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# The Economics of World Wheat Markets: Implications for North America

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Objective Analysis  
for Informed  
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## State Trading Enterprises, Time Consistency, Imperfect Enforceability, and Reputation

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International trade in many basic agricultural commodities is dominated by agents that have potential or exclusive monopoly power. State trading enterprises (STEs) and large private firms control most of the trade volume. The limited number of these agents and the volume of trade that they control suggest the importance of better understanding their behavior and the strategies that may be in use. The recent withdrawal of national governments from domestic and international markets and the questions being raised about the performance of, and the rationale for, STEs make the investigation of these issues most timely. Wheat is an agricultural commodity that is traded internationally under conditions that make these issues particularly relevant.

**Evaluation of  
state trading enterprises  
needs to consider  
problems of timing and  
penalties for not honoring  
trade contracts.**

The analysis provided in this paper is based on applications and adaptations of modern game theory. The general approach derives from the fact that the agents in these markets, and in particular the STEs, make decisions that can potentially be revised based on intervening information. The model suggested involves the concept of time consistency. Available results indicate welfare losses are a consequence of the ability to revise announced policies. Using this concept and the game theoretic framework, explanations can be generated for observable abnormalities in trade behavior. Also, mechanisms that support ex ante optimal contracts in single stage and sequential games can be developed and evaluated using the framework discussed in this paper.

Major conclusions from the analysis fall into two categories: conceptual and applied. The latter follow from a single exercise using the framework to explore in a cursory manner the policies of the Canadian Wheat Board. Conceptual results point to the importance of bonding, forward contracting, and other third-party roles in improving the benefits of trade. These mechanisms involve the imposition of various types of penalties for not honoring ex ante trade contracts. In the context of sequential trades, reputation and signaling enrich the results of the analysis but again point to the importance of various types of trade management interventions. The applied results are informative but largely negative in terms of available analysis for STEs. The added structure provided by the model of strategic trade and the application of game theoretic methods calls into serious question the available results of these empirical studies and perhaps suggests a major reason for their

inconsistencies. Specifically, in the case of the Canadian Wheat Board, the analysis suggests simultaneous welfare impacts of opposite sign. The control and management by the board makes it more possible and likely to commit to certain policies (a plus). The payments scheme to farmers could, however, potentially decrease producer welfare (a minus). Clearly there are possibilities for better use of the theory in providing more informed evaluations of STEs.

The more general observations from the analysis relate to the increased understanding of strategic trade that is now possible, the opportunities for new, more promising empirical and policy-related analyses using the propositions following from the game theoretic treatment, and the applicability of the results in different economic contexts. Problems of timing and honoring of contract commitments are almost always in play between two agents.

#### **About the Authors**

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