents unemployment.

No wage-claim line appears in the diagram of the unskilled labor market (Figure 5) because such workers have no bargaining power. They are not unionized, and the employer can easily monitor whether they are doing their straightforward tasks adequately.

Demand

The negatively sloped lines in Figures 4 and 5 represent firms' demand for the two types of labor. The negative slope illustrates the fact

Figure 4: ***The Skilled Labor Market***

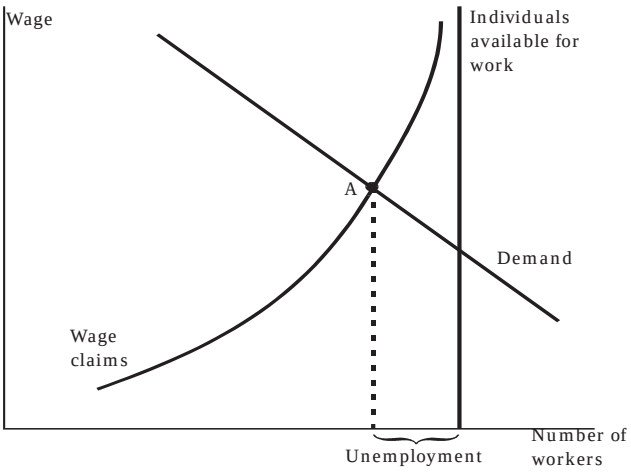
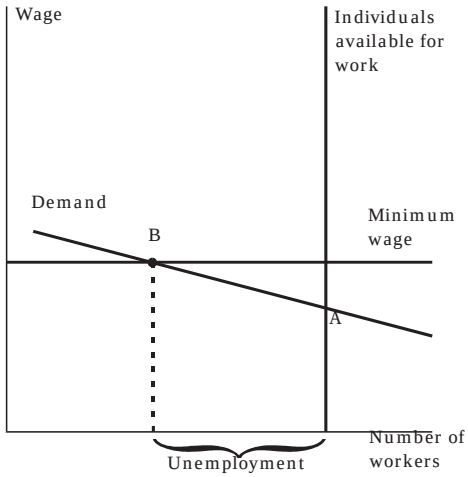


Figure 5: ***The Unskilled Labor Market***



that, for a given level of productivity and payroll taxes, firms find it profitable to hire more of each kind of labor only if its unit price falls.

The Minimum Wage

With no government restriction in the unskilled sector, the outcome is A in each graph, the point where demand and the relevant supply curve intersect. Notice that the graphs are aligned so that the equilibrium wage level for skilled workers realistically exceeds that for unskilled workers. This set of outcomes does, however, have one unrealistic feature: there is no unemployment in the unskilled sector. Only some of the skilled individuals are unemployed. In reality, the unemployment rate for the unskilled tends to be higher than that for skilled individuals.

The most straightforward way of repairing this aspect of the analysis is to introduce the welfare state in the form of a binding minimum-wage law, which makes all points below the horizontal line in Figure 5 unobservable. As a result, the outcome point shifts to B, and there is unemployment among the unskilled after all.

Now recall that a particularly developed welfare state such as Canada views its low-income problem in relative terms, linking the value of the minimum wage to the level of wages earned by skilled workers. This policy is included in the graphic analysis by raising the minimum-wage line in Figure 5 whenever some event causes the wage determined in Figure 4 to increase.

Skills-based technological change is just such an event. It shifts the demand curve for skilled labor to the right, making wages rise and unemployment fall for these individuals, and it shifts the demand curve for unskilled workers to the left. With no welfare state, the wage rate for unskilled labor must fall; with the welfare state, this wage does not fall, but unemployment in that sector rises. With a particularly developed welfare state, the minimum-wage line rises, thereby limiting the rise in wage inequality but accentuating the rise in unemployment among the unskilled.

Other Influences on Supply and Demand

Several items affect the position of the demand curves. The one for skilled labor, for example, shifts to the right in all these situations:

- a rise in the quantity of unskilled labor employed by the firm;
- a rise in the quantity of physical capital employed by the firm;

- a fall in the employer payroll tax levied on skilled workers; and
- the offer of an employment subsidy.

All these influences also shift the wage-claim line of skilled workers. If they demand that their wages adjust to reflect, one for one, any increase in their productivity or, more generally, any increase in their employer's ability to pay, then both the labor demand curve and the wage-claim line shift upward by the same amount. Employers are willing to pass on gains because they must compete to retain their skilled workers. The end result is that employment is unaffected by measures such as a wage subsidy.

Other policies aimed at workers may, however, shift the wage-claim curve without affecting the position of the labor-demand curve. Anything that changes the relative payoffs of working and not working has such an impact. For example, an increase in the employee payroll tax lowers the return from work, and an increase in the generosity of employment insurance decreases the relative return from work; thus, either measure raises the wage-claim line and (other things equal) increases unemployment.

In the unskilled labor market graph, the minimum-wage line plays a similar role. In a country that has an ongoing commitment to limit low incomes and that defines low in relative terms, the only shift influence for the minimum-wage line is the level of wages that emerges in the skilled labor market. (In particular, I assume that what governs this shift is the wage rate in the skilled sector before accounting for any employee payroll tax.)

If government offers a wage subsidy only for unskilled labor, the relevant demand curve shifts rightward, and no upward shift in the minimum-wage line counteracts the positive effect on employment. This absence of a counteracting influence is central to the recommendation I advance in this Commentary.

The fact that this extended supply and demand analysis can illustrate so concisely the tradeoff involved in choosing between the US and the European reaction to the phenomenon of skills-based technological change should lend credence to using the same analysis for exploring the efficacy of several fiscal policies for attacking unemployment.

Alternative Fiscal Policies

The case for any one policy initiative is incomplete if its proponents cannot demonstrate that it is superior to other possibilities. Certainly, North Americans have been offered a plethora of suggested policies to combat the growing wage inequality and high unemployment that is resulting from skills-based technological change.

Education and Retraining

One such option is investment in education and retraining. Some investments in education raise the productivity of workers in the skilled sector. When this occurs, both firms' ability to pay wages and workers' wage claims are increased. As with a cut in the employer payroll tax on the employment of skilled workers, wages rise and there is no effect on the level of employment. But if the minimum wage is increased in proportion to this increase in wages for skilled workers, the effect is higher unemployment among the unskilled.

People who think that any investment in education can be used to combat unemployment in this technological age must identify what they feel is inapplicable about this analysis, which threatens their view. In the appendix, I discuss some variations on the model; here, I confine my attention to the empirical evidence.

Does higher productivity for the already skilled simply raise the standard of living for those already employed, leaving the unemployment rate for high-wage individuals unaffected? The evidence certainly suggests that the answer is yes. Over this century, all Western economies have seen vast increases in labor productivity with a corresponding dramatic increase in wages and no long-run trend in the

unemployment rate for more skilled individuals. (This set of outcomes should increase the reader's confidence in the applicability of this analysis.)

Of course, an education and retraining initiative can be focused on low-skilled individuals. If effective, this policy simply transforms these individuals into high-skilled ones, so that lower overall unemployment among the unskilled results. Thus, a well-targeted retraining initiative can help, at least in principle. There is, however, a serious question about how well these programs have operated in practice. Although Riddell's survey indicates that some UI training programs have worked fairly well, the verdict is often quite negative.[13] Heckman concludes:

> Government investments [in retraining] have not been shown to be effective in any meaningful cost-benefit sense for severely disadvantaged adults or older workers. The available evidence supports the following prescription: invest in the young; subsidize the old and the severely disabled.[14]

Wage Subsidies

As already noted, one form of subsidy (the general approach Heckman favors) is equivalent to a payroll tax cut. But other forms of implementation are possible. For example, some analysts have suggested a set of wage vouchers be distributed to the long-term unemployed. These individuals could then better compete in the job market; firms could employ them and enjoy a significant rebate of the wage bill by sending the vouchers to the government each period for reimbursement of part of the wages paid.

Opponents raise several concerns about the wage-voucher suggestion. Some worry that the result would simply be substitution: individuals with vouchers would take jobs away from those without. In pilot studies, others find that individuals with vouchers become earmarked in the eyes of employers as people to avoid. After all, if the government feels they are unemployable without a voucher, risk-aversion may lead some firms to avoid these candidates at any cost. Finally, some observers worry about how to finance wage subsidies in an era of scarce government funds.15

A general wage subsidy would avoid the stigma issue. A wage subsidy is general if it is introduced in the form of a reduction in the employer payroll tax rate that each firm must pay. Although I emphasize a subsidy that applies only to low-wage employees, it is still general in the sense that it is up to the employer to decide whom to hire; thus, all low-wage hires qualify for generating subsidy payments for the firm.

I address the financing issue by explaining how an increase in the employer payroll tax levied for high-wage workers would make the package self-financing. This revenue-neutral initiative would raise both the general level of wages and the level of investment in new capital.

Employment Subsidies

Employment subsidies are another option for government. They induce firms to increase the number of jobs they offer (not to make higher wage payments), and so they can raise employment more effectively than wage subsidies.

An employment subsidy program that is available to all workers, however, is simply too expensive, so initiatives customarily restrict the subsidies to "new" hires and hence are called *marginal* employment subsidies. In principle, government pays no subsidy for jobs that already exist.

There are, however, at least two difficulties with such a policy. First, all the many new jobs (an average of some 1.25 million each year in Canada in recent years) that would have been created even without it would qualify for a marginal employment subsidy and thus raise the cost of the program. Second, a marginal employment subsidy creates an incentive for firms to rearrange their affairs to make even more new hires appear in the measured data. (For example, a firm might split into two separate firms, one contracting and the other expanding. The expanding unit would qualify for

employment subsidies even when the overall firm would not.) The introduction of incentives of this sort is undesirable.

A number of programs and pilot studies involving employment subsidies exist, and the evaluation of these experiments is still under way.[16] The early analysis suggested that these policies can add significantly to employment growth.[17] More recently, in a series of books and papers, Phelps argues that employment subsidies for all low-income workers should be permanent, both to improve equity and to correct the inefficiencies that exist in labor markets because of distortions such as imperfect competition and asymmetric information.[18]

In recent years, there has also been another round of theoretical analyses of these policies. For example, Snower and Mortensen use simple turnover and search models of the labor market to argue in favor of marginal employment subsidies.[19] In the appendix of this Commentary, I report my extension of this work to an efficiency-wage specification, and the result is some additional analytical support for such initiatives.

What all these theoretical analyses ignore are implementation and administration issues. Feldstein and others stress that these problems are so far-reaching that marginal employment subsidies must be rejected.[20] Yet, other analysts counter that governments have had a lot of practical experience in running programs of this sort. For example, the Targeted Jobs Tax Credit program has been operating in the United States since 1978.[21]

My pragmatic response to all this uncertainty is simply to recommend further study of marginal employment subsidies.[22] This strategy of buying time still leaves Canadians with a constructive option in the meantime — the less controversial policy I have already identified of wage subsidies for low-wage employees.

Conclusions

Canada's persistent and high level of unemployment is a serious problem. It has generated numerous calls for putting deficit reduction and inflation control at least partially to one side, so that job creation can become a more central part of government policy. But as long as the debate is seen as either deficit reduction and inflation control or job creation, I suspect that the unemployment problem will remain on the back burner. There is simply — and quite appropriately — little political support for squandering the gains that have been made on inflation and interest rates and that are being established on deficit reduction. The best hope for a more active approach to unemployment is to emphasize policies that are self-financing. This emphasis forces the focus onto structural, not cyclical, unemployment (except for a plea for the Bank of Canada to consider alternative implementation strategies, such as nominal GDP targeting).

How should the federal government use the funds that have been freed up by the recent

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tightening of the EI program? Ottawa's original plan was not simply to apply them to deficit reduction, but to keep most of them within the employment envelope, and to switch from a passive approach that supported people when out of work to an active one that supported their attempts to get work.

Now, since the federal government is vacating the labor market policy field and leaving it to the provinces, one might assume that the funds would be used to reduce the down loading of the deficit problem to the provinces. This strategy would allow the provinces to keep these funds within the employment envelope on the federal government's behalf.

The most promising use of these funds is to finance a wage subsidy for low-wage workers. A small-scale version of this policy would be equivalent to reducing or eliminating employers' EI contributions on behalf of their low-wage employees. Given this fact, my recommendation is a partial support of recent calls for a payroll tax cut.

My analysis suggests that a significant reduction in unemployment among the unskilled can be had with such a low-income wage subsidy policy. Improvement in unemployment is possible even if the savings from EI reform are not made available to finance the new initiative, but it is paid for instead via an increase in the EI contributions firms make on behalf of their higher-wage employees.

Further, this initiative should not involve political resistance from those who worry about the wages of those already employed or about the level of investment in new capital. The analysis shows that this revenue-neutral initiative, while reducing unemployment, would raise both wages and investment.

Some may, of course, view any active labor market initiative as a backward step, one in opposition to the trend of freeing the market economy from excess regulation. To such individuals, a wage subsidy is just another unjustified intrusion of government into what should be a private transaction between a worker and her employer. Remember, however, that the policy I recommend is equivalent to a reduction in one part of the payroll tax system that is financed by an increase in another component of that tax, and a proponent of free markets, like anyone else, should remain open to any suggestion concerning tax reform.

Also remember that the support for what is proposed here comes from an analysis that explains unemployment in terms of market failure. Even the most conservative economists admit that, in principle at least, government has a role when markets fail. Those same economists very much prefer corrective action to take the form of adjusting private incentives through taxes and subsidies, rather than having direct government involvement. Since the policy I recommend here respects this preference, I do not think it should be rejected on any underlying philosophical ground concerning the proper role of government.

Appendix

This appendix uses the model of structural unemployment suggested by Summers.[23] I extend it to allow for various taxes and transfer payments, a variable capital stock, and the stipulation that all fiscal initiatives be revenue neutral. This extra material is included to provide results more precise than those that follow from a purely graphic analysis. The efficiency-wage theory of structural unemployment, of which the Summers model is an example, combines the rigor demanded by classical economists (given its grounding in formal optimization) with a well-defined source of market failure (which is at the core of Keynesian economics). As a result, many influential economists regard it as the most promising framework for understanding unemployment.[24]

Within this framework, Pisauro explores the implications of alternative taxes and Agénor and Aizenman consider skills-based technological change.[25] Compared to this work, my model is simplified in some ways, but in others it involves some extensions. All my changes are motivated by the desire to bring the work on efficiency wages to bear on the policy debate, a task Mortensen and Snower have already accomplished for search theory and labor turnover models.[26]

For clarity of exposition, I divide the appendix into two parts. The first explains how the model can be used to compare various labor market policies when no distinction is made between a skilled and an unskilled worker. The second details the modifications that convert the model to a two-sector version.

A One-Sector Model

In the Summers model of structural unemployment, firms maximize profits,

$$F(qL,K) - w(1+t)L - rK\,,$$

where F is output, which depends on labor employed, L, times an index of effort per worker, q, and the quantity of capital, K, and where w, t, and r are, respectively, the wage rate, the employer payroll tax rate, and the interest rate. Work effort depends on the gap between the wage workers receive after the employee payroll tax, w(1 – x), where x is the employee payroll tax rate, and the alternative available to them, which is z:

$$q = [w(1-x) - z)]^a,$$

where a is positive. The alternative wage is a weighted average: the employment rate (1 – u) times the after-tax wage that can be earned elsewhere, plus the unemployment rate, u, times the employment insurance benefit (fraction f of before-tax wages). Thus,

$$z = (1-u)(1-x)w + ufw\,.$$

The level of structural unemployment results from the firm's choosing w, L, and K to maximize profits subject to the variable work-effort constraint.

Combining the decision rules with the definition of the alternative wage and the fact that units can be chosen so that u = 1 – L, the level of structural unemployment can be determined:

$$u = a(1-x)/(1-f-x).$$

Despite the evidence on the aggregate wage elasticity of labor supply cited in the text, some readers may feel more comfortable with a small positive value, rather than the zero that has been imposed here (implicitly by defining the labor force as unity). If so, they will feel that an increase in the payroll tax levied on high-wage employees (used as a means of financing wage and employment subsidies) will cause (other things being equal) a small increase in unemployment.

A similar result follows from a related extension — one that involves either the labor force or the index of worker effort depending on nonlabor income. Marchildon, Sargent, and Ruggeri note that, if the basic analysis is extended in this way, the wage-claim line does

not shift up one for one with the labor-demand curve.[27] Phelps stresses this extension, but Kesselman argues that most workers have very little unearned income beyond what accrues within their pension plans or coming from any appreciation in the value of their homes.[28] My model assumes that short-run variations in this income source play no appreciable role in individuals' work-effort decisions. (Notice that Phelps's specification leaves the analyst stuck with the prediction that the unemployment rate must forever rise over the coming decades, simply because people's nonlabor income will continue its upward trend. Any reader who is intuitively uncomfortable with this prediction should find the basic specification in this Commentary more appealing.)

The other first-order conditions and the production function determine wages, the capital stock (given that the interest rate is assumed to be fixed by perfect capital mobility with the rest of the world), and the level of output. These relationships are:

$$Y = F(qL,K) = [q(1-u)]^{h}K^{(1-h)},$$

$$F_K = r,$$

and

$$qF_{qL} = w(1+t).$$

The effects of various policies on the unemployment rate, the accommodating tax rate (t, adjusted to maintain revenue neutrality), and the other endogenous variables are determined from these equations, given the balanced budget constraint for the EI fund, which is

$$(x+t)(1-n) = fn,$$

where n is the overall unemployment rate (which is greater than u since some full-equilibrium unemployment occurs for reasons other than efficiency-wage considerations). This equation could include an exogenous constant (to cover the government's apparent desire to maintain a surplus in the EI account) without affecting the analysis.

Employment Subsidies

The model is slightly more complicated with employment subsidies. Firms now maximize

$$F(qL,K) - w(1+t)L + s(L-L^{*}) + jL - rK,$$

where s is the subsidy the government pays for each worker that the firm hires beyond its base-period level of employment, L^{*}, and j is a general employment subsidy rate. Firms face the same constraints as before, and optimization proceeds by choosing L, w, and K while taking t, x, f, s, and j as parameters. The equilibrium unemployment rate is

$$u = a(1-x)(1+t-b-c)/1-x-f)(1+t).$$

The government sets s = bw, j = cw, and the balanced budget constraint is now

$$(t+x)(1-n) = fn + mb(u^{*}-n) + c(1-n),$$

where m is the waste factor that multiplies the cost of a marginal employment subsidy program. (In reality, if not in this model, turnover and ongoing growth will mean that new hires will exist in full equilibrium.) Subsidies are introduced with an initial full equilibrium involving b = c = 0 and u^{*} = n. As before, the budget is balanced by letting the employer payroll tax rate, t, be determined residually.

Calibration

Although I did not report in the text specific quantitative predictions for a one-sector analysis, it is useful to consider plausible parameter values as a test of the model's applicability. Illustrative quantitative results require only the following numerical assumptions:

- the EI benefit rate (the proportion of wage income received by individuals while unemployed);
- the EI contribution rates levied on employers and employees;
- the average value of the unemployment rate before any policy initiative is considered;
- the proportion of that unemployment that is due to the efficiency-wage considerations

that are highlighted in this study (as opposed to other things that cause structural unemployment, such as imperfect matches between job aspirants and vacancies); and
- labor's share of national income.

I assume the following base-line values for these items:

- the EI benefit rate: 0.4;
- the employee contribution rate: 0.0145;
- the employer contribution rate: 0.0202;
- the overall unemployment rate: 8 percent;
- the amount of this unemployment that is due to variable work-effort issues: three percentage points; and
- labor's share of income: 0.67.

The only aspects of this set of values that may appear unrepresentative of reality are the EI contribution and payout rates, which are lower than the legislated values. The reason for this discrepancy is that the actual program involves no payroll taxes beyond certain income levels, a qualifying period involving no EI benefits, and a maximum number of weeks of benefits. For simplicity, I used in the simulation model uncapped proportional contribution and benefit rates and adjusted the values for these parameters[29] so that they generate realistic revenue and expenditure totals. The ratio of the employer and the employee contribution rates reflects the 1.4 factor in the Canadian legislation, and the adjusted rates imply a balanced EI account, with revenues and expenditures of $18 billion, given current GDP values.

The plausibility of the model as calibrated with this set of numerical assumptions can be further assessed by using it to answer a question to which analysts think they may already know the answer. Over the past 40 years, the generosity of the Canadian EI system was approximately doubled during the first two decades and then returned to its original level over the second two.[30] What has been the effect on unemployment?

Noting that this question has evoked much dispute, Corak suggests that the consensus in the literature is that increased EI generosity pushed up the unemployment rate by somewhere between six-tenths and one full percentage point.[31] When the EI benefit rate in the simulation model is cut in half and the payroll tax rates are adjusted to keep the EI account balanced, the unemployment rate falls by eight-tenths of a percentage point.

Since this response coincides with the midpoint of the range reported in earlier studies, I conclude that the model is a reliable one and that illustrative numerical calculations can be regarded as representative and instructive.

A General Employment Subsidy

One of the policies I examined was a general employment subsidy, partly because some labor economists highlight an analogy between employment policy and a long-standing proposition regarding how public policy might deal with a monopolist.[32] Since a monopolist restricts output below the competitive outcome, economic efficiency can be enhanced if the monopolist is subsidized per unit of output — an encouragement to raise output. To keep the program revenue neutral and to avoid raising monopoly profits, the subsidy can be financed by taxing the monopolist on the basis of a percentage of sales revenue (not physical output).

Can an analogous policy package be designed for employment creation?[33] In this setting, incomplete information is the source of market failure (the analogue of monopoly power). An employment subsidy and a payroll tax on the firm's wage bill are the analogues of the fiscal instruments suggested for the monopoly problem.

I examined this revenue-neutral package by increasing c and raising t to keep the budget balanced. Such a general employment subsidy turns out to be quite impractical. Despite having a very small favorable effect on the unemployment rate, the subsidy is so expensive that the employer EI contribution must be increased dramatically.

A marginal employment subsidy (an increase in b financed by an increase in t) turns out to be much more effective in reducing unemployment. It is still expensive, however, since a plausible value for the waste factor, m, is in the range of 6 to 8.[34]

A Two-Sector Model

The model is expanded by splitting labor into two groups, skilled and unskilled. Firms now maximize

$$F(qL,N,K) - w(1+t)L - v(1+i)N - rK,$$

where L and N denote, respectively, the employment of skilled and unskilled workers, w and v are the corresponding wage rates, and t and i are the corresponding employer payroll tax rates. Firms choose w, L, N, and K (but not v). The constraints are the same as before, except that the production function is

$$Y = F(qL,N,K) = [q(1-u)]^h N^g K^{(1-h-g)},$$

and L and N equal $P_1(1-u)$ and $P_2(1-e)$, respectively, where the Ps denote the number of individuals available in each market and u and e stand for the unemployment rates in the skilled and unskilled sectors. The first-order conditions and the balanced budget condition yield the following relationships:

$$u = a(1-x)/(1-f-x),$$
$$(1-e) = g(1-u)(1+t)p/Rh(1+i),$$
$$(1-u)(t+x)p + (1-e)(i+x)R = f(up+eR),$$
$$(1-h-g)Y = rK,$$

and

$$hY = w(1+t)(1-u)P_1,$$

which, along with the production function and the definition of q, can be used to verify all statements in the text. (Note that $p = P_1/P_2$, R is the fixed ratio of v to w, and that, for simplicity in this two-sector setting, I assume that all unemployment in the skilled sector is due to efficiency-wage considerations.)

The second of the equations given above implies $\Delta e/\Delta i = (1-e)/(1+i)$, which suggests, in turn, for representative parameter values, that a one percentage point reduction in the employer payroll tax levied on low-wage workers can lead to a four-fifths of one percentage point reduction in the unemployment rate of the unskilled.

This calculation ignores any increase in t that may be necessary to finance this initiative. Thus, it ignores both the direct effect of t on e, which is favorable, and a possible indirect effect of t on u (and therefore on e), an unfavorable effect that would exist if the first equation were modified to allow for a positive wage elasticity of labor supply. Yet, even if the outcome of this illustrative calculation is cut in half, it represents a significant change in the unemployment rate.

The only result that is in any doubt is the response of wages to the introduction of the wage subsidy for low-wage workers (a reduction in i) when the initiative is financed by an increase in the payroll tax on high-wage employees (an increase in t).

Wages rise, as described in the text, if

$$gp(1-u)(1+t) > hR(1-f-x)(1-e).$$

Representative parameter values for f, x, t, and (h + g) have already been discussed. Given 1990 income distribution data and the assumption that an annual family income of $45,000 divides high- and low-wage individuals, then P_1 is roughly one-half, so p = 1. This lower-income half of the families received about 30 percent of total income in 1990. If this group received very little of that income from capital, surely a credible assumption, then h = 0.42 and g = 0.28 are plausible values for the income share parameters.

Finally, with the sizes of the two component labor forces the same, R is both the ratio of the two wage rates and the ratio of the two shares of labor income. These assumptions and the knowledge that e exceeds u are sufficient to argue that the inequality given above can easily be satisfied.

Notes

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1 W. Scarth, "Comment," in D.E.W. Laidler, ed., Where We Go from Here: Inflation Targets in Canada's Monetary Policy Regime, Policy Study 29 (Toronto: C.D. Howe Institute, 1997).

2 Such a policy could deliver the same average inflation rate as direct inflation targeting does now, but with the added benefit of strengthening the Bank of Canada's role in limiting the effects of variations in demand on the unemployment rate. Under current operating procedures, Bank officials automatically expand demand when they expect inflation to fall below the lower boundary of the announced band. But the fact that inflation has been in the lower half of this band most of the time in the past few years means that this practice could have been pursued more vigorously. A shift to nominal-income targeting is one way to keep the Bank a little more focused on using the entire range of the announced band. Further, such a shift should make Bank watchers less worried when they see the inflation rate extend into the upper half of the band, a variation to be expected under nominal-income targeting. Only under direct-inflation targeting does it make sense for the Bank to fear that such a development may be taken as a signal of its dwindling commitment. Thus, while the Bank is already operating in a way that is consistent with what lies behind the suggestion of nominal-income targeting, a more complete embracing of this implementing strategy could stabilize employment a little more and at the same time allow the Bank to enjoy an increase in its credibility.

3 G. Saint-Paul, "Some Political Aspects of Unemployment," European Economic Review 39 (1995): 575–582.

4 L. Di Matteo and M. Shannon, "Payroll Taxation in Canada: An Overview," Canadian Business Economics, Summer 1995, pp. 5–22; R. Parker, "Aspects of Economic Restructuring in Canada, 1989–1994," Bank of Canada Review, Summer 1995, pp. 23–34; J. Baran, Payroll Taxation and Employment: A Literature Survey, (Ottawa: Department of Industry, Micro-Economic Policy Analysis, forthcoming); and J.R. Kesselman, General Payroll Taxes(Toronto: Canadian Tax Foundation, 1997).

5 See, for example, "Which capitalism?" Globe and Mail (Toronto), January 13, 1997, editorial.

6 See Di Matteo and Shannon, "Payroll Taxation"; Parker, "Aspects of Economic Restructuring"; Baran, Payroll Taxation and Employment; and Kesselman, General Payroll Taxes. The empirical work (which concerns episodes of change in all four components of the payroll tax system) is not a perfect match for this paragraph in the text (which concerns just part of the tax that is levied on employers). Some of the empirical results are consistent with a small employment effect. So is my model. The reader can verify this point by considering a simultaneous change in parameters *t*, *x*, and *i* in the two-sector analysis summarized in the appendix.

7 To some readers, it may seem plausible to argue that, with more of the other inputs, firms could afford to (and therefore would want to) make do with less of the first one. Such reasoning would be appropriate if firms were constrained to produce some fixed level of output. But since this analysis is aimed at firms that are free to choose the overall level of output that maximizes profits while they make the decision about input hiring levels, the fixed-output assumption is not appropriate.

8 See Canada, Department of National Revenue, Tax Statistics on Individual Incomes, 1995 Edition (Ottawa, 1996), basic table 2. Employer contribution portions are estimated from this table by multiplying employee portions by the legislated factor of 1.4.

9 C. Freedman, "The Use of Indicators and of the Monetary Conditions Index in Canada," in T. Balino and C. Cottarelli, eds., Frameworks for Monetary Stability: Policy Issues and Country Experiences (Washington, DC: International Monetary Fund, 1994), p. 472.

10 L. Osberg, "Growth and Jobs: The Missing Link," in K. Banting and K. Battle, eds., A New Social Vision for Canada? (Kingston, Ont.: Queen's University, School for Policy Studies and the Caledon Institute of Social Policy, 1994).

11 Similar analyses are available in L.F. Katz, "Active Labor Market Policies to Expand Employment and Opportunity"; and P. Krugman, "Past and Prospective Causes of High Unemployment," both in Federal Reserve Bank of Kansas City, Reducing Unemployment: Current Issues and Policy Options (Kansas City, Mo: Federal Reserve Bank of Kansas City, 1994).

12 As noted earlier, empirical evidence is consistent with this specification. It is true that some individuals enter the labor force only as wages rise, but there are others — second-earners — who drop out of the labor force as wages increase since, with a higher wage, the family's income target can be met with just one partner working outside the home. Of course, the supply curve for unskilled labor does depart from the vertical line in Figure 5 at very low wage rates. In this range, the supply relationship curves back down to the left of the vertical line. But with institutional arrangements, such as the minimum-wage law, this part of the labor-supply curve is made largely irrelevant. Thus, I do not focus on the phenomenon.

13 Riddell's paper is forthcoming in a volume on employment issues in the C.D. Howe Institute's "The Social Policy Challenge" series. The evidence is also surveyed in D. Leigh, Assisting Workers Displaced by Structural Change: An International Perspective (Kalamazoo,

Mich.: W.E. Upjohn Institute, 1995); and L. Marchildon, "Active labor Market Policies: An Evaluation," Working Paper 95-11 (Ottawa: Department of Finance, Fiscal Policy and Economic Analysis Branch, 1995).

14 J.J. Heckman, "Commentary," in Federal Reserve Bank of Kansas City, Reducing Unemployment, p. 294.

15 Some excellent surveys and evaluations of these programs exist. See H. Robertson, "Wage Subsidies to Encourage the Hiring of Unemployment Insurance Claimants," Research Paper R-95-1 (Ottawa: Department of Human Resources Development, Applied Research Branch, Strategic Policy, 1994); Leigh, Assisting Workers; Marchildon, "Active Labor Market Policies"; and Baran, Payroll Taxation and Employment.

16 See the survey articles already cited: Robertson, "Wage Subsidies"; Leigh, Assisting Workers; Marchildon, "Active Labor Market Policies." Just last November, the federal government introduced another such experiment. Under the New Hires program, firms with fewer than 100 employees that make new hires can obtain a waiver of 100 percent of the associated EI premiums due in 1997 and 25 percent in 1998.

17 J.R. Kesselman, S.H. Williamson, and E.R. Berndt, "Tax Credits for Employment Rather Than Investment," American Economic Review 67 (1977): 339–349; and R. Layard, "The Costs and Benefits of Selective Employment Subsidies: The British Case," British Journal of Industrial Relations 17 (1979): 187–204.

18 E. Phelps, "Low-Wage Employment Subsidies versus the Welfare State," American Economic Review 84 (Papers and Proceedings, May 1994): 54–58; idem, Structural Slumps (Cambridge, Mass.: Harvard University Press, 1994); and idem, "Subsidize Employment," Policy Options, July/August 1996, pp. 5–9.

19 D. Snower, "Converting Unemployment Benefits into Employment Subsidies," American Economic Review 84 (Papers and Proceedings, May 1994: 65–70; and D.T. Mortensen, "Reducing Supply-Side Disincentives to Job Creation," in Federal Reserve Bank of Kansas City, Reducing Unemployment.

20 M. Feldstein, "Commentary," in Federal Reserve Bank of Kansas City, Reducing Unemployment.

21 This experience is ably surveyed in Robertson, "Wage Subsidies."

22 One administrative issue is whether business subsidies could be challenged under the terms of Canada's recent trading agreements. Since these policies would not confer an advantage to any specific industry, however, they should be nonactionable.

Another issue is constitutional. The federal government has just signed an agreement with Alberta (and is in advanced negotiations with other provinces) to make wage and employment subsidies a matter of provincial jurisdiction. On this question, see K.J. Boessenkool and W.B.P. Robson, Ending the Training Tangle: The Case against Federal-Provincial Programs under EI, C.D. Howe Institute Commentary 86 (Toronto: C.D. Howe Institute, February 1997). As time passes, therefore, my recommendation can be viewed as applying to provincial authorities, with the federal government's role being to transfer the necessary EI savings to the provinces to help them finance this initiative.

23 L. Summers, "Relative Wages, Efficiency Wages and Keynesian Unemployment," American Economic Review 78 (Papers and Proceedings, May 1988): 383–388.

24 See, for example, O.J. Blanchard, and S. Fischer, Lectures on Macroeconomics (Cambridge, Mass.: M.I.T. Press, 1989), p. 463.

25 G. Pisauro, "The Effect of Taxes on Labor in Efficiency Wage Models," Journal of Public Economics 46 (1991): 329–345; and P.-R. Agénor and J. Aizenman, "Technical Change, Relative Wages, and Unemployment, "European Economic Review 41 (1997): 187–200.

26 Mortensen, "Reducing Supply-Side Disincentives"; Snower, "Converting Unemployment Benefits."

27 L. Marchildon, T.C. Sargent, and J. Ruggeri, "The Economic Effects of Payroll Taxes: Theory and Evidence" (Ottawa, Department of Finance, Economic Studies and Policy Analysis Division, 1996), mimeo.

28 Phelps, Structural Slumps; Kesselman, General Payroll Taxes.

29 As in T.C. Sargent, "An Index of Unemployment Insurance Disincentives," Working Paper 95-10 (Ottawa: Department of Finance, Fiscal Policy and Economic Analysis Branch, 1995); and J. Martin, "Unemployment and Related Welfare Benefits in OECD Countries and Their Impact on the Labor Market" (Paris, Organisation for Economic Co-operation and Development, 1996), mimeo.

30 Sargent, "An Index of Unemployment Disincentives," p. 45.

31 M. Corak, "Unemployment Insurance and Canada-US Unemployment Rates," Policy Options, July/August 1996, pp. 33–37.

32 For example, G.E. Johnson and P.R.G. Layard, "The Natural Rate of Unemployment: Explanation and Policy," in O. Aschenfelter and R. Layard, eds., Handbook of Labor Economics, vol. 2 (Amsterdam: Elsevier Science Publishers, 1986).

33 As suggested in ibid.

34 As Graham Rose has convinced me in correspondence.