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Dynamics of the U.S.-Canada Softwood Lumber Trade: Market and Welfare Effects of the 2006 Softwood Lumber Agreement

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This article examines the effects of macroeconomic variables (i.e., housing starts, disposable income, and the exchange rate), market variables (i.e., lumber price and wage rate) and the 2006 Softwood Lumber Agreement (SLA06) on U.S. lumber imports from Canada. It also looks at the welfare consequences of the SLA06. Results suggest that macroeconomic variables are more important than lumber price in determining the bilateral trade in softwood lumber. It is also found that, although the SLA06 has a significant negative effect on lumber imports from Canada, the market and welfare impacts of the trade restriction are moderate.

Keywords: exchange rates, housing starts, softwood lumber trade, trade restrictions, U.S. import demand

Introduction

Since the early 1980s, a number of disputes concerning softwood lumber trade have arisen between the United States and Canada. The very latest trade dispute between the two countries has come as a result of the expiration of the 1996 Softwood Lumber Agreement (SLA96; April 1996-March 2001), which imposed a tariff-regulated quota regime on Canadian lumber. In April 2001, U.S. producers filed countervailing (CV) and antidumping (AD) petitions, claiming that subsidized and below-cost Canadian lumber was being dumped on the U.S. market, harming the U.S. lumber industry. The International Trade Commission issued its finding that the U.S. lumber industry is threatened with material injury by imports of Canadian lumber. As a result, in May 2002, the U.S. government imposed CV (18.79 percent) and AD (8.43 percent) duties on Canadian lumber. Canadian interests, including the Canadian federal and provincial governments and Canadian producers and exporters, challenged various aspects of these and other related unfair trade and injury determinations before the United States Court of International Trade and World Trade Organization and North American Free Trade Agreement panels. After several years of negotiations to resolve the protracted multi-forum litigation, in September 2006, the United States and Canada signed the 2006 Softwood Lumber Agreement (SLA06), which involves export charges and volume restraints to regulate Canadian lumber. The SLA06 will be in force for a term of seven years, with an option to renew for two additional years.

The objective of this article is to examine the effect of the most recent episode of the U.S. trade restrictions – that is, the 2006 Softwood Lumber Agreement – on U.S. lumber imports from Canada. Although the literature on the economic consequences of the lumber trade dispute is fairly large (for example, Wear and Lee, 1993; Myneni, Dorfman and Ames, 1994; Lindsey, Groombridge and Loungani, 2001; Zhang, 2001; Baek and Yin, 2006), little attention has been paid to inclusion in their models of an appropriate measure (i.e., disposable income) of the likely impact of economic activity on the demand for lumber. More specifically, U.S. demand for lumber is mainly derived from demand for new homes, and repair and remodeling; the former is determined by housing starts, whereas the latter is decided by disposable income (Uri and Boyd, 1990; Sarker, 1996; Baek and Yin, 2006). These two factors are key measures of the likely effects of economic activity on lumber consumption and imports. Hence, inclusion of both variables in an empirical model would be desirable to explain lumber demand accurately; so far, however, studies evaluating U.S.-Canada lumber trade have frequently overlooked this issue. Bearing this in mind, therefore, our empirical focus is placed on analyzing the dynamic effects of the SLA06 together with macroeconomic variables such as housing starts, disposable income and

exchange rate, and lumber market variables such as lumber price and wage rate, as well as the consequent effects of the SLA06 on U.S. consumer costs and producer profits.

The 2006 Softwood Lumber Agreement

The SLA06 stipulates obligations of the United States and Canada, export measures and a surge mechanism. Under the SLA06, the United States agrees to revoke the CV/AD duty orders of May 2002 and fully to refund all CV/AD duty cash deposits arising from these orders (approximately US$5 billion). In addition, the United States commits for the duration of the SLA06 not to impose other trade remedies. In return, Canada agrees to impose a mixture of export charges and volume restraints on its lumber exports to the United States. The main points of the SLA06 are summarized as follows.

Export Measures

Canadian regions – British Columbia (BC) coast, BC interior, Alberta, Saskatchewan, Manitoba, Ontario and Quebec – can choose between two export-charge regimes for periods of three years: (1) *Option A*: an export charge with the charge varying with the prevailing monthly price or (2) *Option B*: an export charge plus volume restraint, where both the rate and the volume restraint vary with the prevailing monthly price. The prevailing monthly price means the most recent four-week average of the weekly framing lumber composite (FLC) prices (produced by Random Lengths Publications Inc.) available 21 days before the beginning of the month to which the prevailing monthly price shall be applied (Annex 7A). Under both options, export charges are imposed when the prevailing monthly price is at or below US$355 per thousand board feet (MBF), and the charges increase as the price declines (table 1). In addition, for the purpose of preserving Canada's share of the U.S. market and addressing increases in third-country share of the U.S. market, Canada can retroactively refund export charges (up to the equivalent of a 5 percent charge) if (1) the third-country market share increases by at least 20 percent, (2) Canadian market share decreases, and (3) U.S. domestic producers' market share increases.

Surge Mechanism

Each region that has elected *Option A* will be allocated a share of exports based on its historic share of the U.S. market, which is referred to as *trigger volume.* Specifically, a region's trigger volume for a particular month is determined by multiplying the total monthly expected U.S. consumption (EUSC) by the region's U.S. market share, and then multiplying that product by 1.1 (Annex 8). The monthly EUSC means the

volume of softwood lumber expected to be consumed in the U.S. in a particular month (Annex 7D). The formula for calculating the monthly EUSC is EUSC = [USCR|12] × SAF, where USCR is U.S. consumption for the latest 12-month period and SAF is the seasonal adjustment factor for the pertinent month. If the volume of exports from a region in a month exceeds 110 percent of its trigger volume, then the export charge on the volume from that region during that month will be increased by 50 percent.

Arguments: Canada's Breach of the SLA06

In August 2007, the United States submitted its statement of the case regarding Canada's breaches of the SLA06 to the London Court of International Arbitration (LCIA). The first key issue that the two parties argued is whether the SLA06 requires Canada to apply the complete calculation of the expected U.S. consumption (EUSC), including the adjustment to EUSC (application of paragraph 14 of Annex 7D), to all exporting regions, that is, to Option A regions (BC coast, BC interior and Alberta) in addition to Option B regions (Saskatchewan, Manitoba, Ontario and Quebec). The full text of paragraph 14 of Annex 7D reads as follows: "If U.S. Consumption during a Quarter differs by more than 5 percent from Expected U.S. Consumption during that Quarter, as calculated under paragraph 12, the calculation of Expected U.S. Consumption for the following Quarter for which quotas are being determined shall be adjusted as follows. Specifically, the difference (in MBF) between U.S. Consumption and Expected U.S. Consumption for the Quarter shall be divided by 3 and the amount derived shall be added to (if U.S. Consumption was more than expected) or subtracted from (if U.S. Consumption was less than expected) the monthly Expected U.S. Consumption calculated under paragraph 12 for each month in the next Quarter for which quotas are determined."

The second key argument is whether Canada was required to begin to apply the complete calculation of the EUSC as of the agreement's effective date (January 2007 vs. July 2007). In the second half of 2006, for example, actual U.S. lumber consumption was more than 5 percent below estimates of EUSC as calculated under paragraph 14 of Annex 7D. This means that adjusted EUSC should have been used instead of unadjusted EUSC in the formula for determining quota volume for the Option B regions during the first half of 2007. Claiming that no adjustment under paragraph 14 of Annex 7D is required for the Option B regions until July 1, 2007, however, Canada has begun to apply adjusted EUSC to the Option B regions only since July 2007. During the period from January 2007 through June 2007, therefore, the Option B regions might have over-exported their lumber to the United States (see the later section Market and Welfare Impact of the SLA06).

The LCIA concluded that the SLA06 does not obligate Canada to apply the complete calculation of the EUSC to Option A, but that the SLA06 obligates Canada to make the calculation of the EUSC for all export measures for softwood lumber as of January 1, 2007. The decision can thus be interpreted to mean that the SLA06 obligates Canada to calculate EUSC to determine quota volumes of softwood lumber imports from Canada's Option B regions pursuant to paragraph 14 of Annex 7D as of January 1, 2007.

Dynamics of the U.S.-Canada Softwood Lumber Trade

It is worth emphasizing here that, for a careful analysis, it is important to construct the U.S. lumber market properly and to identify the effects of the trade restrictions and other market variables on U.S. lumber imports from Canada. For this purpose, we have estimated the effects of the trade restrictions (the MOU, the SLA96 and the SLA06), macroeconomic factors (housing starts, disposable income and exchange rate) and lumber market factors (lumber price and wage rate) on U.S. lumber imports from Canada. The results show that all macroeconomic and market variables are statistically significant at the 5 percent level and have the expected signs (table 2). More specifically, a positive coefficient of the lumber price on lumber imports from Canada suggests that these imports tend to increase as the domestic lumber price rises. Positive coefficients of housing starts and disposable income on lumber imports from Canada indicate that an increase in real domestic income and economic activity leads to an increase in U.S. imports of Canadian lumber through the increased demand for new homes and remodeling and repairs. A negative coefficient of the wage rate on imports of lumber from Canada shows that labour is a complement to imported lumber from Canada. A positive coefficient of the exchange rate on imports of lumber from Canada suggests that the weakening Canadian dollar makes the price of Canadian lumber cheaper in the U.S. market and leads to an increase in lumber imported to the United States from Canada. Notice that the effect of the lumber price on imports of Canadian lumber is found to be much smaller than that of market and macroeconomic variables such as housing starts, disposable income and exchange rate. As the lumber price increases by 1 percent, for example, imports of Canadian lumber increase by approximately 0.14 percent. Given a 1 percent increase in housing starts and disposable income, on the other hand, imports increase by approximately 0.50 percent and 0.81percent, respectively.

Our results also show that the MOU, covering January 1990-September 1991, had a negative effect of 6 percent on Canadian lumber imports (see the data section in the technical annex to this article for detailed discussion of dummy variables).

Additionally, our results show that the SLA06 covering July 2007-December 2007 (SLA06-Π) depressed Canadian lumber imports by around 9 percent, whereas the SLA06 covering January 2007-June 2007 (SLA06-I) had little impact. This finding thus provides evidence to support the hypothesis that Canada (i.e., Option B regions) might have over-exported lumber to the United States under the SLA06 during the period from January 2007 to June 2007 by failing to compute the correct export volumes (i.e., quota volume). Finally, SLA06-III is found to have had a significant and negative impact, suggesting that the financial crisis combined with the recent trade restriction reduced imports of Canadian lumber by as much as 26 percent for the period January 2008-December 2009. Notice that the SLA96 is found to be statistically insignificant even at the 10 percent level, indicating that the SLA96 had little impact on the lumber market.

Market and Welfare Impacts of the SLA06

Our results show that the SLA06 did take effect in the second half of 2007, reducing Canadian exports by 9 percent (table 2).[1] Given that result, we now turn our attention to assessment of potential market and welfare impacts of the SLA06 during the period from July 2007 through December 2007. For this purpose, we simulate what the market conditions would have been if the SLA06 had not been imposed. Before proceeding, it is worth mentioning that it is impossible to estimate the effects of *Option A* and *Option B* separately due to unavailability of the needed data and export price elasticities for different regions. For analytical convenience, therefore, it is assumed that the SLA06 would take the form only of a 15 percent export charge, or *Option A*. Since lumber prices were below $315/MBF during the year (table 1), and given that provinces that chose *Option A* (BC coast/interior and Alberta) account for more than 70 percent of Canadian lumber exports to the United States, this assumption may not be unreasonable. Certainly, it should be understood that a uniform 15 percent export charge would be an upper bound of potential market and welfare changes.

We calculate the market and welfare impacts of the SLA06 using the price elasticities estimated from previous studies (table 3). For sensitivity analysis, two different (i.e., highest- and lowest-) price elasticities are used to evaluate the welfare impacts of the SLA06-Π: (1) case I (-0.08 for domestic demand, 0.13 for domestic supply and 0.18 for Canadian exports) and (2) case II (-0.174 for domestic demand, 0.70 for domestic supply and 0.917 for Canadian exports). The results for case I, for example, show that Canadian exports would have been reduced by 682 MMBF during the six months (2007:7-12), and market price would have been $43 higher per MBF.

As such, U.S. production would have been boosted by 360 MMBF. Together, these results could lead to a U.S. producer gain of $705 million. Likewise, Canadian producers could have gained $882 million. Compared with the welfare impacts of other trade restrictions such as the MOU and the SLA96 obtained by previous studies (e.g., Wear and Lee, 1994; Zhang, 2001; Baek and Yin, 2006), the SLA06 has only moderate market and welfare consequences on the lumber market. Notably, the Canadian producer gain is sensitive to changes in the price elasticity of Canadian export supply.

Moreover, recall the LCIA's decision that the SLA06 obligates Canada to calculate EUSC to determine quota volumes of softwood lumber imports from Canada's Option B regions pursuant to paragraph 14 of Annex 7D as of January 1, 2007. For completeness, therefore, it is interesting to assess whether the Option B regions over-exported their lumber to the United States in the first half of 2007. Our assessments show that over-exports from Option B regions did occur for the period from January 2007 through June 2007; in aggregate, the over-exports by the regions amounted to 155.3 MMBF, with 76.2 MMBF from Ontario and 74.5 MMBF from Quebec (table 4).[2] Additionally, the welfare impacts show that the over-exports displaced U.S. production by 82.8 MMBF and exports from other Canadian provinces by 25.1 MMBF.[3] Lumber prices were depressed by about 2 percent on a monthly basis. So U.S. producers lost $91 million. In Canada, the Option B region gained $3.7 million from its over-exports to the United States – the difference between its total revenue actually received and its total revenue that would have been received if the SLA06 had been applied properly – whereas the other region, not subject to the SLA06 export restraint, lost $5.8 million.

Concluding Remarks

The main purpose of this article is to assess the market and welfare impacts of the 2006 Softwood Lumber Agreement. A better understanding of the dynamic structure of the North American lumber market is particularly important in light of the accurate measurement of the effects of the trade restrictions and macroeconomic/market factors on imported volumes from Canada. We examine the dynamic effects of the lumber price, housing starts, disposable income, wage rate and exchange rate on U.S. lumber imports from Canada and assess the economic consequences of the SLA06. Our empirical results show that macroeconomic variables are more important than lumber price in determining the bilateral trade in softwood lumber. It is also found that the SLA06 had a significant effect on the lumber market in the second half of 2007, which decreased Canadian exports by

approximately 9 percent; however, the overall efficiency costs of the SLA06 are moderate.

References

Baek, J., and R. Yin. 2006. U.S.-Canada softwood lumber trade: measuring the market and welfare impacts of restrictions. *Forest Science* 52(4): 390-400.

Lindsey, B., M. A. Groombridge, and P. Loungani. 2000. The economic impact of trade protection of the softwood lumber industry. Washington, DC: CATO.

Myneni, G., J. H. Dorfman, and G. C. W. Ames. 1994. Welfare impacts of the Canada–United States softwood lumber trade dispute: beggar thy consumer trade policy. *Canadian Journal of Agricultural Economics* 42: 261-271.

Sarker, R. 1996. Canadian softwood lumber export to the U.S.: a cointegrated and error corrected system. *Journal of Forest Economics* 2: 205-231.

Uri, N. D., and R. Boyd. 1990. Estimating the regional demand for softwood lumber in the United States. *Northern Central Journal of Agricultural Economics* 12: 137-147.

Wear, D. N., and K. J. Lee. 1993. United States policy and Canadian lumber: effects of the 1986 Memorandum of Understanding. *Forest Science* 39: 799-815.

Zhang, D. 2001. Welfare impacts of the 1996 United States–Canada softwood lumber trade agreement. *Canadian Journal of Forest Research* 31: 1958-1967.

Table 1 Export Measures under the SLA06

Prevailing monthly price	Option A: export charge (% of export price)	Option B: export charge with volume restraint (% of export price)
Over $US355	No export charge	No export charge and no volume restraint
$US336-355	5%	2.5% export charge + maximum volume that can be exported to the U.S. cannot exceed the region's share of 34% of expected U.S. consumption for the month
$US316-335	10%	3.0% export charge + maximum volume that can be exported to the U.S. cannot exceed the region's share of 32% of expected U.S. consumption for the month
$US315 or under	15%	5.0% export charge + maximum volume that can be exported to the U.S. cannot exceed the region's share of

Note: The prevailing monthly price means the most recent four-week average of the weekly framing lumber composite (FLC) prices (produced by Random Lengths Publications Incorporated) available 21 days before the beginning of the month to which the prevailing monthly price shall be applied (Annex 7A). The monthly EUSC means the volume of softwood lumber expected to be consumed in the U.S. in a particular month (Annex 7D).

Table 2 Effects of the Trade Restrictions and Macroeconomic Factors on U.S. Softwood Lumber Imports from Canada

Dependent variable: U.S. lumber imports from Canada		
Independent variables	**Coefficient**	**t-statistic**
Lumber price	**0.142**	**4.072****
Housing starts	**0.497**	**12.827****
Disposable income	**0.811**	**6.010****
Wage rate	**-0.957**	**-6.671****
Exchange rate	**0.606**	**6.360****
MOU **(Jan. 1990-Sept. 1991)**	**-0.059**	**-2.418****
SLA_{96} **(Apr. 1996-Mar. 2001)**	**-0.019**	**-1.484**
$SLA_{06\text{-}I}$ **(Jan. 2007-Jun. 2007)**	**-0.0163**	**-0.489**
$SLA_{06\text{-}II}$ **(Jul. 2007-Dec. 2007)**	**-0.091**	**-2.437****
$SLA_{06\text{-}III}$ **(Jan. 2008-Oct. 2009)**	**-0.262**	**-5.789****
Constant	**-1.894**	**-1.417**

Note: ** denotes significance at the 5 percent level.

Table 3 Results of Market and Welfare Impacts under the SLA06 (2007:7-2007:12)

		Case I		Case II	
		Total change	**Monthly change**	**Total change**	**Monthly change**
Market impact	Consumption (MMBF)	-322.0	-113.6	-181.0	-30.2
	Production (MMBF)	+359.6	+59.9	+500.5	+83.4
	Canadian exports (MMBF)	-681.6	-113.6	-681.6	-113.6
	Price (US$/MBF)		+42.9		+11.1
Welfare impact	U.S. consumer surplus	-1,044.4	-174.1	-269.2	-44.8
	U.S. producer surplus	+704.8	+117.4	+181.4	+30.2
	U.S. net impact	-339.6	-56.6	-87.8	-14.6
	Canadian producer surplus	+881.6	+146.9	-150.1	-25.0
	Canadian net impact	+1,171.1	+195.2	+139.4	+23.2

Note: For sensitivity analysis, different price elasticities estimated from previous studies are adopted for case I (demand: -0.08; domestic supply: 0.13; and Canadian exports: 0.18) and case II (demand: -0.174; domestic supply: 0.70; and Canadian exports: 0.917). All values for welfare impact are in US$ million 2005.

Table 4 Results of Market and Welfare Impacts for 2007:1-2007:6 under Option B

		Total change	**Monthly change**	**% change**
Market impact	Consumption (MMBF)	+72.5	+18.1	+0.3
	Production (MMBF)	-82.8	-20.7	-0.5
	Canadian exports (MMBF)	+155.3	+38.8	+2.0
	Other exports (MMBF)	-25.1	-6.3	-2.8
	Price (U.S.$/MBF)		-7.5	-1.9
Welfare impact	U.S. consumer surplus	+132.2	+33.1	+0.6
	U.S. producer surplus	-91.3	-22.8	-2.1
	U.S. net impact	+40.8	+10.2	+0.1
	Canadian producer surplus	+3.7	+0.9	+0.2
	Other producer surplus	-5.8	-1.5	-1.1
	Canadian net impact	-2.1	-0.6	-0.1

Note: All values for welfare impact are in US$ million 2005. Price elasticities estimated from Baek and Yin (2006) are used (demand: -0.15; domestic supply: 0.25; and Canadian exports: 0.18). Quantity changes are relatively insensitive to price elasticities estimated from other studies. Other exports (producer surplus) are the volume of Canadian exporters (provinces) that are not subject to the SLA06 such as the Maritimes and the Northwest Territories.

1. It is assumed here that, without the financial crisis that occurred in 2008, the SLA06 would have depressed imports of Canadian lumber by 9 percent, as was found from the dummy for $SLA_{06\text{-}\Pi}$ (July 2007-December 2007).
2. Over-exports occurred mainly in the first quarter of 2007 and for the provinces of Ontario and Quebec; there was no single incident of over-export by Saskatchewan, and excessive exports from Manitoba were very small (1.4 MMBF). For the sake of brevity, the calculation procedures are not reported here.
3. To assess the welfare impact of Canadian over-exports, we first simulated what market conditions would have been if there had been no Canadian breach of SLA06. We did this using actual consumption, production, Canadian exports, and market price during the time. Additionally, Canadian provinces are divided into two groups – one group that is subject to SLA06 export measures (both *Option A* and *Option B* regions) and another that is not subject to SLA06 export measures (the Maritimes and the Northwest Territories). Then, assuming that the *Option A* regions (BC Coast/Interior and Alberta) did not over-export softwood lumber to the U.S. during the time under consideration, we estimated the impact of the over-exports from the *Option B* region on the U.S. and Canadian markets.