Long-term economic impact of countervailing duties on coated free sheet paper imported by the United States from China, the Republic of Korea, and Indonesia

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Abstract

The international effects of United States countervailing duties on imports of coated free sheet paper from China, the Republic of Korea, and Indonesia were predicted with the Global Forest Products Model, up to the year 2020. The results indicate that the production of printing and writing paper in China, Indonesia, and the Republic of Korea would be lower. The trade balance would worsen in Korea and Indonesia. China, currently a net exporter would become a net importer. Concurrently, production and prices of chemical pulp would decrease substantially in China. However, because of lower prices in China, its domestic consumption of printing and writing paper would increase. In the United States, the duty would induce little increase in production or improvement of net trade. The main effect would be on the United States' source of imports. While the United States' imports of printing and writing paper from Korea, Indonesia, and China would decrease, the imports from Canada, Finland, Germany, and other sources would increase. Moreover, although imports of printing and writing paper from China would be reduced for a few years by the duty, they would start increasing again after less than a decade. The Canadian industry would gain the most from the duty. Canada's production of printing and writing paper would be nearly 9 percent higher. The United States would see some increases in producer revenues, consumer expenditures, and value-added, but they would be small compared to the increases in Canada.

In 2006, the Republic of Korea was the largest exporter of coated free sheet (CFS) paper to the United States, with exports of 427 thousand metric tons (**Table 1**). China was second with 264 thousand metric tons. Indonesia, with 50 thousand metric tons was the ninth largest exporter.

While the United States CFS imports from Korea increased 50 percent from 2002 to 2006, imports from China increased almost 7-fold, and imports from Indonesia more than tripled. The possibility that this growth was driven by government subsidies in China, Indonesia, and Korea led NewPage Corporation, a United States producer of CFS paper, and the United Steelworkers union, which represents nearly 10 thousand workers in United States CFS mills, to file a series of trade cases with the United States Department of Commerce (NewPage 2007).

On April 9, 2007, the United States Commerce Department published preliminary countervailing duty (CVD) determinations for coated free sheet imported from China, the Republic of Korea, and Indonesia (Dept. of Commerce 2007a, 2007b, 2007c). The duties are effective from April 9, 2007. For Indonesia, a 21.24 percent (ad valorem) CVD was imposed

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Table 1. — U.S. imports of coated free sheet paper, by main country of origin.

	2002	2003	2004	2005	2006
	---------- (10^3 t) ----------				
Korea, Republic of	285	343	390	378	427
China	34	50	29	147	264
Finland	129	167	198	168	203
Canada	261	241	268	272	144
Germany	49	84	145	98	123
Japan	90	89	90	93	84
Italy	95	77	71	75	82
Austria	80	64	51	36	57
Indonesia	11	29	30	27	50
Spain	20	15	26	36	49
All others	174	162	128	78	87

Source: U.S. Dept. of Commerce, Bureau of Census.

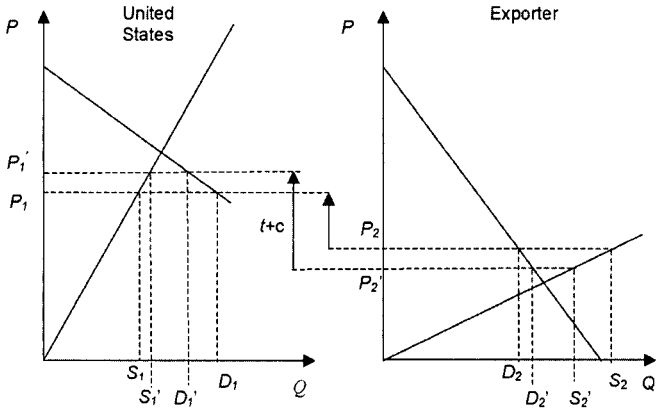

Figure 1. — Theoretical effect of a countervailing duty on the production, prices, and trade of coated free sheet paper in the United States and its suppliers.

on all Indonesian CFS exporters (Dept. of Commerce 2007b).

For the Republic of Korea, margins for three companies (En Paper Mfg. Co., Kyesung Paper, and Moorim Paper Co.) were determined to be of minimum importance. These companies do not face a CVD. For Hansol Paper Co. and all other Korean exporters a 1.76 percent duty was imposed (Dept. of Commerce 2007a). For this study we assumed a 1.5 percent countervailing duty on Korean coated free sheet paper.

For China, a CVD of 20.35 percent was imposed on Gold East Paper, 10.90 percent on Shandong Chenming Paper Holdings, and 18.60 percent on all other exporters (Dept. of Commerce 2007c). In 2006, US$116.3 million (51.8%) of China's US$224.6 million in coated free sheet exports was from Jiangsu province (China Customs 2007), where Gold East Paper is located. There were no reported exports from Shandong province. A duty on Chinese coated free sheet paper of 19.5 percent[1] was assumed here.

The objective of this study was to predict the long-term (up to 2020) effects of the countervailing duties on the pulp and paper markets in the United States and its main suppliers of coated free sheet paper. In particular this paper focuses on the extent to which the CVD would achieve its aim of reducing exports from China, Korea, and Indonesia to the United States, and stimulate the United States' industry.

Methods

The effects of the countervailing duties were simulated with the Global Forest Products Model (GFPM, Buongiorno et al. 2003), a dynamic spatial equilibrium model that predicts production, consumption, trade, and prices of 14 product groups in 180 countries. The mathematical formulation of the model and the most recent improvements are in Zhu et al. (2006a, 2006b). The GFPM has been applied in several previous studies, for example to predict the effects of accelerated tariff liberalization (Zhu et al. 2001), of the Free Trade Area of the Americas on forest resources (Turner et al. 2005), and of forest bio-security policies (Prestemon et al. 2006, Li et al. 2007).

Among the variables of the GFPM are production, imports, exports, and prices of printing and writing paper, which includes CFS papers. Like other products in the GFPM, the demand for printing and writing paper is represented by econometric equations, while supply is represented by activity analysis. The demand-supply equilibrium and the corresponding trade and prices in every projected year are found by maximizing the welfare of the world forest sector: the value of the products to consumers, minus the cost of production and transport. The method of this study consisted essentially in changing the transport cost of printing and writing paper shipped to the United States by an amount equivalent to the countervailing duty.

Figure 1 symbolizes the economic equilibrium in the CFS market consisting of one exporting country and the United States. Without the CVD, the price in the United States, P_1 is equal to the price in the exporting country, P_2, plus the transport cost, t. At that price, the quantity supplied in the United States, S_1, is less than the quantity demanded, D_1, and the difference, $D_1 - S_1$, consists of imports. Symmetrically, in the exporting country, the quantity supplied, S_2 exceeds the quantity demanded, D_2, and the difference $S_2 - D_2$ consists of exports. In equilibrium total demand equals total supply, and United States imports are equal to exports of the other country. This equilibrium reflects the eventual subsidies that may affect the position of the supply curve in the exporting country.

The countervailing duty, c, imposed by the United States, is equivalent to an increase in the transport cost from t to $t + c$. With this duty, the new equilibrium price in the exporting country is P_2', and the price in the United States is $P_1' = P'_2 + t + c$. Production in the United States increases from S_1 to S_1', and domestic consumption decreases from D_1 to D_1', consistent with the higher price, P_1'. Meanwhile, production decreases in the exporting country from S_2 to S_2', while consumption increases from D_2 to D_2' in accord with the lower price P_2'.

It is worth noting that the price increase in the United States is less than the duty, and that the price decrease in the exporting country is also less than the duty. Similarly, the increase in United States production is less than the decrease in imports, and the decrease in the exporting country production is less than the decrease in exports. The changes that result from the

[1] 51.8 × 20.35% + (100 – 51.8) × 18.6% = 19.5%.

disturbance of the equilibrium (the CVD) compensate in part for the effect of this disturbance.

The GFPM adheres to the theory sketched out in **Figure 1**. However, it deals dynamically with interrelated markets with many countries and products (from industrial roundwood to pulp and paper). Thus, it can show the repercussion of a change in one product and country on the rest of the forest sector.

The effects of the United States countervailing duty on CFS from China, Indonesia, and the Republic of Korea were obtained by comparing two GFPM projections, or scenarios. The base scenario projected the status quo global forest products sector from 2007 to 2020, as in Turner et al. (2006). The alternative scenario made the same assumptions as the base scenario, except for the introduction of countervailing duties on coated free sheet paper in the United States. In particular, factors such as exchange rate and transportation cost were held constant at their long-run averages, as our policy analysis concentrates on the effects of imposing a CVD on coated free sheet paper in the United States, other things being equal.

As imports of CFS paper have increased considerably in recent years, especially from Korea, China, and Indonesia, the GFPM was recalibrated with data from 1992 to 2006 (FAO 2007), with the method described in Zhu et al. (2006b). Where data for 2006 were not available, they were extrapolated from the data from 2001 to 2005. Due to incomplete production data for coated free sheet papers, the analysis was done for printing and writing paper, which includes CFS paper, and related sectors. It was assumed that the imports of CFS paper as a proportion of printing and writing paper imported by the United States from its top 10 trade partners would remain constant over the projection period. Based on historical data (Dept. of Commerce 2007 d), 2002 to 2006, CFS imports have been approximately 14 percent of printing and writing paper imports during this period.

Because the duties are on imports from specific countries, the total United States imports of printing and writing paper from the world market were disaggregated into imports from the 10 major sources of CFS paper (**Table 1**).

The ad-valorem duties applied to United States imports of printing and writing paper in the GFPM were 1.08 percent for Korea, 4.29 percent for China, and 4.67 percent for Indonesia. They were estimated from the countervailing duty on coated free sheet paper (Dept. of Commerce 2007a, 2007b, 2007c), weighted by the ratio of United States imports of coated free sheet paper to printing and writing paper in 2006 (Dept. of Commerce 2007d).

The accuracy of the predicted policy impact depends on the data and assumptions used in the GFPM. One source of uncertainty lies in the GFPM structure and parameter estimates. Validation against data from1980 to 2000, in earlier versions of the GFPM (Buongiorno et al. 2003), has shown that the model replicates observed trends, if not the year-to-year detail. The base-year data used in the present application (FAO 2007) also contain inaccuracies. To address these, the base-year data are calibrated (Buongiorno et al. 2001, Zhu et al. 2006b) so that materials used in a country are consistent with the amounts of products manufactured and with a-priori knowledge of manufacturing techniques. Thirdly, the exogenous assumptions, such as exchange rate and transportation cost, used to make projections to 2020 are uncertain. However, these various sources of uncertainty are more critical for forecasting than for the type of policy analysis carried out here, in which all the assumptions are the same in both scenarios, except for the introduction of the countervailing duties.

Results

The main effects of the United States countervailing duties occurred in the printing and writing paper market, and in the countries that are major suppliers of coated free sheet paper to the United States. The chemical pulp markets were also affected because chemical pulp is the main input in making coated free sheet paper. Very little change was observed in the markets for mechanical pulp, waste paper, and other pulp. The production, trade, and prices of industrial roundwood, the main input to chemical pulp production also remained practically the same with or without the duties.

Effects on the printing and writing paper market

According to the GFPM projections, the total world production of printing and writing paper would hardly change from 2007 to 2020 due to the United States duties (**Table 2**). However production would decrease in countries to which the duties would be applied.

In Korea, the average annual production over the period would be about 4 percent lower. This would translate to an equal change in net trade (exports minus imports) while domestic consumption would remain the same and the price would hardly change.

China would see its production of printing and writing paper decrease by less than half of a percent. However, its trade balance would be considerably worse, changing from a surplus under the base scenario to a deficit with the introduction of the duties. Concurrently, China's annual domestic consumption would be about 183 thousand metric tons higher, on average between 2007 and 2020, and the price would be 2.7 percent lower.

With the duties, Indonesia's production would be 2.4 percent lower than without it. Indonesia would remain a net exporter of printing and writing paper, but at a lower level. Domestic consumption and the attendant price would change little in Indonesia.

Canada would gain the most from the United States duties. Its average annual production of printing and writing paper would be about 8 percent higher with the duties than without it. Correspondingly, annual net trade would be 606 thousand metric ton higher. Domestic consumption and price would remain the same.

In the United States, the production and price of printing and writing paper would increase by less than half of a percent due to the duties on coated free sheet paper. Net trade would hardly improve, as the United States would remain a big importer of printing and writing paper.

The main effect on the United States would be in the source of imports. Due to the CVDs, the United States average annual imports between 2007 and 2020 would be 40 percent lower from Korea, 51 percent lower from China, and 45 percent lower from Indonesia (**Table 3**). This decrease would be nearly compensated by higher imports from all other current major sources: Canada, Finland, and Germany, in that order.

Table 2. — Effects on the printing and writing paper sector of the United States countervailing duty on coated free sheet paper.

	Actual		Projection to 2020			
	1992	2006	Base	With duty	Effect on annual average 2007 to 2020	
Production	----------	----------	(10^3 t)	----------	----------	(percent)
United States	20,281	21,117	21,267	21,383	65	0.3
Korea, Republic of	1,040	3,064	6,137	5,741	−215	−4.3
China	5,531	10,710	21,465	21,168	−72	−0.4
Finland	4,979	8,752	8,034	8,068	−29	−0.3
Canada	3,567	6,925	7,373	8,327	606	8.2
Germany	5,173	8,221	11,702	11,865	−3	−0.1
Japan	9,610	10,371	13,303	13,307	2	0.0
Italy	2,397	3,258	4,655	4,668	3	0.1
Austria	1,546	2,562	2,332	2,371	−13	−0.5
Indonesia	735	2,697	5,302	5,089	−102	−2.4
Spain	850	1,316	2,202	2,206	−1	−0.1
ROW	15,323	30,765	48,355	48,379	−64	−0.2
WORLD	71,032	109,758	152,126	152,571	178	0.1
Price	----------	----------	($\$ t^{-1}$)	----------	----------	
United States	1,006	908	894	895	1.2	0.1
Korea, Republic of	939	857	828	828	−0.3	0.0
China	995	908	890	839	−23.8	−2.7
Finland	939	857	843	844	0.1	0.0
Canada	939	857	843	844	1.1	0.1
Germany	995	857	843	844	0.1	0.0
Japan	939	908	884	884	0.0	0.0
Italy	995	908	888	888	0.0	0.0
Austria	939	857	843	844	0.1	0.0
Indonesia	939	857	830	826	−2.4	−0.3
Spain	995	908	881	881	0.0	0.0
WORLD	1,133	857	843	844	0.1	0.0
Net trade	----------	----------	(10^3 t)	----------	----------	
United States	−1,887	−6,846	−10,350	−10,228	71	0.8
Korea, Republic of	53	1,275	2,795	2,398	−215	−10.0
China	−856	−686	561	−190	−255	−126.0
Finland	4,295	8,428	7,622	7,656	−29	−0.3
Canada	1,434	3,740	3,095	4,050	606	17.2
Germany	−421	1,362	3,368	3,532	−3	−0.5
Japan	170	−684	−150	−146	2	0.9
Italy	−390	−526	−101	−89	3	2.4
Austria	1,378	2,198	1,869	1,909	−13	−0.5
Indonesia	157	1,860	3,835	3,619	−103	−3.4
Spain	−610	−657	−309	−304	−1	−0.1
ROW	−3,824	−7,512	−10,283	−10,254	−65	−0.7

Effects on the chemical pulp market

With the United States duties on imports of CFS paper, the total world chemical pulp production and the world average price of chemical pulp would remain practically the same from 2007 to 2020 (**Table 4**). Production, trade, and price would be most affected in some of the countries with the largest changes in the printing and writing paper market noted above.

In Korea, the production and the price of chemical pulp would not change, but annual net exports would be on average 111 thousand metric ton higher. With the duties, part of the unused pulp due to lower production of printing and writing paper was available for export.

With the duties on CFS paper, the production of chemical pulp dropped the most in China (13%). Nevertheless, the net trade of chemical pulp remained unchanged. Thus, the domestic consumption was lower, in accord with the lower printing and writing paper production, and the corresponding price was 7 percent lower.

The production and price of chemical pulp in Indonesia were hardly affected by the duties. Net trade was slightly higher.

In the United States, the production, price, and net trade of chemical pulp were unaffected by the duties on CFS paper. In Canada, the net trade was 181 thousand metric ton per year lower, as some Canadian exports of chemical pulp would be

Table 3. — Effects on United States imports of printing and writing paper of the countervailing duty on coated free sheet paper.

	Actual		Projection to 2020			
	2002	2006	Base	With duty	Effect on annual average 2007 to 2020	
Country of origin	(10^3 t)					(percent)
Korea, Republic of	346	427	823	363	−257	−40
China	503	799	2,000	640	−725	−51
Finland	792	993	1,667	1,956	110	8
Canada	4,486	4,104	3,131	4,201	672	18
Germany	290	369	526	707	75	15
Japan	169	124	242	245	2	1
Italy	123	130	234	253	12	6
Austria	135	106	121	186	30	26
Indonesia	79	150	293	72	−106	−45
Spain	32	49	82	92	7	11
All others	1,070	1,144	1,976	2,258	110	6
Total	8,025	8,395	11,094	10,973	−71	−1

substituted by the higher exports of Korea, Indonesia, and Finland.

Other effects

The countervailing duties on imports of coated free sheet paper would affect government revenues (the value of the import duties), producer revenues (the value of the products), consumer expenditures (the amount paid by users of the products), and the value-added (the value of the product minus the cost of the wood and fiber input used in making them).

The amounts of United States government revenues generated by the import duties are in **Table 5**. Over the period considered, the duties would generate an average of $28 million a year. About 75 percent of this would be raised from imports that would continue to come from China. The revenues would decrease from 2007 to 2015, but then rise again from 2015 to 2020 as China would overcome the handicap of the countervailing duties and its exports to the United States would rise again.

Table 6 shows the changes in revenues, expenditures, and value-added in all industries and markets, from wood production to paper and paperboard consumption. These changes result mostly from the changes in the printing and writing paper and chemical pulp industries and markets noted above. At the world level, both the average annual producer revenues and consumer expenditures from 2007 to 2020 would be lower with the duties than without it. The decrease in consumer expenditures would be $441 million more than the decrease in producer revenues. The average annual world value-added would be $148 million higher with the duties.

In Korea, Indonesia, Finland, Italy, and Austria, producer revenues, consumer expenditures and value-added would all be lower with the duties. China would experience the largest decrease in producer revenues and consumer expenditures, but value-added would change minimally. Positive changes in producer revenues, consumer expenditures, and value-added would occur in the United States, Japan, and Canada, though the changes would be much larger in Canada.

Summary and conclusion

The objective of this study was to predict the long-term effects of United States countervailing duties on imports of coated free sheet paper from China, the Republic of Korea, and Indonesia. Of particular interest was the extent to which the duties would reduce United States imports, and stimulate domestic production.

The results of simulations done with the Global Forest Products Model suggested that countervailing duties would have significant and some unexpected effects on the countries involved in the trade. The main effects would be felt in the printing and writing paper market and in the pulp market.

The production of printing and writing paper in China, Indonesia, and the Republic of Korea would be lower. The trade balance of printing and writing paper would worsen in Korea and Indonesia. China, currently a net exporter would become a net importer. Concurrently, production and prices of chemical pulp would decrease substantially in China. However, due to price decreases China's domestic consumption of printing and writing paper would increase.

With the CVDs, which aim to protect domestic industries, the United States would see little increase in production or improvement of net trade of printing and writing paper. The main effect of the duties would be on the United States' source of imports. While the United States imports from Korea, Indonesia, and China would be lower, the imports from Canada, Finland, Germany, and other sources would increase. Moreover, although imports of printing and writing paper from China would be reduced for a few years by the CVDs, they would start increasing again after less than a decade.

The Canadian industry would gain the most from the duties. Canada's production of printing and writing paper would be more than 8 percent higher. The United States would see some increases in producer revenues, consumer expenditures, and value-added, but they would be small compared to the increases in Canada.

The concurrent limited impact of the countervailing duty on United States' producer revenues suggest that import duties would not do much to compensate or improve the competitiveness of United States produced CFS in the domestic market. In fact, on November 20, 2007, in a 5 to 1 voting, United States International Trade Commission (ITC) determined that the CFS imported from China, Indonesia, and Korea did not harm the CFS producers in the United States. As a result of the ITC decision, no antidumping or countervailing duties will be

Table 4. — Effects on the chemical woodpulp sector of the United States countervailing duty on coated free sheet paper.

	Actual		Projection to 2020			
	1992	2006	Base	With duty	Effect on annual average 2007 to 2020	
Production	----------	----------	(10^3 t)	----------	----------	(percent)
United States	52,128	49,413	50,824	50,824	−3	0.0
Korea, Republic of	162	960	2,839	2,864	1	0.1
China	1,523	82	357	216	−33	−13.3
Finland	5,371	7,944	9,687	9,719	4	0.0
Canada	12,377	14,047	16,158	16,146	−6	0.0
Germany	791	2,069	1,675	1,717	−6	−0.1
Japan	9,167	9,391	10,983	10,983	−1	0.0
Italy	85	131	361	362	0	−0.2
Austria	1,003	1,289	1,726	1,746	−1	−0.1
Indonesia	939	5,684	7,881	7,868	−3	0.0
Spain	1,409	1,886	2,266	2,263	−3	−0.1
ROW	28,969	46,733	77,420	77,462	−3	0.0
WORLD	113,924	139,629	182,176	182,169	−53	0.0
Price	----------	----------	($\$ t^{-1}$)	----------	----------	
United States	469	519	503	503	0.0	0.0
Korea, Republic of	507	519	503	503	0.0	0.0
China	507	519	716	616	−46.2	−6.8
Finland	469	481	463	463	0.1	0.0
Canada	469	481	465	465	0.0	0.0
Germany	507	519	503	504	0.0	0.0
Japan	507	519	504	504	0.0	0.0
Italy	507	519	503	503	0.0	0.0
Austria	507	519	496	496	0.0	0.0
Indonesia	507	481	466	466	0.0	0.0
Spain	469	481	465	465	0.0	0.0
WORLD	565	481	465	465	0.0	0.0
Net trade	----------	----------	(10^3 t)	----------	----------	
United States	1,487	−618	−5,476	−5,522	−5	−0.1
Korea, Republic of	−1,516	−2,478	−2,912	−2,691	111	4.4
China	−963	−7,400	−13,760	−13,760	0	0.0
Finland	1,123	2,036	3,385	3,401	14	0.6
Canada	8,205	10,413	12,240	11,953	−181	−1.6
Germany	−3,468	−3,804	−5,273	−5,292	−6	−0.1
Japan	−2,479	−1,750	−1,674	−1,676	−2	−0.2
Italy	−2,380	−3,382	−3,874	−3,873	1	0.0
Austria	−268	−410	−226	−224	3	0.9
Indonesia	−310	2,011	2,180	2,281	50	2.1
Spain	88	77	137	133	−2	−2.0
ROW	1,659	4,017	13,966	13,980	17	0.2

Table 5. — Amount of countervailing duty resulting from the United States tariff on coated free sheet paper.

	2007	2010	2015	2020	Annual average 2007 to 2020
	----------	----------	(10^6 US$)	----------	----------
Korea, Republic of	4	3	3	3	3
China	29	22	16	23	21
Indonesia	6	5	4	3	4
Total	39	31	23	30	28

imposed on imports of CFS paper from these countries (ITC 2007). The ITC noted that while the United States coated papers are web roll stocks, "the papers from China, Indonesia and Korea are entirely cut sheets of various sizes". Such product differentiation, not only in form but also in quality, may well be the marketing model that the United States' paper industry should pursue to become more competitive, rather than seeking the protection of higher tariffs.

Table 6. — Average annual change, from 2007 to 2020, of producer revenues, consumer expenditures, and value-added in all forest industries, due to the United States countervailing duty on coated free sheet paper.

	Producer revenues	Consumer expenditures	Value-added
	(10^6 US$)		
United States	21	24	25
Korea, Republic of	−152	−58	−95
China	−387	−714	13
Finland	−12	−4	−9
Canada	454	163	281
Germany	−1	0	−1
Japan	7	2	5
Italy	−5	−1	−4
Austria	−4	−1	−2
Indonesia	−89	−43	−31
Spain	0	0	0
ROW	−36	−13	−33
WORLD	−204	−645	148

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