



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# **Transparency and Export Subsidies in International Wheat Competition**

by

**William W. Wilson**

**D. Demcey Johnson**

**Bruce L. Dahl**

**Department of Agricultural Economics ! Agricultural Experiment Station**

**North Dakota State University ! Fargo, ND 58105-5636**

## ACKNOWLEDGMENTS

Comments on an earlier version were obtained from George Flaskerud, Won Koo, and Cheryl Wachenheim though errors and omissions are the responsibility of the authors. We wish to acknowledge participants in a U.S. Wheat Associates seminar (March 15, 1999) who also provided comments on an earlier version. Thanks also to Linette Knoll who helped to prepare this document. This research was conducted under a National Research Initiative project titled *Strategic Effects of Transparency in International Wheat Markets* (NRI Project Number 97-35400-4436).

We would be happy to provide a single copy of this publication free of charge. You can address your inquiry to: Carol Jensen, Department of Agricultural Economics, North Dakota State University, PO Box 5636, Fargo, ND 58105-5636, (Ph. 701-231-7441, Fax 701-231-7400), (e-mail: [cjensen@ndsuxext.nodak.edu](mailto:cjensen@ndsuxext.nodak.edu)) or electronically from our web site: <http://agecon.lib.umn.edu/ndsu.html>

## NOTICE:

The analyses and views reported in this paper are those of the author. They are not necessarily endorsed by the Department of Agricultural Economics or by North Dakota State University.

North Dakota State University is committed to the policy that all persons shall have equal access to its programs, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

Information on other titles in this series may be obtained from: Department of Agricultural Economics, North Dakota State University, P.O. Box 5636, Fargo, ND 58105. Telephone: 701-231-7441, Fax: 701-231-7400, or e-mail: [cjensen@ndsuxext.nodak.edu](mailto:cjensen@ndsuxext.nodak.edu).

Copyright © 1999 by William W. Wilson, D. Demcey Johnson, and Bruce L. Dahl. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES .....	ii
LIST OF FIGURES .....	ii
ABSTRACT .....	iii
INTRODUCTION AND OVERVIEW .....	1
PSEs AND THE URUGUAY ROUND .....	1
OVERT EXPORT SUBSIDIES .....	4
EU Restitutions .....	4
U.S. Export Enhancement Program (EEP) .....	8
EXPORT CREDIT MECHANISMS .....	9
TRANSPARENCY AND PRICE DISCRIMINATION .....	14
Price Discrimination .....	14
Price Transparency .....	15
Factors Contributing to the Transparency Problem in International Grain Trading .....	17
TRANSPARENCY AND HIDDEN SUBSIDIES .....	20
SUMMARY AND IMPLICATIONS .....	21
REFERENCES .....	23

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Value of Export Credit Guarantees for Major Wheat Exporters . . . . .	13
2 Simulation Results with Symmetric Information and Cost Distributions . . . . .	18
3 Simulation Results with Asymmetric Information and Cost Distributions . . . . .	18
4 Import Tender Results with Four Exporters with Asymmetric Information and Cost Distributions . . . . .	18

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1 Value Per Unit of Producer Subsidy Equivalents for Wheat, 1995-1997 . . . . .	2
2 Producer Subsidy Equivalents for Wheat as Percent of Value of Production, 1995-1997 . . . . .	3
3 EU Export Restitutions for Grains, 1980-1997 . . . . .	5
4 EU Wheat Export Restitution/Tax Quantities and Values, 1996-1999 . . . . .	6
5 EU Barley Export Restitution Quantities and Values, 1996-1999 . . . . .	7
6 U.S. Exports of Wheat Under the EEP Program and EEP Volumes as a Percent of Total Wheat Exports, 1981/82 to 1997/98 . . . . .	8
7 U.S. Wheat Exports Under Export Credit Programs and Export Credit Volumes as a Percent of Total Wheat Exports, 1978-1997 . . . . .	10
8 Canadian Wheat Exports Under Export Credit Programs and Export Credit Volumes as a Percent of Total Wheat Exports, 1983-1996 . . . . .	11
9 EU Wheat Exports Under Export Credit Programs and Export Credit Volumes as a Percent of Total Wheat Exports, 1981-1992 . . . . .	12

## **ABSTRACT**

Export subsidies and price transparency will be areas of critical importance in the forthcoming round of World Trade Organization (WTO) negotiations. This paper provides a review and discussion of issues relating to export subsidies and transparency in international wheat trade. Among other topics, the paper addresses the escalation in U.S. and EU producer subsidy equivalents (PSEs) for wheat since 1996, EU export restitutions, export credit guarantee programs, and price transparency and price discrimination, specifically as they relate to State Trading Enterprises (STEs).

As the United States develops its strategy for trade negotiations, several points should be considered. First, the European Union continues to subsidize its wheat much more intensively than other wheat exporters. EU export restitutions overshadow most of the other 'policy distortions' which might be drawn into negotiations over wheat trade. Second, there will likely be pressure for new international disciplines on export credit guarantee programs. This is of critical significance for the United States, given the recent importance of sales under GSM programs, and features which may make these programs more effective than those employed by competing exporters. U.S. wheat producers would lose if the United States were forced to curtail its use of export credit guarantees.

Conceptually, the topic of price transparency can be understood in the context of bidding games with asymmetric information. As such, it probably is not of great significance to international trade; for example, 'lack of transparency' (e.g., by the Canadian Wheat Board) may impute an advantage of less than \$1-2/mt in bidding competition. Lack of transparency is also linked to concerns about hidden subsidies and the potential for evading international disciplines. Past investigations of the Canadian Wheat Board have turned up little evidence of unfair pricing, while highlighting the difficulty of defining 'cost of acquisition' where Board transactions are concerned. Finally, while an ability to practice price discrimination is an advantage enjoyed by STEs, that is not prohibited under the WTO.

**KEY WORDS:** WTO, Policy, Wheat, Price Transparency, Price Discrimination, Export Subsidies, and STEs.

# **Transparency and Export Subsidies in International Wheat Competition**

**William W. Wilson, D. Demcey Johnson, Bruce L. Dahl\***

## **INTRODUCTION AND OVERVIEW**

Export subsidies are a perennially important issue in international agricultural trade. Their importance may be greater for wheat than for other agricultural commodities, due to the composition of exporting countries and mechanisms which govern their agricultural sectors. While the previous round of international trade talks imposed specific disciplines on export subsidies, and subsidy levels for wheat fell somewhat during the mid-1990s, EU export restitutions have again increased sharply in response to lower world prices. Besides these more overt export subsidies, other, less-transparent forms of subsidies have emerged and likely will be at issue in the forthcoming round of trade negotiations.

For purposes of this paper we discuss export subsidies in two contexts. One category includes price subsidies which are specifically designed and administered to expand exports (such as EU export restitutions, or the U.S. EEP program); these are typically direct and transparent. The other category includes programs (such as export credit guarantees) that have a subsidy component, but which are less direct and less transparent.

The paper identifies some of the issues related to export subsidies which are likely to become important in the forthcoming round of trade negotiations. First we describe PSE's (producer subsidy equivalents), which provide a summary measure of subsidies for inter-country comparisons. The second section provides a discussion of direct subsidies, and the following section describes a number of less transparent or indirect subsidy mechanisms. The final section provides a summary and serves as a point of departure for assessing strategies for trade negotiations.

## **PSEs AND THE URUGUAY ROUND**

Producer Subsidy Equivalents (PSEs) are an aggregate measure of the policy-related transfers from taxpayers and consumers to agricultural producers. PSEs provide a way to compare the aggregate effects of agricultural policies in different countries, and as such have provided an important analytical foundation for trade negotiations. Data on PSEs are collected by the Organization for Economic Cooperation and Development (OECD). Figures 1 and 2 show PSEs for the three major wheat exporters during 1995-97, the first three years of the implementation period for the Uruguay Round Agreement on Agriculture (URAA).<sup>1</sup> Despite the sharp reduction in support, the European Union continues to subsidize its wheat producers

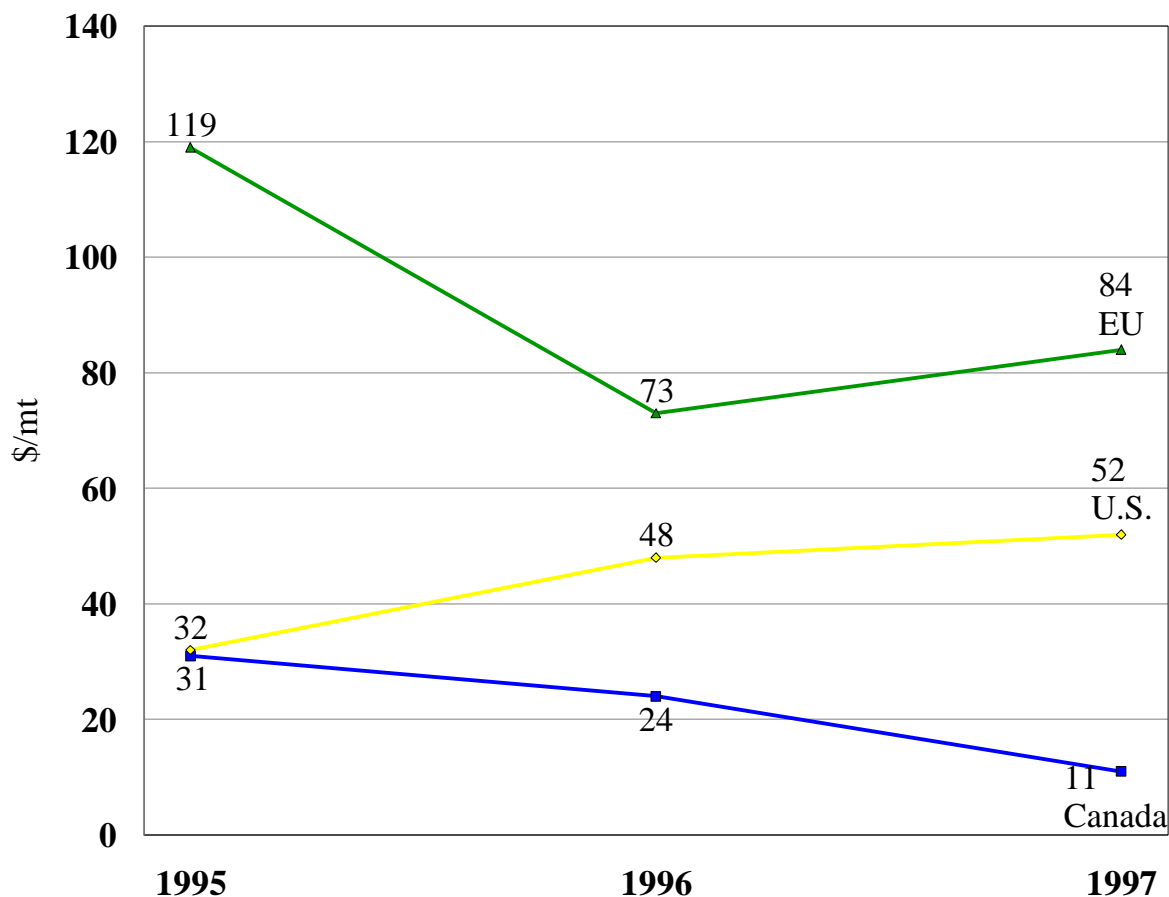
---

\*Professor, Associate Professor, and Research Scientist, respectively, in the Department of Agricultural Economics, North Dakota State University, Fargo.

<sup>1</sup>Data on PSEs for 1998 are not yet available.

heavily, both in terms of dollars per tonne (Figure 1) and as a percentage of the value of production (Figure 2). Canada's support for wheat producers has fallen considerably, both in dollar and percentage terms, while U.S. support for wheat producers has shown continual increases.<sup>2</sup>

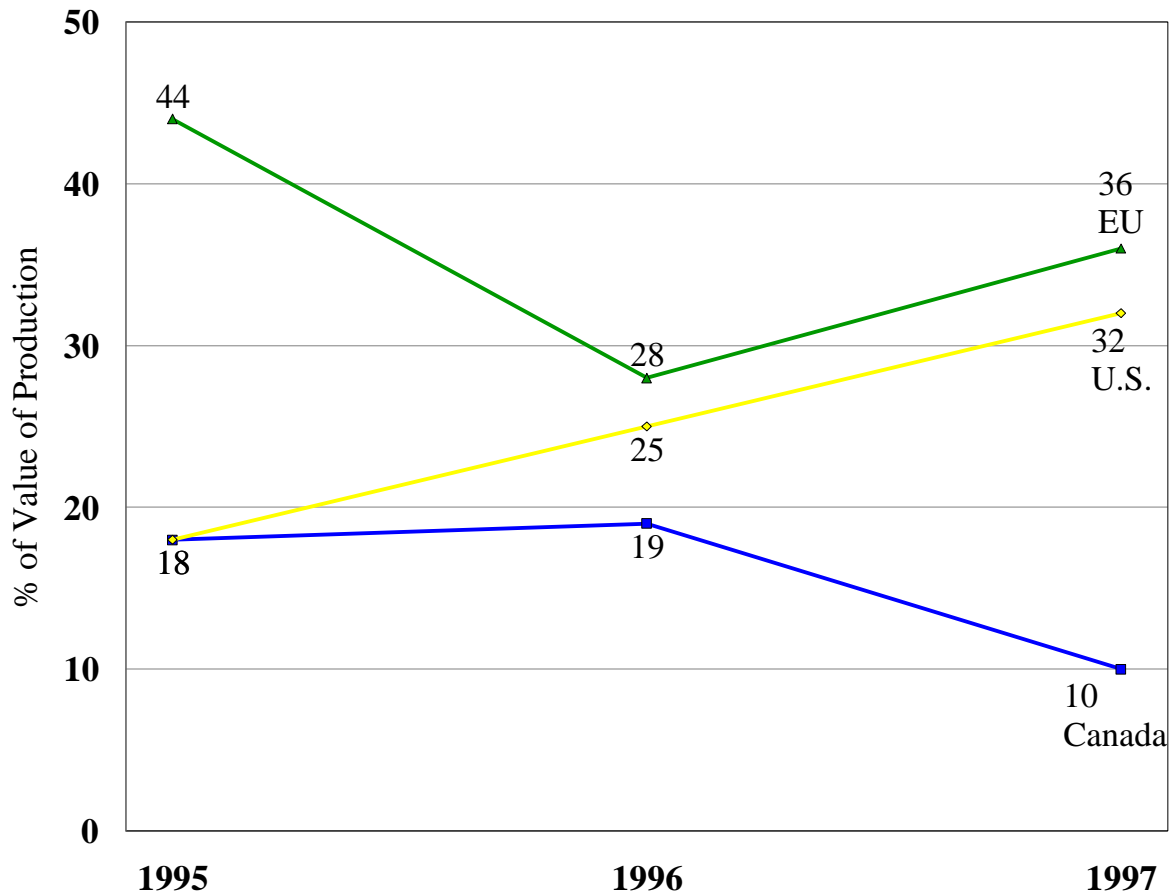
The disciplines imposed under the URAA are not specified in terms of PSEs. Rather, the URAA imposes numerical targets in three areas: 1) market access (reducing import barriers and converting nontariff barriers to tariffs); 2) export subsidies (reductions in value and volume terms); and 3) domestic support (trade-distorting policies in support of producers). The third objective makes use of an agreed upon numerical measure, the Aggregate Measure of Support (AMS), which omits certain policies judged to be nontrade distorting or minimally distorting. Research and extension, disaster relief, environmental programs, and crop insurance fall into a category of policies termed "green box" which are not constrained by the Agreement.



**Figure 1. Value Per Unit of Producer Subsidy Equivalents for Wheat, 1995-1997.**

<sup>2</sup>Some annual fluctuations in PSEs can reflect changes in market conditions rather than policy changes.





**Figure 2. Producer Subsidy Equivalents for Wheat as Percent of Value of Production, 1995-1997.**

For wheat, negotiated reductions in export subsidies were perhaps the most important outcome of the URAA. Developed countries agreed to reduce the value of their export subsidies by 36 percent by 2000, and to reduce the export volume qualifying for a subsidy by 21 percent, relative to the 1986-88 base period. Canada's elimination of its rail subsidy program (which lowered the cost of rail shipments to export position) counted toward fulfillment of this commitment. The European Union's commitments did not pose much difficulty during 1995-7 due to relatively high world grain prices; however, the price collapse of the past year (and pending accession of other grain producing countries) now confront the EU with much higher restitution payments (Figures 3-4). Budgetary pressures, in addition to URAA commitments, seem certain to force further lowering of the EU's support prices for grains.

## OVERT EXPORT SUBSIDIES

Many of the major wheat exporters have programs that have been (or are currently) used for export price subsidies. They include the Export Enhancement Program (EEP) for the United States, the European Union's export restitutions, and to a lesser extent, Canada's rail rate subsidy, although this was eliminated in 1995.

### EU Restitutions

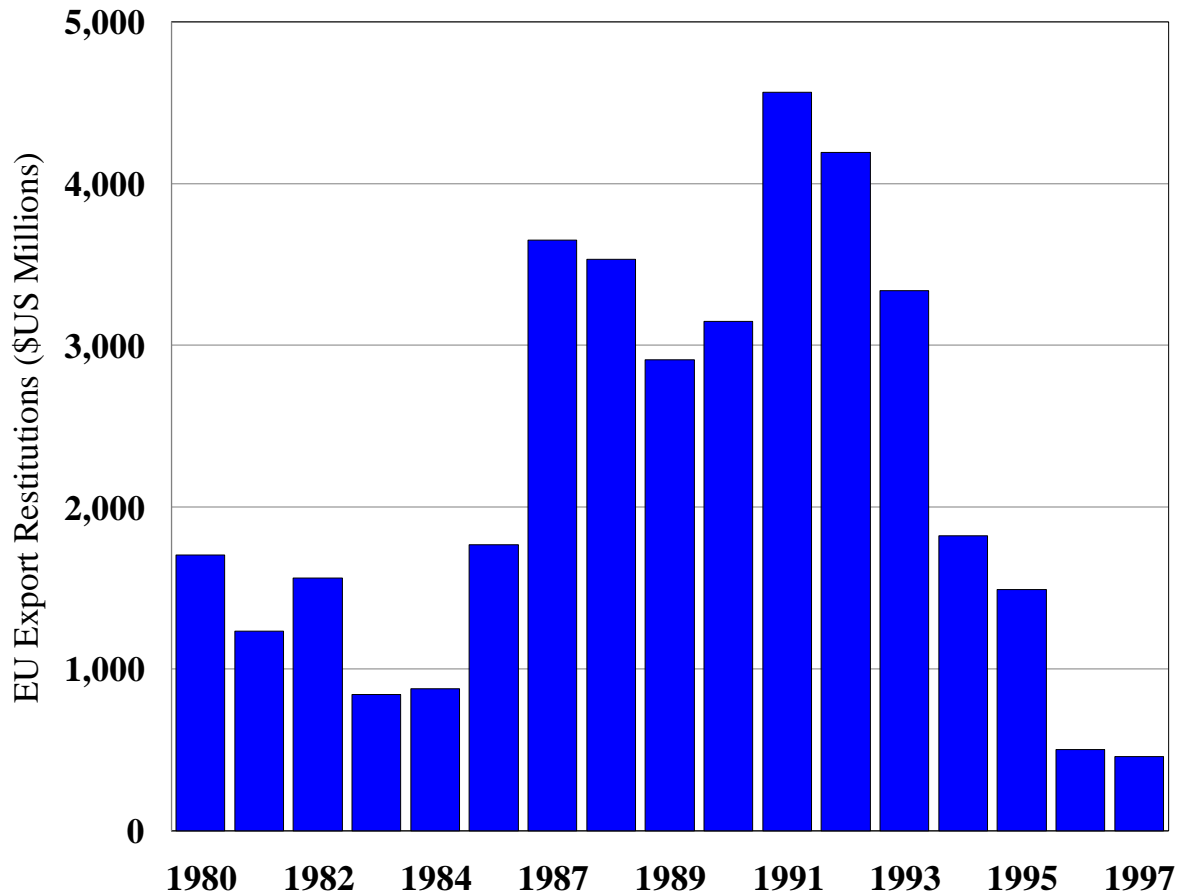
The most transparent form of subsidy in the international wheat market is that of the EU restitution. The EU provides export restitutions (difference between selling price and an established intervention price, when world prices are lower than domestic prices) and export taxes (when world prices exceed domestic prices) for exports of agricultural commodities. This allows for high domestic prices that foster production and a direct export subsidy to reduce excess stocks as a result of surplus production. Export restitutions became a significant direct export subsidy in the late 1970s and 1980s as the EU shifted from being a wheat importer to a wheat exporter.

Aside from the sheer magnitude of the subsidy, there are three important aspects of this mechanism. One is that it is highly transparent and overt. All market participants are acutely aware of the use and value of the restitutions. Second, it is generally nondiscriminatory with respect to administration. Traditionally, with the exception of special subsidies for durum and a formula arrangement for malt, it was administered so that the value of the restitution did not vary by importing country; thus, it was nondiscriminatory. However, it appears greater flexibility is now being allowed, so that slightly different values may occur across importing countries. Third, the restitution mechanism applies to 100 percent of the wheat exported from the EU.

Historical expenditures under the EU restitution mechanism are shown in Figure 3. As illustrated, EU restitutions escalated and reached a peak during the early 1990s. Annual average values on wheat in \$/mt were: 1992/93, 105; 1993/94, 80; and 1994/95, 70. The restitution was eliminated during 1995/96, and, in fact, during part of this period, an export tax was levied. However, the restitutions began to escalate again beginning in September 1996. Figures 4 and 5 illustrate some of the recent behavior of EU restitutions on wheat and barley, respectively.<sup>3</sup> In recent months, restitutions have been increasing and are now \$36/mt for wheat and \$56/mt for barley.

---

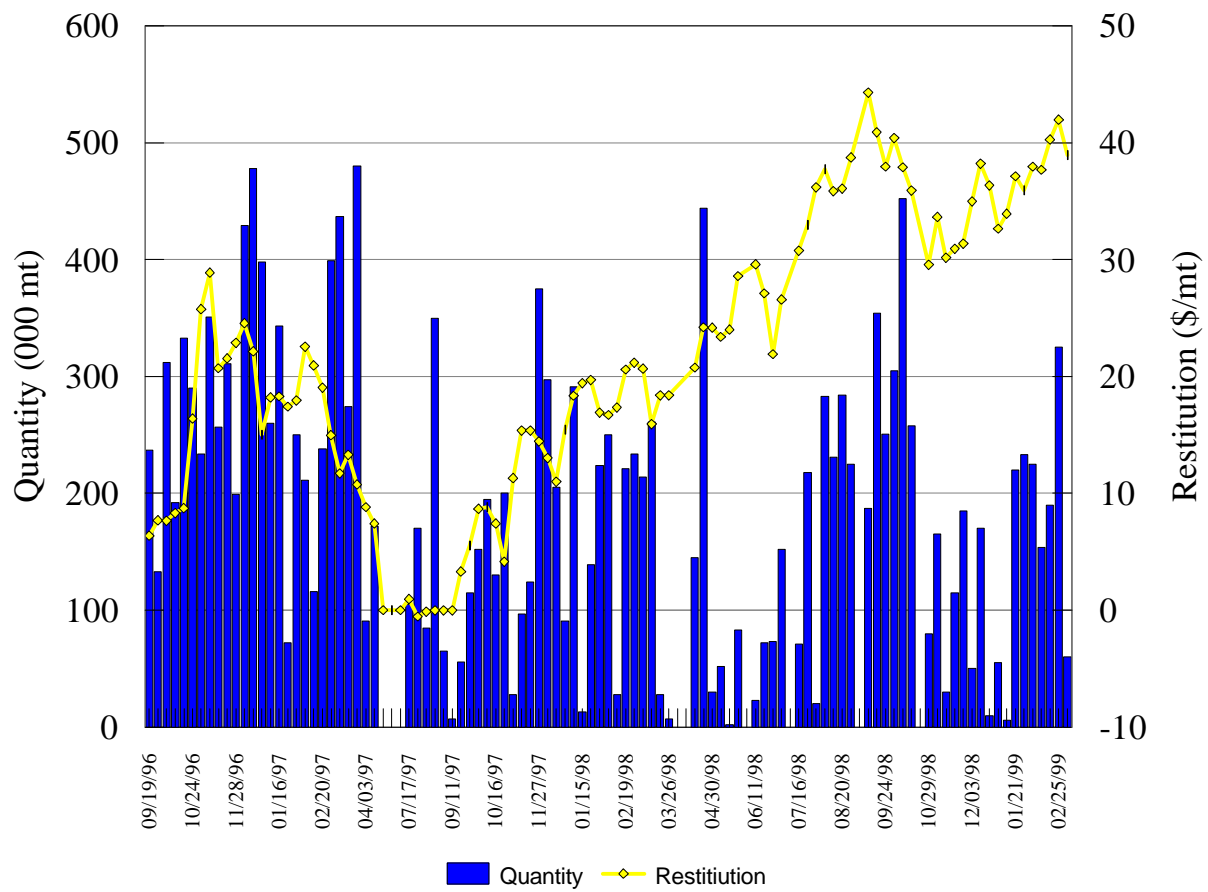
<sup>3</sup>Data used in these figures were provided by Mr. Paul Gallagher, USDA/FAS.



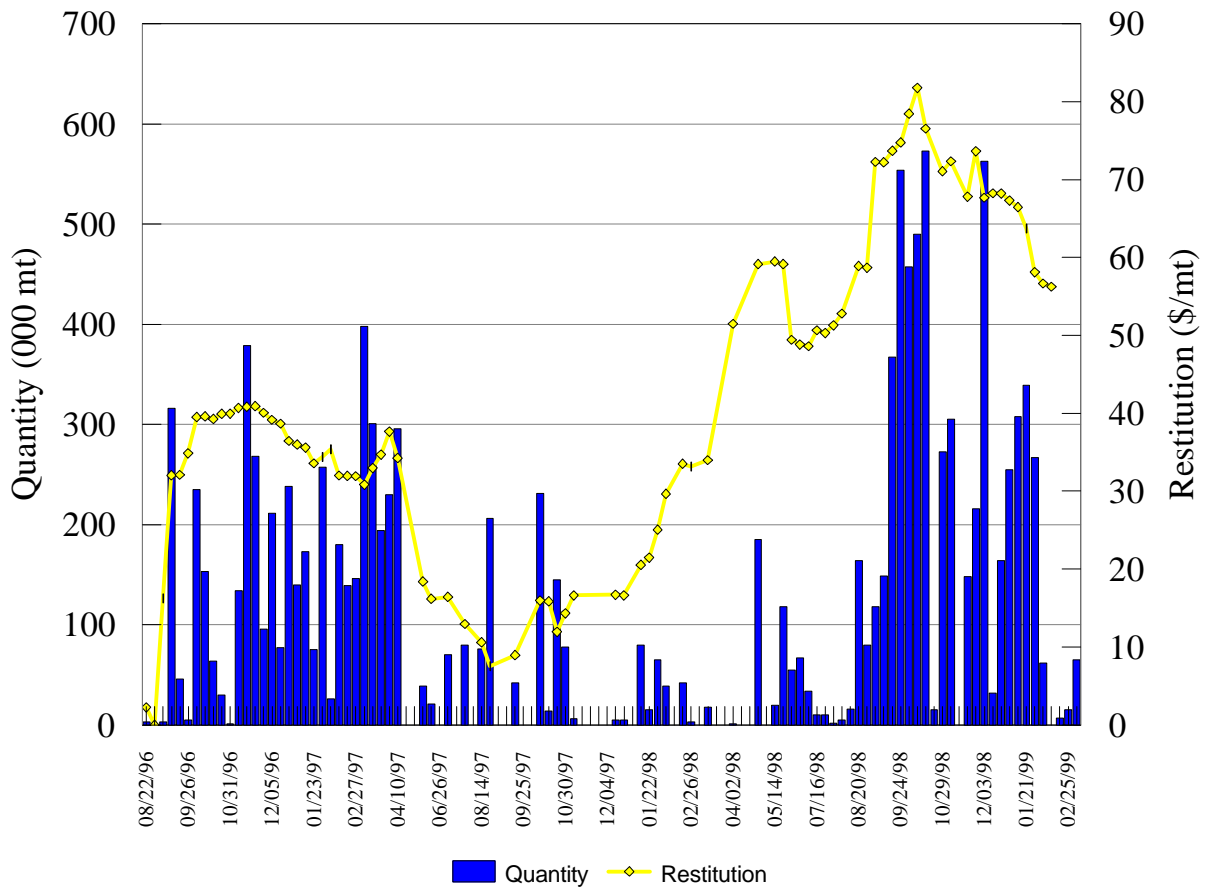
**Figure 3. EU Export Restitutions for Grains, 1980-1997.**

### **U.S. Export Enhancement Program (EEP)**

The EEP was originally developed to foster U.S. agricultural exports and counter unfair trade practices of competitors. It was established in 1985 primarily to counter EU subsidies, and currently operates subject to GATT and WTO limits. The United States had used overt export subsidies during the 1960s. However, the design of EEP marked a departure from earlier U.S. programs. First, EEP was highly discriminatory, in that only targeted countries were eligible. Second, it was only applied to a portion of the wheat exported. Third, its operation made it a highly transparent subsidy mechanism (see below). Again, these are in contrast to earlier export subsidy regimes.

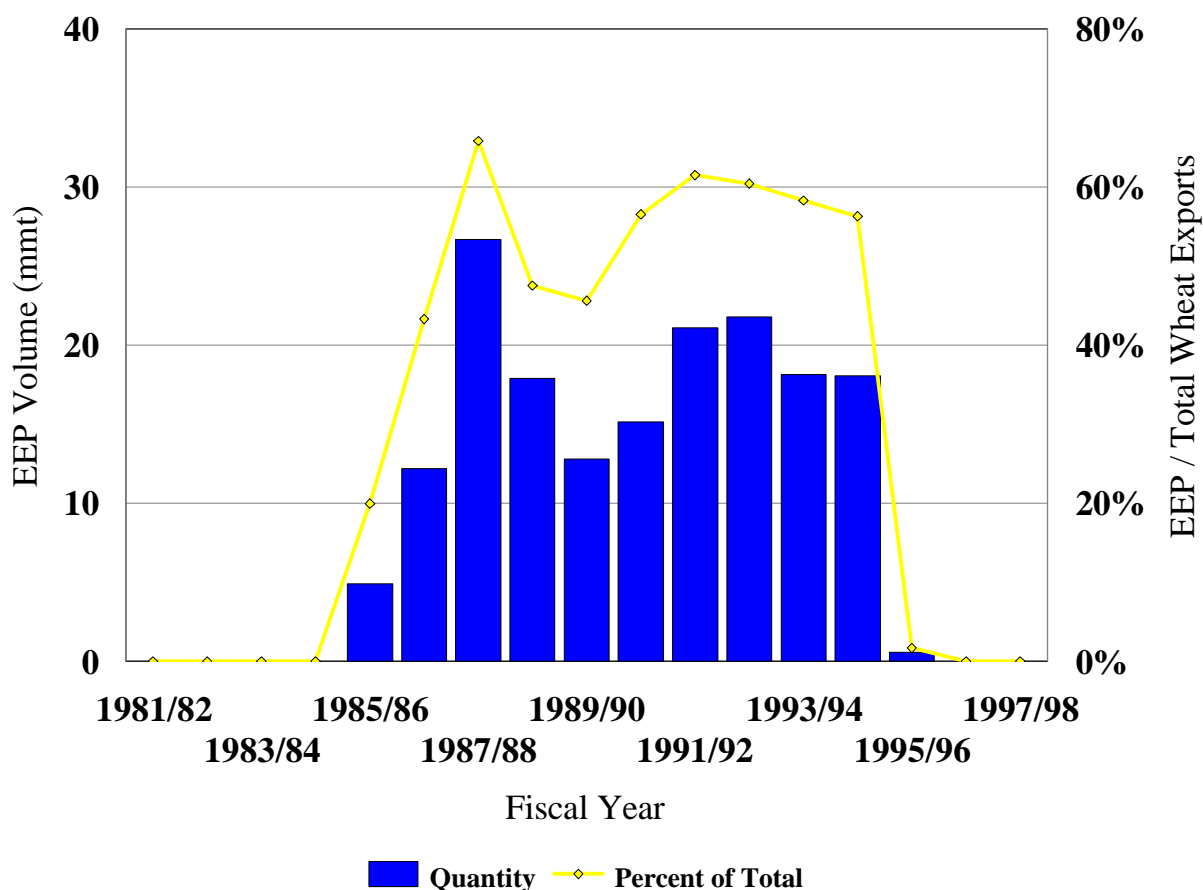


**Figure 4. EU Wheat Export Restitution/Tax Quantities and Values, 1996-1999.**



**Figure 5. EU Barley Export Restitution Quantities and Values, 1996-1999.**

Exports of wheat under EEP were substantial from 1985 to 1995. In some years, over 60 percent of wheat exports were under the EEP program (Figure 6). The EEP initially involved payments in kind (i.e., in the form of government-owned commodities), although these were later replaced by cash payments. In either case, the program allowed private firms to export U.S. commodities to targeted markets at less than the cost of domestic procurement and shipping. Export sales of wheat under EEP were discontinued in July of 1995, although the program remains authorized.



**Figure 6. U.S. Exports of Wheat Under the EEP Program and EEP Volumes as a Percent of Total Wheat Exports, 1981/82 to 1997/98.**

The expansion of EEP had important effects on inter-country competition and on the structure of competition among grain firms.<sup>4</sup> One of the important effects of EEP was to increase the level of price and demand transparency; this affected both inter-firm and inter-country competition (Wilson and Dahl, pp. 40-42). The auctioning mechanism used to execute EEP transactions resulted in demand (quantity, quality, timing) and prices being publicly released and easily accessible to all competitors. Administration of the bidding mechanism resulted in near instantaneous disclosure of bids by importers and EEP allocations to winning bidders (exporters). This information, along with fairly public knowledge of market values and transformation costs, resulted in the U.S. export price being highly transparent.

---

<sup>4</sup>Sosland indicated "... the cessation of export subsidies has exerted a tremendously beneficial effect not just on the competitive pace of export business, but on the economics of the grain trade itself. Eliminating the stultifying impact of daily subsidy decisions has lifted a weight from the industry's shoulders..." (Sosland Publishing Co., Feb 1996) *Milling & Baking News*.

As a result of EEP, competitor countries gained tremendous informational advantages (relative to a less transparent system); U.S. disclosure of EEP values made it easier for competitors to make their own sales and marketing decisions. Information asymmetries among grain exporting companies were reduced, and firms who had previously established informational advantages saw these advantages reduced. Firms or selling organizations not having extensive informational networks gained advantage relative to incumbent firms.<sup>5</sup>

## **EXPORT CREDIT MECHANISMS**

Most major exporting countries of agricultural commodities extend some form of export credit guarantee/insurance. The United States, Canada, Australia, France and other countries in the EU have export credit insurance/guarantee programs.<sup>6</sup> The U.S. extends credit guarantees through GSM-102, GSM-103, and the Supplier Credit Guarantee Program. Significant volumes and proportions of total wheat exports have been shipped under these programs from their inception (Figure 7). In the last few years, the largest users of the U.S. credit guarantee programs for wheat have included: Algeria, Brazil, Egypt, Jordan, Korea, Mexico, Pakistan, Sri Lanka, Tunisia, Turkey, and Uzbekistan. Pakistan was the largest user of export credit for wheat from 1993/94 to 1996/97, importing on average more than 1.5 *mmt* per year under export credit programs.

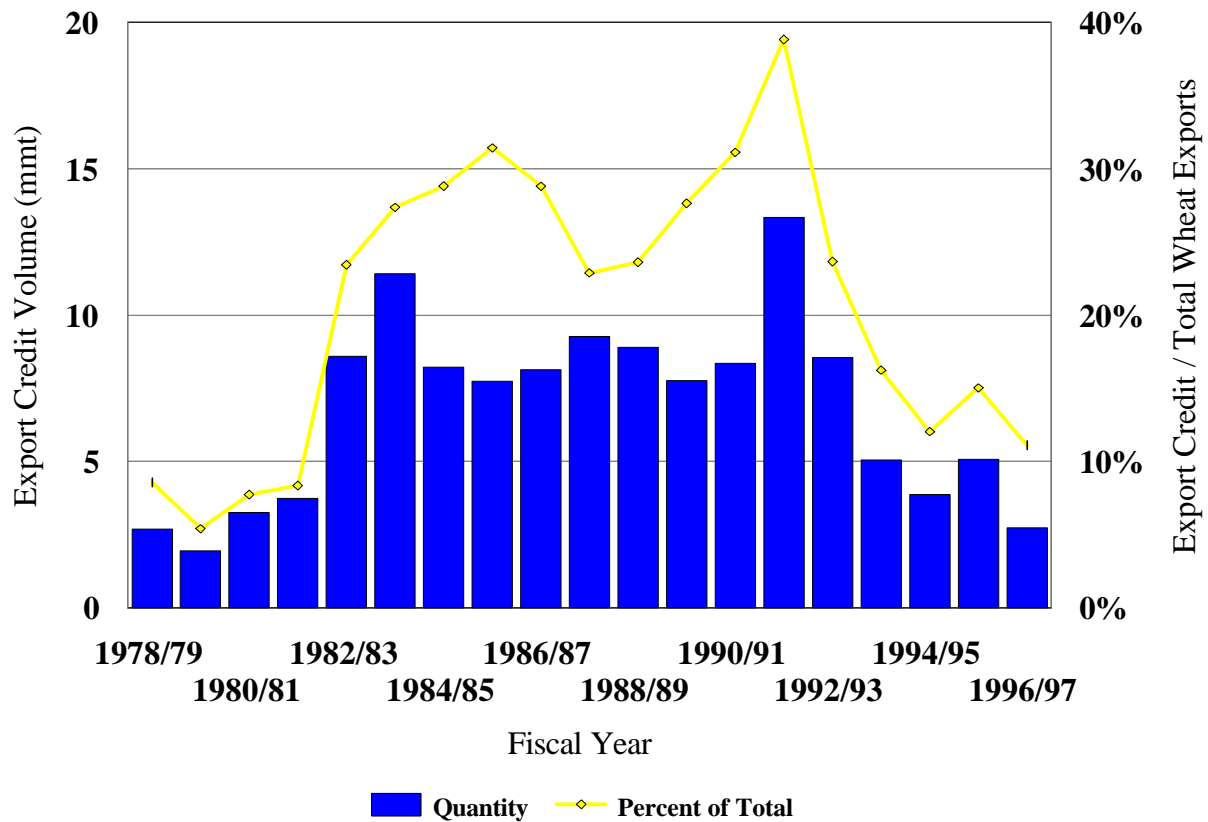
Canada has also exported significant quantities of wheat under its export credit program. However, since major defaults by the Former Soviet Union in the early 1990s, Canada's use of export credit programs has declined, with export volumes under credit comprising less than 10% of total wheat exports from 1994-1996 (Figure 8). The EU has also extended credit guarantees through COFACE on a significant volume of their wheat exports (Figure 9).

Credit guarantees have several different types of economic justification: they increase sales by relaxing an importer's foreign exchange constraint (Smith and Ballenger), and can correct market failures (Raynauld). Credit can also be viewed as an element of strategic trade policy (Johnson). Extension of credit guarantees generally provides for lending at interest rates less than those for commercial lending, thus providing an implicit interest subsidy over the length of the loan.

---

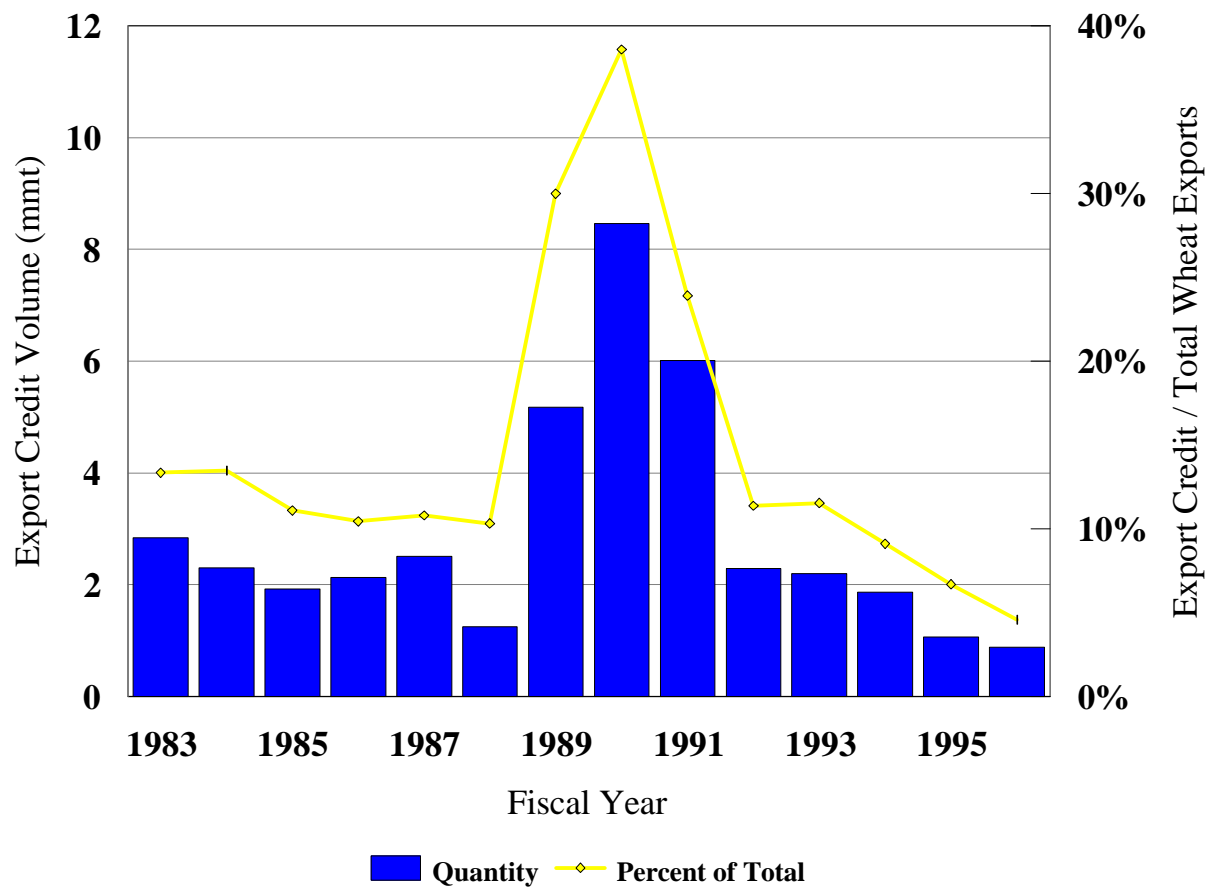
<sup>5</sup>In addition, Wilson and Dahl pointed out that EEP had two other effects on the structure of competition. First, the EEP mechanism facilitated easier entry of non-traditional firms into grain trading. Second, the EEP mechanism stifled incentives for market development and sales.

<sup>6</sup>See Dahl, Johnson and Wilson and Harris for an extensive discussion of these mechanisms, and Dahl, Wilson and Gustafson for estimates of the value of the guarantee mechanisms. Other studies discussing use of these mechanisms include Sumner and Josling and Johnson. Other studies that have addressed issues related to the implicit subsidy related to these mechanisms include Hyberg et al. and Skully.

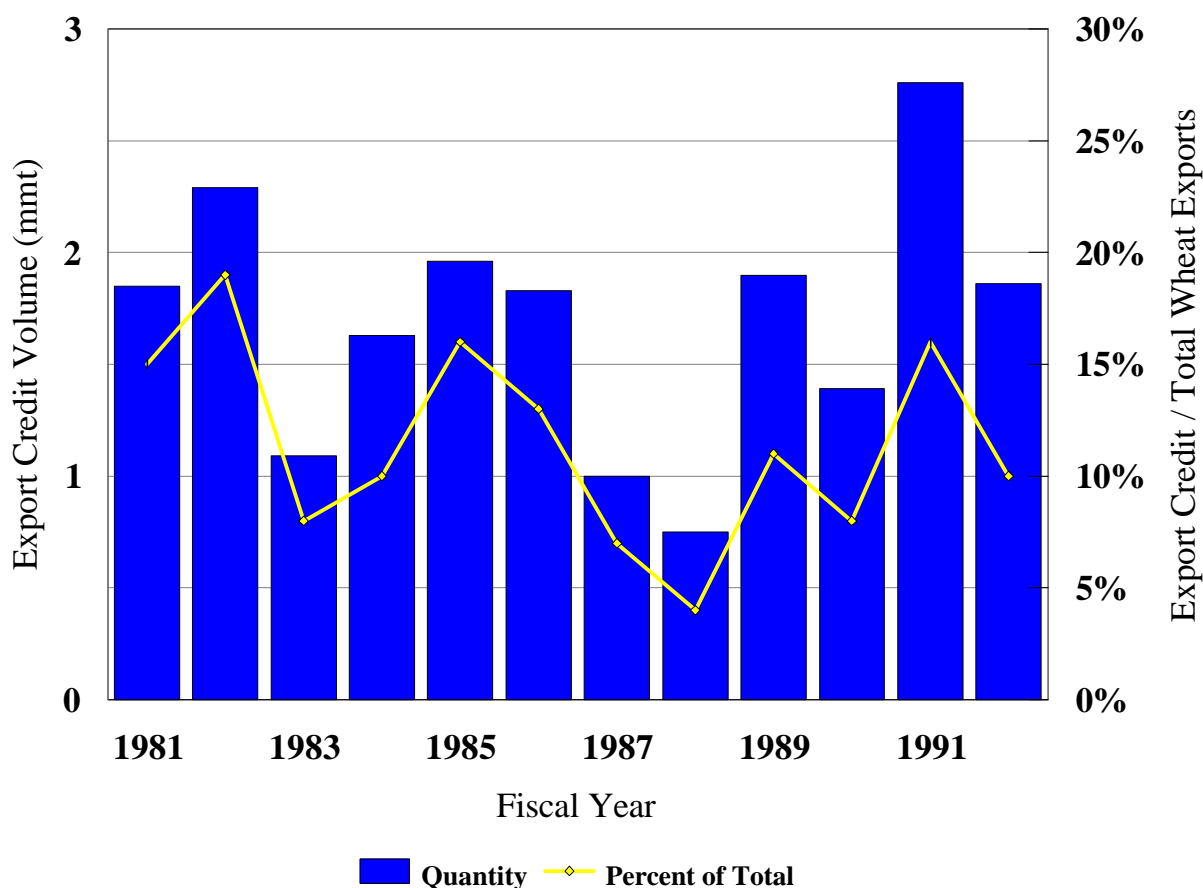


**Figure 7. U.S. Wheat Exports Under Export Credit Programs and Export Credit Volumes as a Percent of Total Wheat Exports, 1978-1997.**





**Figure 8. Canadian Wheat Exports Under Export Credit Programs and Export Credit Volumes as a Percent of Total Wheat Exports, 1983-1996.**



**Figure 9. EU Wheat Exports Under Export Credit Programs and Export Credit Volumes as a Percent of Total Wheat Exports, 1981-1992.**

The implicit interest subsidy for credit guarantees can be substantial. Hyberg, et al. estimated the implicit interest subsidy in GSM guarantees for wheat to all countries at 4 percent. Diersen, et al. found a high degree of variability in implicit interest subsidies across importers and years, with subsidies ranging from 0.13 to 11 percent of export value. GSM guarantees also provide credit insurance: importer payments to U.S. banks are guaranteed by the CCC. Dahl, et al. estimated the implicit value of this guarantee for U.S. and competitor country programs using option theory. Values of the export credit guarantee varied by exporting country, with the EU's COFACE guarantee having the most value, followed by the guarantees of Australia, the United States and Canada (Table 1).

**Table 1. Value of Export Credit Guarantees for Major Wheat Exporters.**

Table 1. Value of Export Credit Guarantees for Major Wheat Exporters.				
Country	Basic	Exchange Rate	Value of Letter of Credit	
	Guarantee	(if offered)	\$1000/1000	\$500/1000
	------(U.S.\$per mt)-----			
Canada (CWB)	12.55		9.58	38.26
Australia	26.95		21.76	63.41
U.S.	22.61		18.01	56.44
France-COFACE*	38.55	4.98	31.96	80.50

\* Includes coverage for freight and shipping.

Periods - U.S., CWB, France-COFACE (3 annual installments), AU (6 semiannual installments)

Source: Dahl, Wilson, and Gustafson (1999)

One of the primary reasons for using credit guarantees is to expand export sales. Generally, this can be referred to as additionality, or an increase in exports due to the use/availability of export credit programs. Diersen, et al. examined additionality of export credit programs for selected importers. They estimated import demand functions for the United States and competing countries. Significant additionality was found for U.S. export credit programs, amounting to 14.6 *mmt* to selected importers. Additionality varied across countries and years, with the largest additionality attributed to exports to Egypt. Comparisons were made with competitor country programs. Canadian export credit subsidies were found to displace U.S. sales more than increase Canadian exports, and French COFACE guarantees were found to provide less additionality than U.S. credit guarantee programs. This suggests that the U.S. export credit program is more effective in creating additional exports than are programs extended by the EU and Canada.

There will likely be escalating pressure on the use of export credit guarantees for agriculture. The recent Uruguay Round Agreement on Agriculture (URAA) agreed to continue talks in the OECD to establish disciplines on agricultural export credit guarantees. The Cairns Group has pushed for including export credits for agricultural products under the same laws currently used for commercial goods (Leetma and Ackerman). More recently, competitor countries (i.e., Canada, Australia) have taken the position that the Commodity Credit Corporation (CCC), through its credit guarantee programs, acts as an State Trading Enterprise (STE). This signals a broadening of debate over STEs in the next WTO round (Fegley).

## TRANSPARENCY AND PRICE DISCRIMINATION

Some of the more thorny issues emerging in current trade discussions relate to price discrimination and transparency. These terms are often used interchangeably; however, they differ in concept and effect. This section treats each in turn. First we discuss the concept of price discrimination and relevant studies. Second, we specifically define and explain the effects of price transparency. Finally, we explain why transparency comes to be important in trade negotiations.

### Price Discrimination

Price discrimination occurs when “the same commodity is sold to different customers for different prices” (Phlips 1985, p. 5). Technically, price discrimination is said to exist if  $P_i / MC_i \neq P_j / MC_j$  where  $P$ =price,  $MC$  is marginal cost, and subscripts  $i$  and  $j$  denote two different customers. However, many other aspects—such as the spatial location of goods, differences in qualities, and time frame of transaction or delivery—can (falsely) give the appearance of price discrimination. Therefore, Philips argues price discrimination should be defined as “implying that two varieties of commodity are sold (by the same seller) to two different buyers at different *net* prices, the net price being the price (paid by the buyer) corrected for the cost associated with the product differentiation” (Phlips 1985, p.6). It is optimal to pursue price discrimination if the selling firm has some degree of market power, and if there are differences in demand elasticities among different customer groups.

Price discrimination has been an important component of the international wheat market in the past. However, it may have become especially important to STEs in the past decade, due to targeted U.S. subsidies. The Export Enhancement Program accentuated price spreads between various offshore markets. This made it advantageous for STEs [e.g., Canadian Wheat Board (CWB) and Australian Wheat Board (AWB)] to differentiate between EEP and non-EEP markets. In fact, the CWB and AWB each defended their existence in their home countries by pointing to EEP and the need to match U.S. price discrimination.

Since the elimination of EEP, price discrimination has continued but at a lesser magnitude. It persists to the extent that these STEs can exploit market power and differentiate their product from those of competitors; no doubt this occurs in selected countries.<sup>7</sup> However, to be technically correct, price discrimination only occurs when price differences do not reflect differences in marginal costs. The latter may be affected by specific quality factors or terms of individual transactions.

Price discrimination has been studied by Skully, Goodwin and Smith, and Smith, Goodwin, and Holt. Goodwin and Smith indicate that price discrimination is analogous to an implicit subsidy on exports if the price discriminator is effectively able to limit imports into its

---

<sup>7</sup>It can also be argued that large multi-national grain firms could accumulate enough market power to exercise price discrimination in some markets.

higher priced markets. Skully indicated that the CCC can be considered a state trading entity. He argues that state trading exists “when political objectives are substituted for, or bias, the private profit or revenue maximizing objectives which would determine the prices, volumes, and directions of trade in the absence of government intervention”(p.314). He demonstrates that the CCC uses its export policies to price discriminate, which is consistent with a model of state trading. He argues the CCC is able to price discriminate by targeting different subsidy levels to different countries.

Price discrimination is not forbidden under the WTO. Specifically, targeted price discrimination is allowed for state trading enterprises (STEs) as long as the amount of subsidy is less than the limits established in their respective country’s WTO commitments (Rominger, 1996). Furtan indicates the GATT agreement allows price discrimination (differential pricing) by STEs “provided such different prices are charged for commercial reasons, to meet conditions of supply and demand in export markets” (GATT, p. 9). However, differential pricing is limited by any potential association with subsidization/dumping. Article VI of the GATT permits imposition of antidumping duties equal to the difference between the price sought in the importing country and the normal value of the product in the exporting country.

## **Price Transparency**

The term transparency is sometimes used to describe what is really price discrimination. In this section we define price transparency and explain its strategic importance.

Despite much public interest in the topic of price transparency, there have been few attempts to give it rigorous definition, to interpret its strategic effects for firms, or explain its economic implications for policy-makers. In its simplest terms, price transparency is a lack of price disclosure (*Milling and Baking News*, 1994). Furtan describes it as “the extent that details of transactions made by a purchasing or selling agent are available to the public. These transaction details may include unit selling prices and acquisition costs, volumes bought and sold and any other contract terms indirectly affecting the transaction such as financing arrangements, commodity specifications, and other stipulations” (Furtan p. 1-2). Wilson, Johnson, and Dahl define it more conceptually in terms of information asymmetries — specifically, if one bidder has more refined information about other bidders than do rivals, it would have an advantage in bidding competition. This is recognized as a problem not only in international grain trade, but in other agricultural marketing industries characterized by an absence of public price information.

Much of the North American and world grain trade is conducted using some form of competitive bidding. Tenders are one of the more important mechanisms of bidding competition, especially for foreign buyers of U.S. grains, oilseeds and related products.<sup>8</sup> Information is a crucial element in determining bids among competitors in export tenders, as in other bidding situations. Firms with more refined information enjoy a competitive advantage. Thus, as Caves indicated, information is a crucial source of competitive advantage in commodity-based business such as the grain trade.<sup>9 10</sup> In fact, during much of the period from the 1970s through the mid-1980's, grain trading firms sought to develop competitive advantage based on their informational networks. During this period, these firms likely had informational advantages relative to STE rivals with less extensive overseas networks.

Using game theory, the transparency problem (or, more properly, the *opaqueness* problem) can be interpreted as a problem of asymmetric information. Rasmusen (p. 53) defines asymmetric information as a situation in which some player has useful "private information." Incomplete information occurs when nature moves first, and that move is unobserved by at least one of the players. Competitive bidding games where one player has more refined information than others are characterized by incomplete and asymmetric information. Thus, the price transparency problem should be interpreted (modeled) as a bidding (pricing) game with incomplete and asymmetric information. Philips (p. 94) defines such games as incomplete in that other bidders' reservation values are not known. In these games the bidder with the more refined information set has a strategic advantage.

As an initial interpretation, Wilson, Johnson and Dahl characterized the transparency problem (i.e., in context of the U.S./Canada dispute) in terms of information asymmetries, arguing that these facilitate the ability of STEs to underbid U.S. offers. This drew on an earlier analysis by Preszler, Wilson and Johnson, based on a one-shot competitive bidding game. In that game, several sellers compete in an export wheat tender; strategies are limited to sellers' offer prices, and the winner is the seller with the lowest price. In developing their offers, players take into account the expected offers of their opponents, and uncertainty about those offers. This is summarized in terms of probability distributions. The transparency problem can be interpreted as a situation in

---

<sup>8</sup>Recently, W. Weisensel (Head of corporate policy at the CWB) in describing CWB operations to a court challenge in Federal Court in Calgary, Nov. 6. "Bidding is common in Japan ...When making an offer, the price has to be competitive with what American offer for equivalent grains" (Duckworth). This emphasizes the importance of bidding as a transaction mechanism.

<sup>9</sup>Auctioning is also used as a form of selling in several important segments of international grain. Bourgeau and LeRoux discuss the use of auctions to allocate EU export restitutions.

<sup>10</sup>The popularity of import tenders is likely due to the large volume of commodities being procured, which means that small deviations in price can have a large impact on total cost. Another reason is that importers are uncertain about the value of marketing costs, which vary through time and across potential exporters; this discourages *a priori* selection of an individual supplier. In many cases there are institutional mechanisms that favor a tendering process. Examples include the administration of export programs, international financing arrangements, and internal import control mechanisms (e.g., exchange controls) in some countries.

which uncertainty about one player's reservation price is much larger than for other players. Arguably, that is the case when one bidder represents a country with a single seller agency, whose transaction prices are not released (or are released selectively). One competitor possesses these characteristics; other competitors are represented by bidders with a narrower distribution (standard deviation) of reservation prices.

Wilson, Johnson, and Dahl developed an analytical model to describe a typical bidding game in exporter competition and solved it using numerical procedures. Results are summarized in Tables 2-4. This game is among 4 rival firms. In the base case each is confronted with similar costs (\$158/*mt*) and information (distributions about rivals costs) and the resulting equilibrium bids are \$158.42/*mt*. In the same game with two or three players equilibrium bids increase to \$159.26/*mt* and \$158.63/*mt*, respectively. In the second case, there is higher variability in the information about one of the players' costs. The less transparent player gains an informational advantage, increasing his/her probability of winning relative to more transparent players. This results in the less transparent player under-bidding the more transparent firms. Finally, we can examine a case representing the U.S., EU, Australia, and Canada. In this case Canada and Australia have STEs that divulge less information about their costs to other players (Table 4). In this case, both Canada and Australia reduce their bids because they perceive that they will win more often, whereas the more transparent EU and U.S. increase their bids. This confers a strategic advantage to the less transparent players.

Thus, viewing transparency as asymmetric information, one can conclude that STEs gain a competitive advantage from divulging less information. However, that advantage in a typical situation would be relatively slight, in the area of \$1-2/*mt*.

### **Factors Contributing to the Transparency Problem In International Grain Trading**

In this context, several aspects of the world grain trade have affected the transparency problem.<sup>11</sup> First, in some cases, bidders have more refined information about the reservation prices of U.S. trading firms than they do for single-seller agencies. The vast majority of transactions for U.S. domestic and offshore sales are made through formal or informal bidding processes. U.S. market prices and marketing costs are highly transparent. (One caveat may be the lack of price reporting of premiums and discounts for quality characteristics.) In addition, results of all sales made under export assistance, including PL480 and EEP, are reported publicly. These dissemination mechanisms do not have counterparts in Canada or Australia.

---

<sup>11</sup>Though the focus here is on transparency with respect to prices, similar problems exist with respect to other strategic variables. Notably these include credit allocation decisions and quality supplied (e.g., protein in excess of specification,...). In each of these cases the U.S. appears to be much more transparent than STE rivals.

**Table 2. Simulation Results with Symmetric Information and Cost Distributions**

Element	Number of Players		
	Two	Three	Four
Average Cost <sup>1</sup>	158	158	158
Op. Inf. on Players Cost <sup>2</sup>	1	1	1
Equilibrium bid	159.26	158.63	158.42
Players Prob of Winning	.50	.25	.125
Players Expected Profit	.63	.16	.05

**Table 3. Simulation Results with Asymmetric Information and Cost Distributions**

Element	Players		
	U <sub>1</sub>	U <sub>2</sub>	U <sub>3</sub>
Average Cost <sup>1</sup>	158	158	158
Op. Inf. on Players Costs <sup>2</sup>	1	1	5
Equilibrium bid	159.04	159.04	158.78
Players Prob of Winning	.24	.24	.36
Players Expected Profit	.25	.25	.28

**Table 4. Import Tender Results With Four Exporters with Asymmetric Information and Cost Distributions**

Element	Players			
	U.S.	EC	A	C
Average Cost <sup>1</sup>	158	158	158	158
Op. Inf. on Players Cost <sup>2</sup>	2.5	2.5	7	7
Equilibrium bid	159.82	159.82	158.48	158.48
Players Prob. of Winning	.12	.12	.15	.15
Players Expected Profit	.21	.21	.23	.23

<sup>1</sup> This is each players assessment of the mean cost of replacement for that player (assumes all players have same average cost and all rivals have same information on opponents average costs)

<sup>2</sup> This represents rivals assessment of their uncertainty about that players costs measured as a standard deviation (assumes all players have same view of information about a given player).



The role of the administration of EEP on transparency is not entirely clear. One of the effects of EEP was to make U.S. export prices highly transparent to competitor STEs. As these STEs conducted transactions in non-EEP and EEP markets, important differentials emerged in their offer prices. The auctioning mechanism used to execute EEP transactions resulted in demand (quantity, quality, timing) and prices being publicly released and easily accessible to all competitors. Administration of the bidding mechanism resulted in near instantaneous disclosure of bids by importers, and EEP allocations to winning bidders (exporters). This information, along with fairly public knowledge of market values and transformation costs resulted in U.S. export prices being highly transparent.<sup>12</sup>

As a result, competitor countries gained tremendous informational advantages, making their sales and marketing decisions relatively easy. Information asymmetries among grain exporting companies were also reduced and firms who had previously established informational advantages found these eroded. Thus, firms/selling organizations without extensive informational networks gained advantage relative to incumbent firms.

A second factor contributing to the transparency problem is particularly acute for the types of grains that are contentious in North America, barley and durum wheat. Neither of these had a futures market (facilitating price discovery)<sup>13</sup> and the cash markets have become highly decentralized, inhibiting accurate price reporting using conventional methods.<sup>14</sup> In addition, these are grains in which the possibility of large premiums and discounts for quality deviations is substantial. Taken together, this has created a high degree of uncertainty about reservation values (or procurement costs) for all market participants.

Finally, some unique characteristics of the Canadian marketing system are relevant to this discussion. These include disclosing prices offered in the North American market, price pooling (with mandatory sales to the CWB) and the initial payment guarantee. It is notable that prior to CUSTA the CWB exercised a 2-price system with higher prices charged to Canadian end-users. As a result of CUSTA that policy was abandoned and replaced with a single North American price which is offered weekly and widely distributed.<sup>15</sup> The extent that actual transaction prices conform to these values is not clear, but it is a direct example of the CWB seeking to become more transparent. This would have the effect of mitigating the transparency problem.

In contrast, because of the price pooling system and initial payment guarantee, the CWB does not

---

<sup>12</sup>It is notable that in July 1995 the USDA GSM proposed some alternative mechanisms for executing EEP and sought public comment. However, comments were not published, likely due to the reduction in the utilization of EEP since then, changes have not yet been adopted.

<sup>13</sup>However, it was notable that with the advent of the Minneapolis Grain Exchange durum futures, price transparency has improved.

<sup>14</sup>As examples, prices for these grains are typically quoted/reported in large ranges and the frequency of *nq* (for not quoted, as in the *Wall Street Journal* and electronic data services).

<sup>15</sup>See *Milling and Baking News* as an example in which these prices are quoted.

have to compete in procurement against other traders. The combined effect is to give the CWB a strategic advantage in competitive bidding relative to U.S. trading firms. These differ subtly in Australia, given the changes that have occurred in that system since 1992 (Condon; Ryan). In particular, pooling and guarantees were eliminated and domestic competition has given growers alternatives, forcing AWB prices into alignment with alternatives. However, in the offshore market the problem persists.

To summarize, while transparency (or opaqueness) is recognized as an important issue in international grain trade, there is a need for more formal definition and analysis. Lack of transparency presents problems for both public policy and private strategies. Ultimately, these problems will be addressed via the WTO, and potentially in bilateral trade negotiations. For now it is important that the transparency problem differs substantially from the price discrimination problem. The transparency problem is reflective of informational asymmetries which have conventionally been exploited to the advantage of larger multinational trading firms—to the disadvantage of STEs. The transparency problem was likely worsened due to EEP, which had the effect of making the U.S. highly transparent and rivals opaque; since EEP has been eliminated, the U.S. has likely regained its informational advantage relative to rival STE exporting countries.

### **TRANSPARENCY AND ‘HIDDEN SUBSIDIES’**

Transparency is also a problem for grower groups which are heavily involved in policy discussions, as well as the United States Government as it seeks to develop its negotiating position. These entities need an interpretation of the concept, documentation of the incidence of opaqueness, and analysis to identify its effects (i.e., on price levels).

Among U.S. policymakers, much of the discussion about transparency concerns the following questions: To what extent do STEs (specifically, the CWB) engage in unfair trading practices? Are hidden subsidies involved? Would public disclosure of pricing information expose violations of treaty commitments, e.g., on export subsidies?<sup>16</sup> Lack of pricing transparency, it is argued, allows unfair practices to go unchallenged, or subsidies to remain undetected.

Some of the claims linking subsidies to the transparency issue are ill-considered. For example, ‘subsidies’ are sometimes conflated with ‘price discrimination’, but charging different prices in different markets is not illegal under the WTO. ‘Unfair practices’ might refer to any practice that private trading firms cannot easily duplicate. The CWB does enjoy more discretion in its pricing than private traders, since it does not have to compete for grain procurement, and benefits from other institutional advantages, such as its access to low-cost financing. However, these factors are probably not ‘actionable’ under U.S. or international trade law.

In 1992 the United States requested that a binational panel determine whether Canada was pricing durum exports to the United States below the ‘cost of acquisition,’ contrary to requirements of the Canada U.S. Free Trade Agreement (CUSTA). Debate turned on whether the CWB’s cost of acquisition was the initial price paid to producers (as claimed by Canada), or the sum of initial, interim, and final payments (as claimed by the U. S.). The panel supported Canada’s definition and ordered an audit of durum sales; of

---

<sup>16</sup>For discussion, see Ackerman, “State Trading Enterprises in World Agricultural Trade,” *Agriculture in the WTO*, USDA/ERS, WRS-98-4, December 1998, pp. 43-47.

105 contracts, only 3 were judged not in compliance with the CFTA.<sup>17</sup> Two investigations by the U.S. International Trade Commission (in 1990 and 1994) also found no evidence of consistent underpricing of Canadian wheat in the U.S. market.

While there has been little evidence through these processes of Canadian dumping in the U.S. wheat market, the U.S. experience does highlight 1) the difficulty of monitoring CWB sales prices; and 2) lack of agreement about how to measure subsidies, or costs of acquisition, where the CWB is concerned.

## SUMMARY AND IMPLICATIONS

The extent and composition of export subsidies have escalated in recent years. However, subsidies have varied across exporting countries. No doubt one of the critical areas of the forthcoming WTO for U.S. wheat will be the extent that these are governed. This paper provides a discussion of the multitude of issues that will emerge during these negotiations.

Following are some of the important findings:

- **Producer Subsidy Equivalents:** Both U.S. and EU producer subsidies have escalated since 1996, while those of Canada have decreased. Since these are an aggregated measure of subsidies that are measured over time, these trends will be difficult to refute.
- **The EU restitution is likely the most overt direct and transparent subsidy in the international wheat market.** Restitutions have escalated rapidly since September 1996. Important characteristics of this mechanism are that it is generally non-discriminatory, applies to all wheat exported and its value varies with international price levels.
- **Export Credit Guarantees:** Each of the major countries have some form of export credit guarantee. These programs have been used more extensively by the U.S. and EU, whereas use by Canada has been declining. There are some important implications of this program from a trade negotiation perspective:
  - 1) These mechanisms provide an implicit subsidy related to the guarantee, and that for the EU exceeds that for the United States.
  - 2) It appears that U.S. credit guarantee programs have been more effective at expanding sales than similar programs of competitor countries.
  - 3) These mechanisms will likely be challenged by competitor countries in the next round of trade negotiations.
- **Price transparency and discrimination.** These terms are often used interchangeably, but there are important differences between them in international trading.
- **Price discrimination occurs when/if price differentials exceed marginal cost differentials.** It can

---

<sup>17</sup>Summarized in the GAO report, *U.S. Agricultural Trade: Canadian Wheat Issues*, October 1998, p. 55.

occur due to differences in prices, credit offerings, quality and other terms of trade. It is analogous to an implicit subsidy on exports only if the seller is able to limit imports into higher priced markets. Is not necessarily illegal under the GATT and WTO. Further, the U.S. EEP program during the period that it was actively utilized likely provided greater incentives for STEs to exploit price discrimination strategies.

- Price transparency relates to the extent that rivals have comparable information about each other's prices, costs and operations. Technically, price transparency can be viewed as the symmetry of information in tendering strategies. Some of the important implications are: 1) Sellers with more refined information about their rivals have a strategic advantage; 2) Typically, this technical interpretation of transparency would yield an advantage to STEs of less than \$1/mt; 3) An important factor contributing to the transparency problem is the fact that the United States, as an exporter, is highly transparent with respect to costs, prices and export mechanisms; and 4) EEP likely had the effect of providing a strategic advantage to STEs as a result of its highly transparent administration.
- Lack of transparency has also been viewed as problem by U.S. policy makers because it hinders monitoring trade policies. Indeed, if transaction prices are not revealed, it is argued that it is impossible to know whether sales are being made below acquisition costs (however defined). This is no doubt one of the biggest hindrances in the evolving U.S./Canada trade agreement.

Given the evolution of these subsidy mechanisms, a number of points should be addressed in developing strategies for U.S. wheat growers. One is that the most important export subsidy, far overshadowing programs of other countries, is the EU export restitution. This is true both in value and volume, as well as in terms of its adverse impacts on the U.S. industry. Second, export credit guarantees will likely surface and be designated as export subsidies. This is of critical significance because GSM programs are very important to U.S. exports, and appear to be more effective than similar mechanisms in other countries. Thus, losing the ability to use export credit guarantees would affect the United States more adversely than other exporters. As technically defined here, the topic of price transparency (i.e., as asymmetric information in bidding games) is not of great significance to international trade. At best, it imputes an advantage to non-transparent sellers of less than \$1-2/mt for individual transactions. Transparency with respect to acquisition costs is potentially relevant, but investigations to date have failed to show major violations. Finally, though price discrimination yields an advantage to STEs, these are not in violation of the WTO.

## REFERENCES

- Ackerman, Karen. 1998. "State Trading Enterprises in World Agricultural Trade," *Agriculture in the WTO*, USDA/ERS, WRS-98-4, December, pp. 43-47.
- Bourgeau, J., and Y. LeRoux. 1996. "Optimal Auction Theory and EC Grain Export." Sheldon, I. And P. Abbott, *Industrial Organization & Trade in the Food Industries*, Boulder, Westview Press.
- Condon, Clinton. 1991/92. "Grain Marketing Beyond 2000", speech to the Grains 2000 Conference. In Grains Council of Australia, *Special Edition Yearbook: Grains 2000*.
- Dahl, B., W. Wilson, and C. Gustafson. 1999. "Option Values for Provisions in Export Credit Guarantees," AE Paper. Department of Agricultural Economics, NDSU, Fargo, ND (Feb).
- Dahl, Bruce L., D. Demcey Johnson, William W. Wilson, and Cole R. Gustafson. 1995. *Credit Guarantee Programs in International Grain Markets: Background and Issues*. Department of Agricultural Economics, North Dakota State University, Fargo, ND. Agricultural Economics Report No. 326, March, pp. 72.
- Diersen, Matthew A., William W. Wilson, Bruce L. Dahl, and Vidyashankara Satnarayana. 1997. *Additionality of Credit Guarantees for U.S. Wheat Exports*. Department of Agricultural Economics, North Dakota State University, Fargo, ND. Agricultural Economics Report No. 377.
- Fegley, K. 1999. "The U.S. Needs an Agricultural Trade Strategy," *Prairie Grains*, (Feb): p. 11.
- GAO. 1998. *U.S. Agricultural Trade: Canadian Wheat Issues*, GAO/NSIAD-99-21, October, p. 55.
- GATT, 1994. *Uruguay Round Final Agreement, Understanding on the Interpretation of Article XVII of the General Agreement on Tariffs and Trade 1994*, Geneva, 1994.
- Goodwin, B. K., and V. H. Smith. 1995. *Price Discrimination in International Wheat Markets*. A report prepared for the Wheat Export Trade Education Committee, March 10.
- Furtan, W. H. 1995. "Transparency and Differential Pricing: An Analysis of Canadian and American Grain Handling Systems." In *Canada-United States Joint Commission on Grains Final Report Vol. II*. Canada-United States Joint Commission on Grains. Washington, DC. October.
- Harris, Meghan. 1990. *Export Credit Guarantee Programs of Major Exporting Countries*. Unpublished monograph. Foreign Agricultural Service, United States Department of Agriculture. Washington, DC.
- Hyberg, Bengt, Mark Smith, David Skully, and Cecil Davison. 1994. *Export Credit Guarantees: The Commodity Credit Corporation and U.S. Agricultural Export Policy*. Unpublished paper. Economic Research Service, United States Department of Agriculture. Washington, DC.

- Johnson, D. Demcey. 1995. *Export Credit Guarantees: A Welfare and Strategic Analysis*. Department of Agricultural Economics, North Dakota State University, Fargo. Agricultural Economics Miscellaneous Report No. 174. February.
- Leetma, Susan E., and Karen Z. Ackerman. 1998. "Export Subsidy Commitments: Few Are Binding Yet, But Some Members Try to Evade Them." *WTO: International Agriculture and Trade*. USDA-ERS. December 11. WTO/WRS-98-44. pp 21-26.
- Phlips, Louis. 1988. *The Economics of Imperfect Information*. Cambridge University Press. New York.
- Phlips, Louis. 1985. *The Economics of Price Discrimination*. Cambridge University Press. New York.
- T. Preszler, W. Wilson, and D. Johnson. 1992. "Competitive Bidding, Information and Exporter Competition," Staff Paper AE 92008, Department of Agricultural Economics, North Dakota State University, Fargo, August; Abstract in *American Journal of Agricultural Economics*, December 1992, p. 1300.
- Rasmusen, Eric. *Games and Information: An Introduction to Game Theory*. Blackwell Publishers Inc. Cambridge, Mass.
- Raynauld, Andre. 1992. *Financing Exports to Developing Countries*. OECD, Paris.
- Rominger, Richard. 1996. Statement Before the House Committee on Agriculture, Sept. 12, 1996. In *Competitiveness in World Agriculture Trade and the Effect of State Trading Enterprises*. Hearing Before the Committee on Agriculture, House of Representatives. Serial No. 104-39.
- Ryan, Timothy J. 1993. "Marketing Australia's Crop: The Way Ahead." Paper presented at the 37<sup>th</sup> Annual conference of the Australian Agricultural Economics Society, Sydney, Feb 9.
- Satyanarayana, Vidya, and D. Demcey Johnson. 1998. *Credit Guarantee Programs and U.S. Market Share in Selected Wheat Import Markets*. Department of Agricultural Economics, North Dakota State University, Fargo, ND. Agricultural Economics Report No. 398.
- Smith, Mark E., and Nicole Ballenger. 1989. "Agricultural Export Programs and Food Aid." pp.169-186. *In Agricultural-Food Policy Review: U.S. Agricultural Policies in a Changing World*. Agriculture and Trade Division, Economic Research Service, U.S. Department of Agriculture. Washington, D.C. Agricultural Economics Report No. 620.
- Smith, V. H., B. K. Goodwin, and M. T. Holt. 1995. *Price Leadership in International Wheat Markets*. Paper prepared for the Wheat Export Trade Education Committee (WETEC), September 5.
- Skully, David W. 1992. "Price Discrimination and State Trading: The Case of U.S. Wheat." *European Review of Agricultural Economics*. Vol. 19. pp. 313-329.
- Sosland Publishing Co. "Grain Trade Must Look Beyond 'Good Times' to Prepare Future." *Milling and Baking News*, Feb. 27 pp. 21-28.

- Sumner, Dan, and Tim Josling. 1998. "The Role of the State in Agricultural Trade in North America: The U.S. Commodity Credit Corporation as a Government Actor in the North American Market for Grains." In *Proceedings of Workshop on State Trading in North America*, Sponsored by the North America Forum, Stanford, CA Nov 19-21.
- Wilson, William W., and B. Dahl. 1999. *Transnational Grain Companies: Evolution and Strategies in North America*. Department of Agricultural Economics, North Dakota State University, Fargo. Ag Econ Report No. 412.
- Wilson, W., D. Johnson, and B. Dahl. 1995. "Pricing to Value: U.S. Analysis and Issues," in *Final Report Vol. II, Canada-United States Joint Commission on Grains*, Part 2:D, October.