

THE UNINTENDED CONSEQUENCES OF TRADE ADJUSTMENT ASSISTANCE

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Government programs designed to compensate workers and firms harmed by increased import competition often accompany trade liberalization. In the United States, the Trade Adjustment Assistance Act of 1974 offers such compensation to workers. Additional legislation designed to compensate displaced workers was adopted following the North American Free Trade Agreement of 1994. Such trade adjustment assistance (TAA) is considered a pragmatic and normatively appealing way to offset political resistance to trade liberalization. Economist Jeffrey Schott of the Institute for International Economics stated, "Assistance programs [were] incorporated into NAFTA legislation to buy some support and to alleviate some of the dire concerns of NAFTA critics" (quoted in Richards 1997: A1). Economists have generally approved of such compensation schemes (see, for example, Bergsten 1997: 26; Bhagwati 1982: 168, 1994: 21–22; Eisner 1997:A22; Feenstra and Bhagwati 1982: 246; and Lawrence and Litan 1986: 27).

Although there are a number of TAA programs, they are typically offered to workers who lose their jobs as a result of foreign competition. Workers who believe their job loss is attributable to such competition first file a petition with the governor of the state in which their employment is located. The governor's office then forwards an initial recommendation to the secretary of labor, who ultimately determines the case. If it is certified by the secretary that the job loss is attributable to foreign competition, the workers become eligible for a variety of benefits.

Those benefits can include an extension of unemployment compensation for up to a year, if the worker is in a training program; the

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payment of worker education and retraining costs; and job search and relocation allowances (U.S. Department of Labor 1998). Total federal expenditures on TAA have been around \$350 million annually since 1995 (Executive Office of the President 1996). As of December 1997, over 150,000 workers had been certified under the NAFTA-TAA program alone (Public Citizen 1998). Further discussions of trade liberalization and free-trade agreements will undoubtedly be accompanied by calls for extended and expanded TAA programs.

This paper points out some of the unintended consequences of TAA. First, its implementation almost certainly decreases the gain from trade liberalization and could conceivably reverse it. The reason is simple. Compensation is paid only to those who exit an impacted industry. As a result, forgone compensation becomes part of the opportunity cost of continuing production. TAA therefore gives domestic producers an artificial incentive to exit when pressed with foreign competition. The lure of compensation means that some domestic producers will abandon the industry even though their true production costs are below those of foreign producers. The social loss resulting from this compensation-induced resource misallocation can more than offset the gains from trade liberalization, making liberalization-cum-compensation an economically inefficient policy.

Second, there are some potentially troubling equity implications of the assistance. TAA is targeted at resources that are displaced by foreign competition. This, in turn, implies that those producers who are harmed least by foreign competition receive the most compensation as a percentage of their loss. In contrast, producers who are harmed most by foreign competition either obtain less relative compensation or receive no compensation at all. Ironically, domestic resources that receive no compensation from TAA are those that are most competitive in the presence of international competition.

A Single-Period Numeric Example

A simple one-period numeric example can illustrate these points. Suppose a domestic producer produces 10 tons of coal at an opportunity cost of 525 bushels of corn. Suppose the domestic price of the coal is \$250 a ton, while the price of corn is \$4 a bushel. The producer realizes \$2,500 in income from coal production at an opportunity cost of \$2,100 in forgone corn. The producer obtains a \$400 gain.

Now suppose a foreign producer offers coal at a price of \$225 a ton. The domestic producer will match the price of his competitor and still produce the coal, although his gain declines to \$150. His loss

of \$250 is transferred to consumers in the form of a lower price. There is no net loss to the domestic economy.

If, on the other hand, the foreign offer price is below \$210, say \$150 per ton, the domestic producer will forgo coal production and produce \$2,100 worth of corn. The foreign coal supplier's claim on domestic output is \$1,500 ($\150×10). The impact of the import is that the domestic economy has the same amount of coal *and* \$2,100 worth of other goods of which foreign producers can only claim \$1,500. National welfare, therefore, rises by \$600 as a result of the import.

This argument for free trade has been made at least since the time of Adam Smith. Free trade improves domestic welfare because more goods and services are available to domestic consumers. Although import substitution is painful for some, the economy as a whole benefits by substituting lower cost foreign goods for higher cost domestic goods.¹

But now let us incorporate TAA into the scheme. Suppose the coal producer has a legal entitlement to \$25 per displaced ton, or in this example \$250, if his exit from the coal business is due to foreign competition.² *Although the social value of the coal producer's alternative is still \$2,100 worth of corn, the coal producer's private cost of coal production is \$2,350 when faced with foreign competition.* A \$225 offer price of coal from a foreign producer will induce the domestic producer to abandon the coal industry. The economy, in this case, obtains the 10 tons of coal from the foreign source and \$2,100 worth of corn from the domestic producer. However, the foreign producer's claim on domestic output is \$2,250. The domestic economy is worse off by \$150 because of the import. Higher cost foreign coal has substituted for lower cost domestic coal, because of the compensation offered to the domestic producer.

To explore the equity implications of TAA, let there be two other domestic coal producers who each initially produce 10 tons of coal. Let them be identical to our original producer in every respect *except* that they have different opportunity costs of coal production. Suppose a high-cost producer sells coal at a market price of \$250 per ton and has an opportunity cost of \$240 per ton (or \$2,400 for 10 tons). In addition, suppose a low-cost producer can supply 10 tons of coal at an opportunity cost of \$1,500. Finally, let us designate our original

¹We are ignoring the gains consumers presumably obtain from consumption of additional coal due to the reduced price of coal.

²The level of compensation chosen for this example is equal to the difference between the original domestic price of coal and the new international price.

supplier, who has an opportunity cost of \$2,100, the medium-cost producer.

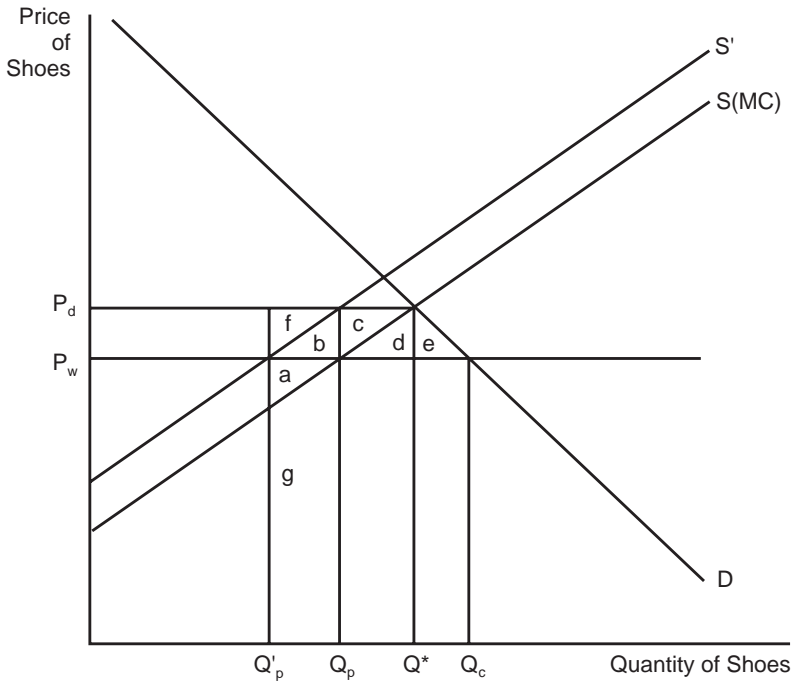
Now assume that foreign coal producers offer coal at a price of \$225 per ton and domestic producers who exit the industry receive compensation of \$25 per ton (or \$250 for 10 tons). The high-cost producer exits the industry, because he would receive \$250 from TAA while forgoing only \$100 in profits. And this exit would be efficient, because the domestic cost of coal for the high-cost firm is \$2,400 while the foreign cost is \$2,250. In contrast, the medium-cost producer, whose exit from the coal industry is inefficient, bears a \$250 loss from the foreign competition but is compensated \$250. Finally, the low-cost producer stays in the coal industry. It is efficient and profitable for him to do so, because his opportunity cost of production is substantially lower than that of the foreign producers. However, by staying in the industry, the low-cost firm loses \$250 of producer's surplus. That loss is the result of foreign competition, yet the firm receives no compensation. In sum, TAA differentially benefits high-cost producers who, by definition, have the least to lose from foreign competition—because they would not be in the market in the first place. Put another way, producers with low costs, who continue to compete with foreign rivals, bear larger losses and receive *no* compensation.

Demand and Supply Analysis

The analysis is further developed in Figure 1. Let D represent the demand for shoes. S is the domestic supply of shoes. It also represents the domestic opportunity cost of shoe production—that is, the marginal cost of shoes (MC). In the absence of foreign trade, domestic producers will produce Q^* shoes at a price of P_d . Now suppose that the domestic economy is opened to trade and that the world price of shoes is P_w . In the absence of any compensation for domestic shoe producers, domestic consumption will increase to Q_c and domestic production will decrease to Q_p . The economy will import $Q_c - Q_p$ shoes. The net gain in domestic welfare is given by the combined areas of triangles d and e in the diagram. Triangle d represents the gain due to replacing relatively high cost domestic producers with low-cost foreign production. Triangle e represents the gain in consumer surplus resulting from increased consumption. The two triangles combined represent the amount by which the increase in consumer surplus exceeds lost producers' surplus.

Now suppose that legislation is enacted that provides compensation to domestic producers when they exit the industry because of foreign competition. Although the value of producer resources in alternative

FIGURE 1
SOCIAL COST OF TRADE ADJUSTMENT ASSISTANCE



uses is still given by S , the compensation is an implicit tax on domestic production and, consequently, shifts the domestic supply of shoes to S' . There is a further reduction in domestic production from Q_p to Q'_p . This compensation-induced decrease imposes a welfare loss on the economy equal to the area of triangle a in the diagram. This loss is the result of lower cost domestic producers being replaced by higher cost foreign producers. In other words, when domestic production of shoes is reduced from Q_p to Q'_p , foreign suppliers increase their claims on domestic output by the combined areas of $a + g$, while the released resources from the domestic shoe industry produce other goods and services valued by domestic consumers at the smaller amount represented by quadrangle g .

The magnitude of the welfare loss associated with TAA-induced resource misallocation depends, of course, on the amount of compensation that is granted. To illustrate, let us begin with a plausible scheme in which compensation is based on the difference between the price of shoes before and after trade liberalization. Such a compensation scheme would impose an implicit tax and corresponding vertical

displacement of the domestic supply curve equal to $P_d - P_w$. The supply curve shift in Figure 1 is that amount. With compensation at that level, the welfare loss represented by triangle *a* is exactly equal to that portion of the original welfare gain represented by triangle *d*. Compensation has eliminated the gain associated with lower production cost but left that portion of gain, triangle *e*, associated with increased shoe consumption.

Obviously, if the level of compensation were to be increased, the loss due to resource misallocation would also increase. *It is possible for compensation to be set so high as to offset all of the initial gains from trade liberalization.* Perhaps this will not seem a likely outcome, but it is important to remember that political, not economic, considerations will set the level of compensation. Also, it is worth noting that the welfare gain (triangle *e* in the diagram) associated with increased consumption will be smaller, the less elastic is domestic demand for the product and, correspondingly, this loss will be more rapidly offset by excessive compensation.

When compensation is based on the trade-induced decline in domestic shoe prices, the actual compensation paid to displaced resources will be equal to the total loss of producer surplus experienced by those resources. Compensation paid will equal the sum of the areas of triangles *b*, *c*, *d*, and *f*. Lost producer surplus associated with the decline in domestic production from Q^* to Q'_p is equal to the sum of areas *a*, *b*, *c*, and *f*. All of these triangles are equal in area in this case.

Owners of resources that would have exited the industry even in the absence of compensation are actually overcompensated relative to lost producer surplus ($c < (c + d)$). The additional resources that exit because of the availability of compensation actually are undercompensated for their losses due to trade liberalization. Lost surplus for these resources is $a + b + f$, while compensation received by them is only $f + b$. These resources exit because once trade liberalization is in place, the effective choice with which they are confronted is to remain in the industry and receive producers' surplus equal to the area of triangle *a* or to leave and collect compensation of $(b + f) > a$. The rather perverse distributional implication of the compensation is that those resources that lose the least as a result of trade liberalization actually are overcompensated and end up being net beneficiaries. Resources that exit only because of compensation are undercompensated for the total loss experienced by liberalization and those resources that remain in the industry receive no compensation at all.

A Multi-Period Model

The preceding example is a single-period model and, as such, might well be suspected of overstating the case for compensation-induced

inefficiency. If compensation were to cease after only one period, workers who inefficiently switch occupations to obtain compensation, switch back once the compensation ceases to be available. In this circumstance, the distortion is only temporary and of considerably reduced importance. However, in the real world, TAA is designed to train displaced workers for new occupations. As opposed to simple compensation, this training orientation ensures that the welfare loss extends across multiple periods.

Returning to our first example, consider the worker who produces 10 tons of coal at a price of \$250 per ton. Suppose his next best alternative consists of training for a job as a computer programmer. After the training, he could produce 50 programs valued at \$50 each. However, the training itself costs \$4,000.

At the original price of coal, it is not efficient for the coal miner to retrain for the computer industry, even though the value of his output in both sectors is identical. This is because there is a real cost to the switch. Suppose that the appropriate social discount rate is 10 percent. The \$4,000 cost of training in the current period is equivalent in present-value terms to a \$400 annual perpetuity—that is, the \$4,000 invested in training a coal miner is not available for alternative investment and correspondingly reduces the output of other goods and services by \$400 in all future periods. It is efficient for the coal producer to switch only if the price of coal falls to \$210. Moreover, in the absence of TAA, the coal producer will only switch if the price of coal falls to that level or below.

Suppose, however, that TAA covers the full costs of training if a domestic producer is harmed by foreign competition. In that case, if the price of coal drops below \$250, the coal miner has an incentive to switch. Suppose that the price of coal drops to the world price of \$225 as in our earlier example. The coal miner takes advantage of the TAA to shift to computer programming. The domestic economy gains \$2,500 in computer services but loses \$400 in return on alternative investment in perpetuity. New goods and services worth \$2,100 are available per period of because of the TAA-induced switch (\$2,500 in computer programs – \$400 lost return) but foreign claims on domestic output are \$2,250 per period. The economy is \$150 poorer per period than it would be in the absence of TAA.

Unlike the TAA-as-transfer case, where the welfare cost will only persist in the period(s) when the transfer is in effect, TAA-as-training ensures a welfare cost persists indefinitely. *The welfare costs of TAA-as-training are the same qualitatively as the case of TAA-as-transfer. More important, the TAA efficiency cost extends beyond the single period in the more realistic training case.*

There are, of course, many coal workers who have the potential, with training, to switch to alternative occupations. Suppose, as seems likely, that because of differences in innate productivity due to such factors as age, intelligence, locational preference, etc., the switching price differs among those workers. In the absence of TAA, some would invest in training and switch occupations if the price of coal were to fall to \$225, for others the price would have to fall to \$210, and so on.

If the government were to offer a lump-sum training grant to all displaced coal workers, those who would accept could be divided into two groups. One group are those who would not have undergone training and switched occupations unless the training is financed, at least in part, by a government grant. Their switch to alternative occupations is inefficient. The second group comprises individuals who would have switched even without the government assistance. Their training and movement into alternative work is efficient. However, because the training is financed by the government rather than the trainees, two potential sources of welfare cost arise even with this group.

First, there is a welfare cost associated with raising tax dollars to finance their training. The higher the marginal welfare cost of taxation, the greater is this loss from TAA. Second, because the grant is a fixed amount, those workers may decide to undergo more extensive training than is efficient. Consider the possibility that an individual would, in the absence of TAA, abandon coal production and switch to an alternative occupation without any training if the price of coal were to fall to \$245. The new occupation might be as a shipping clerk for a truck company and would pay the individual compensation just above that available in the coal industry after the price declined, say, to \$246. With TAA, on the other hand, that individual might decide to become a computer programmer in order, at no cost to himself, to earn compensation equivalent to that which he was earning prior to trade liberalization. In our initial example, where TAA came in the form of a cash grant rather than training, the only welfare cost was due to resources leaving the coal industry when it was efficient for them to remain. Now we have the added problem that, even though it may be efficient for some resources to leave the industry, the TAA training assistance inefficiently channels them into the wrong occupation.³

³The emphasis on training rather than mere compensation has been strengthened in recent legislation. For example, legislation providing for TAA under NAFTA requires workers to be enrolled in training in order to obtain income support (U.S. Department of Labor 1998).

Some Real-World Examples

Other authors have noted the possibility that TAA distortions can undermine the gains from trade liberalization (Brander and Spencer 1994, Diamond 1982, Smith 1982). However, the full implications of this point, to our knowledge, have not been developed elsewhere. We make no attempt to develop any empirical estimate of the costs of trade distortion or to determine whether they plausibly outweigh the gains from trade liberalization. Rather, our goal is more modest: we shall present two real-world cases where it appears an inefficient substitution out of domestic production occurred.

The first case is found in the work of sociologist Ronald Dore. His 1982 study examined English textile workers who received significant lump-sum compensation if their job loss resulted from a company bankruptcy attributable to foreign competition. He noted that the size of the transfer, called a “redundancy,” was enough to finance an extended vacation to the Costa del Sol for many of the workers. He reported that many workers feared that they would lose their compensation (redundancy) if their firms failed to go bankrupt (Dore 1982: 307). It is our inference that workers may have been willing to stay in the textile industry at lower levels of real compensation because they were still better off than in their next best alternative. If, however, the next best alternative employment is sweetened by a public policy that offers the equivalent of an expense-paid vacation package, workers will increasingly be willing to abandon the textile industry in pursuit of alternative occupations. More important, that switch may well be an inefficient use of worker resources.

Another, more recent, example relates to NAFTA trade assistance. In Oregon, a timber mill laid off workers temporarily in response to reduced lumber availability, which the Department of Labor deemed to be NAFTA related. However, “the reluctance of some workers getting aid to return created a skilled labor shortage and that contributed to the mill’s decision to shut down permanently” (Richards 1997: A9). Again, it is likely that the Oregon workers would have returned to the mills had the NAFTA compensation not been available. It is also likely that their move from the lumber industry was an inefficient allocation of their labor resources.

Conclusion

TAA is not a costless way of smoothing a transition to a regime of free trade. If exiting an industry in the presence of foreign competition is “sweetened” by government transfers, then some potentially efficient competitors will exit the industry. In addition, the equity implica-

tions of TAA are peculiar. Those producers who would leave the industry in the absence of compensation are “overcompensated.” Those who exit because of the compensation are “undercompensated.” Finally, those who remain in the industry in the presence of foreign competition obtain no compensation. Both the magnitude of those compensation-induced trade distortions and their precise distributional implications are beyond the scope of this paper. However, it is clear that any policy appraisal of a trade-compensation program’s structure or desirability should surely consider those costs.

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