THE WELFARE EFFECTS OF TRADE LIBERALIZATION

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ABSTRACT

Despite an unprecedented reduction in trade barriers since World War II, some countries continue to impose sizable tariffs on forest products imports. The Vancouver Agreement of the APEC countries calls for the elimination of all tariffs on paper products by the year 2002 and on wood products by the year 2004. However, several APEC countries are strongly resisting tariff removals. Protected industries emphasize the potential job loss of trade liberalization, but liberalization also benefits consumers by lowering the cost of the good and offering a wider choice of goods. This paper presents an empirical model for comparing the benefits and costs of trade liberalization. The model is applied to the elimination of the Philippine tariff on lumber imports. The results of the analysis suggest that the welfare gains from removing the tariff substantially exceed the job displacement costs.

Keywords: Employment, forest products, international trade, labor, lumber, Philippines, tariffs, trade, trade liberalization.

THE ECONOMICS OF FOREST PRODUCTS TRADE LIBERALIZATION

Despite an unprecedented reduction in trade barriers since World War II, some countries continue to impose significant barriers to trade in forest products. For example, Asian tariffs on wood and paper products range up to 40%. In 1994, Malaysia imposed a 20% tariff on kraft linerboard, designed to preclude foreign competition with a local production facility (Moore 1998). The reasons given for these tariffs include the protection of domestic industry and the reduction of deforestation. Despite broad global support of free trade, efforts to remove specific trade barriers inevitably are vigorously resisted by the affected industry.

The 1997 Vancouver agreement of APEC (Asia-Pacific Economic Council) is the most important current effort to liberalize forest products trade. APEC is an international forum composed of 21 Pacific Rim economies, established in 1989 to promote economic integration and development in the Pacific Region.

In November 1997, President Clinton and other APEC leaders called for trade liberalization in nine sectors, one of which is forest products. All tariffs would be eliminated on paper products by 2002 and on wood products no later than 2004. APEC members agreed to conclude negotiations by June 1998 and to implement the plan in 1999. The 1998 negotiations did not go well, however, and failed to achieve significant progress towards implementing the agreement. The countries most strongly resisting trade liberalization are Japan, South Korea, China, the Philippines, and Thailand (Moore 1998). The fundamental reason for opposition to trade liberalization is that the reduction of trade barriers will impose costs on members of the protected industry, even though it benefits society as a whole.

A study by Hufbauer and Elliott (1994) illustrates the politics of protectionism. Hufbauer and Elliott estimated the welfare effects on the United States of removing the 6.51% countervailing duty (CVD) on imports of Canadian softwood lumber imposed by the United States in 1992 (the CVD was subsequently replaced by a combined quota and tariff). They estimate that the potential consumer gain from eliminating the CVD would be 459 million, the producer loss would be $264 million, and the duty revenue loss to the government would be $183 million. The job loss would be 605 jobs.

A net welfare gain of $11 million and a loss of only 605 jobs suggest that the CVD has a modest net impact on the United States. The U.S. lumber industry's resistance to removal of the CVD is explained by the welfare transfer from producers to consumers. Removal of the CVD would benefit U.S. consumers significantly more than it would cost producers ($459 million compared to $264 million), but the consumer gain would be distributed thinly amongst millions of U.S. lumber consumers, whereas the producer cost would be concentrated on a relatively smaller number of producers. Individual producers are more likely to feel pain from removal of the CVD than are individual consumers likely to notice any improvement in their welfare.

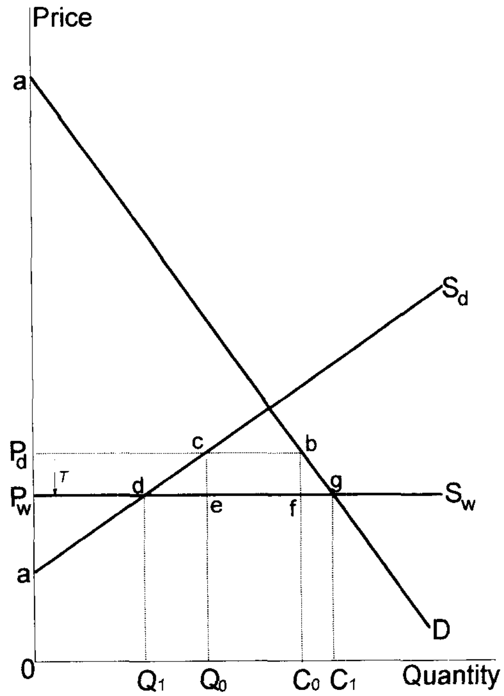

Fig. 1. The welfare effects of tariff removal.

THE TRADE LIBERALIZATION MODEL

Introduction

This section outlines the comparative static "gains-from-trade" approach developed by Leamer and Stern (1970) and Magee (1972), and elaborated upon by Szenberg et al. (1977) and Hufbauer and Elliott (1994), to measure the welfare effects of trade barriers. The method used to quantify the welfare effects follows Leamer and Stern (1970), Szenberg et al. (1977), and Roussland and Soumela (1985).

A country is assumed to impose a tariff on imports of a forest product. The question is: What will be the welfare effects of removing the tariff? There typically are three potential effects: (1) the welfare gain from eliminating the deadweight losses of the tariff, (2) the jobs lost as a result of imports replacing the domestic import-competing good, and (3) a change in the terms of trade. The model measures the economic efficiency effects of removing a trade barrier; it does not provide an answer to equity considerations, such as if and how to compensate those who suffer losses from tariff removal. That is a political question.

The model assumes that the imported and domestic good are perfect substitutes. This appears to be a reasonable assumption in the present case, and substantially reduces the data required to empirically estimate the model. This is an important consideration when data are limited. This assumption also means that there will be no terms of trade effect. The perfect substitutes model is founded on five key assumptions:

- the domestic good and the imported good are perfect substitutes,
- the supply schedule for the imported good is perfectly elastic,
- the supply schedule for the domestic good is less than perfectly elastic,
- a change in the production of the good does not affect prices for substitute goods, and
- all markets are perfectly competitive.

Figure 1 illustrates the effect of an import tariff on the market for a particular good in the importing country. Let D and S_d be the demand and supply curves for the good in the importing country. The supply curve for the imported good, S_w, is perfectly elastic at the world price, P_w. The tariff-burdened domestic price is P_d, which lies above the world price by T, the specific equivalent of the *ad valorem* tariff rate, t, where $T = P_d - P_w = \Delta P$, and $t = \Delta P/P_d$ Domestic consumption is C_0, domestic production is Q_0, imports are Q_0C_0, and consumers' surplus is area $P_d$ab.

There are three theoretical considerations that must be addressed before we proceed. First, the demand curve, D, is properly defined as a compensated demand curve; however, for present purposes, we assume that consumption enjoys a zero income effect and, as a consequence, the ordinary demand curve corresponds to the compensated demand curve. Second, I ignore any possible negative externalities of production. If there are important negative externalities, then the computations should be based upon the social cost curve, which would lie above the private cost curve by the amount of the negative externality (see Anderson 1992 and Braga 1992, for discussions of tariff effects in the presence of negative externalities). Third, I assume that removal of the tariff will have no effect on other industries. With the assumption of zero income effect, absence of negative externalities, and no impact on other industries, triangles dce and fbg represent the deadweight losses of the tariff.

If the government removes the tariff, the domestic price will decline to the world price, or to P_w. Consumers will take advantage of the lower price of the imported good and substitute it for the domestic good. Domestic producers will reduce the price of the domestic good in order to remain competitive. A new equilibrium will be established when the domestic price falls to P_w, and domestic and import prices are equal. At price, P_w, consumers will consume C_1, producers would produce Q_1, and imports will be Q_1C_1. The increase in imports comes from two sources: one is the replacement of domestic production by imports, Q_0Q_1; the other is the increase in domestic consumption of the good, C_0C_1.

The price and quantity changes following removal of the tariff increase consumers' surplus by area $P_wP_d$bg. Part of the consumer surplus gain, however, is welfare transfers from producers (area $P_wP_d$cd) and the government (area ecbf) to consumers, and hence transfers are not a gain in social welfare. The gain in welfare from trade liberalization is the sum of triangles fbg and dce, which is henceforth identified as "deadweight gain." Deadweight gain fbg arises because consumers now pay less for the good than they paid when supply was restricted by the tariff and because some consumers priced out of the market entirely by the tariff now enter the market. Deadweight gain dce is an efficiency gain from the improvement in the allocation of resources. The tariff inserts a wedge between the world price and domestic price. The increase in domestic price induces a transfer of resources toward the production of the import substitute and away from other sectors where those resources could have been used more efficiently. Removal of the tariff encourages a reallocation of resources to their highest social use.

I now develop a method for estimating the values of the two deadweight gains triangles, dce and fbg.

Mathematically,

$$\text{area dce} = D_1 = \frac{1}{2}\Delta Q \Delta P, \qquad (1)$$

where D_1 is the deadweight gain from increased production efficiency, ΔQ is the reduction in domestic production, and ΔP is the decrease in domestic price following tariff removal. From the elasticity formula,

$$Q_0Q_1 = \Delta Q = Q_0\epsilon_S\left(\frac{\Delta P}{P_d}\right), \qquad (2)$$

where

Q_0 = the quantity of domestic production with tariff

Q_1 = the quantity of domestic production without tariff
P_p = the domestic price of the good with tariff
ϵ_s = the price elasticity of domestic supply
Δ_P = the change in price following tariff removal.

Substituting the right-hand side of the first equation into the second equation and multiplying the numerator and denominator by P_d, yield:

$$D_1 = \frac{1}{2}\left[Q_0\epsilon_s\left(\frac{\Delta P}{P_d}\right)\frac{\Delta P}{P_d}P_d\right]. \quad (3)$$

Rearranging terms,

$$D_1 = \frac{1}{2}\epsilon_s\left(\frac{\Delta P}{P_d}\right)^2 P_d Q_0. \quad (4)$$

Letting $V_s = P_dQ_0$, the dollar value of domestic production with the tariff, and $t = \Delta P/P_d$, the relative change in domestic price following tariff removal, yields

$$D_1 = \frac{1}{2}\epsilon_s t^2 V_s. \quad (5)$$

Applying the same procedure to estimate the deadweight gain from consumer savings, area fbg, yields,

$$\text{area fbg} = D_2 = \frac{1}{2}\eta_d t^2 V_s, \quad (6)$$

where

η_d = the price elasticity of domestic demand for the good
V_d = the dollar value of domestic consumption with tariff, or P_dC_0.

All other variables are as defined previously.

The total deadweight gain from removing the tariff is

$$DWG = D_1 + D_2 = \frac{1}{2}t^2(\epsilon_s V_s + \eta_d V_d). \quad (7)$$

The deadweight gain from tariff removal is an annual flow beginning the year the tariff is eliminated and extending into infinity or until the tariff is reinstalled. It is necessary, therefore, to compute the discounted present value of the deadweight gains for each year from the time of tariff removal to infinity or until the tariff is reimposed. I first assume a static no-growth case in which domestic demand does not grow, as a prelude to a more realistic analysis of the growth case later on.

The present value of an infinite series of annual deadweight gains is:

$$PV_b = \frac{DWG_1}{(1 + i)^1} + \frac{DWG_2}{(1 + i)^2} + \frac{DWG_3}{(1 + i)^3} + \frac{DWG_n}{(1 + i)^n}, \quad (8)$$

where PV_b is the present value of the deadweight gains, DWG, $n \rightarrow \infty$ and i is the appropriate real social discount rate. Since no growth in benefit occurs, $DWG_1 = DWG_2 = DWG_3 = DWG_n$ and the previous equation can be reduced to $PV_d = DWG/i$, by using present value of an infinite series rule.

I now adopt the more realistic assumption that demand for the good will grow at a rate of r% annually. The formula for the deadweight gain in year j, D_j, adjusted to reflect r% annual growth in demand is:

$$DWG_j = \frac{1}{2}t^2[\epsilon_s V_s + \eta_d V_d(1 + r)^j]. \quad (9)$$

The present value of an annual deadweight gain occurring in year j is

$$PV_{b_j} = \frac{DWG_j(1 + r)^j}{(1 + i)^j}. \quad (10)$$

The present value of an infinite series of such deadweight gains is: $PV_b = DWG/d$, where $d \approx i - r$. (The exact value of d is: $d = [(1 + i)/(1 + r)] - 1$. For most purposes, the approximate relationship is acceptable. Notice that r must be less than i for the solution to be defined. If r is greater than i, then the series of benefits must be limited to a finite time period for the problem to have a solution. In that case, one must use the formula for the present value of a terminating annual series with the denominator growing at a constant annual amount, or

$$PV_b = \sum_{j=1}^{n} \frac{DWG_j[(1 + d)^n - 1]}{d(1 + d)^n}, \quad (11)$$

where n is the length of the terminating annual series.

Labor displacement costs

Removal of the tariff may also generate costs if workers in the import-competing industry are displaced because of the decrease in domestic production, Q_0Q_1. In a full-employment economy, and in the absence of wage rigidity, displaced workers would find alternative employment immediately and there would be little or no social cost associated with the reduction in production. Full employment is often assumed in studies of U.S. trade liberalization studies (i.e., Markre and Tarr 1980; Tarr and Markre 1984; Roussland and Soumela 1985; Hufbauer and Elliott 1994). In developing countries, however, there typically are high unemployment and limited alternative job opportunities. It cannot be assumed that displaced workers will soon find alternative employment. Until they do, the social opportunity cost of their displacement offsets some of the gains from lower cost imports.

There is no clear measure of the cost of labor displacement. I will use the procedure suggested by Magee (1972). Magee argues that the social cost of resource allocation caused by trade liberalization is the value added lost by the displaced labor while searching for new jobs. I use the compensation lost by workers who lost their jobs as an approximation of the value added by these workers. The assumption is that workers are compensated roughly according to their marginal value product. Admittedly, this is a strong assumption, especially if the labor market is distorted by government employment policies and labor unions. An alternative approach that may be available to analysts is to use the value added by the sawmilling industry, taken from industry surveys, if available. This is a more direct estimate of the social cost. However, I did not have access to that information for the Philippines.

The estimate of the social cost of labor displacement is accomplished in three steps: (1) estimate the reduction in production following tariff removal, Q_0Q_1; (2) estimate the number of workers displaced by the reduction in production; and (3) estimate the compensation that would have otherwise been earned by displaced workers.

Given information on the supply elasticity of the good, the amount of the tariff and the level of domestic production prior to tariff removal, the reduction in production can be found by manipulating the supply elasticity formula to yield a formula for estimating the change in production, ΔQ, as follows:

$$\frac{\Delta Q}{Q_0} = \epsilon_s \frac{\Delta P}{P_d}, \qquad \Delta Q = \epsilon_s \frac{\Delta P}{P_d} Q_0 \quad (12)$$

where $\Delta P/P_d$ is also the *ad valorem* tariff, t, so that, $\Delta Q = \epsilon_s t Q_0$ where all variables are defined as before. The number of workers displaced by the reduction in production, ΔL, is equal to $\Delta L = \alpha \Delta Q$, where α is the labor-output coefficient and ΔQ is the reduction in production. I assume that there are no economies of scale in the production of the good, so that the labor-output coefficient is constant for all levels of production. The total annual compensation lost because of labor displacement, LC, is derived by multiplying the number of workers laid off, ΔL, by the annual compensation of sawmill workers, w, or $LC = w\Delta L$.

Compensation lost is an annual cost and is incurred as long as the workers remain unemployed. It is necessary, therefore, to estimate the duration of unemployment and to compute the present value of the time stream of compensation losses. In addition, if the new job pays less than the old job, then the wage differential between the two jobs represents a second source of compensation loss, extending from reemployment into infinity. Thus, the present value of the compensation lost due to tariff removal consists of two parts: the present value of the compensation lost during unemployment; and the present value of any wage differential beginning with reemployment and extending into infinity. Mathematically,

$$PV_c = \sum_{n=1}^{j} \frac{LC_n}{(1 + i)^n} + \frac{\Delta LC}{i(1 + i)^j} \quad (13)$$

where PV_c is the present value of the social cost of displaced labor, LC is the compensation lost due to labor displacement, ΔLC is the differential between sawmill wage and wage in the new job beginning in year j, i is the social discount rate, and n is the number of years workers are unemployed.

After obtaining the estimate of the present value of labor displacement cost, the net benefit from trade liberalization can be computed as: $PV_b - PV_c$ = Net Benefit. This completes the development of the theoretical trade liberalization model. The model will now be applied to estimate the welfare effects of removing the Philippine lumber import tariff.

APPLICATION OF THE MODEL

The Philippine lumber import tariff

The model described in the previous section is now used to estimate the welfare effects of removing the 20% Philippine lumber import tariff. The Philippines satisfies the small country definition as a producer, consumer, and trader of hardwood lumber. The Philippines accounts for only 0.4% of global hardwood lumber production, 0.7% of hardwood lumber imports, and 0.4% of hardwood lumber exports (Food and Agriculture Organization 1998). It is thus reasonable to use a partial equilibrium model of trade liberalization.

The welfare effects of tariff removal depend upon the changes in lumber price and quantity following tariff removal. Unfortunately, one cannot simply compare prices and quantities before and after tariff removal, because a number of other factors that affect lumber prices, production, and consumption may have changed in the interim. Instead, one must estimate post-tariff lumber prices and quantities. To do this, I use estimates of lumber demand and supply elasticities from a Philippines lumber market model developed by the author for the Philippines Department of Environment and Natural Resources (Wisdom 1994). The estimated lumber demand (η_d) and supply (ϵ_s) price elasticities are: −1.15, and 0.67, respectively.

Welfare implications

In this section I estimate the welfare implications of removing the 20% Philippine lumber import tariff. All values are in real terms and the real social discount rate is used, thereby avoiding the difficult problem of projecting the rate of inflation. Deciding upon the appropriate real annual social discount rate is always difficult, calling for a great deal of judgment. Markandya and Pearce (1991) discuss the problem of choosing the appropriate social discount rate for analysis of projects in developing countries. The year 1996, the latest year for which information is available on Philippine lumber production, imports, and exports, is assumed to be the year targeted for tariff removal. I considered using the year targeted by APEC for tariff removals, but that would require projecting the relevant variables and divert attention from the primary thrust of this section of the paper, demonstration of the application of the model, without adding significantly to it.

Welfare gains.—The estimated 1996 values for the key parameters of the deadweight gain formula are as follows: V_s = \$49,141,000; V_d = \$153,359,000; $\eta_d = -1.15$; $\epsilon_s = 0.67$; and $t = 20\%$. The value of domestic production was obtained by multiplying Philippine lumber production in 1996 (313,000,000 cubic meters) by the average unit price of lumber exports (e.g., \$157/cum). The value of domestic consumption was obtained by subtracting lumber exports from production, plus imports. All data are taken from the Food and Agricultural Organization (FAO) forest products database (FAO 1998) and official Philippine statistical reports. The lumber demand and supply elasticities are derived from the lumber market model.

The deadweight gain in the first year is,

$$\begin{aligned} DWG_1 &= 1/2(0.2)^2 \cdot [(0.65)(\$49.14) \\ &\qquad + (1.15)(\$153.36)] \\ &= (0.02) \cdot [\$31.94 + \$176.36] \\ &= \$4.17 \text{ million.} \end{aligned} \quad (14)$$

I now calculate the present value of the perpetual series, in which demand grows 4% each year, and the social rate of discount is 10% annually. The Philippine Forest Master Plan uses two domestic lumber consumption growth scenarios: a low rate of 3.5% and a high rate of 4.4%, and a 10% real discount rate (Forest Management Bureau 1990). Krugman et al. (1992) state that the real interest rate on T-bills in the Philippines has hovered around 10% in recent years. Paris and Ruzicka (1991) use a 10% real rate to evaluate Philippine forest charges.

The present value of a perpetual series of deadweight gains, beginning at $4.17 millions, with lumber demand increasing 4% annually, and discounted at a 10% real social discount rate, is

$$\begin{aligned} PV_b &= \frac{DWG}{i - r} = \frac{\$4.17}{0.06} \\ &= \$69.50 \text{ million.} \end{aligned} \quad (15)$$

Thus the deadweight gain from removing the lumber import tariff is $69.50 million.

Labor displacement costs.—Following the procedure described earlier, the social cost of labor displacement is estimated in three steps. Recall that the reduction in lumber production in response to tariff removal, ΔQ, is equal to $\Delta Q = \epsilon_s \cdot Q_0 t$, where ΔQ is the change in lumber production, $\epsilon_s = 0.67$, $Q_0 = 313$ thousand cubic meters in 1996, and $t = 0.2$. Substituting these values into the equation yields $\Delta Q = 0.67 \cdot 313{,}000 \cdot 0.2 = 42.9$ thousand cubic meters. The average labor-to-lumber coefficient for the Philippines, based on official statistics for the three-year period, 1987–1989, is 18 workers per thousand cubic meters of lumber (National Statistical Coordination Board 1991). Substituting into the equation for change in employment yields $\Delta L = \alpha \Delta Q = 18 \cdot 42.9 = 773$ workers.

Finally, I estimate the annual compensation forgone by unemployed sawmill workers. Ramirez and Laarman (1993) estimate the average compensation of workers in the sawmilling and planning mills industry in 1988 to be $940 for large establishments (10 or more employees) and $364.81 for small establishments (fewer than 10 employees). Average annual compensation, weighted by total number of employees in each category, is $896.85. Adjusting for inflation, the estimated annual compensation in 1996 is $2,042. Multiplying annual compensation by the number of workers displaced yields the annual loss in compensation, or $LC = \$2{,}042 \cdot 773 = \$1.58$ million, where LC is the value added (compensation) lost each year the workers are unemployed.

The next step is to estimate the present value of the compensation losses for the duration of unemployment. The approach outlined in the theoretical portion of this paper is to first estimate the duration of unemployment, and then compute the present value of the time stream of compensation losses. Unfortunately, the information necessary to estimate length of unemployment and likely wage of the new job is not available for the Philippines. More to the point, firing employees is not the most likely response of sawmill operators to a reduction in lumber production. Instead, mill operators are likely to reduce the number of hours worked by some or all employees, and attempt to keep all or most at least partly employed. Thus, a more realistic scenario is for sawmill operators to adjust their labor force to the lower production levels by placing some workers on less than a full 40-hour weekly work schedule, while attempting to maintain the pool of workers as a whole. This scenario is supported by official unemployment statistics. For 1991, the distribution of employment by number of hours worked is: less than 20 employees = 8.7%, 20 to 29 employees =

10.5%, 30 to 39 employees = 12.9%, and 40 or more employees = 67.2% (National Statistical Coordination Board 1991).

The average number of hours worked by those working less than 40 hours a week, weighted by the number of workers in each category, is 25 hours. I assume that workers affected by the reduction in lumber production do not lose their jobs but, instead, experience a reduction in hours worked weekly from 40 to 25 hours, or a 37.5% reduction in hours worked. A combination of reduced number of hours worked and compensation per hour is possible. It also is possible that some workers would lose their jobs completely, and it is unlikely that the reduction in compensation will be precisely proportional to the reduction in hours worked, because of fixed labor costs. All things considered, however, the assumption that reduced labor demand will be accomplished by an across-the-board 37.5% reduction in hours worked seems reasonable.

Recall that the estimated average compensation rate in 1994 for sawmill workers is \$2,042. If compensation of workers affected by the reduction in lumber production is reduced by 37.5%, or to \$1,276, the social cost of this reduction is \$766 annually. If this differential persists into the foreseeable future, the present value of this perpetual annual series of compensation losses by displaced sawmill workers due to tariff removal, discounted at 10%, is \$7,660 per worker. Multiplying the present value of compensation loss per worker by the total number of workers affected, I obtain an estimate of the total present value of social cost of labor displacement attributable to removal of the lumber import tariff, or PV_c = \$7,660·773 = \$5.92 million.

This procedure overstates labor displacement costs to the extent that some workers will seek and find alternative full-time employment. There is, however, no objective basis for estimating either the number of workers that will do this or when they will obtain full employment.

The net present value of tariff removal.— The net present value of removing the lumber import tariff PV_{nb}, is the positive efficiency gains from trade, PV_b, less the reduction in value added by workers displaced by the reduction in production, PV_c, or, $PV_{nb} = PV_b - PV_x$ = \$69.50 million − \$5.92 millions = \$63.58 million. This is a 12:1 benefit-cost ratio, indicating a significant social benefit to the Philippines from removing the tariff. Labor displacement costs, while significant, are overwhelmed by the benefit from trade. The harsh economic reality is that labor is in ample supply in the Philippines, whereas hardwood lumber is increasingly scarce, largely because of the combined effect of restrictions on domestic timber harvesting and the lumber import tariff. Thus, the social opportunity cost of the jobs lost is modest compared to the social opportunity cost of the artificially scarce lumber.

SUMMARY AND CONCLUSIONS

A comparative statics model is developed and used to measure the welfare effects of removing the Philippine lumber export tariff. The major strengths of the model are that it directly compares the gains from trade with the labor displacement costs of trade, and computes the discounted present value of both the benefits and costs from the time the trade restriction is removed into the future, or until the restriction is reimposed. The model is flexible and can be applied with minor modification to a broad range of trade liberalization actions, such as the removal of log and lumber export bans. The model can also be modified for use in spatial price equilibrium models that involve several demand and supply regions. Given sufficient information, multiple market levels can also be included (e.g., timber harvesting, furniture manufacturing). The model has the advantage of simplicity and modest data requirements. Its modest data requirements make it especially attractive for use in small economies with limited information on domestic forest products production, prices, and trade.

The model has important limitations that must be kept in mind when deciding whether to use it and in interpreting the results. The model assumes that the imported good and domestic good are perfect substitutes even though in practice it is likely that the imported forest product will be an imperfect substitute for the domestic good. The model does not consider impacts that may occur outside the industry whose protection is removed, or the possible change in environmental externalities associated with domestic production of the protected good if the trade restriction is removed. Modeling these broader effects would require a significantly more complex model, such as a computable general equilibrium model, or at the least, a multi-market level model.

Most importantly, however, the model does not address the equity considerations of the welfare transfers if trade is liberalized. The model demonstrates that the welfare gain by consumers exceeds the welfare loss of sawmill workers; that is, consumers could compensate workers for their loss and still have some gain left over. The questions of whether, in fact, workers should be compensated, and if so, how, is a political question. It is a very important question. The gains from trade model constitute only one piece of information decision-makers should use in deciding whether or not to remove the lumber export tariff. In that sense, the model can make a useful contribution to the often acrimonious debate over the tradeoff between the gains from trade and employment costs of trade liberalization proposals. The model has the considerable virtue of presenting commensurate measures of the potential gains from trade and job losses, thereby facilitating the evaluation of the net effect of proposed trade liberalization.

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