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The United States–Canada softwood lumber trade: An actual versus optimal export tax



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ABSTRACT

By developing a two-country two-stage game model, this study examines an optimal level of export tax under the framework of the 2006 United States (U.S.)–Canada Softwood Lumber Agreement (SLA 2006). The theoretical results suggest that marginal lumber production costs in Canada and U.S. lumber production capacity along with linear demand parameters determine an optimum rate of export tax on Canadian lumber exports to the U.S. The empirical estimation reveals that the monthly optimal export tax during the SLA 2006 period follows the actual export tax closely with a monthly rate ranging from –4% to 19%.

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1. Introduction

The U.S.–Canada softwood lumber trade dispute has been a major political issue between the United States (U.S.) and Canada over the last several decades. It is one of the largest inter-country trade disputes, as two to three billion dollars are transacted each year in the softwood lumber trade between the two countries. The different forestland ownership system in the U.S. and Canada is considered to be the main underlying reason of this trade dispute between two friendly nations. Almost 60% of forests in the U.S. are owned by the private sector, and competitive auction-bid market determines the timber price. However, around 95% of Canadian forests are under the ownership of federal and provincial governments (Abboushi, 2010), and Canadian provincial governments, by and

large, determine the timber price administratively¹ (Zhang, 2007). Pointing to the administrative pricing system of Canada, U.S. lumber producers argue that the stumpage price in Canada has been subsidized and that subsidized Canadian lumber shipments are dumped in the U.S. market. In order to resolve this trade dispute, there have been several temporary bilateral agreements since late 1980s including five-year Memorandum of Understanding (MOU) for the period of 1987–1991, Softwood Lumber Agreement 1996 for the period of 1996–2001, and Softwood Lumber Agreement (SLA) 2006 for the period of 2006–2015.

SLA 2006 is a latest transitory agreement between the U.S. and Canada from October 2006 to October 2015 to regulate Canadian lumber exports to the U.S. SLA 2006 specifies two options to Canadian lumber exporting provinces to the U.S. Option A is a price-driven variable rate of export charge ranging from 0–15% of the prevailing monthly price, and option B entails an export charge of 0–5%

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¹ British Columbia and Quebec started implementing an auction-bid pricing system similar to that of the U.S. for approximately 20% of the total timber harvests (Parajuli et al., 2015).

combined with a volume restraint (SLA, 2006). Alberta and British Columbia, two major Canadian lumber-producing provinces, choose option A, while other provinces such as Manitoba, Saskatchewan, Ontario and Quebec follow option B of SLA 2006. The rate of the Canadian export tax and/or volume restraint is primarily a function of the prevailing monthly price. The prevailing monthly price, as defined in SLA 2006, is a four-week average of Random Lengths framing lumber composite prices available 21 days before beginning of the month. If the prevailing monthly price is above \$US 355/thousand board feet (mbf), free trade of softwood lumber prevails between the U.S. and Canada, and Canada has to impose a flat 15% export tax once the monthly lumber price is under \$US 315/mbf.

The main purpose of this study is to determine an optimal export tax under the framework of SLA 2006 using game-theoretic tools, and uncover empirical evidence supporting our theoretical insights. While Baek (2012) and Nagubadi and Zhang (2013) reported that SLA 2006 has been able to restrict Canadian lumber shipments to the U.S., a recent empirical study by Parajuli et al. (2015) revealed that the export tax under SLA 2006 has minimal effects on the softwood lumber trade between the U.S. and Canada. Under this circumstance, it seems quite pertinent to investigate whether the export tax rate of 0–15% under SLA 2006 is economically optimal from both countries' perspectives. In other words, we aim to assess whether the level of export tax provisioned in SLA 2006 is too high or low. This study first develops a two-country two-stage game model by considering the capacity-constraint scenario of the U.S. domestic lumber production, and computes an optimum export tax rate of the U.S.–Canada softwood lumber trade. Furthermore, we estimate a monthly rate of optimal export tax by using the formula devised from theoretical analysis, and compare it with the corresponding actual monthly export tax that Canadian producers had paid as per SLA 2006.

The two-stage game model developed in this article shows that the rate of optimum export tax under the framework of SLA 2006 is primarily determined by the level of U.S. softwood lumber production capacity, marginal lumber production costs in Canada, and linear demand parameters. The higher the level of the U.S. production capacity and Canadian marginal production costs, the lower the level of the optimum export tax. Our empirical estimation reveals that during the period of SLA 2006 the monthly optimal export tax ranges from –4% to 19% with an average monthly export tax of 8%. In terms of organization of the paper, the next section presents a brief historical overview of the trade dispute, followed by a two-stage game-theoretic model and empirical estimation. The last section concludes with discussion.

2. Historical overview of the trade dispute

Since the late 1980s, there have been several rounds of temporary bilateral trade agreements between the U.S. and Canada with a sole objective of limiting Canadian market share in the U.S. softwood lumber market. The MOU between the U.S. and Canada was the first five-year agreement for the period of 1987–1991. It provisioned Canadian provincial governments either had to levy a 15% export tax on their lumber shipments to the U.S. or to increase prevailing stumpage prices in Canada. Another succeeding short-term agreement was SLA 1996, which was a tariff-regulated quota system of Canadian exports for the period of 1996–2001. It stipulated annual duty-free export quotas of 14.7 billion board feet (bbf) of Canadian lumber shipments to the U.S. For exports quantities of over 14.7 bbf, SLA 1996 provisioned US\$50–\$100 per mbf of the export fee on Canadian exports. Subsequently, SLA 2006 is a variable rate price-driven export tax of 0–15% coupled with a export quota system for the period of October 2006–October 2015. Besides these bilateral agreements, the U.S. Department of Commerce had placed various

unilateral import tariff duties including Countervailing duties (CVDs) and Antidumping (AD) tariffs during turmoil periods of 1991–1996 and 2001–2006. Those CVDs and ADs were province-specific variable rates ranging from a low rate of 2.11% to a high rate of 32%.

A number of studies have expounded on the U.S. softwood lumber market, Canadian lumber exports to the U.S. and effects of past trade restriction measures on the overall lumber market as well as total social welfare in both countries. Some early studies which explored the U.S. softwood lumber market and Canadian lumber exports using different modeling approaches and econometric estimation techniques were Buongiorno et al., 1979; McCarl and Haynes, 1985; Adams et al., 1986; Buongiorno et al., 1988 and Sarkar 1993. Likewise several studies primarily investigated how effective trade protection measures were under prevailing market conditions. Using Spatial and partial equilibrium analysis approaches, early studies by Boyd and Krutilla (1987), Chen et al. (1988), Wear and Lee (1993), and Myneni et al. (1994) assessed market and total welfare effects of 1986 MOU. Likewise, Lindsey et al. (2000), Zhang (2001), Zhang (2006), and Baek and Yin (2006) specifically evaluated market and welfare effects of SLA 1996. Similarly, several studies examined the effects of the U.S. retaliatory CVDs and ADs on Canadian lumber imports in the post-SLA 1996 period from 2001 to 2006 (Adams, 2003; Devadoss et al., 2005; Devadoss, 2006; Mogus et al., 2006; Song et al., 2011).

Only a few studies have evaluated the impacts of SLA 2006 in the softwood lumber trade between two countries. Baek (2012) and Nagubadi and Zhang (2013) found a significant negative long-term effect of SLA 2006 on U.S. lumber imports from Canada. Moreover, based on the analysis of the world lumber market, van Kooten and Johnston (2014) projected that with a removal of the export tax on Canadian lumber exports to the U.S., the lumber production in the U.S. would decrease by almost 1 million m³ (approximately 423.78 million board feet) and the Canadian lumber production would rise by 3.2 million m³ (1.36 billion board feet). However, a recent empirical study by Parajuli et al. (2015) revealed that SLA 2006 has minimal effects on the softwood lumber trade between the U.S. and Canada. They found that the monthly export tax per mbf has a statistically insignificant effect on Canadian lumber exports to the U.S. during the period from October 2006 to June 2014. In strike contrast, using different theoretical framework and econometric methods, a recent study by Parajuli and Zhang (2016) reported that U.S. lumber imports from Canada reduced 7.8% over the course of SLA 2006, which resulted in \$1.6 billion gain in the U.S. producer surplus and \$2.3 billion loss in the U.S. consumer surplus.

While most of the past studies investigated welfare effects of trade policies under the framework of the U.S.–Canada softwood lumber trade, only a handful of studies assessed alternative as well as optimal aspects of trade policy instruments in prevailing market scenarios. Employing the concept of forest rents and methods of rent capture, van Kooten (2002) compared the possible market implications of SLA 1996, Canadian export tax, and U.S. import tariffs. He revealed that the best policy option for Canadian lumber producers would be an export quota as provisioned in SLA 1996, because the quota rent they acquire would clearly outweigh the loss of producer surplus due to the imposition of the export quota limit. van Kooten (2002) also determined the optimal level of export quota of softwood lumber from the perspectives of Canadian producers, and showed that the U.S. lumber demand, Canadian lumber supply and transportation costs primarily determine the level of optimal export quota. Likewise, Kinnucan and Zhang (2004) simply defined the optimal export tax rate as a reciprocal of the excess demand elasticity in the U.S. Their empirical illustration depicted that the optimal export tax was 77% as opposed to the export tax of 35% imposed by Canada under SLA 1996. Similarly, employing a vertically interrelated log-lumber model, Devadoss (2008) examined the appropriate level of U.S. CVDs in retaliating against presumed Canadian subsidy policies during the period of 2001–2006. His empirical findings revealed that

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