

The Case for Government Supported Training Program Appartient-il à l'État d'absorber le coût de l'apprentissage?

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Résumé de l'article

Même si on trouve de nombreuses études sur l'évaluation des coûts-avantages des programmes de formation au travail, on n'a accordé jusqu'ici qu'assez peu d'attention au rôle de l'État dans ce domaine.

La question fondamentale suivante se pose : le marché libre du travail offre-t-il suffisamment de possibilités pour assurer dans l'ensemble à la main-d'œuvre le degré de formation professionnelle qu'on pourrait considérer comme optimal ? Sinon, le gouvernement pourrait-il intervenir à sa place ?

L'article précédent traite cette question en appliquant les plus récentes découvertes de la macroéconomie au fonctionnement des marchés du travail en général et aux programmes de formation professionnelle en particulier.

Dans son exposé, l'auteur s'efforce de tracer le rôle du gouvernement, lorsque le marché du travail n'est pas en mesure d'assurer, par la formation sur place, le renouvellement de la main-d'œuvre.

L'entreprise privée n'est pas toujours capable de répondre aux normes qu'exigent les conditions optimales de formation. Les raisons en sont nombreuses. D'une part, la formation peut être source d'avantages gratuits pour certaines entreprises ou communautés qui, tout en ne se préoccupant guère de la formation de leur personnel, font quand même appel à des travailleurs qualifiés, s'appropriant ainsi à leur profit le savoir et l'expérience pour lesquels d'autres entreprises ont payé le prix fort. Conséquence : ces dernières entreprises hésitent à donner une formation qui ne leur rapporte finalement rien. D'autre part, étant donné l'impossibilité relative dans laquelle on se trouve d'évaluer à son coût exact le prix de la formation, il s'ensuit que c'est l'apprenti qui en récolte les avantages en obtenant une rémunération plus élevée sur le marché du travail. Ce sont là les motifs qui font que l'entreprise n'est pas apte à répondre aux besoins de formation professionnelle du marché du travail.

L'analyse de la situation permet de faire la constatation suivante : ou l'entreprise procure à ses employés une formation exclusive et elle a des chances d'en retirer des avantages ; ou la formation sera plus générale et il se peut que ce soit d'autres employeurs qui en profitent.

La formation est un bien collectif dont on ne peut être certain que le coût est payé par celui à qui il rapporte. L'employeur qui le fournit peut avoir à défrayer en totalité ou en partie le coût de la formation dite générale, ce qui l'incite à le donner à contre-coeur. En effet, si la formation est *estraltriste* dans le sens qu'elle tend à accroître la productivité marginale davantage chez les employeurs qui ne la paieraient pas que chez ceux qui la soutiennent, ces derniers ont intérêt à ne pas la donner, car s'ils le font, non seulement ils auraient à en défrayer le coût, mais ils risqueraient en outre de se voir enlever les travailleurs dont ils auraient assumé la formation partout où leur productivité marginale est plus grande. En effet, s'ils désirent le garder à leur service, il leur faudra payer un salaire égal à sa productivité marginale la plus haute. Au surplus, même si la formation ne leur coûtait rien dans le sens qu'elle serait en quelque sorte un sous-produit de son activité normale, l'employeur aurait encore intérêt à ne pas la donner de crainte de perdre les services de son employé.

De ce qui précède, on peut donc conclure que les entreprises n'ont aucune incitation véritable à dispenser une formation générale. C'est pour cela que l'on entend souvent dans la bouche des employeurs l'observation suivante : « Nous ne voulons pas qu'il (l'employé) devienne trop bon, car il pourrait s'en aller ailleurs ».

Dans ce contexte, toutefois, il faut retenir que la formation peut avoir un effet d'entraînement du fait que l'employé, qui a ainsi acquis une certaine compétence peut obtenir une promotion, ce qui laisse sa place vacante pour une autre personne et permet d'embaucher un sans-travail. Ils sont deux alors à profiter de la formation, le premier qui obtient un meilleur salaire par suite de son avancement, le second parce qu'il trouve ainsi un travail rémunérateur. Ce dernier point est important quand l'on tient compte du coût social du chômage. La formation professionnelle tendrait donc ainsi à réduire les inconvénients économiques résultant du chômage des travailleurs assimilés. Il s'ensuit donc que la société globale peut être disposée à couvrir le risque de former une main-d'œuvre compétente, mobile afin d'être en mesure d'en tirer profit au moment opportun et aussi parce qu'elle doit faire face à une usure de ses effectifs qui est nécessairement irréversible.

La formation professionnelle doit être aussi considérée du point de vue du travailleur lui-même. Celui-ci peut être prêt à payer en tout ou en partie la formation qu'il reçoit en vue d'en retirer des avantages dans l'avenir. Il s'agit de sa part de l'acceptation d'un risque calculé. Il le fera dans la mesure où il y a de bonnes chances d'y trouver son compte.

En effet, si l'on considère la formation professionnelle un peu à la manière d'un placement, il faut convenir que ni le travailleur ni l'employeur ordinaire ne peuvent guère diversifier beaucoup leur porte-feuille, étaler leurs placements. Un travailleur ne peut pas se spécialiser dans dix métiers ; un employeur ordinaire ne peut pas donner toute la gamme de la formation.

La situation n'est pas la même dans le cas de l'État qui peut pour ainsi dire se permettre d'assumer plusieurs types de formation. Les risques peuvent se répartir. Les échecs et les réussites pourront s'équilibrer, d'autant plus qu'il reste toujours possible au gouvernement de prévoir les changements technologiques, d'où sa possibilité d'orienter son choix du côté des carrières prometteuses d'avenir.

Au surplus, il existe dans la société une foule d'individus désavantagés dont il y aurait intérêt à favoriser la formation professionnelle dans l'espoir que ces individus en retirent des avantages. On peut se demander si, au cours des dernières années, l'on n'a pas trop mis l'accent sur l'instruction générale et pas assez sur la formation professionnelle. De toute manière, il n'est pas dit que les sommes consacrées à la mise en place de programmes de formation professionnelle ne sont pas préférables à la politique de paiements de transfert purs et simples.

Ceci explique, d'une part, que le marché du travail n'est pas apte à fournir quantitativement « la somme » de formation professionnelle socialement désirable et que, par conséquent, l'intervention publique est souhaitable.

Il reste à voir quelle pourrait être la nature exacte de son rôle. Doit-il se charger de la formation professionnelle, la subventionner ou tout simplement la promouvoir ?

The Case for Government Supported Training Program

Morley Gunderson

Concepts of Public Expenditure Economics are applied to the operation of labour markets in general and training programs in particular to see if the free market provides a socially optimal amount of training. The case for government-supported training is discussed when there exist market imperfections and equity considerations, as well as market failure due to externalities, high risk and uncertainty, and merit goods.

Although the literature in manpower economics abounds with cost-benefit evaluations of training programs, little attention has been paid to the question of the appropriate role of government in such training. The basic questions to be answered are : Does the free market provide a socially optimal amount of training? If not, could the government intervene to ensure a socially optimal amount of training?

This paper deals with these questions by applying some of the newer developments in the literature of Public Expenditure Economics to the operation of labour markets in general and training programs in particular. The paper begins with a discussion of the role of government when market failure results because of externalities, high risk and uncertainty, and merit goods. Then the effect of various types of non-competitive markets is discussed and the paper concludes with a discus-

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sion of the equity or distributional effects of training. Throughout the paper stress is placed on identifying the role of government when the private unregulated market fails to provide a socially efficient or equitable amount of training. Emphasis is placed on the micro-economic issues of efficient and equitable resource allocation rather than on the macro-economic issues of stabilization which have been discussed extensively elsewhere.¹

EXTERNALITIES

Externalities arise when the production or consumption by one actor affects the production function of a producer or the utility function of a consumer, and it is not possible to have a market that extracts full payment or compensation for these effects. The possibility of a market for externalities depends not only on the ability to exclude non-payers but also on the existence of information to permit market transactions — both of which may be very costly. These transactions costs include : exclusion costs; costs of disequilibrium; and costs of communication and information, including both the supplying and the learning of the terms on which transactions can be carried out. The existence of externalities is not a sufficient condition for government intervention since many of these costs will also be present for governments. However, as Arrow² points out, « The State may frequently have a role to play in resource allocation because, by its nature, it has a monopoly of coercive power, and coercive power can be used to economize on transaction costs. »

Spillover externalities from general training

Companies providing general training may produce significant spillover benefits to other companies or localities that do not provide training but do utilize the trained workers. Rather than undertake their own

¹ James HUGHES, « The Role of Manpower Retraining Programs : A Critical Look at Retraining in the United Kingdom, » *British Journal of Industrial Relations*, Vol. 10, July 1972, pp. 206-223 and J. THIRWELL, « Government Manpower Policies in Great Britain : Their Rationale and Benefits, » *British Journal of Industrial Relations*, Vol. 10, July 1972, pp. 165-179.

² Kenneth ARROW, « The Organization of Economic Activity : Issues Pertinent to the Choice of Market Versus Nonmarket Allocation, » *The Analysis and Evaluation of Public Expenditures : The PPB System*, Vol. 1, Washington, U.S. Government Printing Office, 1969, 610 pp.

training programs these later companies simply pirate or poach³ the trainees from the sponsoring company. As a result, profit maximizing firms are reluctant to provide such training unless they can sell the training service on a market. Because of the inability to sell these positive spillover benefits the private market yields a less than socially optimal amount of training.

The problem with applying the externality argument to training programs is that it is difficult to see why markets do not arise to internalize the externalities. As Becker⁴ argues, economic theory predicts that the trainee bears the cost of general training (probably by accepting a lower wage rate during training) and he reaps the benefits later in the form of a higher competitive market wage rate. If a firm that does no training wants to pirate a trained worker from a firm that does training it has to attract him through a wage payment sufficiently high to reimburse him for his training expenses. According to economic theory a market exists for general training and it is thereby not a positive spillover benefit or externality.

Becker's analysis has been accused of being overly simplistic and not providing adequate insight into the real world operation and financing of training. In his analysis of internal labour markets Michael Piore⁵ states :

Worker training is a by-product of the process of production and of innovation... training, innovation, and current output are joint products of a single process... because average cost cannot be apportioned among joint products, it will not serve as an approximation to the marginal cost of training.

Richard Eckaus⁶ explores the problem of joint production in the context of general training and concludes that :

The cost of general training under these conditions need not be fully shifted to workers. It is in fact impossible to know exactly what these

³ Marshall was the first to use this argument to explain the reluctance of private employers to invest in training. This is discussed in Ozay MEHMET, « A Critical Appraisal of the Economic Rationale of Government-Subsidized Manpower Training, » *Relations Industrielles*, Vol. 25, August 1970, pp. 568-582.

⁴ Gary BECKER, *Human Capital*, New York, National Bureau of Economic Research, 1964, 187 pp.

⁵ Michael PIORE, « On-the-Job Training and Adjustment to Technological Change, » *Journal of Human Resources*, Vol. 3, Fall 1968, pp. 435-449.

⁶ Richard ECKAUS, « Investment in Human Capital : A Comment, » *Journal of Political Economy*, Vol. 71, October 1963, pp. 501-504.

costs are. The firm produces ; workers become better trained by example, by practice, and by maturing in a job situation. The amount that the firm will be able to extract from workers in compensation for training is not determined by training costs. On the one hand, the firm cannot pay the worker less than his marginal productivity in goods production in any other line or the worker will make the move that his general training makes possible. On the other hand the firm cannot avoid giving the training.

This inability to separate out the costs of training may result in the firm bearing the cost of general training and the trainee receiving the benefits in the form of a higher market wage. Because a market may not develop to appropriate the costs to those who benefit, the firm may provide a less than socially optimal amount of training.

In order to better illustrate this point, an expansion of Becker's simplistic distinction between general and specific training is in order. Backer's taxonomy does not cover the cases of training that increases the marginal productivity of the worker exclusively in non-sponsoring firms or more in non-sponsoring firms than in sponsoring firms. To reflect the idea that the benefits for such training will not be capturable by the sponsoring company, such training could be classified respectively as altruistic and completely altruistic. This leads to the following classification of training according to how it affects marginal productivity as viewed by firms. The first three are terms used by Becker.

- (1) Completely specific — increases marginal productivity only in sponsoring firm
- (2) Specific — increases marginal productivity more in sponsoring firm than in other firms
- (3) Completely General — increases marginal productivity the same in all firms
- (4) Altruistic — increases marginal productivity more in non-sponsoring firms than in sponsoring firms
- (5) Completely altruistic — increases marginal productivity only in non-sponsoring firms.

According to Becker, the firm will bear all of the cost of completely specific training and part of the cost of specific training. It will not bear any of the cost of completely general training. However, if we hold the Piore-Eckaus view that training is a joint product the cost of which cannot be ascertained so as to be appropriated to those who benefit, then

the firm may have to pay part or even all of the costs of completely general training, and therefore may be reluctant to provide it. If the training is altruistic in the sense that it increases marginal productivity more in non-sponsoring firms than in sponsoring firms then the firm has a positive incentive not to provide such training. For if it did, not only would it pay the cost of such training but also it would lose that trainee to the firm where his marginal productivity is greatest. If it wanted to keep the trainee it would have to pay him a wage rate equal to his highest marginal productivity elsewhere which would be greater than his marginal productivity in the sponsoring firm. If the training is *completely* altruistic in the sense that it increases marginal productivity *only* in non-sponsoring firms then the firm would be completely reluctant to provide such training. Even if such training were costless in the sense that it were a natural by-product of the worker's normal work activity, the firm would have an incentive to discourage such training, providing it could not sell the training either to the worker or to a non-sponsoring company. Otherwise, it would lose the trainee to the company where its marginal productivity was greatest or it would have to pay him a wage equal to that marginal productivity.

To the extent that it is not possible to develop a market for general, altruistic and completely altruistic training of a joint product nature, firms may be reluctant to provide such training and in fact it may be in their profit maximizing interest to discourage this training. Hence the dictum : « We don't want him to get to be too good, or he may go elsewhere. »

Holtman⁷ points out however, such underproduction of training would result from the lack of knowledge of the production of the training, not from the joint product nature of training itself. In a perfect labour market with knowledge of the joint product nature of training, trainees will pay for general training provided as a joint product by accepting a lower wage rate during such training. The lower wage rate comes about as workers compete for those jobs giving the general training as a joint product. They will fail to compete for these jobs only if they don't know how much training they are purchasing — a possibility that is *compounded* (but not certain) when training is a joint product. Training provided as a joint product does not necessitate market failure — it only makes the information problem more likely and hence increases the possibility of market failure.

⁷ Al HOLTMAN, « Joint Products and On-the-Job Training, » *Journal of Political Economy*, Vol. 79, July-August 1971, pp. 929-931.

Vacuum and complementary multiplier externalities

Richard Judy⁸ discusses vacuum and complementary multiplier effects in the context of externalities. *Vacuum* effects occur when the trainee is upgraded and vacates a job that is filled by a member of the unemployed. The social benefits of such training include the additional income from both the upgraded worker and the unemployed worker. This is so because in the absence of such training the potential trainee would be producing at his pre-training productivity and the unemployed worker would be completely non-productive and in fact may be receiving government transfer payments in the form of unemployment compensation or welfare payments. The valuation of the additional benefits to the trainee is clear — it is simply his increase in lifetime productivity. However, the valuation for the previously unemployed worker is not so simple because of the problem of evaluating the social opportunity cost of being unemployed. At one extreme, unemployment may be valued highly in the form of leisure, job search (frictional unemployment) or viable household alternatives. In these cases the valuation to be put on the vacuum effect is low since putting these people in jobs would do little to increase social welfare. At the other extreme, unemployment may have no value and in fact may have severe adverse effects in such forms as alienation or frustration which in turn could lend to anti-social acts such as crime. In usual cases however, it is reasonable to assume that the unemployed do have some positive non-market alternatives but that these are not valued as high as the alternative of working and therefore the vacuum effect is positive. Because of the existence of unions or a legal or social minimum wage, the firm is unable to hire this unemployed worker at a wage equal to his low alternative cost hence it is not able to reap the full benefits of having taken a worker off the role of the unemployed. Since the full social benefits of the training cannot be brought into its calculations, the firm provides a less than socially optimal amount of training.

Training may also have a *complementary multiplier* component insofar as it reduces structural bottlenecks that resulted in the unemployment of related workers. Re-employment of these workers would result in significant social benefits but as in the case of vacuum effects these benefits may not be captured by whoever bears the cost of the training.

⁸ Richard JUDY, « Conceptual Problems and a Theoretical Framework for Analysing the Distribution of Benefits from Government Assistant Training-In-Industry, » Toronto, Systems Research Group, 1970, 47 pp.

Option demand externality

Weisbrod⁹ discusses the possibility of government intervention when certain individual-consumption goods possess collective-consumption characteristics. In such cases society may be willing to pay for the option to use the service in the future either because the service may be extremely valuable if needed (e.g. hospitals) or because the decision to discontinue the service may be irreversible (e.g. forest preserves). To a certain degree the private market could develop a system of user charges that would capture some of the option demand, nevertheless such charges may be cumbersome or costly to collect. Consequently, government intervention may be justified in the presence of an option demand externality.

Is there a case to be made for applying the option demand arguments to training programs? To a certain degree society collectively may be willing to pay for the option to have a well-trained, flexible labour force available for use in times when such a workforce may be extremely valuable (e.g. times of national emergency such as war or in times when goals such as growth or rapid technological change become paramount). To a country dependent on foreign trade, this flexibility may be especially important to enable the country to move into changing foreign markets.

Because of the obsolescence of human capital, the decision not to invest in training may be irreversible and therefore society may be willing to pay an extra premium for the option of having a pool of skilled labour from which to draw in the future, even if it is not fully utilized in the present. If we allow the training of our labour force to deteriorate beyond a certain point it may not be possible to upgrade it in any reasonable length of time and at any reasonable cost.

Similarly an individual trainee may be willing to pay small amount just to have the continued existence of training facilities so as to have the option to use them at some time in the future when the service would be extremely valuable to him, say perhaps if his future employment depended on it. Companies may also be willing to pay small amounts for the option to draw from a pool of skilled labour or for the option to use certain training facilities when the need arises.

As mentioned previously, the private market could develop a system of user charges that would capture at least some of the option demand.

⁹ Burton WEISBROD, « Collective-Consumption Services of Individual Consumption Goods, » *Quarterly Journal of Economics*, Vol. 78, August 1964, pp. 471-477.

Nevertheless such charges may be cumbersome or costly to collect and therefore government intervention may be socially justifiable.

HIGH RISK, UNCERTAINTY

Private actors may be unwilling to invest in training because they find it too risky and uncertain a venture. To the extent that their private risk is greater than the social risk of the investment then the private market may yield a less than socially optimal amount of training.

Portfolio theory tells us that, other things equal, an investment has a higher value if its expected return is high, the variance of this return is low, and the yield of the investment is *negatively* correlated with the yield of other assets in our portfolio of wealth. The negative correlation of yields is desirable because it provides risk averters with more certainty in the yield of their overall portfolio, since if the yield of one asset is not forthcoming then the negative correlation implies that the yield from the other asset will probably be forthcoming. Hence the existence of insurance policies which have a low (or negative) expected rate of return, a very high variance since one seldom collects, but where yields are *perfectly negatively* correlated with the yield of other assets such as our house, car or life.

Different types of training can be negatively correlated with each other. For example, the yield from being trained as a numeric machine programmer (computer tape driven basic machine work) may be negatively correlated with the yield from being trained as a lathe operator since computer driven machines are replacing lathe operators. Consequently, a lathe operator would value highly the chance to get training in numeric machine programming since that is the very skill that would replace him. This would be true even if the yield from numeric programming had both a low expected return and a high variance. Its value to this particular worker lies in its negative correlation with the yield from training as a lathe operator. As with other investments, in choosing the optimum mix of training, the trainee will consider not only the expected return and variance of the investment, but also its correlation with the yields of other types of training.

Because of his limited wealth, however, it is difficult for an individual trainee to diversify his portfolio of wealth let alone his portfolio of training yields. Consequently, some form of collective actions may be appropriate.

A risk averter may try to avoid the risk associated with training by collectively agreeing to share the cost and benefits with other actors under the presumption that if some skills become obsolete then others will be more in demand. However, transactions costs and difficulties in establishing such private markets may be formidable. Governments by virtue of their size would be able to absorb the risk, since for any trainee they finance who loses, it is likely that there would be an offsetting one who gains. That is, the government portfolio would consist of various types of training, the yields of which are *negatively correlated* assuming that for every skill that becomes obsolete a new one becomes a premium skill. The government investment may be socially profitable even if the private market would not undertake the investment, since the government would serve as its own insurance agent for some of the private risk costs. Because of this possibility of the private market attaching a cost to a risk that is only a private risk and not a social risk, then the private market may again breakdown in providing a socially optimal amount of training and therefore government intervention may be warranted.

In practice the government need not supply the training itself but rather may help finance it through a contingent loan system where the borrower repays the government only if the training is successful. The repayment would have to be sufficient to cover those who do not repay, but the borrower would be willing since it is a riskless venture to him. Or the government may want to provide the training and charge only those who benefit to cover the total cost. Of course the government would only undertake the project if its expected social benefits exceed its expected social costs.

If the government is getting involved to act as an insurance broker providing a diversified portfolio of training yields, it may also want to be selective in the type of training it finances or provides. Specifically, it would want to provide a portfolio that is diversified in the sense that individual yields are negatively correlated. Translating this into practice requires detailed knowledge of the dynamics of skill shortages and substitutions. For example, if the government decides to finance or provide training for a particular skill it may also want to finance the skill that is most likely to replace it. To use our previous example, if the government finances the training of lathe operators it may also want to finance the training of numeric machine programmers since this is the skill most likely to replace lathe operators. By doing so the government would diversify its portfolio and thereby increase its value. To put it more succinctly, if the government does not get involved in training, it would

want to consider not only the expected return and variance of its training investments, but also the diversification of its portfolio.

To a certain degree large scale firms may serve a similar role as the government in financing a diverse portfolio involving training. When they train in large numbers it is likely that they will train both for skills that become obsolete and for skills that become in high demand. Consequently, the yields from training are negatively correlated with each other — when some are high others are low. This ability for large firms to train various workers whose yields will be negatively correlated with each other may also account for the concentration of training in large firms and perhaps even their willingness to engage in some general training for which the worker does not pay.

MERIT GOODS

A more positive role of government in training programs is justified if we believe that training has a merit good component. Society may feel that certain disadvantaged groups are « locked in » to their poverty consumption and investment patterns and hence their present consumption pattern may not be what is best for them in the long run. Society may then take it upon itself to expose individuals to training in the hope that in the longer run these individuals will themselves rationally purchase training and once again consumer sovereignty can apply. Society could also force the individual to invest in training but where consumer sovereignty is at least respected, society would probably choose to provide the service free, subsidize it, or force it on the individual contingent upon his receiving a government transfer payment.

Justifying government intervention based on the merit good argument can be dangerous since it does have a « society knows best » ring to it, and practitioners in the training evaluation area are all too familiar with the phrase that « training is simply good for people and therefore governments ought to be involved. » Nevertheless it is not unreasonable to assume that some actors are simply acting irrationally and underinvesting in training (and perhaps overinvesting in education) and therefore a brief exposure to the benefits of training will have them investing more in it. Empirical evidence presented by Hansen, Weisbrod and Scanlon¹⁰ suggests that for low achievers, training may be better than

¹⁰ Lee HANSEN, Burton WEISBROD, and W. SCANLON, « Schooling and Earnings of Low Achievers, » *American Economic Review*, Vol. 60, June 1970, pp. 409-418.

schooling for raising their income. However, society has tended to stress the importance of education for this group. Responding to societal pressures, low achievers may be overinvesting in education and underinvesting in training. Temporary government action may thereby be justified, perhaps in the form of providing the « correct » information on the desirability of alternative forms of investment in human capital.

NON-COMPETITIVE MARKETS

The previous discussion dealt with the conditions under which the free market, even under the assumptions of perfect competition, may lead to a less than socially optimal amount of training. If private markets are *not* competitive then a further role for the government may be justified.

Natural monopoly for training services

The provision of training services may be characterized by economies of scale such that the training industry in effect is a natural monopoly. In such a case the demand for training services is not sufficiently high to require that output be produced at minimum average cost; or conversely, the economies of scale to be had from training are so great that even the concentration of training in a single firm cannot exhaust these economies of scale. When training is provided in natural monopolies the supply of training is less than the competitive supply and the price charged for training is greater than the competitive price.

Does there appear to be any real basis for thinking that this is an important reason for government intervention? Can we identify natural monopolies? The answer to these questions is difficult since a natural monopoly implies the existence of *both* economies of scale and insufficient demand to exhaust these economies of scale in a single firm. Suggestions have been made to the effect that training programs do have substantial economies of scale. Lees and Chiplin¹¹ point out that under the British Industrial Training Act small firms tend to be taxed so as to subsidize training in large firms under the presumption that « there are substantial economies of scale in training, which means that training by small firms is simply uneconomic. » In their study of the Neighbourhood Youth Corps, Somers and Stromsdorfer¹² give empirical

¹¹ D. LEES, and B. CHIPLIN, « The Economics of Industrial Training » *Lloyds Bank Review*, Vol. 95, April 1970, p. 35.

¹² Gerald SOMERS and E. STROMSDORFER, *A Cost-Effectiveness Study of the In-School and Summer Neighborhood Youth Corps*, Madison, Wisconsin, Industrial Relations Research Institute, 1970, 435 pp.

evidence to suggest that economies of scale do exist in that program. In our discussion of risk and uncertainty we also indicated that large companies can hedge against risk by diversifying their portfolio of training activities. Although these arguments suggest that economies of scale exist for training this does not establish the existence of a natural monopoly since in a rapidly changing economy the demand for training services will also be large. It is difficult to think of a training skill that is in such short demand that it will only be produced in one company. Consequently, we could hazard the generalization that although economies of scale probably exist in the provision of training services, the demand for such services is also large so that the efficient provision of training occurs in a large, but not monopolistic company.

Imperfect capital markets

Our previous discussion of externalities pointed out the importance of transactions cost in developing an efficient market for training services. Even if many of the arguments of market failure are really just situations where transactions costs are high, the individual trainee may not be able to bear the cost of these transactions because he does not have full access to capital markets. Lees and Chiplin¹³ cite this as the « only one area of useful state intervention in the field of industrial training — the provision of finance to workers to help meet the cost of general training. »

Legally, a worker cannot offer his human capital as collateral for a loan to invest in his training. Consequently he may be unable to finance the training even if it is profitable. This problem is especially true for low income workers who have limited assets and who cannot afford to pay for the cost of general training by foregoing any of their income during the training period.

Stigler¹⁴ points out that this is not really a capital market imperfection since lenders are acting rationally given the legal constraint that they can't hold human capital as collateral. Rather it is a labour market imperfection where the legal constraint really reduces the labourer's disposable property rights by not allowing him to offer human capital as collateral. Since society has deemed it socially desirable to impose this restriction on individuals it may have an obligation to alleviate unde-

¹³ D. LEES and B. CHIPLIN, « The Economics of Industrial Training » *Lloyds Bank Review*, Vol. 95, April 1970, p. 132.

¹⁴ George STIGLER, « Imperfections in the Capital Market, » *Journal of Political Economy*, Vol. 75, June 1967, pp. 287-92.

sirable side-effects from the action. To the extent that one such side effect is the worker's inability to finance investment in themselves then government intervention to rectify this situation is socially justifiable. In order to correct this imperfection economists have suggested such schemes as providing perspective trainees with contingent loans that they must repay only if their training is successful.

Non-competitive firms in product market

Because the demand for inputs is derived from the demand for a firm's output, the way a firm acts on the product market affects the way it acts on the market for its inputs. A monopolist on the product market not only sells less output at a higher price than does a competitive firm, but also demands less of each input and, if it faces a less than perfectly elastic supply, pays a lower input price than would a competitive firm on the product market.

Translating this into the purchase of training services illustrates that firms operating in non-competitive *product* markets purchase less training and may pay a lower price for the training component of labour than firms operating in competitive product markets. To remedy this, governments may want to intervene in the form of an anti-trust policy, tax-subsidy scheme, price control or government provision of the service.

Monopsony in the training market:

If the purchaser of the training service is large relative to the size of the training market so that its purchases affect the price of the service, then the purchaser is a monopsonist in the training market. Because the firm's purchases affect the market price, it faces an upward sloping supply or average cost curve for the service. The corresponding marginal cost curve lies to the left of the supply curve and therefore the monopsonist purchases less training and pays a lower price for training than would a competitive purchaser.

Do we have reason to believe that monopsony is prevalent in the market for training services? Certainly individual workers who purchase training from firms (usually by accepting a lower wage rate during training) are competitive purchasers. However firms that hire trained labour may well be monopsonistic purchasers of the skilled component of labour. It is not difficult to envisage a firm being so large relative to the market for particular skills that it exerts an influence over the price of that skill. This is especially true when the skills are specialized so that

the market has few actors or where transactions costs or inertia deter the mobility of skills (along with the labour that embodies the skill). In such circumstances the firm faces a less than perfectly elastic supply curve for the skill — to attract more of the skill it has to raise its price.

Since monopsony in a factor market arises when the firm faces a less than perfectly elastic supply of the factor, then policies designed to increase the elasticity or factor supplies would reduce monopsony. Information concerning the returns to be had would encourage the response of factors to changes in their prices. So would the rapid production of training for scarce skills — that is, skills for which a large price increase result only in a small supply increase. To this effect, the government may have a role overcoming monopsony pricing by providing information on premium training skills in short supply.

Market imperfections and the theory of second best

Imperfections in markets related to the market for training services may have serious implications for optimal pricing rules in training markets. The general theory of second best implies that if market imperfections exist in any markets, then following the usual optimal pricing rules in related markets may not be socially desirable. As Richard Judy¹⁵ illustrates, in the case of training it may not be socially desirable to have those who benefit from training pay for training, provided there are imperfections in markets related to the training market. Examples of such related market imperfections exist, although it is difficult to assess their as collateral or the firm's operating in a non-competitive product market even though it purchases training in a competitive market.

The implications of this are profound since we do know that such related market imperfections exist, although it is difficult to assess their quantitative impact. The correct role of the government under such circumstances is made even more complex, since it may not be socially optimal for it to follow the usual optimal pricing rules and it may not be socially optimal for the government to try to correct what it believes to be imperfections in the training markets. This does not preclude the role of a government, it merely makes its role more complex. And until the implications of the theory of second best are translated into opera-

¹⁵ Richard JUDY, « Conceptual Problems and a Theoretical Framework for Analysing the Distribution of Benefits from Government Assisted Training-In-Industry, » Toronto, Systems Research Group, 1970, p. 11.

tional rules of thumb for decision makers, little can be said about the correct role of the government in the face of such market imperfections.

EQUITY OR DISTRIBUTIONAL CONSIDERATIONS

The previous discussion concentrated on the possibility of a breakdown in the allocative efficiency in the private market supply of training. Society is also concerned with the distributional *equity* aspects of training programs and the degree to which training can be used to yield opportunities and income to people who are poor, unemployed, unskilled, discriminated, residents of economically depressed areas or who are otherwise disadvantaged. By raising their productivity, training can increase the wages of the disadvantaged. And according to the empirical evidence presented by Hansen, Weisbrod, and Scanlon,¹⁶ training is more effective than schooling for the disadvantaged. According to Oi¹⁷ training can also increase their employability since firms are reluctant to lay off trained workers in an economic downswing for fear of losing their fixed costs associated with such workers.

Since society is concerned not only with redistributing income but also with *how* the income is redistributed then subsidizing training programs may be preferred to transfer programs because the former allows the worker to earn his income rather than receive it as a dole or handout. This could be true even if the transfer program were more efficient in that more benefits went to the poor or administrative costs were lower. In addition, society may use redistribution as a way of « buying behavior » of specific groups. To this end it may be efficient for society to bear part of the cost of training the disadvantaged to buy their security both by redistributing income in their favour and by making them part of a work society that they would be less likely to distrust. Goodman¹⁸ indicates that to a large degree private firms respond to social unrest by providing training as a form of insurance in areas of recent unrest. However, since they are unable to exclude other firms in the area from the benefits (social stability) of their actions, we can expect less training to be provided than if they collectively provided the training.

¹⁶ Lee HANSEN, Burton WEISBROD, and W. SCANLON, « Schooling and Earnings of Low Achievers. » *American Economic Review*, Vol. 60, June 1970, pp. 409-418.

¹⁷ Walter OI, « Labour as a Quasi-Fixed Factor. » *Journal of Political Economy*, Vol. 70, December 1962, pp. 538-55.

¹⁸ Paul S. GOODMAN, « Hiring, Training and Retaining the Hard-Core. » *Industrial Relations*, Vol. 9, October 1969, pp. 54-66.

Appartient-il à l'État d'absorber le coût de l'apprentissage ?

Même si on trouve de nombreuses études sur l'évaluation des coûts-avantages des programmes de formation au travail, on n'a accordé jusqu'ici qu'assez peu d'attention au rôle de l'État dans ce domaine.

La question fondamentale suivante se pose : le marché libre du travail offre-t-il suffisamment de possibilités pour assurer dans l'ensemble à la main-d'œuvre le degré de formation professionnelle qu'on pourrait considérer comme optimal ? Sinon, le gouvernement pourrait-il intervenir à sa place ?

L'article précédent traite cette question en appliquant les plus récentes découvertes de la macroéconomie au fonctionnement des marchés du travail en général et aux programmes de formation professionnelle en particulier.

Dans son exposé, l'auteur s'efforce de tracer le rôle du gouvernement, lorsque le marché du travail n'est pas en mesure d'assurer, par la formation sur place, le renouvellement de la main-d'œuvre.

L'entreprise privée n'est pas toujours capable de répondre aux normes qu'exigent les conditions optimales de formation. Les raisons en sont nombreuses. D'une part, la formation peut être source d'avantages gratuits pour certaines entreprises ou communautés qui, tout en ne se préoccupant guère de la formation de leur personnel, font quand même appel à des travailleurs qualifiés, s'appropriant ainsi à leur profit le savoir et l'expérience pour lesquels d'autres entreprises ont payé le prix fort. Conséquence : ces dernières entreprises hésitent à donner une formation qui ne leur rapporte finalement rien. D'autre part, étant donné l'impossibilité relative dans laquelle on se trouve d'évaluer à son coût exact le prix de la formation, il s'ensuit que c'est l'apprenti qui en récolte les avantages en obtenant une rémunération plus élevée sur le marché du travail. Ce sont là les motifs qui font que l'entreprise n'est pas apte à répondre aux besoins de formation professionnelle du marché du travail.

L'analyse de la situation permet de faire la constatation suivante : ou l'entreprise procure à ses employés une formation exclusive et elle a des chances d'en retirer des avantages ; ou la formation sera plus générale et il se peut que ce soit d'autres employeurs qui en profitent.

La formation est un bien collectif dont on ne peut être certain que le coût est payé par celui à qui il rapporte. L'employeur qui le fournit peut avoir à défrayer en totalité ou en partie le coût de la formation dite générale, ce qui l'incite à le donner à contre-cœur. En effet, si la formation est *altruiste* dans le sens qu'elle tend à accroître la productivité marginale davantage chez les employeurs qui ne la parrainent pas que chez ceux qui la soutiennent, ces derniers ont intérêt à ne pas la donner, car s'ils le font, non seulement ils auraient à en défrayer le coût, mais ils risqueraient en outre de se voir enlever les travailleurs dont ils auraient assumé la formation partout où leur productivité marginale est plus grande. En effet, s'ils désirent le garder à leur service, il leur faudra payer un salaire égal à sa productivité marginale la plus haute. Au surplus, même si la formation ne leur coûtait rien dans le sens qu'elle serait en quelque sorte un sous-produit de son activité normale, l'employeur aurait encore intérêt à ne pas la donner de crainte de perdre les services de son employé.

De ce qui précède, on peut donc conclure que les entreprises n'ont aucune incitation véritable à dispenser une formation générale. C'est pour cela que l'on entend souvent dans la bouche des employeurs l'observation suivante : « Nous ne voulons pas qu'il (l'employé) devienne trop bon, car il pourrait s'en aller ailleurs ».

Dans ce contexte, toutefois, il faut retenir que la formation peut avoir un effet d'entraînement du fait que l'employé, qui a ainsi acquis une certaine compétence peut obtenir une promotion, ce qui laisse sa place vacante pour une autre personne et permet d'embaucher un sans-travail. Ils sont deux alors à profiter de la formation, le premier qui obtient un meilleur salaire par suite de son avancement, le second parce qu'il trouve ainsi un travail rémunérateur. Ce dernier point est important quand l'on tient compte du coût social du chômage. La formation professionnelle tendrait donc ainsi à réduire les inconvénients économiques résultant du chômage des travailleurs assimilés. Il s'ensuit donc que la société globale peut être disposée à courir le risque de former une main-d'œuvre compétente, mobile afin d'être en mesure d'en tirer profit au moment opportun et aussi parce qu'elle doit faire face à une usure de ses effectifs qui est nécessairement irréversible.

La formation professionnelle doit être aussi considérée du point de vue du travailleur lui-même. Celui-ci peut être prêt à payer en tout ou en partie la formation qu'il reçoit en vue d'en retirer des avantages dans l'avenir. Il s'agit de sa part de l'acceptation d'un risque calculé. Il le fera dans la mesure où il y a de bonnes chances d'y trouver son compte.

En effet, si l'on considère la formation professionnelle un peu à la manière d'un placement, il faut convenir que ni le travailleur ni l'employeur ordinaire ne peuvent guère diversifier beaucoup leur porte-feuille, étaler leurs placements. Un travailleur ne peut pas se spécialiser dans dix métiers ; un employeur ordinaire ne peut pas donner toute la gamme de la formation.

La situation n'est pas la même dans le cas de l'État qui peut pour ainsi dire se permettre d'assumer plusieurs types de formation. Les risques peuvent se répartir. Les échecs et les réussites pourront s'équilibrer, d'autant plus qu'il reste toujours possible au gouvernement de prévoir les changements technologiques, d'où sa possibilité d'orienter son choix du côté des carrières prometteuses d'avenir.

Au surplus, il existe dans la société une foule d'individus désavantagés dont il y aurait intérêt à favoriser la formation professionnelle dans l'espoir que ces individus en retirent des avantages. On peut se demander si, au cours des dernières années, l'on n'a pas trop mis l'accent sur l'instruction générale et pas assez sur la formation professionnelle. De toute manière, il n'est pas dit que les sommes consacrées à la mise en place de programmes de formation professionnelle ne sont pas préférables à la politique de paiements de transfert purs et simples.

Ceci explique, d'une part, que le marché du travail n'est pas apte à fournir quantitativement la somme de formation professionnelle socialement désirable et que, par conséquent, l'intervention publique est souhaitable.

Il reste à voir quelle pourrait être la nature exacte de son rôle. Doit-il se charger de la formation professionnelle, la subventionner ou tout simplement la promouvoir ?