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Technical Annex

Recent Developments in the US–Canadian Softwood Lumber Disputes

Stephen Devadoss
Department of Agricultural Economics, University of Idaho

Angel Aguiar Román
Department of Agricultural Economics, University of Idaho

This document is the technical annex to the full paper "Recent Developments in the US–Canadian Softwood Lumber Diputes" which is available separately.

In this annex we present a graphical analysis to examine the welfare implications of the U.S. tariff and determine the winners and losers. Consider a two-country (the United States and Canada) trade model. The United States is the importing country and Canada is the exporting country. The analysis could be extended using a mathematical approach to cover many countries in a spatial equilibrium trade model. We start with the scenario of no tariffs, then examine a tariff scenario (corresponding to the 27.2 percent tariff), and analyze the effect of reduction of this tariff to 13.5 percent (figure 1).

The free trade price (P_1) is determined by the intersection of excess supply and excess demand. At this free trade price, the United States produces Q_1 and consumes Q_6 amounts of softwood lumber, and the difference between demand and supply equals imports. Canada produces Q_{12} and consumes Q_7 amounts of softwood lumber,

and the difference between supply and demand equals exports. U.S. imports equal Canadian exports in this two-country model.

As a result of the U.S. imposition of the 27.2 percent *ad valorem* tariff, the excess demand curve rotates down to ED'. Price in the United States increases to P_2 as imports are restricted. A higher price benefits producers and hurts consumers. As a result of this price increase, production rises to Q_3 and consumption falls to Q_4. Because of the price increase, U.S. producers gain by areas A and E, and consumers lose by A, B, C, D, E, F, G, H, I, and J (see also table 1). The U.S. government receives tariff revenues equal to areas C, H, and K. Consumers' loss less the sum of producers' gain and tariff revenues is the deadweight loss, which is equal to the negative areas B, G, F, D, I, and J, and positive area K. Specifically, areas B, G, and F represent production inefficiency as resources from other efficient uses are drawn to the inefficient lumber industry. Areas D, I, and J represent consumption inefficiencies as the consumers have to spend more on softwood lumber instead of on other goods.

U.S. tariffs lower the prices in Canada to P_4 as Canada cuts down its exports to the United States. As a result of this price decrease, production falls to Q_{10}, and consumption rises to Q_9. The welfare analysis for Canada shows that Canadian producers lose areas L, M, N, O, P, Q, R, S, T, U, and V. Canadian consumers gain areas L, M, Q, R, and S. Producers' loss minus consumers' gain is represented by areas N, O, P, T, U, and V.

Table 1 Welfare Analysis of the U.S. Tariff (27.2%) on U.S. and Canadian Lumber Markets.

	United States	Canada
Change in producer surplus	+ (A+E)	- (L+M+N+O+P+Q+R+S+T+U+V)
Change in consumer surplus	- (A+B+C+D+E+F+G+H+I+J)	+ (L+M+Q+R+S)
Tariff revenue	+ (C+H+K)	
Net change in welfare	- (B+D+F+G+I+J) + K	- (N+O+P+T+U+V)

In response to the WTO rulings, the United States is planning to reduce the tariffs to about half of the current level, i.e., from 27.2 to 13.5 percent (*Spokesman-Review,* 2004). As a result of this tariff reduction, the excess demand curve rotates up from ED' to ED''. This causes U.S. prices to decline from P_2 to P_3 and Canadian prices to increase from P_4 to P_5. These price changes will affect producers and consumers in both countries. Extending the welfare analysis, we can conclude that the reduction in

tariffs will lower U.S. prices and reduce both U.S. producers' gain and U.S. consumers' loss. In Canada, prices will rise, producers will regain some of their losses, and consumers will lose some of their gains.
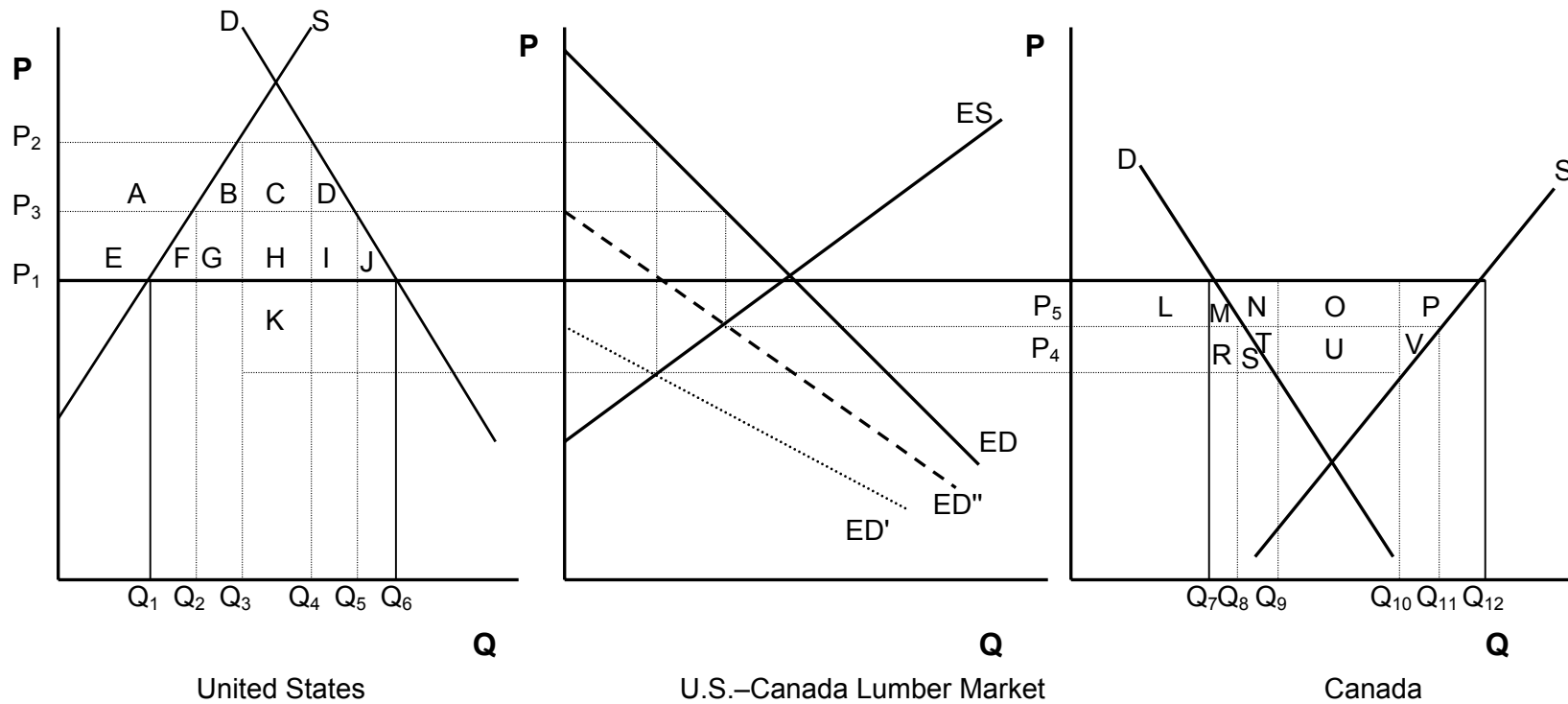
Figure 1: Effects of U.S. Tariffs on U.S.–Canadian Lumber Market