COUNTERVAILING DUTY

THE CASE OF CHINA'S COATED FREE-SHEET PAPER EXPORTING

by

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Abstract

In the last decade, as China engaged in market reforms, the U.S. Department of Commerce began to reassess the use of Countervailing duty (CVDs) laws against China. Specifically, in 2007, the Department of Commerce started a countervailing duty investigation against a paper exporting company located in China, along with companies in Indonesia and Korea. This thesis uses this case to ask whether there is evidence that a company in a non-market economy responds differently to subsidize than those located in a market economy.

First, I introduce what kinds of subsidies the government in China and Indonesia offer to companies in the paper industry and what kinds of subsidies United States International Trade Commission chose to investigate and what kinds of subsidies it did not choose, and explain why it did that.

I use a simple theoretical model in this thesis based on the model of strategic trade used by Brander and Spencer (1985). Two exporting firms from two different countries are competing in a third country. I modify the model to capture the types of subsidies I have found in the paper industry and I separate domestic and export output. I show that the subsidy from a non-market economy country may induce more exports than if it comes from a market economy country. Further, like Brander and Spencer, I find

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that as one firm's exporting quantity goes up, another firm's exporting quantity will decrease.

I then use an empirical model to test the results from the theoretical model. I use quarterly firm-level data from one Chinese firm (Chenming. Ltd) and one Indonesian firm (Asia Pulp&Paper Co. Ltd) named in the US CVD case. Chenming. Ltd (Chenming) is a big state-owned firm and it received lots of subsidies since 1950. Asia Pulp&Paper Co. Ltd (APP) is also a big paper producing firm but it is privately owned. I find evidence that both of the two firms increased their exports in response to subsidies, although there is some evidence that exports from the Chinese firm are more elastic with respect to subsidies, implying that subsidies from NMEs may well be of concern to importers.

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CHAPTER ONE: INTRODUCTION

Countervailing duty laws (CVDs), as well as other trade laws such as antidumping laws (ADs), are now widely used. A previous constraint was that CVDs could not be used against non-market economies. However, a precedent was set in 2007 by a ruling involving NewPage Corporation, a U.S. paper company that had petitioned for a countervailing duty investigation of imports from companies in the People's Republic of China, Indonesia, and Korea. The NewPage decision is the first CVD to be levied against China, hitherto considered a non-market economy. This thesis uses the NewPage case to explore whether firms in non-market economies behave differently in response to subsidies than those in market economies.

The development of globalization has allowed foreign companies that may have been aided by government subsidies to export their goods to the United States. Over a century ago, the U. S. was the first country to develop laws that limited the perceived "unfair" competition of subsidized imports. Nominally, such countervailing duty laws (like anti-dumping laws) try to equalize conditions which have been distorted by subsidized (or dumped) imports.

Free-market principles have made it hard for the U.S. to have trade relations with non-market economy countries because in those countries,

market rules do not dictate company behavior. Also, the U.S. has until recently felt that since it is not possible to identify and quantify subsidies from non-market economy countries, countervailing duty laws cannot be used against these countries.

On March 30, 2007, however, the U.S. Department of Commerce affirmative preliminary determination in announced its the countervailing duty investigation into the importation of coated free-sheet paper from the People's Republic of China. The Department of Commerce made preliminary determination that Chinese а producers/exporters had received net countervailing subsidy rates ranging from 10.90 to 20.35 percent. This preliminary determination, in which a subsidy from a non-market economy country was quantified for the first time in history, thus marks the Department's first departure from its 23-year bipartisan practice of not applying CVDs to non-market economy countries such as China. In this preliminary determination, the Department of Commerce explains that the Georgetown Steel judgment no longer applies to China because of how markedly different China' s economy today is from the economies of the non-market economy countries of the 1980s Soviet bloc. This change in trade policy has occurred despite the fact that China is still seen as a non-market economy country.

My thesis will use data from two companies involved in the 2007 case *Coated Free-Sheet Paper from China, Indonesia, and Korea*: Shandong

Chenming Ltd. (a state-owned Chinese company), and Asia Pulp & Paper (a privately owned Indonesian company), to try to answer the following question: Do subsidies in a non-market economy affect the quantity of its exports differently than subsidies in a market economy?

This thesis analyzes the countervailing duty situation by using theoretical and empirical models. Adapting the model of export subsidies in an oligopoly developed by Brander and Spencer (1985), I model how a company in a non-market economy, such as China, and a company in a market economy, such as Indonesia, might alter their exports in response to the introduction of government subsidies, and what these responses would mean for a company in the importing country.

The empirical model is more complicated. I use my theoretical model to construct an empirical model of the two exporting companies' reaction functions. Specifically, I estimate how exports are affected by the subsidy, domestic price, foreign companies' exports, GDP (for both China and the U.S.), and wages in the paper industry. I use this model to ask whether the subsidy to the Chinese company has the same effect on its exports as the subsidy to the Indonesian company.

Below, the second chapter describes the background of countervailing duty law. The third chapter describes countervailing duty laws implemented in non-market countries. Chapter four introduces the kinds of subsidies governments generally offer to companies.

Chapters five and six present my theoretical and empirical models, while chapter seven discusses the results and limitations of the thesis.

CHAPTER TWO: BACKGROUND OF COUNTERVAILING DUTY IN THE UNITED STATES

Nominally, the purpose of U.S. countervailing duty laws is to prevent the unfair competitive advantage that foreign governments offer to their exporting companies by giving them subsidies. The principle behind these laws is that U.S. producers should not have to compete with foreign companies that are not subject to the same competitive market constraints as U.S. producers. Under U.S. countervailing duty law, duties are imposed to offset whatever subsidy the foreign exporter has received, thereby ideally enforcing the goal of free-market efficiency.

This chapter provides a brief introduction of the history of countervailing duty laws, describes how the U.S. Department of Commerce investigates CVDs, and discusses the implementation and policy problems associated with these laws.

2.1 The History of Countervailing Duty Laws

The U.S. Congress enacted the first countervailing duty law in 1890.¹ That law empowered the government to tax importers of sugar receiving financial support from the exporting countries. The 1897 Act²

¹ See Tariff Act of 1890 (Mckinley Tariff).

² See Tariff Act of 1897 (Dingley Tariff).

was more general, covering any companies that had received a bounty or grant paid directly or indirectly on exportation.

The Tariff Acts of 1913 and 1922³ expanded countervailing duty law to establish the lowest possible tariff and income tax rates for exporting.

In the 1974 Tariff Act, Congress amended section 303⁴ and expanded the law to include any subsidized companies. The Act also required a determination of injury to the domestic industry before imposing a countervailing duty on duty-free imports, but only if such a test was required by international obligations.

In 1979, another countervailing duty provision, section 701, was enacted.⁵ The purpose of this amendment was to make the laws consistent with the requirement of the Subsidies Code signed that year at the Tokyo Round Multilateral Trade Negotiations.⁶ This GATT Subsidies Code Stipulated that countervailing duty laws should be imposed only after a material injury to a domestic industry is shown. It also seeks to determine if a material injury has been inflicted or is threatened.

³ See Tariff Act of 1913 (Underwood Tariff Act) and Tariff Act of 1922 (Fordney-McCumber Tariff Act).
4 See Trade Act of 1974.

⁵ See Trade Agreement Act of 1979.

⁶ See Hoyt, Robert F. "Implementation and Policy: Problems in the application of Countervailing Duty Laws to non-market Economy countries." University of Pennsylvania Law Review. Vol. 136. June 1988

Congress implemented these commitments in section 701 because the requirements of the Subsidies Code only apply to those countries which are signatories to the Subsidies Code or with whom the United States has negotiated substantially similar bilateral agreements. As a result of this implementation, the U.S. has two different countervailing duty laws: one for those countries which signed the Subsidies Code or similar agreements, and one for all other countries. The difference between the two laws is that the former, according to section 701, requires the administering authority to make a determination of material injury before imposing countervailing duties, whereas the latter, according to section 303, requires no demonstration of injury. Most non-market economy countries are not signatories to the Subsidies Code and so do not receive the benefit of an injury test.⁷

2.2 Countervailing Duty Investigations

There are three basic elements of a countervailing duty investigation: first, finding material injury to a domestic industry; second, identifying the existence of a subsidy; and third, quantifying the net benefit conveyed by the subsidy.⁸ The U.S. International Trade Commitment (ITC) is responsible for the first element of this

⁷ See GAO REPORT TO THE CONGRESS, supra notes 1, at 29.

⁸ See GAO REPORT TO THE CONGRESS, supra notes 1, at 28

investigation. The ITC identifies whether an industry has been materially injured and whether the allegedly subsidized import is a cause of this injury.⁹ The ITC analyzes the volume of the imports, their effect on U.S. prices, and their effect on domestic producers. If the ITC determines that the imports in question are causing material injury to a domestic industry, the investigation is then turned over to the U.S. International Trade Administration (ITA).¹⁰ The ITA is responsible for the second and third elements of a countervailing duty investigation. However, its task of identifying and quantifying subsidies is difficult because neither the GATT, the Subsidies Code, nor the U.S. countervailing duty laws defines what a subsidy is, per se. The countervailing duty laws only provide that the term means the same as the terms "bounty" and "grant" as used in section 303." Countervailing duty may be levied only against subsidies granted by government. Although ostensibly the laws cover subsidies from institutions, they have never been imposed if subsidies have been received from non-governmental organizations.

After identifying a government subsidy, the ITA must quantify the net benefit the producer receives from the subsidy. The ITA will have to calculate the gross value of the subsidy, including any costs the

⁹ See OVERVIEW OF U.S. TRADE STATUTES, supra notes 45, at 52.

¹⁰ See 19 U.S.C § 1671(a) (2).

¹¹ See 19 U.S.C. § 1677(5) 1982; OVERVIEW OF U.S TRADE STATUTES, supra note 45, at 51.

company has incurred in receiving the subsidy. The net benefit, the gross value less the cost, is the amount of countervailing duty imposed. This process however, might meet serious problems when applying CVD laws to non-market economy counriews.

2.3 The Application of CVD Laws to Non-Market Economies

Unlike market economies, which use the price system to adjust demand-supply relations, non-market economies rely on centralized government planning to arrange the production, trade, and distribution of goods and services.

Prior to the 1980s, the U.S. undertook no countervailing duty investigations of products from non-market economy countries.¹² In late September, 1983, however, a group of U.S. textile manufacturers and unions filed a petition for the first such investigation against imports from the People's Republic of China. The petition alleged that China's policies granted a preferred monetary exchange rate and other benefits to the producers of exported goods, which constituted a countervailable subsidy.¹³ However, the investigation was never completed: to protect its domestic industry from the Chinese government, the U.S. Secretary of Commerce convinced the petitioners to withdraw their petition,

¹² See GAO REPORT TO THE CONGRESS, supra note 1, at 27.

¹³ See Recent Development, 105.

guaranteeing to reinstate the investigation if the industry later requested the Department of Commerce to do so.¹⁴

The second countervailing duty petition was launched in November, 1983. The petitioners alleged that Poland and Czechoslovakia¹⁵ were subsidizing exports of carbon steel wire rods. During the investigation, the Department of Commerce determined that countervailable subsidies granted in a non-market economy country could not be identified by the U.S. because the concept of subsidization had no meaning in a non-market economy country where costs, profits, and prices are determined by central planning instead of by market forces. This conclusion later led the Department of Commerce to rescind another countervailing duty investigation into imports of potash from the German Democratic Republic¹⁶ and the Soviet Union.¹⁷

It might be true that some of the non-market economy countries, such as German Democratic countries, Soviet Union and China, their governments have some very strong subsidies to support their exporting companies. However, it is not easy to investigate this subsidies. The

¹⁴ See Textile, Apparel, and Relative Products From People's Republic of China, 48, Fed, Reg. 55,492 15 See Steel From Czechoslovakia. Supra note 114, at 19.371

¹⁶ See Potassium Chloride from the German Democratic Republic. 49 Fed Reg. 23,428

¹⁷ See Potassium Chloride from the Soviet Union. 49 Fed Reg. 23,428

reason the court determined that it is not possible to investigate countervailing duty in non-market economy countries is that the basic elements of a countervailing duty investigation such as the identification and quantification of the alleged subsidy are thwarted by the structure of a non-market economy¹⁸. However, in *Continental Steel Corp. v. United States*, the Court of International Trade overruled the Department of Commerce's conclusion. In this case, the Court of International Trade concluded that subsidies in non-market economy countries can exist and, further, that the Department of Commerce should develop a method of identifying and quantifying them (Jones 2007).

In this way, the Court of International Trade sought to solve the problems of investigating alleged subsidies in non-market economy countries by broadly defining subsidization as "a distortion of a pattern of regularity or even a pattern of reasonably expected fairness" (Horlick and Shuman 1984). According to this definition, the Court of International Trade reasoned that the International Trade Administration (ITA) can "detect patterns of regularity" and identify as subsidies any "beneficial deviations from those patterns" (Horlick and Shuman, 1984).

However, in Georgetown Steel Corp. v. United States (1986), the

¹⁸ See Potassium Chloride from the People's Republic of China, 49 Fed, Reg. 23,428

¹⁹ See Section 15, Trade Bill 1987

Court of Appeals for the Federal Circuit reversed the finding of the Court of International Trade.¹⁹ The Court of Appeals adopted the arguments set out by the Department of Commerce in its final determination that, by definition, subsidization is a market phenomenon that cannot exist in a non-market economy.

Implementation and Policy Problems

In 1987, several bills were introduced into the House and Senate which invalidated Georgetown Steel Corp. v. United States and applied countervailing duty laws against non-market economy countries. One of the most successful efforts was section 157 of the 1987 Trade Bill, which suggested that Congress decrease discrimination between non-market economy countries and market economy countries when investigating countervailing duties.²⁰ This provision suggested that future legislative attempts to overturn *Georgetown Steel* might be successful.

Congress paid careful attention to how to apply section 157. The bill would require the Department of Commerce to apply the law to non-market economy countries when a subsidy could be identified and measured.²¹ The House Report on section 157 only mentioned "the theoretical and administrative difficulties of applying the

²⁰ See 1987 Trade Bill

²¹ See H. Rep No. 40, 1000th cong, . 1st sess. 138 (1987)

countervailing duty law"²² and did not discuss whether the application of laws would be consistent with U.S. trade policy.

The problem of using CVDs is that the countervailing duty laws have not offered guidance about whether they could be applied against imports from non-market economy countries. To solve this problem, the investigators would have to be less concerned with accuracy when identifying and measuring a subsidy. In debating changing the rules to apply CVDs to non-market economies, Congress must decide whether it is willing to sacrifice accuracy in return for applicability (Hoyt 1988).

The following sections provide detailed discussions of the problems with the policy and its implementation.

The Policy Problem

The policy problem for a countervailing duty investigation in a non-market economy country is whether the application of countervailing duty laws to this country is consistent with U.S. trade policy.

In a non-market economy country, the government and the producer are a single economic entity, which makes it difficult for a countervailing duty investigation to distinguish between dumping and subsidization.²³ Dumping occurs when a producer makes its exporting price

²² See WTO definition of dumping.

²³ See Rawson. "An outline of United States regulation of Trade with Nonmarket Economy Countries".

lower than its costs and attempts to recoup this loss from a domestic price increase. If the government reimburses the producer for its loss, the process is called subsidization. However, when the producer recovers its losses from domestic price increases in a non-market economy country, it could also be called subsidization because the central or local government controls the price. That is, the government thus helps the producer by increasing the domestic price. As a result, the U. S. International Trade Administration would find it difficult to distinguish between dumping and subsidization practices in a non-market economy country (Diehlman 1988).

The ability to apply both antidumping and countervailing duty laws to importers from non-market economy countries would afford domestic petitioners a choice of remedies for a single offense. The result of this choice would be the substitution of countervailing duty petitions for antidumping petitions against non-market economy countries. The reason for this substitution is that only a few non-market economy countries receive the benefit of an injury test under the countervailing duty laws while under antidumping laws, all countries receive the benefit of the test. When choosing between these two, the petitioners would absolutely choose the first one because it makes the injury test meaningless in trade relations with non-market economy countries.

Of even greater concern, when a petitioner files a CVD case against an importer from non-market economy country, the Department of Commerce

does not need to demonstrate injury. Thus, allowing CVDs to be used against non-market economies would increase the number of petitioners and the countervailing duty laws would offset trading practices that are not causing any material injury to the United States economy. In effect, instead of being an efficiency-maximizing standard in international trade relations, countervailing duty laws would become competitive weapons. This expansion of protection would harm relations between the United States and non-market economy countries and likely lead to retaliatory measures; furthermore, it would probably harm domestic producers as well (Rawson 1987).

Currently, the United States enjoys a favorable balance of trade with non-market countries, and did so even before the end of the Cold War. These relations also give the U.S. significant political benefits. To allow the use of countervailing duty laws against non-market economy countries without requiring an injury test would therefore lead these countries to misunderstand international trade standards and the goals of the United States, which would have both economic and political ramifications.

The Implementation Problem

The implementation problem in applying countervailing duty laws to non-market economy countries is the difficulty in accurately identifying and quantifying subsidies in the absence of market-based

price, cost, and exchange rates. A non-market economy is completely different from a market economy. In a market economy, price and cost are determined by the market, involving such factors as demand, supply, and scarcity of goods. The market can, theoretically, allocate goods with maximum efficiency without government intervention. As a result, a company in a market economy purchases its inputs and sells its commodities at market-determined prices.

The fundamental difference between a market and a non-market economy is that in a non-market economy, production is controlled by the Government' s central planning: prices, costs and profits are controlled by the state and do not reflect market forces such as demand, supply, or scarcity of resources. Instead, the price of a commodity is a tool used by the government to promote its social, political, and economic objectives; that price does not reflect the cost of production. Thus, the goal of microeconomic efficiency does not exist in a non-market economy country. Furthermore, there is no reliable exchange rate that could convert a non-market currency into dollars (Downey and Graham 1985).

In a non-market economy, the state and the producer are actually the same, making an alleged act of subsidization indistinguishable from the state's normal role of allocating resources. Such distortions led the Department of Commerce to conclude that attempts to identify and quantify subsidies in non-market economy countries cannot succeed. In

place of an unobtainable accurate measure of subsidization in non-market economy countries, the Department of Commerce is therefore likely to substitute price and cost information from a comparable surrogate market economy. This move is supported by Article 15 of the Subsidies Code, which provides for the use of the surrogate country approach to calculate the value of a subsidy when conventional means are unfeasible. Some regulations previously proposed by the Department of Commerce also have advocated this use of surrogate country producers.

Furthermore, just as there is no pure free-market economy country, there is no pure non-market economy country: the degrees to which central economic planning control the domestic prices of commodities in these countries differs significantly. In North Korea, the government controls almost all of the economy,²⁴ for instance, while in Cuba the control is less extensive. In China and Viet Nam, recent reforms have increased the numbers of privately owned companies. The current trend is that many non-market economy countries are moving away from strict state control and toward a market economy system.²⁶ If this movement continues, prices and exchange rates in these non-market economy countries will more accurately reflect the forces of demand and supply.

²⁴ See People's Daily, 2006

²⁵ See China Economy, 2007.

Such a change would greatly facilitate the application of countervailing duty laws.

Thus, the implementation problem discussed here does not, in fact, render the attempt to apply countervailing duty laws to non-market economy Countries hopelessness. Congress connected market and non-market economies in 1974 when it applied antidumping laws to non-market economy countries by using surrogate countries to construct appropriate value pricing methods. That same process of using surrogate countries to derive calculations can be used to make countervailing duty laws applicable to non-market economy countries. The real implementation problem has not been that some barrier prevents the evaluation of disparate economies; it has been that evaluation attempts were always inaccurate. Congress must therefore now decide whether it can accept some necessary degree of inaccuracy arising from calculations of countervailing duty being based on forces in a surrogate country rather than in the non-market economy country itself (Soltysinski 1988).

CHAPTER THREE: COATED FREE-SHEET PAPER FROM CHINA AND INDONESIA

On March 30, 2007, the U.S. Department of Commerce announced its affirmative preliminary determination of the existence of a subsidy in its countervailing duty investigation into imports of coated free-sheet paper from China. The Department's preliminary determination was that Chinese producers/exporters had received net countervailing subsidies ranging from 10.90% to 20.35% ad valorem.

3.1 Background

On October 31, 2006, a petition was filed with both the Department of Commission and the Department of Commerce by NewPage Corp of Dayton, OH, alleging that an industry in the United States was being materially injured or was threatened with material injury by subsidized imports of coated free-sheet paper from China, Indonesia, and Korea. Accordingly, on October 31, 2006, the Department of Commission instituted countervailing duty investigations 701-TA-444-446 (preliminary) and antidumping duty investigations 731-TA-1107-1109 (preliminary) against China, Indonesia, and Korea.²⁶

²⁶ See USITC: "Coated Free Sheet Paper From China, Indonesia and Korea," Investigation Nos. 701-TA-444-446 (Final) and 731-TA-1107-1109 (Final).

3.2 Coated Free-Sheet Paper and its U.S. Domestic Market

Coated free-sheet paper contains no more than 10% by weight mechanical or combined chemical mechanical fibers. It is coated with kaolin (China clay) or other inorganic substances, with or without a binder, and has no other coating.

Coated free-sheet paper has unique physical characteristics. First, the amount of mechanical pulp used to make the paper is limited to prevent the paper from discoloring. Second, the coating on the paper, which always contains kaolin clay but may also include some other substances, gives the paper a better printing surface than uncoated paper has. For these reasons, coated free-sheet paper is used primarily in the printing of corporate annual reports and high-end catalogues and magazines.

Along with its other properties, including its heavier weight, these key characteristics make coated free-sheet paper unique. Therefore, it is rarely used in traditional coated groundwood paper applications where weight is important, since it is heavier than groundwood paper, but is preferred in some applications over groundwood paper, which yellows relatively quickly.

Coated free-sheet paper is also an alternative product. Most importers of coated free-sheet paper claim that coated groundwood paper and uncoated free sheet paper *can* be substituted for coated free-sheet

paper. In fact, they offer a long list of products that could be used in place of coated free-sheet paper, including high-yield board, super-calendared paper, plastic, coated bristol, electronic media, and fine-art paper. However, not all importers agree with this claim.

Coated free-sheet paper, like other kinds of paper, is sold in the U.S. through two channels of distribution: to distributors and directly to end-users. However, different types of paper go through different channels. For example, coated groundwood paper is more likely than coated free sheet paper to be sold directly to end users. Most U.S. producers of coated freesheet paper are located to the east of the Rocky Mountains, although one producer is in Oregon. Most of the importers responding to the petition (six of nine importers from China, four of seven importers from Indonesia, and six of twelve importers from Korea) reported that they sold their imported product nationally. While these respondents suggested that the domestic producers were reluctant to ship west of the Rocky Mountains, eight of the nine U.S producers responding to a USITC survey reported that they sold their product nationally.²⁷

Official Department of Commerce importation statistics, organized by subject source and customs district, indicate that imports of coated free sheet paper from China are most heavily concentrated on the west

²⁷ All the data here come from USITC.

coast. These imports made up 66. 3% of total imports of coated free-sheet paper from China during 2005, while 22. 4% of total imports were shipped to the east coast. American imports of coated free-sheet paper from Indonesia are also concentrated on the west coast, accounting for 52.8% of total U.S. imports from Indonesia during 2005 (26.9% went to the Great Lakes region, 17% to the east coast). Most U.S. imports of Korean coated free sheet paper (63.3% during 2005) are also concentrated on the west coast (25.5% went to the east coast).²⁸

Table 3.1 U.S. Annual Total Paper Output and Annual Coated Free-Sheet

	Total paper (thousands	Coated Free Sheet Paper
Year	of short tons)	(thousands of short
		tons)
1970	26302	2258
1971	26309	2258
1972	26765	2335
1973	27601	2399
1974	28250	2480
1975	28849	2684
1976	29526	2672
1977	30191	2746
1978	30507	2908
1979	31825	3017
1980	33028	3166
1981	33929	3009
1982	35460	3523
1983	36492	3619
1984	36761	3578
1985	37439	3656
1986	38164	3861
1987	39147	3734
1988	39508	3915
1989	41068	3970
1990	42314	4376

Paper Output, 1970-2000

Year	Total Paper (thousands	Coated Free Sheet Paper
	of short tons)	(thousands of short
		tons)
1991	43878	4584
1992	45537	5413
1993	46027	5384
1994	46237	5425
1995	47518	5052
1996	47542	4763
1997	48110	5079
1998	49019	5768
1999	48817	5856
2000	49413	5847

3.3 A Brief Analysis of Supply

The supply response of American producers of coated free-sheet paper depends on changes in the prices of the level of excess output, the availability of alternate markets for American-produced coated free-sheet paper, inventory levels, and their ability to shift to the manufacture of other products.

The output utilization of American producers of coated free-sheet paper increased from 90. 1% in 2003 to 95. 1% in 2005. This level of output indicates that U.S. producers have almost no unused output with which they

29 All the data here come from USITC.

²⁸ See USITC: "Coated Free Sheet Paper From China, Indonesia and Korea". Nos. 701-TA-444-446(Final) and 731-TA-1107-1109(Final).

could increase their production when prices change. Similarly, the export by U.S. producers as a share of total shipments increased from 5.5% in 2003 to 6.3% in 2005, which means that U.S. producers have a limited ability to divert shipments to or from alternative markets in response to change in the price of coated free-sheet paper. These indicators show that the U.S. supply is relatively inelastic. However, the ratio of end-of period inventories to U.S. shipments decreased from 17.2% in 2003 to 15.4% in 2005, which indicates that American producers have some inventory they could use to increase shipments to the U.S. market. Coated free-sheet paper from foreign countries such as China might be responsible for this change.

3.4 A brief Analysis of Market Demand

The overall demand for coated free sheet paper has increased since 2003 due to economic growth and its effect on advertising and on the publication of corporate financial reports.

Coated free-sheet paper is also an alternative product. As a lot of other kinds of paper are. Most importers of coated free-sheet paper argue that it could be replaced by coated groundwood paper and uncoated free sheet paper. As a matter of fact, there is a long list of products that could be used as substitutes, including high-yield board, super-calendared papers, plastic, coated bristol, electronic media, and

fine-art paper. However, not all importers agree with this assessment. Some importers have the opposite idea. One importer argues that coated groundwood paper is not a good substitute for coated free-sheet paper because it is not readily available in sheet form. One producer reported that the price of uncoated free-sheet paper has been increasing, thereby raising demand for coated free-sheet paper. Most importers also reported that the price of substitutes does not affect the price of coated free-sheet paper, although some felt that while the prices of substitutes did affect the price of coated free-sheet paper, this effect lasted for only between four and twelve weeks (USITC, 2007).

3.5 A Comparison of U.S. Produced and Imported Coated Free-Sheet Paper

To determine if American produced coated free-sheet paper can be used in the same applications as imports from China, Indonesia, and Korea, the USITC asked producers and importers to report if the products can "always," "frequently," "sometimes," or "never" be used interchangeably. 30 Most U.S. producers reported that they can always use either American or imported coated free-sheet paper interchangeably.

At the same time, importers mentioned some important factors when comparing their products with domestically produced ones. Some reported

³⁰ See USITC "Coated Free Sheet Paper From China, Indonesia and Korea (Final)

that American producers have shorter delivery times, which results in a higher cost to importers. That is, to maintain their inventories, importers must make a greater investment if they are to remain competitive with American producers.

On the other hand, some importers also argue that their coated free-sheet paper is superior to domestically produced paper in brightness, shading and gloss. Although some importers mentioned that U.S. produced coated free-sheet paper is stiffer, which is allows quicker production, it is still unclear whether U.S. or imported coated free-sheet paper seems to producers and importers to be superior.

CHAPTER FOUR: SUBSIDIES

4.1 Definition

As noted in chapter two, the U.S. has no clearly defined definition of a subsidy for use in its CVD cases. Subsidies can come in many different forms, which I discuss below. In my thesis, however, I use the term "subsidy" to mean a form of financial assistance which is paid by a country's government to companies in a business sector and which could decrease the cost of their products or service, and/or increase their output. According to the World Trade Organization (WTO) and Bull (2005), subsidies may be separated into the following types:

1. Direct transfer of funds

A direct subsidy is the simplest and arguably the least used form of subsidy. It is a direct transfer of funds (grants, loans and equity infusion).

2. Potential direct transfer of liabilities (e.g. loan guarantees)

3. Government revenue that would be otherwise due but is foregone (e.g.

tax exemptions)

A tax subsidy is any form of subsidy from which the recipients receive benefits through the tax system, such as reductions in taxes on profits.

4. Government provision of goods or services other than general infrastructure
A government may offer a subsidy for the production of a given product or service. A government gives this subsidy to encourage specific development within an industry.

5. Government payments to a funding mechanism or government, or directions to a private body to carry out any of the foregoing functions.

4.2 Subsidies From China and Indonesia

In this chapter, I will describe the subsidies I found from China and Indonesia. Exporting companies from these two countries received similar subsidies from their own government. During my research I found these companies received government loans, energy subsidies and plantation subsidies.

When investigating subsidies from China and Indonesia, United States International Trade Commission(USITC) also found different subsidies from these two countries. As I will show them later, USITC found the Chinese company Chenming. Ltd received grants, government provided loans, and tax expenditure from Chinese government. USITC found the Indonesian company Asia Pulp & Paper(APP) is supported government provision of standing timber, debt forgiveness, government log export ban, government provided loans and subsidized funding for reforestation.

4.3 Government Loans

A government can use different types of subsidies to help its industries and companies(Bull, 2005). One direct way to provide a subsidy is to offer low-cost loans. In non-market economy countries, direct subsidies are much easier for a recipient to use because both the recipient (such as a paper company) and the lender (such as a bank, or state-owned banks in general) belong to the country.

One of the most important characteristics of the Chinese paper industry is the extent to which it remains state-owned; some of the biggest enterprises in China' s paper industry still belong to either the central or local government. Although reforms beginning in 1978 and gaining strength through the 1990s have transferred ownership of some of the big paper companies from central to local government,³¹ private paper companies remain relatively insignificant to the country's paper industry. One of the objectives of the reforms has been to create some private paper companies—but no more than 50% of the total number. Although China consequently has more than 1000 state-owned paper mills and ten times more private ones, the privately owned paper companies are not as large as the state-owned ones. Moreover, in recent years, the Chinese government has been trying to close small companies: 1000 small

³¹ See China Central Government "How to reform state-owned big firms" (2005).

paper mills, most of them privately owned, have been closed, ostensibly for reasons of environmental protection.³²

China's industrial development has been directed and managed by the central government through its Five-Year Plans. According to the government, the goal of the Five-Year Plans is to "arrange national key construction projects, manage the distribution of productive forces and contributions to the national economy, map the direction of future development, and set targets."³³

The 10th Five Year Plan for National Economic and Social Development, covering the period 2001-2005, calls for the "establishment of a number of large companies and enterprise groups." ³⁴ In order to achieve this goal, big state-owned paper companies are eligible for various tax exemptions and reductions such as income tax reductions to support their exporting business. The U.S. International Trade Commitment (USITC) has made a clear investigation of this tax exemption. I will discuss the tax rebates in more detail at the end of this chapter.

³² See China Paper Industry Annual Report, 1996-2006.

³³ See "China's Subsidization of its Forest Products Industry, Key Findings," U.S. Forestry and Paper Association, 2004 (1-5).

³⁴ See "China's Subsidization of its Forest Products Industry, Key Findings," U.S. Forestry and Paper Association, 2004 (1-5).

How many benefits do Chinese paper producers receive from the government? The Chinese government offers several different types of subsidies in the forms of loans and government grants to its paper industry. To expand its paper industry, the government invested more than \$4 billion (USD) between 2001 and 2005. Using this money, the Chinese paper industry increased its paper and pulp production capacity by 15% in this period. Fourteen million tons of paper and 1.5 million tons of pulp were produced. Furthermore, the central government has subsidized the interest of loans provided to paper companies to update their technology. Between 1998 and 2002, the Ministry of Finance offered \$1.67 billion (USD) for 21 state-owned paper-processing projects, which the government believed would quickly raise China's ability to compete with foreign companies. By 2010, the Chinese government will have assisted 42 projects in this way. ³⁵

Subsidies in Indonesia

In Indonesia, the government has provided substantial capital subsidies to the paper industry. These subsidies have enabled producers to sharply discount their investment and production costs. The subsidies have taken the forms of discounted loans from state-owned banks, allocations from off-budget pools of finance, and generous tax deductions, according to clear findings in the U. S. International Trade Commission's

³⁵ See People's Daily: "The 10th Five Year Plan Report," 2006.

final report on the subsidies Indonesian firms received when exporting coated free-sheet paper to the United States. ³⁶

Since the late 1980s, Indonesian pulp and paper producers have heavily benefited from the government's policy. The government allows pulp and paper producers to pay much less than market price to buy tropical hardwoods (under US\$ 2.50 per m3 compared to a market price of US\$ 3.7 per m3). Moreover, being able to purchase large volumes of wood from harvesters cutting down natural forests instead of plantations reduces Indonesian pulp and paper producers' costs by 20% to 30% compared with their North American and European competitors.³⁷

4.4 Energy Subsidies

The cost of energy (such as electricity) is a large part of the paper industry's production costs. By definition, any measure that keeps prices for energy consumers below market levels or prices for energy producers above market levels, or that reduces costs for consumers or producers, may be considered a subsidy. Energy subsidies are most common for electricity and natural gas costs.

In recent years in China, energy subsidies have increased as domestic controls avoid passing on to final consumers international rises

³⁶ See Indonesia Pulp and Paper Association.

³⁷ See Indonesia Pulp and Paper Association.

in energy prices. Such international increases have been significant: in 2007 alone, electricity prices increased by RMB 2.52 fen per kwh (0.31 of a US cent) in China. 38

In China, electricity subsidies are one of the important ways that the government supports its state-owned companies. A "wise government should have electricity subsidies (for its state-owned companies) to develop both state-owned companies and its electricity industry." ³⁹ Since China has frequent energy shortages, electricity consumption is an important cost for some big electricity consumers such as the paper industry. In the first quarter of 2008, 459.5 billion kwh were used by the paper industry, up 11.8%. Thus, to make its paper products more competitive in the international market, the Chinese government subsidizes both the paper-production companies and the electricity producers.

In China, the electrical industry is a monopoly, which makes electricity very expensive (for industries, the 2005 wholesale price was RMB 0.5 yuan per kwh, which is about seven cents U.S., compared with the 2005 price of 5.73 U.S. cents in the United States). However, state-owned companies with assets of more than RMB 100 million yuan (US\$

³⁸ See China Huaneng Electricity Co. Ltd. "Electricity Consuming Report 2007."

³⁹ See "China Energy Report," Jiangsu University.

14.4 million)⁴⁰ generally obtain subsidies. Small private electricity companies, in contrast, are less likely to be subsidized.

The Chinese government rarely lets outsiders know the various amounts of subsidization electricity factories receive or how much it subsidizes electrical the expenses of big state-owned electricity-consuming companies. Although the electricity industry was reformed several years ago, local governments continue to run these enterprises the same way that the central government did before. The central government has therefore admitted that the reform is not as successful as the central government expected it to be; the reform has only transferred ownership of some electricity companies from the central government to local governments.

Electricity Subsidies in Indonesia

In Indonesia, the budget for subsidizing electricity has increased significantly since the 1998 economic crisis and increased the deficit of the national budget considerably.⁴¹

The International Monetary Fund (IMF) believed that electricity subsidization since 1998 has caused significant pressures on the national budget. As a result, the Indonesian government has raised a lot of its

⁴⁰ See China Central Government "How to Manage Big and Advantaged State-owned Companies."

⁴¹ See "Government of Indonesia (GOI) Report", 1997.

electricity prices. For Indonesia's large industries, including the paper industry, energy costs rose from 94Rp/kwh to a peak of 234. 5Rp/kwh. In the U.S., the average price that industries pay for electricity is U.S. 6. 25 cents per kwh.⁴²

Electricity is subsidized differently in Indonesia than in China. Since Indonesia is a market economy country, it revised its Government Regulation No. 10/1989 PP No. 3, 2005, a regulation pricing electricity to favor small companies: small privately owned operations pay only 86. 5Rp/kwh for electricity, medium-sized private-owned companies pay on average 101. 5Rp/kwh and at most 250Rp/kwh, while the average cost for large, private owned companies is 94Rp/kwh and their peak price, 234. 5Rp/kwh⁴³ (Beca Worley International 1990).

4.5 Plantation Subsidies

4.5.1 Subsidies in China's Paper and Tree Plantation Industries

The Chinese government has set ambitious expansion targets for its wood processing industry for the past five years. In fiber resources, China will develop 13.33 million hectares of fast-growth, high-yield

⁴² See Beca Worley International, "Update Report on Captive Power in Indonesia."

⁴³ See Sudja: "Electricity Power Supply in Indonesia: Developing Plan and Major Issues Toward the 21st Century," 1989.

plantations in the next 10 years, which required \$8.65 billion USD of investment.

One of the most important policies that the central government has developed in order to meet these targets is its plan to devolve decision-making power for approval of new investments to local governments: that is, the central government plans to offer development aid such as tax, financial, and trade measures in local regions. Local government will use these means of support to develop their own tree plantation industries. The details of governments finance and investment policies in this matter are as follows:

- a) The Ministry of Finance has set aside \$1.73 billion (USD) in interest-rate subsidies for the development of fast-growth, high-yield plantations by 2015.
- b) A further \$1.67 billion (USD) in interest rate subsidies has been provided by the Ministry of Finance for technological renovations of 21 state-owned paper-processing projects across China from 1998 to 2002.
- c) Policy banks' low-interest loans and long repayment terms have given fast-growth, high-yield plantation projects loans at 90 percent of the standard rate and with repayment terms of between 10 and 15 years, as opposed to China's conventional 3 to 5-year repayment periods.

4.5.2 Subsidies in Indonesia

The main step that the Indonesian government has taken to support its paper and wood plantation industry is to provide substantial capital subsidies to paper producers, including the sale of pulpwood fiber at costs well below its stumpage value (Barr 2000). However, since the early 1990s, the Ministry of Forestry has also provided companies establishing plantations with heavily discounted financing and equity capital through allocations from the government's Reforestation Fund, Dana Reboisasi (DR). Plantation companies can obtain loans from the DR to finance up to 32.5 percent of their expenses. This arrangement effectively allows plantation developers to commit only 21 percent of the overall investment from their own funds.

The auditors Ernst & Young determined in 1999 that the government provided over Rp 1 trillion in DR monies to subsidize the development of 10 pulpwood plantation projects in 1998. The Ernst &Young report also found that many recipients of plantation subsidies have been able to manipulate the process through which the DR monies are allocated so as to further reduce the portion of their projects that they fund with their own capital. Most commonly, plantation companies have overstated the net area to be planted when applying for the DR funds. Thus, for instance, in the case of a plantation company that develops only 90 percent of the planted area for which it applied for DR support, without an adjustment

for the distribution of funds the portion of the project's total costs covered by DR monies rises from 46.5 percent to 51.7 percent. The Ernst & Young audit concluded that overestimation of HTI (Hutan Tanaman Industri, meaning "fast-wood plantation") planted areas and similar irregularities resulted in the loss of US\$ 223 million from the DR fund between 1993 and 1998.

Table 4.1 Summary of DR Reforestation Fund Allocations to Pulpwood

Company	Affiliated Pulp Mill	Government Grant (Rp '000 bn)	Zero - Interest Loan (Rp '000 bn)	Commercial Loan (Rp '000 bn)	Total (Rp '000 bn)
Musi Hutani Persada	PT TEL	51.9	127. 4	164. 6	343. 9
Surya Hutani Jaya		36. 6	90. 5	61. 7	188. 8
Menara Hutan Buana		43. 5	100. 9	0.0	144. 4
ITCI Hutani		28.0	88. 9	0.0	116. 9
Tanjung Redeb Hutani	Kiani Kerts	25. 0	58. 1	0.0	83. 2
Acehnusa Indrapuri		13. 0	30. 2	0.0	43. 2
Adindo Hutani Lestari		12. 4	28.8	0.0	41. 2
Fendi Hutani Lestari		20. 1	11.9	0.0	31.9
Tusam Hutani LEstari		7.5	17. 4	0.0	24.9

Plantation Companies, 1998

Company	Affiliated	Government	Zero -	Commercial	Total	
	Pulp Mill	Grant	Interest	Loan	(Rp '000 bn)	
		(Rp '000 bn)	Loan	(Rp '000 bn)		
			(Rp '000 bn)			
Finantara Intiga	Kiani Kerts	11.6	11.6	0.0	23. 1	
Total		249. 6	565.7	226. 3	1041.6	

Source: Ernst & Young, 1999

In addition, Indonesia's seven state-owned banks have subsidized the development of some pulp and paper mills through the provision of discounted financing. Companies that have close relationships with the government can obtain loans from these banks at much lower interest rates than at commercial banks.

4.6 Subsidies Determined by the U.S. Department of Commerce in the CVD Case

On October 25, 2007, the U.S. Department of Commerce published notices in the Federal Register of its final determinations that countervailable subsidies were being provided to certain producers and exporters of coated free-sheet paper in China, Indonesia, and Korea. A summary of the determined net countervailable subsidy rates in China follows:

Table 4.2 U.S. Department of Commerce Determinations of

Countervailable Coated Free-Sheet Paper Subsidy Programs Provided to

Shandong Chenming Ltd, China

	Subsidy Program	Туре	Net Subsidy
			Rate
			(percent ad
			valorem)
1	"Other subsidies"	Grants	4. 11
for Chenming			
2	State Key Technology	Grants	4.11
	Renovation Project		
	Fund		85 - C
3	Clean Technology	Grants	4.11
	Production Fund		
4	Famous Brands	Grants	4.11
5	Policy loans	Government-	4.11
		provided loans	
6	"Two Free/Three	Income tax	0.76
	Half" program		
7	Income tax exemptions	Income tax	0.76
	programs for FIEs based		
	on location		
	Local income tax		0.76
8	exemption and	Income tax	
	reduction program		
9	Income tax credits on	Income tax	0.76
	purchases of		
	domestically produced		
10	VAT rebates on	VAT	1.51
	purchases of		
	domestically produced		
	equipment		
11	VAT and tariff	VAT	1.51
	exemptions on		
	imported equipment		
12	Domestic VAT refunds	VAT	1.51

	Subsidy Program	Туре	Net Subsidy
			Rate
			(percent ad
			valorem)
13	Direction adjustment	Income tax	0.76
	tax on fixed assets		
14	Income tax exemption	Income tax	0.76
	program for		
	export-oriented FIEs		
15	Corporate income tax	Income tax	0.76
	refund program for		
	reinvestment of FIEs		
16	Preferential tax	Income tax	0.76
	policies for FIEs		
	engaged in forestry		
17	Preferential tax	Income tax	0.76
	policies for		
	enterprises engaged		
	in forestry		
18	Special Fund for	Grants	4.11
	projects for the		
	protection of natural		
	forestry		
19	Compensation Fund for	Grants	4.11
	Forestry Ecological		
	Benefits		
20	Discounted loans for	Government-pr	4. 11
	export-oriented	ovided loans	
10	enterprises		
21	Subsidies for input	(1)	(1)
	suppliers		
22	Debt-to-equity swap	(1)	(1)
	for APP China		
23	Exemption from payment	(1)	(2)
	of staff and worker		
	benefits for		
	export-oriented		
	enterprises		

	Subsidy Program	Туре	Net Subsidy
			Rate
			(percent ad
			valorem)
	Total net subsidy rate	7. 41	44. 25
(1)	Not applicable/available	•	·
(2)	Program determined to be	terminated	
Source: (3-16).	"Commerce CVD Issue and Decision	n Memorandum" for Chir	na, October 17 2007

The following table shows the U.S. Department of Commerce's determination of the subsidies received by TK/PD in Indonesia:

Table 4.3 TK/PD Subsidy Programs Investigated by the U.S. Department of

Commerce, and Rates for Those Found to be Countervailable

	Subsidy program	Net subsidy rate for TK/PD (Percent ad valorem)
1	Government of Indonesia ("GOI") provision of standing timber for remuneration	14. 21
2	GOI's log export ban (1)	3. 11
3	Subsidized funding for reforestation: "Zero interest" rate loans	0. 01
4	Debt forgiveness through the GOI's acceptance of instruments that had no market value	0. 75

· · · · · · · · · · · · · · · · · · ·							
	Subsidy program	Net Subsidy Rate For TK/PD (Percent ad valorem)					
5	Debt forgiveness through SMG/APP's	4. 40					
6	Subsidized funding for reforestation: government capital infusions into joint venture forest plantations	(2)					
7	Subsidized funding for reforestation: commercial rate loans	(3)					
	Total net subsidy rate	22. 48					
(1)	Because enforcement of forestry laws l	has become difficult in					
Ind	onesia, the GOI uses this ban on export to	control over-harvesting					
and	illegal logging.						
(2)	(2) Program determined to be not countervailable.						
(3)	(3) Program determined to be not used.						
Sour	rce: "Commerce CVD Issue and Decision Memorandum"	for Indonesia, October 17,					
2007	7, pp. 18-47.						

According to the report mentioned above, the Department of Commerce primarily targeted direct subsidies. Tables 4.3 and 4.4 indicate two important facts: that the Department of Commerce was able to quantify many grants and government-provided loans; and that tax expenditures play a major role in both Indonesia and China. Companies, especially state-owned companies or those that have close political relationships with the government, can receive subsidies through the tax system. As the tables above show, tax deductions for employees (such as income tax deductions) or exemptions from consumption taxes (such as VAT deductions) allow enterprises to benefit from the tax system. However, the USITC did not choose to target China's electricity subsidies in their report because it is difficult to accurately identify and quantify subsidies in the absence of market-based prices and costs: both paper producing companies and electricity companies belong to the country, so the real price the paper producers pay for electricity is not transparent. Furthermore, that price is unrelated to both the cost of the electricity and demand-supply relationships. Therefore, it is virtually impossible for outside investigators to quantify the subsidies these industries receive, as the U.S. Department of Commerce eventually admitted.

Nevertheless, the Department's report was able to identify differences between China and Indonesia in how subsidies are distributed. In China, subsidies are used to develop big state-owned companies and are given directly to those companies. In Indonesia, however, the government is trying to develop the entire industry rather than individual companies. Thus, the subsidies Indonesia's APP has received are mostly for the government's reforestation program, not for particular companies. For this reason, the Indonesian economy can be said to be run more like a market economy than the Chinese economy.

CHAPTER FIVE: THEORETICAL MODEL

5.1 Introduction

My analysis in this thesis is based on the linear Cournot model of strategic trade that was developed to try to explain whether subsidies from a non-market economy might affect trade differently than those from a market economy. For a long time, subsidies, especially effective subsidies, have been commonly used as a tool of international rivalry in western economies. More recently, however, some non-western, non-market economy countries have started to use subsidization to support their exporting companies.

Export subsidies are a very important form of policy in the paper industries of China and some other countries. Big international traders like China tend to subsidize their paper producers more heavily than smaller countries do. Nevertheless, as considerable research has shown, in some small countries subsidies function as efficient weapons of international trade if the domestic price for a product is set well above world levels and surplus production is dumped onto the world market. Basevi (1970) found that a domestic monopolist can benefit by exporting a product, a conclusion related to the later work by Spencer and Brander into how national governments can help domestic companies expand their market shares in profitable areas (1983) and to the Brander-Spencer Model

(1984), a basic tool for analyzing export subsidies. Other analysis has investigated how the market is distorted by subsidization (Bhagwati 1971) and how export subsidies may actually arise from a government's desire to distort the market so as to exploit market power in another good (Itoh and Kiyono 1987).

5.2 Paper Importation into the U.S.

The market for coated free-sheet paper in this case is an oligopoly. As noted above, American imports of coated free sheet paper from China and Indonesia are most heavily concentrated on the west coast. In 2005, these imports into the U.S. made up 66.3% of the country's total paper imports from China, and 52.8% of its total paper imports from Indonesia. U.S. imports of coated free sheet paper from Korea were also concentrated on the west coast. Meanwhile, the American domestic supply of coated free-sheet paper was concentrated east of the Rocky Mountains; there was only one large producer on the west coast, in Oregon. Because so much of the coated free-sheet paper supply in the U.S. is imported, changes in the volume or price of imports from any of these three countries might affect the price that American importers and consumers pay. Fig 5.1 U.S. Imported Coated Free-Sheet Paper From China, Indonesia,



and Korea (Volume: Short Tons)

5.3 The Model

When I was building my theoretical model, I chose the simplest possible way to represent the situation. I supposed there to be two companies, one from a non-market economy, China, and one from a market-economy, Indonesia, exporting coated free sheet paper to a third country, the United States. Each of the exporters is trying to maximize its profit.

For this model, I assumed that firm behavior is a simple Nash quantity (Cournot) duopoly: the two exporting companies produce identical

Source: USITC 2004-2006

products. I also assumed that since the Chinese company is state owned, the Chinese government will control its exports. Furthermore, I assumed that the Indonesian company sells its products in both Indonesia and the United States. My final assumption was that the governments in both exporting countries understand the structure of the industry and are able to set a credible subsidy on exports in advance of the quantity decision made by the companies.

Let's start by reviewing the basic Brander-Spencer model on which my model is based. Suppose there are two foreign companies, X and Y, exporting a good to the third country, Home. The profit function can be written as follows:

$$\Pi_{X}(X;Y;S_{X}) = XP(X+Y) - XC_{X} + XS_{X}$$
(5.1.1)

$$\Pi_{y}(x;y;s_{y}) = YP(X+Y) - YC_{y} + YS_{y}$$
(5.1.2)

Where

 Π is the profit of the company.

X and Y are the exporting quantities of companies X and Y.

 C_x and C_y are the constant marginal costs for companies X and Y.

 S_x and S_y are the per unit subsidies that companies X and Y receive from their governments.

P(X+Y) is the price of the good in the Home market.

Also, we can assume linear demand, so

P(X+Y) = a - b(X+Y) (5.2)

I have

$$\Pi_{x}(x;y;s_{1}) = X(a-b(X+Y)) - XC_{x} + XS_{y}$$
 (5.3.1)

$$\Pi_{y}(x;y;s_{2}) = Y(a-b(X+Y)) - YC_{y} + YS_{y}$$
 (5.3.2)

In order to maximize the profit, I have the first order condition over the quantity of function (5.1.1) and (5.1.2). That is, marginal revenue equals marginal cost. The first order condition can be rearranged to give the reaction functions:

$$\mathbf{X}^* = \frac{\mathbf{a}}{2\mathbf{b}} - \frac{\mathbf{Y}}{2} - \frac{\mathbf{C}_{\mathbf{x}}}{2\mathbf{b}} + \frac{\mathbf{S}_{\mathbf{x}}}{2\mathbf{b}}$$
 (5.4.1)

$$\mathbf{Y}^* = \frac{\mathbf{a}}{2\mathbf{b}} - \frac{\mathbf{X}}{2} - \frac{\mathbf{C}_{\mathbf{Y}}}{2\mathbf{b}} + \frac{\mathbf{S}_{\mathbf{Y}}}{2\mathbf{b}}$$
 (5.4.2)

Notice that the reaction function is downward sloping, as shown in the following figure:





In figure 5.2 curves X* and Y* represent the reaction functions of companies X and Y. These two curves intersect at point 1. Figure 5.2 shows that for both companies, an increase in subsidy creates an increase in quantity exported.

Both X and Y want to maximize their profit. However, the reaction functions indicate that an increase in one company's exports causes a decrease in the other company's exports. Only at point 1 can these two companies reach equilibrium (Nash Equilibrium): at this point alone, both companies can maximize their profits.

Going back to the coated free-sheet paper case, the company I have chosen to discuss from China, Chenming Ltd, it is a state-owned company. The percentage of output being allocated to the Chinese domestic market is fixed by the government's political policy. Also, as a non-market economy country, the central government has fixed administrative prices for some of the important industries such as the paper industry. That is, the domestic price of coated free-sheet paper is also fixed. From the basic functions (5.3.1) and (5.3.2), the new profit function for Chenming Ltd is the following:

 $\Pi_{x}(x;y;s_{x}) = P_{c}X_{c} + X(a-b(X+Y)) - XC_{x} - X_{c}C_{x} + XS_{x}$ (5.5.1) Where

Pc is the fixed administrative price in China's domestic market.

Xc is the fixed quantity of coated free-sheet paper Chenming Ltd offers in China's domestic market.

X is the quantity of exporting coated free-sheet paper to the U.S. market.

Suppose there are a fixed percentages of coated free-sheet paper made by Chenming Ltd selling in the Chinese domestic market. From function 5.5.1, I can have:

$$a (X + Xc) = Xc$$
 (5.5.2)

That is:

$$\mathbf{X}_{\mathbf{C}} = \frac{\mathbf{a}}{1 - \mathbf{a}} \mathbf{X}$$
(5.5.3)

Putting the equation 5.5.3 back into 5.5.1, I could have:

$$\Pi_{\mathbf{x}}(\mathbf{x};\mathbf{y};\mathbf{s}_{\mathbf{x}}) = P_{c}\frac{\mathbf{a}}{1-\mathbf{a}}\mathbf{x} + X(\mathbf{a}-\mathbf{b}(\mathbf{X}+\mathbf{Y})) - \mathbf{X}C_{\mathbf{x}} - C_{\mathbf{x}}\frac{\mathbf{a}}{1-\mathbf{a}}\mathbf{x} + \mathbf{X}S_{\mathbf{x}}$$
(5.5.4)

The other company I have chosen to discuss as competing in the U.S paper market against Chenming is the Indonesian company Asian Pulp & Paper Ltd (APP). In order to simplify the model, I consider only its exporting quantity:

$$\Pi_{y}(x;y;s_{y}) = Y(a-b(X+Y)) - YC_{y} + YS_{y}$$
(5.5.5)

As I did before, in order to maximize the profit, I can obtain the following result from (5.5.1) and (5.5.2) by using the first order condition:

$$\mathbf{X} = \frac{\mathbf{a}}{1-\mathbf{a}} \frac{\mathbf{P}_{c}}{2\mathbf{b}} + \frac{\mathbf{a}}{2\mathbf{b}} - \frac{\mathbf{Y}}{2} - \frac{\mathbf{C}_{c}}{2\mathbf{b}} - \frac{\mathbf{C}_{c}}{2\mathbf{b}} \frac{\mathbf{a}}{1-\mathbf{a}} + \frac{\mathbf{S}_{c}}{2\mathbf{b}}$$
(5.6.1)

$$\mathbf{Y}^* = \frac{\mathbf{a}}{2\mathbf{b}} - \frac{\mathbf{X}}{2} - \frac{\mathbf{C}_{\mathbf{Y}}}{2\mathbf{b}} + \frac{\mathbf{S}_{\mathbf{Y}}}{2\mathbf{b}}$$
 (5. 6. 2)

I will also show equations 5.6.1 and 5.6.2 in the figure following:

Fig 5.3 New Reaction Functions



In figure 5.2, curves X* and Y* represent the reaction functions of the two companies, Chenming and APP. Two curves intersect at point 1*. Figure 5.2 shows that for both companies, an increase in subsidy causes an increase in exporting quantity, and that an increase in exporting quantity by one company decreases its competitor's exporting quantity. Also, an increase in China's domestic price will increase its exporting quantity.

The Chinese government could use either Pc or Xc as a subsidy instrument. If it uses domestic price as the subsidy instrument, the increase of the domestic price decreases the domestic consumer surplus. If the Chinese government uses Xc as the subsidy instrument, the increase of Xc increases the domestic consumer surplus. Using either Pc or Xc increases the profit of the company.

At point 1* these two firms meet their equilibrium: neither company increases its exporting quantity. At this time both companies can maximize their profits.

CHAPTER SIX: EMPIRICAL MODEL

In this chapter, the theoretical model in chapter 5 is estimated using empirical methods. The chapter first discusses the data and then presents the empirical model.

6.1 Importing of U.S Coated Free-Sheet Paper

6.1.1 Preliminary Department of Commerce Finding of Unfair Dumping of Coated Free Sheet Paper From China and Indonesia

In March, 2007, the Department of Commerce announced its affirmative preliminary determination in the countervailing duty investigation of imports of coated free-sheet paper from China, Indonesia, and Korea. The Department also announced the preliminary determination that Chinese producers/exporters had received net countervailable subsidies ranging from 10.90 to 20.35 percent, and Indonesian producers/exporters had received 10.85 percent subsidization. The Harmonized Tariff Schedule of the United States (HTSUS) currently classifies coated free-sheet paper under subheadings 4810.13.1900, 4810.13.2012, 4810.13.2090, 4810.13.5000, 4810.13.7040, 4810.14.1900,

⁴⁴ USITC "Coated Free Sheet Paper From China, Indonesia and Korea" Investigation Nos. 701-TA-444-446 (Final) and 731-TA-1107-1109 (Final).

4810. 14. 2010, 4810. 14. 2090, 4810. 14. 5000, 4810. 14. 7040, 4810. 19. 1900, 4810. 19. 2010, and 4810. 19. 2090. ⁴⁴

6.1.2 Total Imports of Coated Free Sheet Paper From China and Indonesia

In the U.S. domestic market for coated paper, production has increased over the past 30 years. Coated groundwood paper capacity in the United States grew at an average compound annual rate of 2.7%, from 2.01 million tons in 1970 to 4.51 million tons in 2000. Coated free-sheet paper production grew as fast as that of coated paper in general. From 1970 to 2000, U.S. coated free-sheet paper output more than doubled. Coated free-sheet paper is generally at the highest-value end of the printing- and writing-paper spectrum.

At the same time as domestic production has been increasing, the United States has also been importing coated free sheet paper from abroad. Exports to the United States from 2004 to 2006 are presented in table 6.1.

Table 6.1 Coated Free Sheet Paper Imports into the U.S. Market

Exporting	Volume(short tons)				
Country	2004	2005	2006		
China	146373	175869	334 6 85		
Indonesia	35876	48089	80116		
(metric tons)					

Exporting	Volume(short tons)				
Country	2004	2005	2006		
Korea	480727	452480	516632		
Canada	303728	301898	159784		
Finland	235536	168281	223942		
Germany	209754	146822	186108		
U. S.	4839651	4926891	4973370		

Source: USITC: Coated Free Sheet Paper From China, Indonesia and Korea (Final Investigation)

6.2 Empirical Model

To analyze the Chinese state-owned company and the Indonesian privately owned company, I use three stage least squares estimation (3sls) because 3sls is more efficient in dealing with endogenous variables; at the same time, 3sls can separately describe market demand and supply conditions.

6.2.1 Estat Durbinalt Test

Estat Durbinalt test performs Durbin's alternative test for serial correlation in the disturbance. It tests the need for adjustment for residual serial correlation. In this section, I try to test in two steps by separating the Chinese and Indonesian companies' exporting quantities. For both steps I will first predict these companies' exporting quantities, run OLS regressions, and find their Estat Durbinalt quotients. The results are the following:

Table 6.2 Estat Durbinalt I (Chenming's Exporting Quantity)

Lags	Prob > chi2
1	0. 111

Table 6.3 Estat Durbinalt II (APP's Exporting Quantity)

Lags	Prob > chi2
1	0. 894

The tables above show that the Probability > Chi2 is much greater than zero, which makes us feel comfortable about going into 3sls regression. 6.2.2 Review of the Theoretical Model

In this chapter, I build my empirical model from the theoretical one described in the last chapter:

$$\mathbf{P} = \mathbf{a} - \mathbf{b} (\mathbf{X} + \mathbf{Y}) \tag{5.2}$$

$$X = \frac{a}{1-a} \frac{Pc}{2b} + \frac{a}{2b} - \frac{Y}{2} - \frac{C_k}{2b} - \frac{C_k}{2b} - \frac{C_k}{2b} \frac{a}{1-a} + \frac{S_k}{2b}$$
(5.6.1)

$$\mathbf{Y}^* = \frac{\mathbf{a}}{2\mathbf{b}} - \frac{\mathbf{X}}{2} - \frac{\mathbf{C}_{\mathbf{Y}}}{2\mathbf{b}} + \frac{\mathbf{S}_{\mathbf{Y}}}{2\mathbf{b}}$$
 (5. 6. 2)

I use the following data in my empirical model.

6.2.3 The Data

To compare how Chinese and Indonesian subsidies help exporters in those countries, I consider every related factor. Chinese and Indonesian exports are directly influenced by U.S. domestic prices in the coated free-sheet paper market, but they are also affected by GDP and workers' salaries. Since China is still a non-market economy country, many state-owned companies' exporting practices follow the country's overall economic trends. In any country, regardless of whether it has a market or non-market economy, the significant cost of workers' wages can affect how much a company exports. On the other hand, U.S. domestic prices are influenced by its GDP. All these factors will be shown in the model.

All the different types of data I collected are described quarterly from 2001 to 2007. Essentially, the subsidies data I use in my empirical model include how much the country supports the companies' production, selling, and exporting activities. For Chenming Ltd, these subsidies include production, technological development, brand support, government loans, tax decreases, and special funds for the development of plantations. For the Indonesian company, APP, the subsidies I factor into my empirical model include government loans, debt forgiveness, and special funds for plantation development. These subsidy data come from Chenming's and APP's quarterly reports. American domestic prices, Chinese workers'

wages, and Indonesian workers' wages come from the paper industry's annual reports from the U.S., China, and Indonesia.

Because paper export quantities are also affected by electricity costs, I include the price of electricity as a variable in my model. The data for electricity prices come from China's and Indonesia's electricity industries' annual reports.

Finally, international trade is always affected by foreign exchange rates and interest rates. Therefore, I also consider both as important factors in my model. I learned these two rates from China's and Indonesia's central banks. Table 6.4 summarizes all of these data.

Table	6.4	Data	Used	in	My	Empirical	Model
-------	-----	------	------	----	----	-----------	-------

Variables	Observations	Mean	Std. Dev	Min	Max
Chinese	25	137667.4	72012. 94	34835	256848.4
Exporting					
Subsidies					
Chenming's	25	13023.88	7160.89	3611	24701
Exporting					
Quantity					
China's GDP	25	35875.12	12607.9	19894	67767
U.S. GDP	25	11561.72	1169.661	10022	13552
U.S. Domestic	25	82364	6851.27	71200	96300
Prices	2				
Chinese	25	3828.651	750. 8656	2835.2	5294. 4
Workers' Wages					
APP	25	8014.92	4896.023	1632	13539
(Indonesia)					
Exporting					
Quantity					
Indonesian	25	2416.072	460.0488	1812.7	3299. 4
Workers' Wages					

Variables	Observations	Mean	Std. Dev	Min	Max
Indonesia's	25	567527.3	186351.9	347471	915919
GDP					
Indonesia's	25	141388	66261.52	27200	221900
Exporting					
Subsidies					

I have already mentioned the issues associated with applying countervailing duty laws to market and non-market economy countries. In my thesis, I try to find out whether there is a differential effect of subsidies on a non-market economy country (China) versus a market economy country (Indonesia).

6.2.4 The Model

The semi-logarithmic function form is commonly used in econometrics because its coefficients represent useful concepts that are easily interpreted. Generally, in a semi-logarithmic function, the left-hand side (y value) is logged and the right-hand side (x value) maintains the original value. In my model, that means I will choose as log values Chenming's Exporting Quantity, the U.S. Domestic Price, and APP' s Exporting Quantity, while the rest of the data will retain their original values.

After finding the log value, I can set up my 3sls empirical model. There are three endogenous variables in the model: the U.S. Domestic Price, Chenming's Exporting Quantity, and APP's Exporting Quantity (these

variables are derived from their log values). The exogenous variables are the following: the U.S. GDP, the Chinese exporting subsidies, China's GDP, Chinese workers' wages, the total Chinese exporting quantity, Indonesian workers' wages, Indonesia's GDP, and Indonesia's exporting subsidies (derived by using their original values).

The empirical model will follow the theoretical model in the last chapter using Chenming Ltd from China and APP from Indonesia as data sources. X and Y represent the exporting quantities from Chenming and APP, respectively.

The subsidies here are the subsidies that Chenming and APP received from their governments to support their producing and their selling, including their exporting. According to Chenming's quarterly report, that company's subsidies include grants, government-provided loans, and income tax and VAT subsidies. For APP, the costs of exporting, C(x) and C(y), include the wages these two companies paid their workers and their electricity costs. Since electricity is an important resource in the paper industry, I consider it to be an important component in the cost.

The price in my empirical model, P(x+y), is the U.S. domestic price of coated free-sheet paper. Since the whole paper industry, like any other industry, closely reflects overall American economic trends, I will use the U.S.'s GDP as a factor that influences the price of U.S, domestic

coated free-sheet paper since it represents the market demand for coated free-sheet paper in the U.S.

Because I am interested in the excess supply of paper from Indonesia and China, I need to control for fluctuations in domestic demand; therefore, I include GDP in my empirical model.

From the theoretical model,

$$P = a - b(X+Y)$$
 (5.2)

$$X = \frac{a}{1-a} \frac{P_c}{2b} + \frac{a}{2b} - \frac{Y}{2} - \frac{C_k}{2b} - \frac{C_k}{2b} \frac{a}{1-a} + \frac{S_k}{2b}$$
(5.6.1)

$$\mathbf{Y}^* = \frac{\mathbf{a}}{2\mathbf{b}} - \frac{\mathbf{X}}{2} - \frac{\mathbf{C}_{\mathbf{Y}}}{2\mathbf{b}} + \frac{\mathbf{S}_{\mathbf{Y}}}{2\mathbf{b}}$$
(5. 6. 2)

I can build my theoretical model:

$$\mathbf{P} = \mathbf{a}_0 + \mathbf{\beta}_0 \mathbf{X} + \mathbf{\gamma}_0 \mathbf{Y} + \mathbf{\delta}_0 \mathbf{K}_0 + \mathbf{\varepsilon}_0 \tag{6.1.1}$$

$$X = \alpha_{1} + \beta_{1}Y + \gamma_{1}C(\mathbf{x}) + \delta_{1}S(\mathbf{x}) + \zeta_{1}T_{1} + \eta_{1}K_{1} + \varepsilon_{1} (6.1.2)$$

$$Y = \alpha_{2} + \beta_{2}X + \gamma_{2}C(\mathbf{y}) + \delta_{2}S(\mathbf{y}) + \zeta_{2}T_{2} + \eta_{2}K_{2} + \varepsilon_{2} (6.1.3)$$

Where

P is the U.S. domestic price for coated free-sheet paper.

X and Y are the exporting quantities from Chenming Ltd and APP to the U.S. K represents other factors that might affect the U.S domestic price such as the U.S.' s GDP and domestic output in the first function and GDP alone in the second and third functions.

C(x) and C(y) are the costs for Chenming Ltd and APP.

Cost = Workers' wages + Electricity Price + Interest Rate + Foreign Exchange Rate (against the U.S. Dollar) (6.2) S(x) and S(y) are the exporting subsidies Chenming Ltd and APP receive from their governments.

T represents the time trend, since it is a time-series.

From the results of the theoretical model presented in chapter five, I know that as Chenming's exporting quantity increases, APP's decreases. Also, government subsidies from both China and Indonesia have a positive effect on their exporting quantities. Therefore, in my regression I will test to determine whether Chenming and APP's exporting quantities are negatively related and if government subsidies have positive relationships with exporting quantity. I will use the empirical model and the factors mentioned above to calculate the regression and prove the results.

The process of running the 3sls model is the following: The first step is to regress the U.S. domestic price (logged) over the U.S. GDP, because the first stage of the 3sls is to remove endogenous variables (the U.S. domestic price) from the actual estimate (Chinese or Indonesian exporting quantity).

Two actual estimates are included in the model, one of Chenming's exporting quantity (logged value); the other of APP's exporting quantity (logged value). Table 6.5 shows all the coefficients of the three steps
of running the regression. My explanation of the results appears after the table.

6.2.5 3sls Regression

Before obtaining a result, I try to forecast the result of the regression. According to the theoretical model and the basic economic theory, I estimate the result to be as follows:

According to the basic supply curve, quantity and price have positive effects on each other, so in the first step, the coefficients of China's exporting quantity, Indonesia's exporting quantity, and U.S. output will be positive.

The second and third steps are about the demand curve. Subsidy should have a positive effect on exporting quantity, while price should have a negative effect on exporting quantity. Costs, including workers' wages, electricity prices, interest rates, and foreign exchange rates, should have negative effects. Finally, the exporting quantity of each competitor should have a negative effect on the other's exporting quantity.

Tables 6.5(1) and (2) provide two more equations which consider the potential for Chinese and Indonesian subsidies being endogenous.

	Coef	Std Err		
U.S Domestic Price				
U.S GDP	-0. 384	2. 932		
U. S. OUTPUT	-0. 918	1. 862		
CHINA'S EXPORTING	20033. 8*	14321. 4		
QUANTITY				
INDONESIA'S EXPORTING	-6861. 785	5587. 578		
QUANTITY				
Chenming's Exporting Qua	ntity			
	· · · · · · · · · · · · · · · · · · ·	*** #***		
Chinese Exporting	8. 03	9. 30		
Subsidy				
China's GDP	6. 55*	1. 48		
U.S. Domestic Price	3. 53*	1.75		
Workers' Wages	-0. 00033*	0.000075		
APP(Indonesia)'s	-0.00611	0.044		
Exporting Quantity				
Time Trend	-0.061*	0.0085		
China's Electricity	-0. 00538*	0. 0022		
Price				
China's Exchange Rate	-0. 025	0. 159		
against the U.S. Dollar	15			
Chinese Interest Rate	0. 0298*	0.01		
APP(Indonesia)'s Export	ing Quantity			
_				
Indonesia's Exporting	6.72*	2.18		
Subsidy				
Indonesia's GDP	1.29	9.53		
Chenming's Exporting	-0.04	1.14		
Quantity				
Time Trend	-0. 06*	0.04		
U.S. Domestic Price	-8.77	10. 8		
Workers' Wages	9. 3*	3. 2		
Indonesia's Electricity	0. 28	0. 29		
Price				
Indonesia's Exchange	-0.0003*	0. 00007		
Rate against the U.S.				
Dollar				

Table 6.5(1) 3SLS Regression

	Coef	Std Err
APP(Indonesia)' s Exporting Quantity		
Indonesia's Interest Rate	-0. 03	0. 02

Table 6.5(2) 3SLS Regression

	Coef	Std Err		
U.S Domestic Price				
U.S. GDP	-0. 257	2. 57		
U.S. CAPACITY	-1.86	1. 27		
CHINA' S EXPORTING	32764.09*	12530. 95		
QUANTITY				
INDONESIA' S EXPORTING	-14266. 38*	4552. 956		
QUANTITY				
Chenming's Exporting Qua	antity			
	-			
Chinese Exporting	8. 48*	1.07		
Subsidy				
China' s GDP	1.96*	1.77		
U.S. Domestic Price	-3. 44	2. 79		
Workers' Wages	-0. 000357	0. 000086		
APP(Indonesia)' s	-0.04	0. 06		
Exporting Quantity				
Time Trend	-0.07	0.01		
China's Electricity	-0.0014	0.0021		
Price				
China' s Exchange Rate	0.104	0. 152		
against the U.S. Dollar				
Chinese Interest Rate	0. 024*	0. 009		
APP(Indonesia)'s Exporting Quantity				
Indonesia's Exporting	8.43*	1.89		
Subsidy				
Indonesia's GDP	1. 81	8.59		
Changing's Exporting	-0.04	0. 74		
Quantity				
Time Trend	-0.08	0.04		

	Coef	Std Err		
APP(Indonesia)' s Exporting Quantity				
U.S. Domestic Price	-0.000028*	8. 25e-06		
Workers' Wages	-0.00005	0.0002		
Indonesia's Electricity	0. 156	0. 189		
Price				
Indonesia's Exchange	-0.0004*	0. 00005		
Rate against the U.S.				
Dollar				
Indonesia's Interest	-0.02	0. 12		
Rate				
Chinese Exporting Subsidy				
Lag Chinese Exporting Subsidy	0. 97*	0. 098		
China's GDP	0. 14	0. 31		
Indonesia's Exporting	-0.01	0.09		
Subsidy				
Indonesian Exporting Subsidy				
Lag Indonesian Subsidy	0.76*	0.12		
China's Exporting	0. 23	0. 28		
Subsidy				
Indonesia's GDP	0.009	0. 09		

Note: The data with * is its p-value less than 5% significance level. From the two tables above I conclude that the results are fairly similar: that is, subsidy is not much affected by other factors. I therefore consider subsidy to be an exogenous variable.

6.3 Results and Explanation

6.3.1 Basic Analysis

Table 6.5(1) shows that some of the results have a different sign than I expected. The first step shows that U.S. output and Indonesian exporting quantity have negative effects on the U.S. domestic price: perhaps the relatively low quantity of Indonesia's exports to the U.S. prevents Indonesia's exports from having a significant effect on the U.S. domestic market. This step also shows that American output has a negative effect on the U.S. domestic price, maybe because I have only 25 quarters of observations.

In the second step, the Chinese interest rate has a positive effect on Chenming's exporting quantity, I believe because China's interest rate has changed little in recent years. Also, as a big state-owned company, Chenming might enjoy a lower interest rate than smaller companies in China. The U.S. domestic price has a positive effect on Chenming' s exporting quantity, which I think may also reveal a problem with the observations: over a short period, my calculation of the result might not accurately follow the demand curve.

In the third step, the Indonesian workers' wages have a positive effect on the country's exporting quantity, which I think might be because APP changed its workers' wages not in relation to its exporting quantity but perhaps because of its total profit or other factors.

The electricity price also has a positive effect on Indonesia's exporting quantity: I think APP might have received a different electricity price at some point because of the Indonesian government adjusting its policy on its paper industry. This adjustment might not be caused by an increasing in Indonesia's paper exporting quantity.

6.3.2 Subsidies

The coefficient on subsidies from the empirical model follows that found in the theoretical model: that is, the exporting subsidies have a positive effect on exports from both countries, regardless of whether they have a market or non-market economy. Meanwhile, as mentioned in previous chapters, a non-market economy country such as China might have stronger government support for its exports than market economy countries. The reasons in this case are as follows:

First of all, Chenming Ltd. has been a state-owned company since Although its structure nowadays is stock-share holdings, its the 1950s. largest share holder is China; therefore, the government naturally tries its best to support Chenming, its own enterprise. It is no surprise that after the U.S. Department of Commerce declared that it had started to investigate the possibility of imposing CVDs against Chenming, almost all Chinese newspapers strongly opposed this investigation and tried to prove there had been no illegal subsidy in this case. However, we must remember that there are no privately owned newspapers in China. Further, on April 3, 2007, the China Paper Industry Organization made "a strong protest," asking the U.S. Department of Commerce to withdraw its "discrimination The Department of Law in Beijing WTO Affair Centre said that, policy." according to the "rules from the WTO and U.S. domestic laws," it was "unfair" to punish Chenming. These protests came out everywhere in

China almost simultaneously. The opinions they voiced were virtually unanimous: as a matter of fact, I found no difference between the ideas that appeared in published newspapers, documents, and declarations. There is no doubt that only a huge amount of subsidization for a state-owned company could have generated such uniform support.

Another reason why the Chinese government gave so many subsidies to a state-owned company is that it wants such enterprises to make good profits abroad, not so as to give their workers better wages, but in order to support the Chinese economy. Because a Chinese state-owned company can easily decrease its workers' wages, it can reduce its production costs, allowing its exports to US will constitute a huge and inevitably damaging challenge to its U.S. rivals.

But Indonesia is different. APP is a private company, and so does not have a strong influence on national development. The Indonesian government also subsidizes its companies less than the Chinese government.

According to equations 6.2 and 6.3, $\beta_{subsidy} = dlnQ/dS$, that is, $\Sigma = S * \beta_{subsidy} = S * dlnQ/dS = (dQ/Q)/(dS/S)$ (6.3)

Where Σ is the elasticity of the subsidy, S is the mean of the subsidy. From tables 6.2 and 6.5, we can determine that

 $\Sigma \text{china} > \Sigma \text{ Indonesia}$ (6.4)

Because it is a non-market economy country, China offers more support to its big state-owned companies than market economy countries do, which in financial terms means offering more governmental subsidies. As mentioned in the subsidy chapter, however, because it is a market-economy country, Indonesia offers subsidies to an entire particular industry (such as the wood plantation industry) instead of particular companies. As a result, big companies in Indonesia receive less subsidization than their Chinese competitors.

6.3.3 Exporting Quantity

According to table 6.5(1), we can form another equation: dQ(China)/dQ(Indomesia) < dQ(Indonesia)/dQ(China). That is, the effect of APP on Chenming is not as great as that of Chenming on APP, which I think is a reasonable perspective: since Chenming is state-owned, its exporting activity depends more on government help than on market competition. As a result, while APP cannot fully influence its exporting quantity because it is not a state-owned company and so depends more on the market than Chenming, Chenming can determine its own exporting quantity.

However, the effect here is not particularly significant, as even table 6.5(1) shows. Table 6.5(2) shows that dQ(China)/dQ(Indomesia) =dQ(Indonesia)/dQ(China), which means in an unrestricted regression that the effect of either of the companies on the other is fairly similar.

6.3.4 Exports and U.S. Domestic Price

From demand and supply curves, we know that when the market price goes up, the quantity supplied will go up as well. The empirical model shows this relationship strongly for Chenming's exports and for U.S. domestic capacity, but not for APP's exports. My explanation for the differing results is that I don't have enough data. Also, as it is a time-series equation and I have data for only 25 quarters, I may not have enough data for an accurate regression. This is one of the limitations of my thesis.

6.3.5 The Relation Between Chenming's and APP's Export Behavior

The theoretical model shows that in a monopoly market, the exports of one company have a negative influence on those of another. We can see from the empirical model that $dQ_c/dQ_i < 0$ and that $dQ_i/dQ_c < 0$.

The R-Square results of 3sls in this chapter are the following:

Equation	0bs	R-Sq
U.S. Domestic Price	25	0. 5337
Chenming's Exporting Quantity	25	0. 6476
APP(Indonesia)' s Exporting Quantity	25	0. 8513

Table 6.6 R-Square

6.3.6 Sensitivity Analysis

According to tables 6.5(1) and 6.5(2), the coefficient sensitivity is comparable. However, table 6.5(1) has a restriction: I consider subsidies both from China and Indonesia as exogenous variables. In contrast, the regression of 6.5(2) is unrestricted because I consider subsidies as an endogenous variable. Yet table 6.5(1) seems not much different from table 6.5(2). Therefore, we can accept the results of table 6.5(1).

CHAPTER SEVEN: SUMMARY AND CONCLUSIONS

7.1 Summary

Countervailing duty laws allow the U.S. government to investigate and offset subsidies received by foreign companies. However, the method that the U.S. uses to measure the amount of subsidization a foreign company has received makes it more practicable for the U.S. to investigate a foreign company from a market-economy country than its counterpart from a non-market economy country. That is the reason that until the case Coated Free Sheet Paper From China, Korea and Indonesia, the U.S. government did not take any countervailing duty actions against a company from a non-market economy country. Although China is still a non-market economy country, today China is far from what it was before the 1980s, and indeed the early 1990s. Because of how China has started to resemble a market economy country in some respects, the United States International Trade Administration therefore decided that it could investigate relevant subsidies in the case of coated free-sheet paper imports from China. The final affirmative determination was made on October 18, 2007, when the ITA found that Chinese exporters had received net countervailable subsidies from their government ranging from 7.40 to 44.25 percent. As a result, legislation seeking to apply countervailing actions to non-market economy countries was introduced in the 110th congress.

The results from my theoretical models confirm that subsidies can support a country's exports, even if it is a non-market economy country. The empirical models also allow the same conclusion. Moreover, they indicate that the subsidies a company receives in a non-market economy country affect competitors in a market economy country, which makes importing countries such as the U.S. anxious to find an effective means of protecting their own domestic industries. Using countervailing duty laws against non-market economy countries seems to be such an efficient action.

In general, legislation should change when the situation changes. China, like various other non-market economy countries, changed its economic system long before the collapse of the Soviet Bloc in the early 1990s. It is still not a real market economy country, but the question of how the United States and other "old market" economy countries should deal with these so-called "semi-market-economy" countries is a serious challenge—or alternatively, a big opportunity.

7.2 Limitations and Further Studies

The results determined from the empirical models confirm the conclusion provided by the theoretical models. However, one of the difficulties I met with when building the empirical models was that I could find only limited data. China's economic growth has outstripped its

statistics. That is why people sometimes do not believe the Chinese government's claims in regard to its economic development. Another limitation is that since these are time-series models and I was able to collect data from only 2001 to 2007, my models might not yield as accurate results as they may have if I could have collected data from a longer period.

Further research within this field should focus on other non-market economy countries, since their economies are similar China's. Some of them have developed extremely rapidly, so their exporting quantity is much greater than before. Their subsidies, meanwhile, remain hard to measure.

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