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Current Issues Affecting Trade and Trade Policy: An Annotated Literature Review

by
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Abstract

This review provides a base of literature describing current issues and research on the impacts of globalization and the industrialization of agriculture and recent approaches to analyze and model agricultural trade and trade policies. Three key factors of the survey are differentiated goods, global economic integration and international supply chain linkages. The review covers 182 publications, which are presented alphabetically by author with a brief annotation describing how it relates to the above criteria. The articles are also indexed by keyword. A brief summary highlights the documented literature and includes a series of issues for future discussion and research.

Executive Summary

Over the past two decades, agricultural markets have evolved as production and processing units have become more economically integrated and industrialized and consumers have demanded safer, higher quality food. The changes in the agricultural markets have been due to a natural evolution process, as well as interactions with multinational, regional and bilateral trade negotiations and liberalization policies. Noted examples of changes from this process include:

- consolidation and expansion of multinational agricultural corporations and their international market power,
- increasing numbers of vertical production contracts,
- expansion of value-added industries using agricultural commodities,
- diversification towards more premium-priced products and consumer demand for specific food attributes relating to the safety,
- quality and process of production.

This evolution of agricultural markets has stretched the ability of current agricultural economic models to adequately model markets and to analyze policy and policy effects. Historically, models have been developed to incorporate pooled markets and homogenous goods in a perfectly competitive framework. Trade model specifications were based on a Heckscher-Ohlin framework incorporating Ricardian comparative advantage in endowments. However, the changes in the agricultural sector have necessitated the incorporation of differentiated goods, global economic integration and global supply chains into economic models with imperfectly competitive markets. This review is intended to provide a base of literature describing current issues and research in this area.

Literature Review

The literature search was conducted using AgEcon Search and the Online Computer Library Center (OCLC) search databases Econ Lit and Agricola. Searches were made using identified keywords. Further, bibliographies from key refereed journal articles, working papers and other articles were used. The primary sources of literature were outputs from prior and current ERS projects, refereed journals and staff and working papers from academic and research institutions. Articles from reputable business and legal journals were also used when applicable.

The primary scope of this review is literature since 1990. Articles considered key that were published before 1990 are included as they relate to the topics. This is not a review of trade and trade policy per se, but rather a review of the issues and factors that have changed the way in which trade patterns occur and are modeled and how trade policy is written. While other issues in current trade literature are important, those issues are outside the scope of this review. Under this thesis, papers containing empirical research incorporating the identified issues are of primary concern. However, the developing nature of these research issues translates into relatively few articles in print. Secondary selection criteria includes papers and reports providing background and discussion in relation to current issues and theoretical journal articles that provide a foundation for an economic conceptualization of the issues.

The review is comprised of 182 publications selected under the above criteria. Accompanying each publication citation, a brief annotation describes what is contained in the publication and the factors that relate it to the identified issues. The annotation is commonly taken from the publication abstract or introductory paragraphs with minor editorial changes, this being denoted by "[A]". Publications are organized in the following two sections. The first section is the bibliography, where publications along with the annotation are organized alphabetically. The second section indexes publications by keyword categories, alphabetically listing publications by author.

Key Issues in Modeling

Trends have emerged in the reviewed literature on the types of models commonly used, such as the need for new model structures, the changes in acceptance of models and tools for the analysis, and conceptualization of economic issues. Observed trends and issues are briefly highlighted, with the discussion primarily focusing on aspects relating to empirical modeling issues, rather than the current policy and market environment. Included in this discussion are: international trade theory, bilateral trade models, differentiable goods models, supply chain analytical methods, risk and uncertainty and globalization related trade issues.

"New" Trade Theory

In the 1970s, the apparent lack of ability for Heckscher-Ohlin type models to explain intra-industry trade led to the development of a "new" trade theory. Helpman and Krugman (1985) combine early literature on "new" trade theory, presenting the development of models in a consistent notation. The three key features where how "new" trade theory differs from "classical" trade theory in the incorporation of imperfect competition, increasing returns to scale and the availability of data on differentiated goods. Due to the complexities of models and the demand on the data, empirical application of "new" trade theory has been limited in development (Neary 2000). Despite this, generalized models[1] and empirical models[2] have been constructed and estimated.

Differentiable Goods

The ability to model goods by differentiable characteristics has been a point of discussion in economics for the later part of the 20th century. Armington (1969) was one of the first to present an empirical model differentiating between both the type of good and the country of production. Armington used several simplifying assumptions, including homotheticity and separability, to reduce a Hicksian demand model to an estimable model. These specifications have been used in both modeling wheat and other differentiable goods in a partial equilibrium demand framework[3] and inclusion within large-scale partial equilibrium and computation general equilibrium (CGE) models[4]. Alston et.al. (1990) test Armington specifications with an Almost Ideal Demand

[1] Venables (1987) models trade in differentiated products between firms with varying market shares and Neary (2002) models trade using oligiposlistic firms to better explain issues relating to globalization.

[2] For examples of empirical studies incorporating imperfectly competitive markets, see Chen, McCarl and Chang (2002), DeSanctis (2002) and Helpman (1987).

[3] Blonigen and Wilson (1999) describes a procedure for estimating Armington elasticities. For examples of policy analysis using models with Armington specifications, see Abbott and Young (1999), Alston and Scobie (1987), MacLaren (1990) and Feenstra, Markusen and Rose (2001).

[4] Haley (1995) used the USDA-SWOPSIM model analyze policy effects on wheat differentiated by source and end use. Senhadji (1997) and Bockel (1999) discuss the inclusion of Armington specifications in CGE models. There is a

System and double-log demand specifications. The test results from Alston et.al. suggest that the Armington assumptions are inadequate for modeling differentiated characteristics in the wheat and cotton sectors. As a result, empirical modeling of differentiable goods using the Armington specification has become more limited.

The foundations of a new series of models for handling demand systems of differentiable goods has evolved in the literature, both relating to the automobile sector and differentiable goods in general. Automobiles are in essence goods composed of a set of discrete components (characteristics). Therefore, it is logical that demand for any number of automobiles could be modeled as a sum of the demand for preferred characteristics[5]. Berry, Levinsohn and Pakes (1995,1998) develop equilibrium conditions for a system of differentiable goods, empirically analyzing the U.S. auto industry, and refining techniques for and estimating a detailed product-level demand system, respectively. For the development of models where goods are modeled as a set of the good's characteristics, Blundel and Robin (2000) present the concept of latent separability. Latent separability is a generalization of weak separability where goods are modeled by sets of characteristics and characteristics are allowed to be included in multiple sets. Additionally, differentiation has been modeled using hedonic model structures, both in demand and equilibrium structures[6].

Gravity Model

A gravity equation estimates the relationship between bilateral trade, country incomes, distance of separation, and other selected indicators. Gravity models have been shown to explain bilateral trade patterns relatively well[7]; however, the formation of a consistent theoretical structure underlying the relationship has been rather elusive. Theoretical foundations have been constructed using both perfect and imperfect competition assumptions using "new" trade theory structures[8]. Deardorf (1998) derived gravity equations from a Hechscher-Ohlin structure, drawing the conclusion that the gravity model is not an empirical test of trade theories. Bergstrand (1989) concludes that misspecification of the theoretical model can lead to (serious) biasedness in the estimates. However, Feenstra, Markesen and Rosel (2001) suggest that the estimated gravity equation does serve as a tool to differentiate between theories.

Supply Chains

Supply chain management (SCM) and network literature evolved from the traditional field of logistics. Both concepts analyze the relationship between stages of production, with the former concentrating on intra-firm and the latter on inter-firm relationships. One popular outgrowth from this literature has been just-in-time techniques. Transaction cost economics (TCE) has evolved out of the industrial organization literature as a method of analyzing vertical

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related set of literature evaluating policy using the Global Trade Analysis Project (GTAP) model with an Armington specification (Alston et.al. 1990). See Stone, Matysek and Dolling (2002) as an example.

[5] See also Goldberg (1995)

[6] See Elad, Clifton and Epperson (1994, Epple (1997) and Rosen (1974).

[7] For examples of studies empirically estimating gravity models, see Cho, Sheldon and McCorriston (2002), Eaton and Kortum (1997), Fink and Braga (1999), Lipsey (1995), Otsuki, Wilson and Sewadeh (2001), Rafiquzzaman (2002), Smith (2002), Wisniewski (2003) and Zahniser et.al (2002).

[8] Anderson (1979) and Bergstrand (1985) derive gravity equations under a perfect competition assumption, Bergstrand (1989) and Helpman (1987) under a imperfect competition assumption and Feenstra, Markusen and Rosel (2001) derive several equations under both assumptions.

interactions[9]. The primary unit of the TCE analysis is not the good involved in the transaction, but rather the underlying structure and properties of the transaction itself and how it may differ from other transactions.

One specific set of transactions, which has received substantial treatment, is increased vertical linkages in food and agriculture supply chains.[10] McLaren (2002) develops a conceptual model of linkages between up and downstream firms using TCE structures. Results show that as inputs (products) become more specialized, there are larger incentives to form linkages due to the uncertainty related to finding a supplier (purchaser). Further treatment shows that integration is negatively related to market openness. Erwin and Römmisch (1999) modeled the role exchange rate uncertainty affects the formation of international trade linkages. Perry (1989) provides an overview of the role of uncertainty in vertical linkages.

Risk and Uncertainty

In addition to affecting the formation of vertical linkages, risk and uncertainty play an increasing role in the creation and analysis of agricultural trade policy. Risk in agriculture has been addressed primarily in agricultural production and income literature (see Just and Pope 2002). As trade policy evolves, there continues to be an increasing need to assess and model the risk of tradable goods violating a technical or other non-tariff barriers[11]. Simpson and Hosken (2000), Verbeke and Ward (2001) and Verbeke, Ward and Viaene (2000) address these external risks using an event study analysis framework. The ability to assess and incorporate event probabilities could lead to a set of models producing point estimates with structurally derived prediction intervals, rather than stochastic point and interval estimates.

Uncertainty in agriculture not only affects farm and industry decisions, but also modeler decisions on the proper assessment of risk. MacLaren (1997) and Ker (2000) model the uncertainty associated with the effects of technical barriers on trade. Erwin and Römmisch (1999) address exchange rate uncertainty impacts on trade and Hennessey (1998) examines the effects of income support policy uncertainty on production. Just (2001) asserts that uncertainty impacts agricultural models at two levels. Uncertainty in the total set of possible events biases probabilities associated with external risks. The changing nature of trade policy and the agricultural sector introduces structural uncertainty into models.

Globalization Issues

Only a limited number of articles are identified linking the impact of globalization issues, such as foreign direct investment, capital mobility and income inequality, on trade and trade policies. These globalization issues are commonly modeled in relation to growth and development;

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[9] See Williamson (1989) for an overview of TCE literature and Rindfleisch and Heide (1997) for an overview and more detailed references of empirical studies. Sylvander, Barjolle and Arfini (2000) and specifically Steiner(2000) provide empirical studies involving TCE.

[10] See Perry (1989) for an overview of vertical integration. For examples of specific articles analyzing transactions in vertical structures, see Bunte and van Tongeren (1999), Connor (2003), Emons (1996), Galizzi (1999), Holm (1997), Kinsey (2001), MacDonald et.al. (2000) and Moss and Schmitz (2002).

[11] For an example examining the risk associated with foot-and-mouth disease infection, see Paarlberg and Lee (1998).

however, the linkage to trade is not often made. This incomplete structure has led to fewer articles being identified which show the linkage between these issues and their impact on trade[12].

Areas for Future Research

Evolving from this summary is a set of questions meant to facilitate future discussion and research on the impacts of current agricultural issues on trade and trade policy, as well as the modeling in the agricultural sector in general. These questions primarily focus on how specific issues are modeled, with the implication that newer structures would also be appropriate for use or incorporation in trade and trade policy analysis.

- How can differentiated goods be modeled in a theoretically based model, better reflecting current market structures? It has been shown where Armington specifications have been used to model differentiable goods. The Armington assumptions have been shown to be overly restrictive, resulting in inadequate modeling of differentiated wheat and cotton. A new set of differentiated good models has shown to be effective in modeling supply and demand in the auto industry. However, automobile characteristics are discrete, whereas for agricultural commodities, some characteristics are continuous.

- How can non-trade and non-tariff barriers be measured and incorporated into trade analysis models appropriately? The measurement of tariffs and quotas and their incorporation into models is prevalent in models because such barriers are quantitative. Non-trade and non-tariff barriers are often qualitative, being subjectively assessed by human judgment or by criterion based on scientific principles.

- How can complete and incomplete vertical linkages be better characterized in models? Vertical linkages are increasingly important in understanding production and marketing decisions. Key areas for further investigation include the price setting and cost determination mechanisms and the market power and relationships exhibited by upstream and downstream firms.

- How can probabilities associated with external risks be better assessed and incorporated into models? The incorporation of external risks into models enables simultaneous analysis of the impacts of multiple outcomes due to specific policies or events. Additionally, sets of probabilities of external risk factors could be used to calculate benefits or costs associated with the occurrence of a specific event.

- What type of non-competitive market structures characterize agricultural markets and how should these structures be incorporated in models? With the increasing industrialization of agriculture, characterized by consolidation of multinational agricultural companies and increasing farm-level production contracts, there is a corresponding change in market access and market power for all stakeholders. These factors shift models away from competitive equilibrium constructs and introduce inefficiencies and non-competitive market interactions that have the potential to produce results contrary to current models.

[12] For examples of articles where the relationship between trade and globalization issues are drawn, see Chui et.al. (2002), Lee (2002), Liddle (2002) and Krugman and Venables (1995).

- How does the lack of data impact the way in which the new models and tools are constructed? The generation of new empirical models is limited by the richness of the data. It is likely that as production, trade and government regulation of products increases, more data will become available for incorporation in analyses. However, it is only through the construction of new empirical models that the level and type of data required is known.

Literature Search Parameters

The literature search has been conducted using AgEcon Search and Online Computer Library Center (OCLC) search databases Econ Lit and Agricola. Searches are made using identified keywords. Searches through working papers from agricultural economics departments and associated research centers are made to identify key current literature in this field. Further, bibliographies from key refereed journal articles, working papers and other articles are used. The primary sources of literature are outputs from prior and current ERS projects, refereed journals and staff and working papers from academic and research institutions. Articles from reputable business and legal journals are also used when applicable.

The primary scope of this review is literature since 1990. While not excluded, other key articles published before 1990 may be included as they relate to the topics. The factors identified as key issues affecting current trade and trade policy are: differentiable goods, globalization, and supply chains. A strong relationship exists between these issues and the multinational, regional and bi-lateral trade negotiations and liberalizations occurring in the past decade, one often resulting in the evolution of the other. This is not a review of trade and trade policy per se, but rather a review of issues and factors that affect the way in which trade is modeled, how trade patterns occur, and how trade policy is written. While other issues in current trade literature are important, they are outside the scope of this review.

Within the bibliography, the symbol [A] denotes that the annotation is primarily written by the author with minor editing.

Keyword Index

Annotated Bibliography

Abbott, P.C. (2002). Tariff-rate quotas: failed market access instruments? *European Review of Agricultural Economics* 29(1): 109-30.

Tariff-rate quotas (TRQs) were one of the policy instruments created in the Uruguay Round Agreement on Agriculture, intended to improve market access for politically sensitive commodities and sometimes to continue managed trade regimes. This paper examines country and commodity coverage, tariffs bound and applied, administrative methods adopted, quota fill rates and import trends under TRQs. Experience with implementation shows there are problems with underfill and limitations on imports as a result of administration methods. TRQs have effectively sanctioned import quotas, accompanied by rents and the need to allocate quota rights. Both theory and practice lead to our recommendation for eventual elimination of this instrument through lowering most favored nation tariffs. [A]

Keywords: trade policy: market access, tariffs, trade agreements.

Abbott, P., M. Boehlje and O. Doering (2001). Coming to grips with globalization. *CHOICES*, Winter 2001-2002: 43-46.

This article is a broad review of economic integration and globalization of industry and business. Globalization has become an important dimension of the changing agricultural sector. Export growth for United States agricultural products is a fundamental premise of U.S. farm policy and an indicator of the business climate for farm and agribusiness firms. U.S. policy has sought to facilitate the trend towards a higher proportion of high-value and processed food products in agricultural trade. While the interest of this article is ultimately globalization's impact upon agriculture and related sectors, globalization is driving and being driven by a range of related factors that influence all sectors. [A]

Keyword: globalization.

Abbott, P.C. and L.M. Young (1999). Wheat-importing state trading enterprises: impacts on the world wheat market. *Canadian Journal of Agricultural Economics* 47(1): 119-36.

This paper examines the prevalence of state trading by wheat-importing countries and the reasons for reform. The paper investigates two hypotheses, whether operation of a state trading enterprise is associated with a higher level of protection than with private traders and whether decisions made by state traders regarding the source of wheat is made on a noncommercial basis. The effective level of protection, net import demand equations and a simple Armington model for U.S. and Canadian wheat exports are estimated to investigate these hypothesis. Behavior is compared across countries who differ in their institutional arrangements for importing wheat. It is also compared over time within countries who have reformed their state trading enterprise to assess whether reform leads to different market behavior. [A]

Keywords: trade modeling: Armington, econometric; trade policy: export subsidies, market access.

Akkermans, H., P. Bogerd and B. Vos (1999). Virtuous and vicious cycles on the road towards international supply chain management. ***International Journal of Operations & Production Management*** **19(5/6): 565-81.**

An increasing number of companies claim to pursue international supply chain management (ISCM), but the empirical evidence of successfully implemented programs is still scarce. This paper aims to contribute to theory-building in this area by presenting an exploratory causal model of goals, barriers, and enablers on the road towards effective ISCM. The results point at a disturbingly gloomy picture of vicious cycles frustrating the implementation of effective ISCM strategies. Fortunately, it appears that it is possible to apply the same generic mechanisms to create a virtuous cycle, for instance by promoting cross-functional careers and by actively responding to customer needs. [A]

Keywords: supply chains: logistics, management strategies.

Alston, J.M., C.A. Carter, R.A. Green and D. Pick (1990). Wither Armington trade models? ***American Journal of Agricultural Economics*** **72(2): 455-67.**

The Armington trade model distinguishes commodities by country of origin while import demand is determined in a separable two-step procedure. The purpose of this paper is to test the Armington assumptions of homotheticity and separability with data from the international cotton and wheat markets. Both parametric and non-parametric tests were performed and the empirical results reject the Armington assumptions. This has important implications for international trade modeling and CGE modeling. [A]

Keywords: trade modeling: Armington, differentiable goods.

Alston, J.M. and G.M. Scobie (1987). A differentiated goods model of the effects of European policies in international poultry models. ***Southern Journal of Agricultural Economics*** **19(1): 59-68.**

This paper analyzes the Common Agricultural Policy (CAP), which increases European poultry production costs, prohibits imports, increases domestic prices and subsidizes exports. This policy has displaced some U.S. exports. Poultry is modeled as a heterogeneous good by extending a homogenous good model with Armington based specifications. Costs to U.S. producers due to the CAP are nearly offset by gains to U.S. consumers. As imperfect substitutability of poultry between countries increases, the effects on U.S. producers and consumers decrease.

Keywords: sector/commodity: meat; trade modeling: Armington, differentiable goods; trade policy: export subsidies.

Andaluz, J. (2000). On protection and vertical product differentiation. ***Regional Science and Urban Economics*** **30: 77-97.**

This paper analyzes the effects of trade barriers on the degree of vertical product differentiation in a model of spatial competition with two interdependent markets. It is shown that with specific trade barriers, firms produce the same product variety provided that the level of protection is sufficiently high. When there is trade in two directions, a specific transport cost will only affect the variety that is least valued by consumers, giving rise to less differentiation. By contrast, with ad valorem trade barriers, protection does not affect the degree of product differentiation. [A]

Keywords: differentiable goods: technical barriers; trade modeling: partial equilibrium, spatial, trade policy; trade policy: non-trade measures.

Anderson, J.E. (1979). A theoretical foundation for the gravity equation. *The American Economic Review* 69(1): 106-16.

The intent of this paper is to provide a theoretical explanation for the gravity equation applied to commodities. It uses the properties of expenditure systems with a maintained hypothesis of identical homothetic preferences across regions. Products are differentiated by place of origin. The present interpretation of the gravity model makes it part of an alternative method of doing cross-section budget studies. The bias problems now uncovered may be quite severe, especially with transit costs varying considerably, but there are efficiency gains to trade off against them. This paper shows that the gravity model may merit continued development and use. [A]

Keywords: trade modeling: econometric, gravity model.

Anderson J.E. and J.P. Neary (1999). The mercantilist index of trade policy. NBER Working Paper No. 6870.

This paper develops and characterizes an index of trade policy restrictiveness defined as the uniform tariff equivalent which maintains the same volume of trade as a given set of tariffs, quotas, domestic taxes, and subsidies. This volume-equivalent index is related to the Trade Restrictiveness Index, a welfare-equivalent measure and the changes in both indexes are related to changes in the generalized mean and variance of the tariff schedule. Applications to international cross-section and time-series comparisons of trade policy show that the new index frequently gives a very different picture than do standard indexes.

Keywords: trade modeling: general equilibrium, trade policy: export subsidies, non-tariff measures, tariffs.

Anderson, J.E. and J.P. Neary (1996). A new approach to evaluating trade policy. *Review of Economic Studies* 63: 107-25.

This paper introduces a new index number, the Trade Restrictiveness Index, which measures the restrictiveness of a system of trade protection. The index is a general equilibrium application of the distance function and answers the question: " What uniform set of trade restrictions is equivalent, in welfare terms, to the initial protective structure?" The index is applicable to both tariffs and quotas and permits international and inter-temporal comparisons. The index is operational and two empirical examples are provided. [A]

Keywords: trade modeling: general equilibrium, trade policy: export subsidies, non-tariff measures, tariffs.

Ara, S. (2003). Consumer willingness to pay for multiple attributes of organic rice: a case study in the Philippines. Presented at the 25th International Conference of Agricultural Economists, Durban, South Africa, August 16-22.

This paper contains a conjoint analysis to determine consumers' preferences of multiple attributes of organic rice in Manila and Naga city. Attributes included are price, reduced health risk level, environmental quality, eating quality, type of organic certification and a fair trade factor. Consumers in Manila revealed organic certification to be the second most important factor while improvement of the farm environment was the second highest factor in Naga city.

Results show that consumers who live further from production sites have a higher demand for certification. On the other hand, consumers who live close to the farms care more about the farm environment and have a lower demand for certification. [A]

Keywords: differentiable goods: consumer preference, organic; sector/commodity: field crops; trade modeling: differentiable goods, econometric.

Armington, P.S. (1969). A theory of demand for products distinguished by place of production. *IMF Staff Papers* 16(1): 159-78.

This paper presents a general theory of demand for products that are distinguished not only by their kind, but also by their place of production. Such products are distinguished from one another in the sense that they are assumed to be imperfect substitutes in demand. The problem confronted in this paper is that of systematically simplifying the product demand function to the point where they are relevant to the practical purposes of estimation and forecasting. The assumptions reduce a general Hicksian model to one that preserves the relationships between demand, income and prices. [A]

Keywords: trade modeling: Armington, differentiable goods.

Bagwell, K. and R.W. Staiger (2001). Strategic trade, competitive industries and agricultural trade disputes. *Economics and Politics* 13(2), July: 113-28.

The primary predictions of strategic-trade theory are not restricted to imperfectly competitive markets. These predictions emerge in a natural three-country extension of the traditional theory of trade policy in competitive markets, once the theory is augmented to allow for politically motivated governments, so that the "sign" of export policy may be converted from tax to subsidy. This suggests that the ongoing agricultural trade disputes may be best interpreted from the perspective of strategic-trade theory. In fact, these disputes may offer the most important example yet of strategic-trade theory. [A]

Keywords: trade modeling: partial equilibrium, strategic trade; trade policy: export subsidies, trade agreements.

Baldwin, R. (1997). The causes of regionalism. *The World Economy* 20(7): 865-88.

This paper attempts to understand the future consequences of regionalism through determination of the past causes of regionalism. The thesis is that the traditional explanation of regionalism is inconsistent with the facts. The paper describes and critiques the standard explanation of regionalism and describes the domino theory of regionalism, which, it is argued, fits the facts better. Finally, there is a summary and speculation on the consequences of regionalism.

Keywords: trade patterns: regional; trade policy: special/differential treatment, trade liberalization.

Baldwin, R.E. and P. Martin (1999). Two waves of globalization: superficial similarities, fundamental differences. NBER Working Paper No. 6904.

This paper looks at the two waves of globalization, focusing on the economic situation, economic beliefs and policymaking environments. The two waves have superficial similarities, but are fundamentally different. Chief similarities include aggregate trade and capital flow ratios and the importance of reductions in barriers to international transactions. The fundamental difference lies in the impact that these reductions had on trade in goods versus trade in ideas.

Initial conditions constitute another important difference. Before the first wave, all the world was poor and agrarian; however, the second wave began with a world sharply divided between rich and poor nations. [A]

Keywords: globalization; trade patterns: multinational corporations, regional.

Bergstrand, J.H. (1989). The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade. ***The Review of Economics and Statistics*** **71(1): 153-53.**

A general equilibrium model of world trade with two differentiated-product industries and two factors is developed to illustrate how the gravity equation, including exporter and importer populations as well as incomes, "fits in" with the Heckscher-Ohlin model of inter-industry trade and the Helpman-Krugman-Markusen models of intra-industry trade. The study extends the microeconomic foundations for a generalized gravity equation in Bergstrand (1985) to incorporate relative factor-endowment differences and non-homothetic tastes. Empirical estimates of this generalized gravity equation for single-digit SITC industry groups yield plausible inferences of their capital-labor intensities. [A]

Keywords: sector/commodity: non-agricultural; trade modeling: econometric, gravity model.

Bergstrand, J.H. (1985). The gravity equation and international trade: some microeconomic foundations and empirical evidence. ***The Review of Economics and Statistics*** **67(3): 474-81.**

Despite the gravity equation's empirical success in "explaining" trade flows, the model's predictive potential has been inhibited by an absence of strong theoretical foundations. A general equilibrium world trade model is presented from which a gravity equation is derived by making certain assumptions, including perfect international product substitutability. If, however, trade flows are differentiated by origin as evidence suggests, the typical gravity equation is misspecified because it omits certain price variables. The last section presents empirical evidence supporting the notion that the gravity equation is a reduced form from a partial equilibrium subsystem of a general equilibrium model with nationally differentiated products. [A]

Keywords: trade modeling: differentiable goods, econometric, gravity model.

Berry, S., J. Levinsohn and A. Pakes (1995). Automobile prices in market equilibrium. ***Econometrica*** **63(4): 814-90.**

This paper develops techniques for empirically analyzing demand and supply in differentiated product markets and then applies these techniques to analyze equilibrium in the U.S. automobile industry. The primary goal is to present a framework which enables one to obtain estimates of demand and cost parameters for a class of oligopolistic differentiated product markets. These estimates can be obtained using only widely available product-level and aggregate consumer-level data and are consistent with a structural model of equilibrium in an oligopolistic industry. Cost and demand parameters for (essentially) all models marketed over a twenty year period are obtained.

Keywords: differentiable goods: consumer preference; sector/commodity: non-agricultural; trade modeling: differentiable goods, econometric, partial equilibrium.

Berry, S., J. Levinsohn and A. Pakes (1998). Differentiated products demand systems from a combination of micro and macro data: the new car market. NBER Working Paper No. 6481.

This paper exploits new sources of cross-sectional data to estimate a detailed product-level demand system for new passenger vehicles. Four data sources are used: on the characteristics of products, on the attributes of the U.S. population of households, on the match between the first and second vehicle choices of the household and on the match between households attributes and first choice vehicles. It is shown that these data solve some, but not all, of the traditional problems in estimating differentiated products demand systems and indicate which data sources are important for which problem. The data is rich enough to reveal a rather complex substitution pattern, requiring a quite general modeling framework. Together the data and the model make a detailed analysis of industry demand possible. [A]

Keywords: differentiable goods: consumer preference; sector/commodity: non-agricultural; trade modeling: differentiable goods, econometrics.

Berry, S., J. Levinsohn and A. Pakes (1999). Voluntary export restraints on automobiles: evaluating a trade policy. *American Economic Review* 89(3): 400-30.

This paper evaluates the voluntary export restraint that was initially placed on exports of automobiles from Japan in 1981. This paper evaluates the impact this policy had on U.S. consumer welfare, firm profits and forgone tariff revenue from its initiation through 1990. [A]

Keywords: sector/commodity: non-agricultural; trade modeling: differentiable goods, econometric.

Bhagwati, J., D. Greenaway and A. Panagariya (1998). Trading preferentially: theory and policy. *The Economic Journal* 108(July): 1128-48.

This review considers the present state of the theories pertaining to preferential trade agreements (PTA). The discussion begins with 'static' theories, in Viner's tradition and outside of it. It then moves onto 'systematic' issues which have been raised in the static framework. Following a review of 'dynamic time-path theories, the state of the current policy debate is briefly discussed. [A]

Keywords: trade models: trade policy; trade patterns: regional; trade policy: special/differential treatment, trade agreements.

Bhagwati, J. and A. Panagariya eds. (1996). The economics of preferential trade agreements. Washington D.C.: The AEI Press.

This volume advances new theoretical research on free trade areas (FTA). FTAs have rapidly proliferated since the early 1980s. Despite the popular equation of FTAs with genuine free trade, these are preferential arrangements. They offer free trade to members and implicit protection against non-members. The main contribution of this volume is to alert policy makers to the substantial shift that is occurring in scholarly circles with regard to the wisdom of pursuing preferential trade agreements (PTA), to demonstrate that many of the pro-PTA arguments in the public domain are shallow and to suggest an agenda for world trade liberalization that returns it to the earlier focus on multilateral principles. [A]

Keywords: globalization: trade agreements; trade policy: special/differential treatment, trade agreements, trade liberalization.

Blonigen, B.A. and W.W. Wilson (1999). Explaining Armington: what determines substitutability between home and foreign goods? *Journal of Canadian Economics* 32(1), February: 1-21.

For decades, trade economists have modeled imperfect substitution between home and foreign goods in consumption (often called the Armington assumption) with little analysis of what explains the wide variation in these substitution elasticities across sectors. Using a varying coefficients model, Armington elasticities between U.S. and foreign goods across over 100 industrial sectors from 1980-88 the study examined the role of product, industry, political and 'home bias' factors as determinants. There is strong support that the presence of foreign-owned affiliates affects Armington elasticities and some support that entry barriers and union presence also affect the elasticities. [A]

Keywords: trade modeling: Armington.

Blundell, R. and J.-M. Robin (2000). Latent separability: grouping goods without weak separability. *Econometrica* 68(1): 53-84.

This paper develops a new concept of separability with overlapping groups—latent separability. This is shown to provide a useful empirical and theoretical framework for investigating the grouping of goods and prices. It is a generalization of weak separability in which goods are allowed to enter more than one group and where the composition of groups is identified by the choice of group specific exclusive goods. Latent separability is shown to be equivalent to weak separability in latent rather than purchased goods and provides a relationship between separability and household production theory. [A]

Keywords: differentiable goods: consumer preference; sector/commodity: non-agricultural; trade modeling: differentiable goods, econometric.

Bockel, D.W. (1999). On apparent problems with the use of the Armington aggregator in computable general equilibrium models. *Applied Economic Letters* 6(9): 589-91.

This letter points out that the problems Senhadji (1997) attributes to the use of the Armington aggregator in CGE models do not arise, provided that applied modelers employ the calibration procedure for CES function parameters frequently described in the literature. [A]

Keywords: trade modeling: Armington, differentiable goods, general equilibrium.

Boehlje, M. (1999). Structural changes in the agriculture industries: how do we measure, analyze and understand them? *American Journal of Agricultural Economics* 81(5): 1028-41.

This paper describes the way in which the agricultural sector is changing and how analytical methods have or will change. This paper cites supply/value chains and biological manufacturing as two profound ways in which the sector is changing. Discussion is given to the two areas, describing the factors influencing the changes and how these factors are to be analyzed.

Keywords: supply chains: logistics, management strategies, vertical integration; trade patterns: producer/consumer linkages.

Brenton, P., J. Sheehy and M. Vancauteren (2001). Technical barriers to trade in the European Union: importance for accession countries. *Journal of Common Market Studies* 32(2), June: 265-84.

This article highlights the importance of technical barriers to trade between the European Union (EU) and various countries of central and eastern Europe (CEEC), distinguishing between sectors according to the different approaches to the removal of these barriers in the EU: mutual recognition, detailed harmonization, and minimum requirements. Two sources of information on technical regulations are used: a sectoral classification from a previous study of the impact of the single market and a detailed translation of EU product-related directives into the relevant tariff codes. The analysis suggests that the importance of technical barriers varies considerably across the CEECs. [A]

Keywords: differentiable goods: technical barriers; trade policy: non-tariff measures.

Buccirossi, P., S. Marette and A. Schiavina (2002). Competition policy and the agribusiness sector in the European Union. *European Review of Agricultural Economics* 29(3): 373-97.

This paper analyzes the main antitrust decisions in the agribusiness sector in Europe. First, legislation and economic principles are recalled. Then for input suppliers, farmers, manufacturers, and retailers, a brief presentation of the market structure is given and the main competition concerns according to the most recent anti-trust decisions are discussed. Farmers are the weakest link of the entire chain, given the degree of concentration in the upstream and downstream industries in Europe. The use of the concept of buying power could be developed by competition authorities to balance power along the agro-food chain. [A]

Keywords: globalization: market integration; supply chains: industrial organization, vertical integration.

Buhr, B. (2003). Traceability, trade and COOL: lessons from the EU meat and poultry industry. International Agricultural Trade Research Consortium Working Paper 03-05.

The traditional food supply chain is arranged as a complex array of producers, handlers, processors, manufacturers, distributors and retailers. As the food supply chain grew in complexity over time, little emphasis was placed on preserving information regarding the origin of raw materials and their transformation, often by multiple handlers, into consumer ready products. This paper provides case illustrations of the implementation of information systems for support of traceability in Europe. Emphasis is on the firm level costs and benefits as well as the broader market structure and governance issues inherent in information economics of the firm. [A]

Keywords: differentiable goods: labeling/brands, traceability; globalization: information technology; supply chains: management strategies.

Bunte, F. and F. van Tongeren (1999). Price setting and vertical coordination in food chains: a game theoretical approach. The Hague, Agricultural Economics Research Institute (LEI) Report 3.99.04.

The paper compares the outcomes of three alternative price mechanisms in vertically related chains: non-cooperative price setting, franchising and bargaining. The alternatives are compared in a game-theoretic framework encompassing consumer and producer behavior. The paper repeats the familiar result that franchising lowers consumer prices and increases chain output compared to non-cooperative price setting. However, chain profits are only increased if

the inter-sector elasticity of substitution is sufficiently high. Both non-cooperative price setting and franchising are well documented in the literature. Bargaining, however, is not, although it occurs frequently at intermediate stages of production, especially in food chains. For this reason, bargaining is analyzed as well. The price solution under bargaining turns out to be more general: the solutions under non-cooperative price setting and franchising are special cases of the bargaining solution. [A]

Keywords: sector/commodity: food; supply chains: game theory, vertical integration; trade modeling: partial equilibrium.

Bureau, J.C., L. Fulponi and L. Salvatici (2000). Comparing EU and US trade liberalisation under the Uruguay Round Agreement on Agriculture. *European Review of Agricultural Economics* 27(3): 259-280.

This article takes bound tariffs under the Uruguay Round Agreement on Agriculture (URAA) as the starting point and attempts to measure how much liberalization in agriculture will be achieved by the European Union (EU) and the US by the end of the implementation period of the Agreement. Using the Trade Restrictiveness Index (TRI) and the Mercantilistic Trade Restrictiveness Index (MTRI) as indicators, the article assesses the tariff structures chosen by the EU and the US in terms of their welfare and market access impacts. The effects of the actual URAA commitments are compared with alternative tariff reduction schemes such as the 'Swiss formula' and a uniform reduction in tariffs. [A]

Keywords: trade modeling: trade policy; trade policy: market access, tariffs, trade agreements, trade liberalization.

Bureau, J.-C. and N.G. Kalaitzandonakes (1995). Measuring effective protection as a superlative index number: an application to European agriculture. *American Journal of Agricultural Economics* 77(2), May: 279-90.

In this study, duality and the theory of superlative index numbers are used to obtain a theoretically consistent Effective Protection Rate (EPR) index that imposes no *a priori* restrictions on the input-output substitution possibilities. Within this framework, EPRs are estimated for European agriculture over the period 1973 to 1989. The empirical results demonstrate that maintaining zero input/output substitutability, a restriction embedded in all common protection measures, can lead to false results about the level of protection both across countries and across time. [A]

Keywords: trade modeling: trade policy; trade policy: export subsidies, producer support programs, tariffs.

Burfisher, M.E., S. Robinson and K. Thierfelder (2002). The global impacts of farm policy reforms in Organization for Economic Cooperation and Development countries. *American Journal of Agricultural Economics* 84(3): 774-81.

This paper presents an analysis of the effects of agricultural policy reform by three OECD members that are major economies in world agricultural trade—the United States, the European Union (EU), and Japan. A multi-country computable general equilibrium (CGE) model is used, with detailed treatment of the agricultural trade and domestic policies in OECD countries. It is found that this linkage leads to dramatic reductions in a country's farm program costs when another country eliminates its support unilaterally. Given the links among domestic

support programs in OECD countries, it is also found that multilateral reform leads to smaller output adjustments than unilateral reform.

Keywords: trade modeling: general equilibrium, trade policy; trade policy: producer support programs, export subsidies, tariffs, trade liberalization.

Burfisher, M.E., S. Robinson and K. Thierfelder (2003). Regionalism: old and new, theory and practice. Presented at The International Agricultural Trade Research Consortium (IATRC) Conference, Capri, Italy, June 2003.

This paper serves as a review of the debate on "new regionalism," focusing on the tools used to evaluate regional trade agreements (RTAs). It shows that much analysis uses tools from old trade theory in the Viner-Meade tradition, focusing on trade creation, trade diversion, and terms-of-trade effects. However, the Viner-Meade framework misses many of the impacts associated with new regionalism, which typically involves "deep integration," often between developing and developed countries. The paper proposes including trade-productivity links and endogenous growth theory, international factor mobility, the role of imperfect competition, rent seeking behavior, and political-economy considerations into trade analysis models. Both theoretical and empirical research is needed to improve the reach and scope of new trade theory applied to issues of new regionalism. [A]

Keywords: globalization: market integration; trade patterns: regional, trade organizations; trade policy: trade agreements.

Carlson, R.L. (1978). Seemingly unrelated regression and the demand for automobiles of different sizes 1965-75: a disaggregate approach. *The Journal of Business* 51(2), April: 243-62.

The purpose of this study is to develop a multi-equation model that can explain the demand for automobiles, which is done by breaking the automobile market into segments. The five equation linear model is fitted using seemingly unrelated regression. The paper develops a desegregated model of the automobile market, determines key variables in the demand for different sized cars, estimates the price elasticity of demand for different sized automobiles, and discusses implications for future demand. [A]

Keywords: differentiable goods: consumer preference; trade modeling: differentiable goods, econometric.

Chang, W. and L.A. Winters (2002). How regional blocs affect excluded countries: the price effects of MERCOSUR. *American Economic Review* 92(4): 889-904.

The welfare effects of Preferential Trading Arrangements are most directly linked to changes in trade prices, i.e., the terms of trade. This paper employs a simple strategic pricing game in segmented markets to measure the effects of MERCOSUR on the pricing of "nonmember" exports to Brazil: As Brazil exempts its MERCOSUR partners from tariffs, the resulting competitive pressure leads other exporters to reduce their prices. Working with detailed data on unit values and tariffs, it is found that the creation of MERCOSUR was associated with significant declines in the prices of nonmembers exports to the region. [A]

Keywords: trade modeling: econometric, trade policy; trade patterns: trade organizations; trade policy: special/differential treatment, trade agreements.

Chappuis, J.-M. and P. Sans (2000). Actors co-ordination: governance structures and institutions in supply chains of protected designation of origin. In Sylvander, B., D. Barjolle and F. Arfini (eds.). ***The socio-economics of origin labeled products in agri-food supply chains: spatial, institutional and co-ordination aspects*****. Paris: Institut national de la recherché agronomique, Économie et sociologie rurales, Actes et Communications No. 17-2, November: 51-66.**

This paper presents the foundations of Transaction Cost Economics (TCE). Co-ordination in the supply chain is certainly a major aspect for the success of the protection of designations of origin (PDO) product and for the competitiveness of the firms producing and marketing it. It is shown that TCE is not sufficient to explain all the observed arrangements because TCE considers governance structures between two private operators. This paper also highlights the diversity of PDO supply chains regarding the number of firms at different levels and the strong diversity of responses to problems common to PDO supply chains. See Sylvander (2000) for more papers on this subject. [A]

Keywords: differentiable goods: geographical indicators/trademarks; supply chains: management strategies, vertical integration.

Chau, H.N. and H. de Gorter (2000). Disentangling the production and export consequences of direct farm income payments. Presented at the American Association of Agricultural Economists Meeting, Tampa, FL, August 2.

This paper identifies the impacts of taxpayer and consumer financed intra-marginal production subsidies to farmers through the effects on fixed costs. Income transfers to farmers allow a farmer who may otherwise have exited the industry to stay in business. In this paper, a generalized model is developed to determine how payments can affect fixed costs and the importance of domestic support programs on global competitiveness. The empirical framework involves the production and cost structure of a typical farm type and empirical simulations of the relevant criteria estimate linkages between global trade competitiveness with domestic farm support. [A]

Keywords: sector/commodity: field crops; trade modeling: trade policy; trade policy: producer support programs.

Chen, C.-C., B.A. McCarl and C.-C. Chang (2002). Spatial equilibrium modeling with imperfectly competitive markets: an application to rice trade. American Agricultural Economics Association Selected Paper.

A general imperfect competition spatial equilibrium model is developed to estimate the trading country behaviors in the international rice market using a conjectural variation approach. Such a model allows the possibility of an imperfect competitive market to exist on both the export and import sides without any prior assumption about the marketing structure. The empirical results show that the major exporting countries, Thailand, Vietnam, and the U.S. acted as oligopolies, with Pakistan to a lesser extent. The importing countries, such as Japan, the Philippines, the EU, Brazil, and the former USSR, behaved as oligopsonies. The empirical results also show that there are welfare gains of $1,568 million when all trading countries comply with the free trade agreement. [A]

Keywords: sector/commodity: field crops; trade modeling: general equilibrium, spatial.

Chen, Y, J. Ishikawa and Z. Yu (2001). Trade liberalization and strategic outsourcing. University of Nottingham Research Paper 2001/13.

This paper develops a theory of strategic outsourcing that arises due to trade liberalization. With trade liberalization, a domestic firm may choose to purchase the intermediate good from a more efficient foreign producer, who also competes with the domestic firm in the final-good market. This can result in higher prices for both the intermediate and final goods. Although trade liberalization in the final product would lower the price of the final good, it could cause the price of the intermediate product to either increase or decrease, depending on the characteristics of the final products. Therefore, in the presence of strategic outsourcing, trade liberation can have ambiguous effects on consumer prices, depending on the relative tariff reductions for intermediate and final goods. [A]

Keywords: globalization: logistics, supply chains: logistics, management strategies; trade modeling: general equilibrium; trade policy: trade liberalization.

Cho, G., I.M. Sheldon and S. McCorriston (2002). Exchange rate uncertainty and agricultural trade. *American Journal of Agricultural Economics* 84(4): 931-42.

Using a sample of bilateral trade flows across ten developed countries between 1974 and 1995, this article explores the effect of exchange rate uncertainty on the growth of agricultural trade as compared to other sectors. Based on a gravity model that controls for other factors likely to determine bilateral trade, the results show that real exchange rate uncertainty has had a significant negative effect on agricultural trade over this period. Moreover, the negative impact of uncertainty on agricultural trade has been more significant compared to other sectors. [A]

Keywords: trade modeling: gravity model, uncertainty/risk.

Chui, M., P. Levine, S.M. Murshed and J. Pearlman (2002). North-South models of growth and trade. *Journal of Economic Surveys* 16(2): 123-65.

This paper surveys the literature that combines growth and trade into models of North-South interaction. Distinctions are made between two strands of growth theory: old (exogenous) and new (endogenous) growth. Distinctions are also made between old trade theory, which assumes constant returns to scale and perfect competition, with new trade theory which relaxes both of these assumptions. This gives us four possible combinations of growth and trade theories which provide the basis of the taxonomy employed in this paper. [A]

Keywords: globalization: income inequality; trade patterns; regional; trade modeling: trade policy.

Collie, D.R. (1997). Bilateralism is good: trade blocs and strategic export subsidies. *Oxford Economic Papers* 49(4): 504-20.

This paper considers the effect of exogenous trade bloc enlargement in a multi-country version of the Brander-Spencer export subsidy game. In the single-shot game, it is shown that trade bloc enlargement leads to a reduction in Nash equilibrium export subsidies and thereby increases the welfare of the exporting countries. Although the welfare of the importing countries decreases, world welfare may increase if the export subsidies are financed by distortionary taxation. When the export subsidy game is infinitely repeated, it is shown that trade bloc enlargement reduces the critical discount factor making it easier to sustain free trade. [A]

Keywords: supply chains: game theory; trade modeling: strategic trade; trade policy: export subsidies.

Connor, J.M. (2003). The changing structure of global food markets: dimensions, effects and policy implications. Conference on Changing Dimensions of the Food Economy: Exploring the Policy Issues, 6-7 February, The Hague, Netherlands.

This paper presents trends in ownership concentration in three principal stages of the food system: food retailing, food manufacturing, and selected inputs purchased by agricultural producers and by food processors. In each of these levels, the available information from North America, Western Europe, or global sources shows that sales concentration is increasing. The paper then assesses the impact on performance of these concentration trends for final consumers and to a lesser extent for agricultural producers. Finally, it assesses the current role played by public policies in ameliorating consumer and producer welfare as it is affected by the exercise of market power. The paper considers some recent horizontal market performance issues, but also ventures into the more difficult arena of vertical sub-sector performance. [A]

Keywords: sector/commodity: food; supply chains: industrial organization, vertical integration.

Cooper, M.C., D.M. Lambert and J.D. Pagh (1997). Supply chain management: more than a new name for logistics. *International Journal of Logistics Management* 8(1): 1-14.

The concept of supply chain management (SCM) has been addressed as an extension of logistics, the same as logistics, or as an all-encompassing approach to business integration. Based on a review of the literature and management practice, it is clear that there is a need for some level of coordination of activities and processes within and between organizations in the supply chain that extends beyond logistics. This article proposes a conceptual model that provides guidance for future supply chain decision-making and research. [A]

Keywords: supply chains: logistics, management strategies.

Dahr, T, J.-P. Chavas and R.W. Cotterill (2003). An economic analysis of product differentiation under latent separability. Presented at the American Agricultural Economics Association Annual Meeting, Montreal, Canada, July 27-30, 2003.

This paper develops an analysis of markets for differentiated products that relies on the concept of latent separability for consumer preferences. Product differentiation can arise when each product makes a different contribution to the production of latent goods. The approach is based on a quadratic almost ideal demand system (Q-AIDS), which provides a flexible representation of consumer behavior. Its usefulness is illustrated in an empirical analysis of markets for carbonated soft drinks (CSD). First, the econometric analysis accounts for the endogeneity of prices for differentiated brands. Second, it provides an empirical evaluation of the number of relevant latent goods. Third, it shows how latent separability improves the efficiency of parameter estimates. Finally, it generates estimates of shadow prices of the latent goods, information that gives useful insights into the economics of differentiated products. [A]

Keywords: differentiable goods: consumer preference; sector/commodity: non-agricultural; trade modeling: differentiable goods, econometric.

Dardis, R. and H. Soberon-Ferrer (1992). The demand for small cars in the United States: implications for energy conservation strategies. *Journal of Consumer Policy* 15(1): 1-20.

The purpose of this paper is to investigate the impact of household characteristics and preferences for Japanese cars on the demand for small cars in the United States. Two stage probit analysis is used to examine the impact of various explanatory variables on the purchase decision.

The results indicate that preferences for Japanese cars, income, price and several household characteristics had a significant impact on the probability of purchasing a small car. The results of this study provide support for freer trade in automobiles and higher gasoline taxes as energy conservation strategies. [A]

Keywords: differentiable goods: consumer preference; sector/commodity: non-agricultural; trade modeling: differentiable goods, econometric.

Davis, D.R. and D.E. Weinstien (2003). Market access, economic geography and comparative advantage: an empirical test. ***Journal of International Economics*** **59(1): 1-23.**

Traditional neoclassical models of comparative advantage suggest that, all else equal, a country with an idiosyncratically strong demand for a good will be an importer of that good. However, there is a contrary tradition that emphasizes the advantages of a large home market as a foundation for exports of a good. One recent formalization of this home market approach falls within what is termed the new economic geography. This paper integrates core models of Heckscher–Ohlin and Krugman [American Economic Review 70 (1980) 950] to investigate whether such home market effects matter empirically in manufacturing for a set of OECD countries. The evidence suggests that home market effects are important for a broad segment of OECD manufacturing. [A]

Keywords: trade modeling: econometric.

Davis, T. (1993). Effective supply chain management. ***Sloan Management Review*** **34(Summer): 35-46.**

In a time of shortening product life cycles, complex corporate joint ventures and stiffening requirements for customer service, it is necessary to consider the complete scope of supply chain management, from supplier of raw materials through factories and warehouses to demand in a store for a finished product. Hewlett-Packard had developed a framework for addressing the uncertainty that plagues the performance of suppliers, the reliability of manufacturing and transportation processes and the changing desires of customers. The author describes several cases in which entire product families have been reevaluated in a supply chain context. [A]

Keywords: supply chains: logistics, management strategies.

Deardorff, A.V. (1998). Determinants of bilateral trade: does gravity work in a neoclassical world? In ***The regionalism of the world economy*****, Frankel, J.A. ed. Chicago and London: The University of Chicago Press: 7-22.**

This chapter takes another look at the theoretical structure of gravity equations. Historically, it has been stated that the Heckscher-Ohlin(HO) model of international trade was inconsistent with the gravity model; however, this paper shows that HO does permit interpretation of the gravity model in some its equilibria. The lessons of this chapter show that it is not difficult to justify simple forms of the gravity equation from classical trade theories because the gravity equation appears to characterize a large class of models, but its use for empirical tests of a model is suspect. [A].

Keywords: trade modeling: general equilibrium, gravity models.

DeSantis, R.A. (2002). A computable general equilibrium model for open economies with imperfect competition and product differentiation. *Journal of Economic Integration* 17(2): 311-38.

This paper corrects a shortcoming in the literature on computable general equilibrium models and imperfect competition with free entry and increasing returns to scale. The trade integration simulations applied to the US suggest that the shortcoming is quantitatively insignificant if key conditions are fulfilled. The model also shows how to incorporate trade costs in both constant and increasing returns to scale sectors. In addition, the same model is proposed for competition policy experiments against illegal collaboration among competitors. [A]

Keywords: trade modeling: differentiable goods, general equilibrium; trade policy: tariffs.

Devadoss, S. and K Lanclos (2000). Trade in imperfectly competitive industries: the role of market size and consumer preferences. *Applied Economics* 32:1189-1200.

This paper develops a profit maximization model where consumers differentiate preferences between home and foreign goods and that market size can vary. Additionally, goods are modeled as a numeraire commodity and a composite of differentiated products. An analytical section details the implications of tariff changes in the model and an empirical section estimates the changes in domestic and foreign demand, welfare and number of firms under five scenarios.

Keywords: differentiable goods: consumer preference; trade modeling: differentiable goods; trade policy: tariffs, trade liberalization.

Diao, X., T. Roe and A. Somwaru (2002). Developing country interests in agricultural reforms under the World Trade Organization. *American Journal of Agriculture Economics* 84(3): 782-790.

Growth in the number of countries engaged in international trade and the share of world GDP traded show that the new era of globalization is far-reaching. This process was stimulated by lowering barriers to trade in goods, services, and ideas and caused many, but not all, countries to benefit. However, protection of agriculture by countries in the North is still quite high and remains a constraint to trade to many countries in the South. Since most developing countries have a disproportionate share of their resources in agriculture, a more open world agricultural market should afford them greater opportunities to increase exports and to participate more actively in the new globalization era. This study focuses on these linkages with emphasis on the cost of agricultural protection in the North to developing countries.

Keywords: trade patterns: trade organization; trade policy: producer support programs, export subsidies, tariffs, trade liberalization.

Diao, X. and A. Somwaru (2001). A dynamic evaluation of the effects a Free Trade Area of the Americas – an intertemporal, global general equilibrium model. *Journal of Economic Integration* 16(1): 21-47.

This study examines the dynamic effects of a Free Trade Area of the Americas (FTAA) on the countries within the Western Hemisphere. The analysis uses an inter-temporal, global, multi-sector general equilibrium model which takes into account changes in savings/investment, capital accumulation and the linkages between openness in trade and economic growth. The study finds that the developing countries in the hemisphere may not enjoy welfare gain from an FTAA if they trade more with non-hemisphere countries and if trade-diverting effects dominate

trade-creating effects. Taking into account the total factor productivity-trade linkages, all developing countries in the region would benefit from a FTAA. [A]

Keywords: globalization: market integration, trade agreements; trade modeling: econometric, general equilibrium, trade policy; trade policy: trade agreements.

Digal, L.N. and F.Z. Ahmadi-Esfahani (2002). Market power analysis in the retail food industry: a survey of methods. ***Australian Journal of Agricultural and Resource Economics*** **46(4): 559-84.**

The present paper surveys various methods used to analyze market power in the retail food industry. The strengths and weaknesses of these approaches are explored and a review of the issues in using New Empirical Industrial Organization (NEIO) and time-series models is provided. The absence of a theory underlying time-series models is highlighted and a review of some theoretical models in retailing is presented. The impact of imperfect competition in the food processing sector on retailing is also examined. It is argued that a combination of the approaches that minimizes the weaknesses and builds on the strengths of single approaches may prove more promising for examining non-competitive behavior. [A]

Keywords: sector/commodity: food; supply chains: industrial organization, vertical integration.

Dixit, P.M. and T. Josling (1997). State trading in agriculture: an analytical framework. International Agricultural Trade Research Consortium Working Paper #97-4.

This paper highlights some of the recent concerns regarding agricultural state trading enterprises (STEs) and proposes an analytical framework to examine the trade impacts of such entities. This paper proposes that, in most instances, tariff equivalents are the most relevant methodology to quantify the trade impacts of agricultural STEs. But, obtaining empirical information that would enable the calculation of such measures is not an easy task. To that end, a classification scheme that highlights the different types of STEs in terns of their ability to distort trade is proposed. [A]

Keywords: trade modeling: trade policy; trade policy: market access, special/differential treatment.

Eaton, D.J.F. (2001). TRIPS and plant varietal protection: economic analysis and policy choices. The Hague: Agricultural Economics Research Institute (LEI) Report 7.02.01.

This paper reviews the economic aspects of the options facing developing countries in implementing intellectual property right protection for agricultural plant varieties under the WTO TRIPS agreement (Article 27(3)b). The various provisions possible in a sui generis system of plant varietal protection (PVP) are summarized. The paper then examines the limited economic research that has been conducted on the impacts of PVP and that may be of use to policymakers faced with current decisions. This review finds that the research to-date has not yet demonstrated overwhelming net benefits from PVP. The evidence so far is weakly supportive of positive contributions by PVP to agricultural productivity. [A]

Keywords: differentiable good: intellectual property rights; trade policy: intellectual property rights, non-trade measures.

Eaton, J. and S. Kortum (1997). Technology and bilateral trade. NBER Working Paper 6253.

A Ricardian model is developed to explore the role of trading in spreading the benefits of innovation. The theory develops an equation for bilateral trade that, on its surface, resembles a gravity specification, but identifies underlying parameters of technology. The equation is estimated using trade in manufactures among the OECD countries. The parameter estimates allow us to simulate the model to investigate the role of trade in spreading the benefits of innovation and to examine the effects of lower trade barriers. [A]

Keywords: sector/commodity: non-agricultural; trade modeling: gravity model; trade policy: intellectual property rights, non-tariff measures.

Elad, R.L., I.D. Clifton and J.E. Epperson (1994). Hedonic estimation applied to the farmland market in Georgia. *Journal of Agricultural and Applied Economics* 26(2), December: 351-66.

Farmland offered for its productive or consumptive value may be viewed as a class of goods characteristic of product differentiation. Using the generalized Box-Cox transformation, an unrestricted hedonic model was employed to derive implicit valuations of parcel attributes. Results suggest that the significance and level of importance of attributes on land pricing depends on the spatial extent of markets in Georgia. Differences in the productive or consumptive use of farmland may imply that different factors and functional forms are appropriate to different farmland markets. [A]

Keywords: differentiable goods: consumer preference; trade modeling: differentiable goods, partial equilibrium.

Emons, W. (1996). Good times, bad times, and vertical upstream integration. *International Journal of Industrial Organization* 14: 465-84.

This article considers a set of downstream firms each of which has a stochastic requirement for a particular input. Downstream firms can produce the input themselves yet do not trade it. Upstream firms produce the input to sell it through a Walrasian market to downstream firms. Efficient pooling of capacities requires the input to be produced by upstream firms and traded in the market. Yet, downstream firms will always vertically integrate. By producing some of its own input needs, a downstream firm cuts down on aggregate input demand thus depressing prices in the market. [A]

Keywords: supply chains: industrial organization, vertical integration; trade modeling: partial equilibrium, uncertainty/risk; trade patterns: producer/consumer linkages.

Epple, D. (1987). Hedonic prices and implicit markets: estimating demand and supply functions for differentiated products. *The Journal of Political Economy* 95(1): 59-80.

In choosing the level of quality to purchase, the buyer of a differentiated product also chooses a point on the marginal price schedule for that product. Hence, in general, the demand function for product characteristics cannot be consistently estimated by ordinary least squares. Market equilibrium results in a matching of characteristics of demanders and suppliers. This matching restricts the use of buyer and seller characteristics as instruments when estimating demand and supply functions for product characteristics. A stochastic structure for hedonic equilibrium models is then proposed, identification results are presented, and estimation procedures are outlined. [A]

Keywords: differentiable goods: consumer preference; trade modeling: differentiable goods.

Erwin, A. and M. Römmich (1999). The impact of exchange rate risk on intercountry trade and production. *Review of International Economics* 7(2): 297-305.

Analyzing various arrangements of inter-country trade, this paper investigates the impact of exchange rate risk on production and expected trade. It addresses the question how a mean-preserving spread of the exchange rate distribution affects strategic aspects of different trading arrangements. It is shown that in an uncertain environment the efficiency loss induced by double marginalization can in general not be overcome by negotiation. [A]

Keywords: supply chains: vertical integration; trade modeling: uncertainty/risk; trade policy: trade agreements.

Esty, D.C. (1994). *Greening the GATT: trade, environment and the future*. Washington, D.C.: Institute for International Economics.

This study seeks to qualitatively untangle the concerns revolving around the relationship between trade and the environment, analyzing their validity and seriousness and offering ways to respond to the critical issues and finding means for improving the coordination of trade and environmental policy. The overarching goal is to reconcile the promotion of economic growth through trade and protection of the environment.

Keywords: globalization: environmental regulation, trade agreements; trade policy: trade agreements, trade liberalization.

Feenstra, R.C., J.R. Markusen and A.K. Rose (2001). Using the gravity equation to differentiate among alternative theories of trade. *Canadian Journal of Economics* 34(2), May: 430-47.

The simple gravity equation explains a great deal about the data on bilateral trade flows and is consistent with several theoretical models of trade. This paper argues that alternative theories nevertheless predict subtle differences in key parameter values, depending on whether good are homogeneous or differentiated and whether or not there are barriers to entry. The empirical work for differentiated goods delivers results consistent with the theoretical predictions of the monopolistic-competition model, or a reciprocal-dumping model with free entry. Homogeneous goods are described by a model with national (Armington) production differentiation or by a reciprocal-dumping model with barriers to entry. [A]

Keywords: trade modeling: Armington, differentiable goods, gravity model.

Fink, C. and C.A.P. Braga (1999). How stronger protection of intellectual property rights affects international trade flows. World Bank Policy Research Working Paper 2051.

This paper reports new evidence about how protecting intellectual property rights affects international trade flows of non-fuel inputs. Using a gravity model of bilateral trade, the effects of increased protection is estimated. To address estimation problems associated with zero trade flows between countries, a bivariate distributed probit regression model is adopted. Stronger protection of intellectual property rights increases bilateral trade flows of manufactured non-fuel imports. The results, however, do not hold for trade flows in high technology. [A]

Keywords: trade modeling: econometric, gravity model; trade policy: intellectual property rights.

Frahan, B.H. de and C. Tritten (2003). Impact of the new EU novel food and feed regulation on the supply chains for animal products. Presented at the American Agricultural Economics Association Meeting, Montreal, Canada, July 27-30.

This communication examines how the new EU novel food and feed regulation would affect markets and trade in commodities, feed ingredients and animal products. Market and trade effects are derived from a multi-region, multi-commodity, multistage, non-spatial, partial equilibrium model in which supply chains for animal products are segmented into GM and non-GM lines of products. [A]

Keywords: differentiable goods: genetically modified organisms; sector/commodity: field crops, meat; trade modeling: partial equilibrium; trade policy: non-trade measures.

Fuller, S., L. Fellin and V. Salin (2003). Effect of liberalized U.S.-Mexico rice trade: a spatial, multiproduct equilibrium analysis. *Agribusiness* 19(1): 1-17.

In this paper, a spatial, multi-product equilibrium model featuring United States-Mexico long-grain rice trade is developed to determine the effect of removing Mexico's rice tariffs in 2003 on U.S. rough and milled rice exports to that country. Analysis considers rice milling costs and yields in the United States and Mexico, transportation costs associated with U.S. rice exports to Mexico, mill byproduct prices in Mexico and the United States and the changing tariff levels. Results show that Mexico's gradual decrease in rice tariffs would increase U.S. rice exports by 1% per year, or 7% over six years. The impact on rice production and prices in the U.S. is moderate, while the impact in Mexico is comparatively large. [A]

Keywords: trade modeling: partial equilibrium, spatial, trade policy; trade policy: tariffs.

Galizzi, G. and L. Venturini (1999). Vertical Relationships and coordination in the food system. Heidelberg, New York: Physica-Verlag.

The papers collected in this volume explore many vertical relationship issues and topics at different stages of the food chain. The papers provide conceptual frameworks, theoretical and empirical materials on vertical interactions at the various stages of the food system and are directly informative about several aspects and topics of vertical relationships and coordination in the food system. The papers also confirm the importance of specific analyses on the determinants and consequences of vertical issues. [A]

Keywords: sector/commodity: food; supply chains: logistics, management strategies, vertical integration.

Giannakas, K. (2002). Infringement of intellectual property rights: causes and consequences. *American Journal of Agricultural Economics* 84(2): 482:94.

A game-theoretic model of heterogeneous producers is developed to examine the economic causes and consequences of intellectual property right (IPR) infringement in the context of a small open developing economy. Analytical results show that complete deterrence of IPR infringement is not always economically optimal. IPR infringement affects economic welfare and has important ramifications for the pricing and adoption of the new technology (biotechnology). The quantitative nature of results depends on the labeling regime. If the TRIPs agreement follows the custom of retaliatory sanctions under GATT, IPR enforcement will remain imperfect and innovators' ability to obtain value for biotech traits will be limited. [A]

Keywords: supply chains: game theory; trade modeling: trade policy; trade policy: intellectual property rights, non-trade measures, trade agreements.

Golan, E., B. Krissoff and F. Kuchler (2002). Traceability for food marketing & food safety: what's the next step? *Agricultural Outlook*, Jan-Feb.

This article discusses traceability of agricultural products and discusses the development of future issues. Both sides of the debate on traceability are addressed. In addition to defining and discussing the issues, the trade impacts of traceability issues are addressed.

Keywords: differentiable goods: genetically modified organisms, labeling/brands, sanitary/phytosanitary, traceability; sector/commodity: food.

Golan, E., F. Kuchler and L. Mitchell (2000). Economics of food labeling. Washington D.C.: U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report Number 793.

This report traces the economic theory behind food labeling and presents three case studies in which the government has intervened in labeling and two examples in which government intervention has been proposed. The three case studies cover nutrition, dolphin-safe tuna and organic labeling and two government interventions cover country of origin and biotech food labeling.

Keywords: differentiable goods: genetically modified organisms, geographic indicators/trademarks, labeling/brands, organic; sector/commodity: food; trade policy: non-trade measures.

Goldberg, P.K. (1995). Product differentiation and oligopoly in international markets: the case of the U.S. automobile industry. *Econometrica* 63(4): 891-951.

This paper develops and estimates a model of the U.S. Automobile Industry. On the demand side, a discrete choice model is adopted that is estimated using micro data from the Consumer Expenditure Survey. The estimation results are used in conjunction with population weights to derive aggregate demand. On the supply side, the automobile industry is modeled as an oligopoly with product differentiation. Equilibrium is characterized by the first order conditions of the profit maximizing firms. The estimation results are used in counterfactual simulations to investigate two trade policy issues: the effects of voluntary export restraint and the exchange rate pass-through. [A]

Keywords: differentiable goods: consumer preference; sector/commodity: non-agricultural; trade modeling: differentiable goods, econometric.

Goodman, D. and M.J. Watts (1997). Globalising food: agrarian questions and global restructuring. London: Routledge.

This book uses a series of wide-ranging case studies to investigate the globalization of agro-food systems and their distinctiveness from manufacturing. This book reveals the importance of new forces that are reshaping how agriculture is being integrated into the world economy and consequences and limits of the processes. Contributors analyze the responses of local actors and institutions to these globalizing forces, as well as changing regulatory norms and new notions of quality that reflect contemporary concerns with personal health and environmental sustainability. The case studies also examine agro-industrial change in advanced and Third World countries, the emergence of new global food chains and the strategies of major actors – multinational food processors, fast food companies and retailers – to dominate global agro-food systems. [A].

Keywords: globalization: multinational corporations, market integration; supply chains: management strategies, vertical integration.

Gow, H.R., L.D. Oliver and N.G. Gow (2002). Co-operating to compete in high velocity global markets: the strategic role of flexible supply chain architectures. Presented at the Annual Meeting of the Western Coordinating Committee on Agribusiness, Las Vegas, NV, June 23-36.

This paper presents a conceptual framework for understanding how firms can create and capture value within a highly volatile and uncertain business environment by exploiting both performance gaps and opportunity gaps through the development and use of flexible supply chain architectures. The choice of flexible organizational architecture allows for the continued reconfiguration of the independent modular components of the supply chain so as to achieve optimal leverage of both the firms core competencies as well as their collaborative partners complementary resources. "Cellars of Canterbury", a New Zealand based International wine marketing and distribution cooperative enterprise provides empirical support. [A]

Keywords: supply chains: management strategies, vertical integration.

Greenlees, J.S. (1980). Gasoline prices and purchases of new automobiles. *Southern Economic Journal* 47: 167-78.

This paper measures the impact of the price of gasoline on the mix of new automobile purchases. The method of conditional logit estimation is used to model the choices of individual households between four, six and eight cylinder cars. An implication of this analysis is that a continuation of gas price increases would lessen the upward pressure on large car prices. Results also suggest that the movement toward small cars can be explained by multi-car and multi-earner households.

Keywords: differentiable goods: consumer preference; trade modeling: differentiable goods, econometric.

Hakansson, H. and I. Snehota (1995). *Developing relationships in business networks*. London: Routledge.

This book is about how to analyze industrial markets by examining what is happening beneath the visible flows of products, enquiries, sales visits and negotiations and beyond the visible growth and prosperity of some companies and failures of others. It is the result of an attempt to condense what the authors have learned about industrial markets into a picture for others to examine. The book is a mixture of concept and empirical cases that are considered important and difficult to separate. [A]

Keywords: supply chains: management strategies, networks.

Haley, S.L. (1995). Product differentiation in wheat trade modeling. Washington DC: U.S. Department of Agriculture, ERS Technical Bulletin No. 1838.

This report indicates that wheat should be differentiated by end use and by country of origin for trade policy modeling. Wheat is differentiated by use and country of origin and modeled using Armington elasticities in the USDA SWOPSIM model. The model is used to analyze the U.S. Export Enhancement Program (EEP). Two scenarios, with and without the EEP, are estimated and the results between homogenous and differentiated goods are substantial.

Keywords: trade modeling: Armington, differentiable goods, partial equilibrium; sector/commodity: field crops; trade policy: export subsidies

Hayes, D.J., S.H. Lence (2002). A new brand of agriculture? Farmer-owned brands reward innovation. *Iowa Ag Review* 8(4), Fall: 4-5,8.

This paper presents the idea of "farmer-owned brands" as a solution to meet consumers' desire for variety and quality and allows farmers to retain profit margins for long periods. This solution would allow some smaller operations to remain in business. The solution does require cooperation between producers and government, but it also relies upon market forces. In essence, the solution is to allow farmers to own their own brands and to control production of branded quantities, much as already occurs in other sectors of the economy. [A]

Keywords: differentiable goods: labeling/brands; sector/commodity: food

Helpman, E. (1987). Imperfect competition and international trade: evidence from fourteen industrial countries. *Journal of the Japanese and International Economies* 1(1): 62-81.

Three hypotheses that emerge from a theoretical model are discussed. One is that in cross-country comparisons the larger the similarity in factor composition, the larger the share of intra-industry trade. The second is that in time series data, the more similar the factor composition of a group of countries becomes over time, the larger the share of intra-industry trade within the group. The third is that changes over time in relative country size can explain the rising trade-income ratio. All three hypotheses are consistent with the data. [A]

Keywords: trade modeling: general equilibrium; trade patterns: regional.

Helpman, E. (1998). The structure of foreign trade. NBER Working Paper 6752.

This paper reviews the historical development of trade theory beginning with Ricardo's comparative advantage and the Heckscher-Ohlin framework. The further development of trade models are presented. Recent developments of trade theory discussed center on technique differences in production between countries. Additional discussion is given to the role of economies of scale in production styles and market structure. Conclusions drawn highlight the need for increased modeling of differentiable goods in trade models.

Keywords: trade modeling: differentiable goods, partial equilibrium; trade patterns: regional.

Helpman, E. and P.R. Krugman (1985). *Market Structure and Foreign Trade*. Cambridge, Mass.: The MIT Press.

This book presents an integrated approach to the analysis of trade in a world characterized by increasing returns to scale, imperfect competition, and international trade. It is one of the original books documenting what has become known as "new" trade theory. The analysis in this book was considered new, both in technique and substantive results. However, the approach reveals a similarity in "deep structure" among models that may appear different on the surface and helps clarify the continuity between traditional trade theory and new approaches. [A]

Keywords: globalization: multinational corporations; trade modeling: differentiable goods, general equilibrium, trade policy.

Henderson, J.R., F. Dooley, J. Akridge and P. Boehlje 2001. E-business and distribution channel strategies in agribusiness industries. Presented at the American Agricultural Economics Association Meeting, Chicago, IL, August 5-8.

The expected growth in Internet sales by agribusiness firms is analyzed to provide insight into the selection of an e-business distribution channel. Agribusiness firm managers are surveyed regarding the application and perceived impacts of e-business activity on their firm's operations. Firm characteristics and manager perceptions regarding the impact of e-business activity are analyzed descriptively and in regression analysis to understand the drivers of expected Internet sales growth. Expected Internet sales growth is found to vary by the firm's position in the distribution channel. Yet, firms with greater levels of existing e-communication with either customers or suppliers and with managers perceiving greater ability of e-business activity to improve inventory management and logistics issues have higher levels of expected Internet sales. [A]

Keywords: globalization: information technology; supply chains: logistics, management strategies

Hennessy, D.A. (1998). The production effects of agricultural income support policies under uncertainty. *American Journal of Agricultural Economics* 80(1): 46-57.

This analysis decomposes the production impacts of income support programs into wealth, insurance and coupling effects. Under the usual assumptions about preferences, the wealth and insurance effects of many support programs increase optimal input levels even for supposedly decoupled programs. If the program is "coupled" in the usual sense, then all three effects often act in the same direction. It is concluded that studies of trade and domestic policy reform in stochastic environments should consider insurance and wealth effects. The derivative conditions required to obtain results are also subjected to scrutiny.[A]

Keywords: trade modeling: uncertainty/risk; trade policy: producer support programs.

Henson, S. and R. Loader (2001). Barriers to agricultural exports from developing countries: the role of sanitary and phytosanitary requirements. *World Development* 29(1): 85-102.

This paper explores the impact of sanitary and phytosanitary (SPS) measures in developed countries on developing country exports of agricultural and food products. It identifies the problem that developing countries face in meeting SPS requirements and how these relate to the nature of SPS measures and the compliance resources available to government and the supply chain. The paper examines the impact of the WTO's SPS Agreement on the extent to which SPS measures impede exports from developing countries. It identifies the problems that limit the participation of developing countries in the SPS Agreement and their concerns about the way in which it currently operates. [A]

Keywords: differentiable goods: sanitary/phytosanitary; trade patterns: trade organizations; trade policy: non-trade measures, trade liberalization.

Hillman J.S. (1996). Nontariff agricultural trade barriers revisited. International Agricultural Trade Research Consortium Working Paper #96-2.

This paper is devoted to revisiting the evolution of the so-called non-tariff trade barrier (NTB) question. Initially, the NTB is described, as an evolution from passive government actions to more definitive technical barriers. Next, topical areas are presented where NTB problems

appear to exist for resolution by the World Trade Organization. Some suggestions are made and challenges raised to encourage International Agricultural Trade Research Consortium member to be more aggressive in addressing NTB issues. [A]

Keywords: trade policy: non-tariff barriers, tariffs.

Hobbs, J.E., S.L. Boyd and W.A. Kerr (2001). International E-commerce: a solution to penetrating niche markets for food. Estey Centre for Law and Economics in International Trade.

This study explores the opportunities and constraints associated with e-commerce marketing channels for food, focusing on "B-2-C" (business to consumer) e-commerce. E-commerce marketing channels provide a means by which specialty products in small domestic markets can gain access to a larger number of international market niches. An Internet search was conducted to identify websites marketing food online. Electronic commerce is changing the way business transactions occur and is becoming an increasingly important part of the marketing strategies of food companies. [A]

Keywords: globalization: information technology; sector/commodity: food; supply chains: vertical integration; trade patterns: producer/consumer linkages.

Holm, P. (1997). Vertically integrated oligopoly and international trade policy. *Canadian Journal of Economics* 30(1), February: 194-207.

This paper examines the consequences of vertical integration with transfer pricing or the rivalry between duopoly firms in an international environment, using the (non-cooperative) Nash equilibrium to determine the output equilibrium. Trade policy incentives resulting from vertical integration in one country, focusing on export subsidy, profit tax rate, and attitudes towards transfer pricing in that country are analyzed. Without the transfer price penalty schema, a government can use either the subsidy or the tax rate to affect outcomes of the Cournot game. With the schema, introducing the interior solution to the transfer price, the optimal policy involves the effective role of both instruments. [A]

Keywords: supply chains: game theory, vertical integration; trade modeling: trade policy; trade policy: export subsidies.

Hooker, N.H. and J.A. Caswell (1999). A framework for evaluating non-tariff barriers to trade related to sanitary and phytosanitary regulation. *Journal of Agricultural Economics* 50(2), May: 234-46.

Under recent trade agreements, a two part science and policy test is used to evaluate whether a country's sanitary or phytosanitary (SPS) regulatory regimes constitute illegitimate non-tariff barriers to trade. This paper presents a framework for operationalizing this test, focusing on how the SPS regime affects trade flows though differences in compliance costs, which in turn depend on the level of regulatory rapprochement between trading partners. [A]

Keywords: differentiable goods: sanitary/phytosanitary; trade policy: non-tariff barriers

Hummels, D., J. Ishii and K.-M. Yi (2001). The nature of growth of vertical specialization in world trade. *Journal of International Economics* 54:75-96.

Dramatic changes are occurring in the nature of international trade. Production processes increasingly involve a sequential, vertical trading chain stretching across many countries, with each country specializing in particular stages of a good's production sequence. This paper

documents key aspect of these vertical arrangements, which are referred to as vertical specialization. Using input–output tables from 10 OECD and four emerging market countries the authors calculate that vertical specialization accounts for 21% of these countries' exports, and grew almost 30% between 1970 and 1990. It is also found that growth in vertical specialization accounts for 30% of the growth in these countries' exports. [A]

Keywords: globalization: market integration; supply chains: industrial organization, vertical integration

Hummels, D. and J. Levinsohn (1995). Monopolistic competition and international trade: reconsidering the evidence. *The Quarterly Journal of Economics* 110(3): 799-836.

This article tests some propositions about international trade flows that are derived from models of monopolistic competition by Helpman and Krugman. It investigates whether the volume of trade between OECD countries is consistent with the predictions of a model in which all trade is intra-industry trade in differentiated products. It then repeats the test with non-OECD countries. It also investigates whether the share of intra-industry trade is consistent with a more general theoretical model in which some, but not all, trade is intra-industry trade. The results lead to questions about the apparent empirical success of these models. [A]

Keywords: trade modeling: differentiable goods, econometric.

Hummels, D., D. Rapoport and K.-M. Yi (1998) Vertical specialization and the changing nature of world trade. *Economic Policy Review* 4(2), June: 79-99.

In this article, case studies and input-output tables are used to calculate the level and growth of vertical-specialization-based trade, which is defined as the amount of imported inputs embodied in goods that are exported. In all of the case studies, our findings indicate that vertical specialization has increased sharply in recent years. To show that the results of the case studies can be generalized, input-output tables are used to calculate estimates of vertical-specialization-based trade in ten developed countries from the Organization for Economic Cooperation and Development (OECD). [A]

Keywords: supply chains: networks, vertical integration; trade patterns: regional

Jackson, L.A. (2000). An econometric model of agricultural labeling policy harmonization in international trading systems. In *Transitions in Agbiotech: Economics of Strategy and Policy*, Lesser, W.H. ed. Proceedings of NE-165 Conference, Washington D.C. June 24-25, 1999.

This paper addresses the issue of harmonization from two perspectives. First a general equilibrium economic model that describes national economies with and without labeling regulation is presented. Secondly, an international trade negotiation model highlights national incentives for committing to harmonization. No estimation results are presented. [A]

Keywords: differentiable good: labeling/brands; sector/commodity: food; trade modeling: econometric, general equilibrium, trade policy; trade policy: non-trade measures.

Just, R.E. (2001). Addressing the changing nature of uncertainty in agriculture. *American Journal of Agricultural Economics* 83(5): 1131-53.

The industrialization of agriculture is beginning to spread beyond one or two isolated commodities and the age of information is expanding opportunities in many ways. This article suggests that these developments impose uncertainties on agriculture that are different in nature

than many in the past because they are likely to change the internal structure of the agricultural sector. A different approach to empirical economic analysis to deal with the changing nature of uncertainty is considered. A major concern has to do with the use of models for which the specification does not change over the sample and prediction period. [A]

Keywords: trade modeling: differentiable goods, uncertainty/risk.

Just, R.E. and R.D. Pope, eds. (2002). *A comprehensive assessment of the role of risk in U.S. agriculture*. Boston: Kluwer Academic Publishers.

This book is intended to define the current state of the literature on agricultural risk research, provide a critical evaluation of economic risk research on U.S. agriculture to date and set a research agenda that will meet future needs. The major parts of the book are broken down into behavior under risk, conceptual adaptations of risk models, adequacy of general methodological approaches for risk analysis, sources and consequences of agricultural risk and risk related policy issues.

Keywords: trade modeling: econometric, trade policy, uncertainty/risk.

Ker, A.P. (2000). Modeling technical trade barriers under uncertainty. *Journal of Agricultural and Resource Economics* 25(1): 28-50.

This paper presents the derivation of a flexible framework for theoretically and empirically analyzing technical barriers under various sources of uncertainty. Attention is focused on uncertainty arising from the variation in the product attribute levels, a source not yet considered in the literature. *Ex ante* and *ex post* densities of domestic and international quantities and prices as well as the densities of their respective extreme-order statistics are derived. An example is presented to illustrate the application of the developed framework.

Keywords: trade modeling: uncertainty/risk; trade policy: non-tariff measures.

Kinsey, J.D. (2003). Emerging trends in the new food economy: consumers, firms and science. Conference on Changing Dimensions of the Food Economy: Exploring the Policy Issues, 6-7 February, The Hague, Netherlands.

This article further builds on topics discussed in Kinsey (2001). The paper examines seven emerging trends in the food economy and details supply/demand interactions as a web, rather than as linkages.

Keywords: supply chains: logistics, vertical integration; sector/commodity: food; trade patterns: producer/consumer linkages.

Kinsey, J.D. (2000). A faster, leaner, supply chain: new uses of information technology. *American Journal of Agricultural Economics* 82(5): 1123-9.

This paper focuses on the economics and the reality of a market for a business-to-business, e-commerce system; a system that will capture economies of scale and lower costs of food distribution toward the retail end of the food supply chain. It discusses the historical incorporation of information technology into food retail and the current development in food supply chains. Several linkage structures discussed are: cooperative planning, forecasting and replacement and scan-based trading. Using information in this way tends to build vertical alliances. It involves intimate relationships among market agents that lasts for more than one transaction and frequently covers several products, over multiple time periods. [A]

Keywords: sector/commodity: food; supply chains: logistics, management strategies, vertical integration.

Kinsey, J.D. (2001). The new food economy: consumers, farms, pharms and science. *American Journal of Agricultural Economics* 83(5): 1113-30.

This article characterizes the food economy in terms of the 'new economy' described in current literature. The 'new food economy' is defined and the changing nature of the businesses and the economy relating to food systems is illustrated by showing breaks in the trends of price indices. The article further explores the idea of 'clockspeed', investigating the dynamics of the food sector and the trajectories of its components. Finally, supply/demand paths are examined to expose a web of tasks and actors that alter the linkages as are currently known.

Keywords: globalization: information technology; sector/commodity: food; supply chains: management strategies, vertical integration; trade patterns: producer/consumer linkages.

Kinsey, J. and S. Ashman (2000). Information technology in the retail food industry. *Technology in Society* 22(1): 83-96.

This paper presents a review of information technology (IT) in the retail food sector and how IT is currently impacting the sector. The four implications of IT in the food sector are the efficiencies gained from consolidation across links in the supply chains, change in adversarial culture between food manufacturers, dangers of reduced competition and future uses of information technology for home shopping.

Keywords: globalization: information technology, market integration; sector/commodity: food; supply chains: vertical integration.

Konan, D.E. (2000). The vertical multinational enterprise and international trade. *Review of International Economics* 8(1): 113-25.

This paper analyzes an endogenous vertical multinational enterprise by explicitly modeling a distortion in the intermediate goods sector. Firms invest abroad to lower the cost of multistage production. The implications for international trade and investment differ markedly from the conventional wisdom of multinationals. Particularly, intra-firm trade in intermediaries implies vertical investment complements rather than substitutes for trade. The decision to become a multinational depends on the level of foreign factor prices, the nature of the competition with foreign suppliers, transport, tariffs and subsidiary plant costs. Marginal change in tariffs may result in unintended welfare jumps as firm configuration shifts. [A]

Keywords: supply chains: vertical integration; trade modeling: general equilibrium, trade policy.

Krishna, P. (1998). Regionalism and multilateralism: a political economy approach. *The Quarterly Journal of Economics* 113(1): 227-51.

In this paper, preferential trading arrangements are analyzed from the viewpoint of the "new political economy" that views trade policy as being determined by lobbying of concentrated interest groups. Two conclusions are reached: first, that trade diverting preferential arrangements are more likely to be supported politically; and second, that such preferential arrangements could critically change domestic incentives so multilateral liberalization that is initially politically feasible could be rendered infeasible by a preferential arrangement. The

larger the trade diversion resulting from the preferential arrangement, the more likely this will be the case. [A]

Keywords: trade modeling: trade policy; trade patterns: regional; trade policy: special/ differential treatment, trade agreements.

Krugman, P. and A.J. Venables (1995). Globalization and the inequality of nations. NBER Working Paper No. 5098.

A monopolistically competitive manufacturing sector produces goods used for final consumption and as intermediates. Intermediate usage creates costs and demand linkages between firms and a tendency for manufacturing agglomeration. At high transport costs all countries have some manufacturing, but when transport costs fall below a critical value, a core-periphery pattern spontaneously forms and nations that find themselves in the periphery suffer a decline in real income. At still lower transport costs, there is convergence of real incomes, in which peripheral nations gain and core nations may lose. [A]

Keywords: Globalization: income inequality, logistics, multinational corporations.

Lambert, D.M. and M.C. Cooper (2000). Issues in supply chain management. *Industrial Marketing Management* 29(1): 45-56.

Successful supply chain management requires cross-functional integration and marketing. The challenge is to determine how to accomplish this integration. This paper presents a framework for supply chain management as well as questions for how it might be implemented and questions for future research. Case studies conducted at several companies and involving multiple members of supply chains are used to illustrate the concepts described. [A]

Keywords: supply chains: logistics, management strategies, networks.

Lanclos, D.K. and T.W. Hertel (1995). Endogenous product differentiation and trade policy: implications for the U.S. food industry. *American Journal of Agricultural Economics* 77(3), August: 591-601.

In this paper, the effects of tariffs on intermediate inputs and final goods in monopolistically competitive industries are assessed. Output per firm and firm numbers decline due to input tariffs. When coupled with output tariffs, the change in firm numbers is ambiguous. Monopolistic competition strengthens the response to input and output tariffs. The direction of the change in total output may differ between monopolistic and perfect competition. [A]

Keywords: trade modeling: differentiable goods, partial equilibrium; trade policy: tariffs.

Larson, B.A., E. Nicolaides, A.Z. Bashir, N. Sukkar, K. Laraki, M.S. Matoussi and K. Zaim (2002). The impact of environmental regulations on exports: case study results from Cyprus, Jordan, Morocco, Syria, Tunesia and Turkey. *World Development* 30(6): 1057-72.

This paper summarizes the results of six case studies that estimate the impact of potential changes in environmental regulations on exports from a key sector in each country. These case studies, which are based on a partial equilibrium, comparative static approach, suggest that a range of outcomes is likely and depends on a fairly small set of specific information. For some cases, expected regulatory changes would probably have little impact on exports, while in other cases the impacts could be substantially larger. In some countries, the range of potential outcomes is largely due to the magnitude of the policy change, the importance of various inputs in production and the lack of information on international market conditions. [A]

Keywords: globalization: environmental regulation; trade modeling: partial equilibrium; trade patterns: regional

Lazzarini, S.G., F.R. Chaddad and M.L. Cook (2001). Integrating supply chain and network analyses: the study of netchains. *Journal of Chain and Network Science* 1(1): 7-22.

This paper introduces the concept of netchain analysis. Net chain analysis interprets supply chain and network perspectives on organizational collaboration with particular emphasis on the value creating and coordination mechanism sources. This paper posits that sources of value and coordination mechanism correspond to particular and distinct types of interdependencies: pooled, sequential, and reciprocal. This paper concludes with an analysis of a set of netchain configuration examples, including buyer-supplier relationships, information technology, induced inter-organization collaborations, and the introduction of the "macrohierarchy" organization structure.

Keywords: supply chains: networks.

Lee, B.-H. (2002). FDI from developing countries: a vector for trade and development. Paris: OECD.

This book analyzes multinational firms with a focus on foreign direct investment (FDI) by firms based in developing and newly emerging economies. Its empirical findings are based on a detailed study of foreign investment activity by the Korean electronics industry. Analysis of the data sheds considerable light on how firms in the industry have invested abroad, their motivations for doing so and the effects of their foreign subsidiaries' operations on home-country exports. This offers both lessons and policy guidelines for firms and governments in developing economies as they globalize via FDI. [A]

Keywords: globalization: foreign direct investment, multinational corporations; trade modeling: foreign investment; trade patterns: multination companies

Liddle, B. (2002). Sustainable development and globalization in a world with unequal starting points. *Review of Urban and Regional Development Studies* 14(3): 256-81.

In this paper, a simulation model is developed by integrating aspects of economics, demography, and environmental science. The model is used to explore the challenges of development for countries with different initial conditions in a world with movement of goods, people, and capital, free substitution in production, flexible economic structures, and the ability to upgrade input factors via investment. It is found that the impact of globalization on various countries differs depending on their starting points. In general, capital flows tend to benefit all countries, migration tends to benefit the destination countries and the migrants themselves and the benefits of trade can be either positive or negative depending on country endowments. A basic revelation of the explicit dynamics is that history matters, a finding that is often highly counter-intuitive from the point of view of conventional models. [A]

Keywords: globalization: capital mobility, income inequality; trade modeling: general equilibrium.

Lipsey, R.E. (1995). Trade and production networks of the U.S. MNCs and exports by their Asian affiliates. NBER Working Paper No. 5255.

Network connections within multinational corporations (MNCs) seem to improve export market shares for Asian affiliates of those MNCs. In particular, Asian affiliates of U.S. MNCs

export more to markets where their parent firm's exports to affiliates are larger and less to markets where their parent firms export more to non-affiliates. This paper attempts to measure the relationship between exports from affiliates and the characteristics of importing countries. The relationships are fairly consistent across industries and markets, across markets within two industries, across industries for two affiliate home countries and across exporters and industries for individual markets. [A]

Keywords: globalization: multinational corporations; supply chains: vertical integration; trade modeling: econometric, gravity model.

Lusk, J.L. and J.D. Anderson (2003). Country of origin labeling on meat producers and consumers. Purdue University, Dept. of Agricultural Economics Staff Paper #03-07.

This paper develops an equilibrium displacement model of the farm, wholesale, and retail markets for beef, pork, and poultry that is able to document how producers and consumers will be affected by added costs of COOL. In addition, the model is able to determine the level of increased consumer demand needed to make producer's welfare neutral to the policy. Empirical results indicate that as COOL costs are shifted from the producer to the processor and retailer, producers are made increasingly better off while consumers are made increasingly worse off. Empirical model results also indicate that an increase in aggregate consumer demand (willingness-to-pay) on the magnitude of 2% to 3% is likely sufficient to offset lost producer welfare due to increased costs imposed by COOL. [A]

Keywords: differentiable goods: labeling/brands; sector/commodity: meat; trade policy: non-trade measures, traceability.

MacDonald, J.M., M.E. Ollinger, K.E. Nelson and C.R. Handy (2000). Consolidation in U.S. meatpacking. U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 785.

Meatpacking consolidated rapidly in the last two decades; slaughter plants became much larger, and concentration increased as smaller firms left the industry. In this report, establishment-based data from the U.S. Census Bureau is used to describe consolidation and to identify the roles of scale economies and technological change in driving consolidation. Through the 1970's, larger plants paid higher wages, generating a pecuniary scale diseconomy that largely offset the cost advantages that technological scale economies offered large plants. The larger plants' wage premium disappeared in the 1980's, and technological change created larger and more extensive technological scale economies. As a result, large plants realized growing cost advantages over smaller plants, and production shifted to larger plants. [A]

Keywords: sector/commodity: meat; supply chains: business economics/organization, industrial organization, vertical integration.

MacLaren, D. (1990). Implications of new trade theory for modeling imperfect substitutes in agricultural trade. In Carter, C.A., A.F. McCalla and J.A. Sharples. *Imperfect competition and political economy: the new trade theory in agricultural trade research*. Boulder, CO: Westview Press: 113-139.

This article gives an overview of how imperfect competition and heterogeneity have been incorporated in agricultural trade models. The discussion of incorporation of imperfect competition centers on standard new trade theory literature (see Helpman and Krugman 1985).

There is a discussion about the Armington (1969) method for modeling vertically differentiated products.

Keywords: trade modeling: Armingrton, differentiable goods.

MacLaren, D. (1997). Uncertainty aversion and technical barriers to trade: an Australian example. In Orden, D. and D. Roberts (eds.). *Understanding Technical Barriers to Agricultural Trade*. St. Paul, MN: University of Minnesota, Dept. of Applied Economics, International Agricultural Trade Research Consortium: 255-71.

This paper presents a theoretical framework for the analysis of sanitary and phytosanitary (SPS) regulations and evaluation of the implications of this framework for trade policy analysis. The institutional context provided by the Agreement of the Application of Sanitary and Phytosanitary Measures of the Uruguay Round is summarized. Alternative approaches to decision making under uncertainty are discussed, with attention being paid particularly to those theories which have characteristics of special significance for public policy decisions on SPS regulations. An example is provided which illustrates the use of non-additive probabilities as a representation of the decision maker's aversion to uncertainty. The risk assessment requirement of the SPS Agreement, the lessons provided by the Australian case study and the results of a model of decision making under uncertainty are brought together and the implications for trade policy is explored. [A]

Keywords: differentiable goods: sanitary/phytosanitary, technical barriers; trade modeling: uncertainty/risk; trade policy: non-tariff measures.

Maskus, K.E. and C.F. Bergsten (2000). Intellectual property rights in the global economy. Washington D.C.: Institute of International Economics.

This book provides a comprehensive review of intellectual property rights literature as it relates to the global economy. In addition, new empirical methods are developed to analyze the qualitative impacts of intellectual property rights on global markets.

Keywords: globalization: intellectual property rights; trade modeling: trade policy; trade policy: intellectual property rights.

Maskus, K.E. and M. Penubarti (1995). How trade-related are intellectual property rights? Journal of International Economics 39: 227-48.

There is little empirical evidence about whether differing international levels of patent protection influences trade flows. If a nation strengthens its patent laws it could experience higher or lower imports. An empirical model is specified, in which deviations of bilateral sectoral imports from anticipated levels are related to income, trade barriers and patent laws. Patent regulations in the importing country are corrected for endogeneity through the use of instrumental variables. The results of the final equations indicate that increasing use of patent protection has a positive impact on bilateral manufacturing imports into both small and large developing economies [A]

Keywords: trade modeling: econometric, trade policy; trade policy: intellectual property rights, tariffs.

Maskus, K.E. and J.S. Wilson, ed. (2001). *Quantifying the impact of technical barriers to trade: can it be done?* Studies in International Economics. Ann Arbor: The University of Michigan Press.

The impetus behind this agglomeration of articles is to provide a survey of current and anticipated approaches to quantifying the trade impact of technical regulations. Of particular interest, the book explores empirical research and quantification methods, which are practical and provide concrete links to public policy decisions. Measuring the trade effect of standards is a complicated task, where there is an infinitely varied array of regulations and channels that may affect trade.

Keywords: differentiable goods: sanitary/phytosanitary, technical barriers; trade policy: non-tariff measures, trade agreements.

Mathews, D. (2002). Globalising intellectual property rights: the TRIPS agreement. London: Routledge.

This book concerns the globalization of intellectual property rights through the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). The book explains how a consensus in favor of global action was achieved across a range of industry sectors; how a coherent strategy of industry alliances linked to government action then emerged, and how a willingness to engage in forum shifting from bilateral to multilateral action, coupled with a negotiating advantage over developing countries in terms of intellectual property expertise led to a successful outcome to the negotiations as far as global business interests were concerned. [A]

Keywords: globalization: intellectual property rights; trade policy: intellectual property rights, trade agreements.

McCorriston, S. and D. MacLaren (2002). Perspectives on the state trading issue in the WTO negotiations. *European Review of Agriculture Economics* 29(1): 131-54.

It has been proposed that state trading enterprises should be on the agenda of the continuing WTO negotiations, on the premise that state trading enterprises can hinder market access in importing countries and can affect export competition. The aim of this paper is two-fold. First, the current status of state trading enterprises in the GATT framework and associated issues are highlighted. Second, recent work considering the potential impact of state trading enterprises on the outcome of trade reform are summarized. [A]

Keywords: supply chains: industrial organization; trade modeling: partial equilibrium; trade policy: market access.

McLaren, J. (2000). "Globalization" and vertical structure. *American Economic Review* 90(5): 1239-54.

This paper analyzes the effects of international openness on vertical integration. Vertical integration can confer a negative externality, by thinning the market for inputs and thus worsening opportunism problems. This induces strategic complementarity and multiple equilibria in the integration decision, thus providing a theory of different "industrial systems" or "industrial cultures" in *ex ante* identical countries. International openness thickens the market, facilitating leaner, less integrated firms, thus providing gains from international openness quite different from those that are familiar from trade theory. Abstracting from the usual channels by

which globalization is modeled, i.e. international trade, the discussion allows for the express treatment of thickening of markets. [A]

Keywords: globalization: market integration; supply chains: industrial organization, vertical integration.

Metcalfe, M. (2001). Environmental regulation and implications for competitiveness in international pork trade. Presented at the IARTC Symposium on International Trade in Livestock Products, Aukland, New Zealand, January 18-19.

This study determines that potential increases in U.S. and Canadian environmental regulation would have minimal effects on the relative competitiveness of their pork exports, while much more stringent EU regulation has the potential to significantly impact EU competitiveness and contribute to continued increases in the market share of U.S. and Canadian pork exports.

Keywords: globalization: environmental regulation; sector/commodity: meat; trade modeling: partial equilibrium; trade policy: non-trade measures.

Mohanty, S. and E.W.F. Peterson (1999). Estimation of demand for wheat by classes for the United States and the European Union. ***Agricultural Resource Economics Review*** **28(2): 158-68.**

This study estimates demand for wheat differentiated by classes using a dynamic AIDS model for the United States and the European Union (EU). The results suggest that imported wheat is more price responsive than domestic wheat in the U.S. market but not in the EU market. This may suggest that the Canadian policy that reduces prices of Canadian wheat in the U.S. market or U.S. export subsidies that raise prices of U.S. wheat could be expected to give rise to substantial substitution of Canadian for U.S. wheat. It is also found that in the EU, complementary relationships exist between spring and other wheat groups, This complementary relationship between the lower and higher quality wheat in the EU is not surprising because EU millers blend cheaper wheat such as EU common wheat and U.S. other wheat with high protein (spring) to obtain the preferred characteristics.

Keywords: sector/commodity: field grains; trade modeling: differentiable goods, partial equilibrium

Mohtadi, H. and J. Kinsey (2002). A model of information and I.T. adoption in food supply chains. University of Minnesota, The Food Industry Center Working Paper 02-02.

This paper is an attempt to build economic (game-theoretic) models that incorporate the economic characteristics of the food supply/demand chain to examine what behavior the models can predict. Observed non-cooperation of information sharing in the food supply chains is explained by treating information as a strategic asset and modeling information exchange and the corresponding adoption of information technologies and analysis as a strategic game. Key results indicate that under certain conditions retailers may withhold valuable sales data from suppliers, there exists a revealed equilibrium signal even when sales data are withheld from suppliers, and unanticipated economic slow-downs cause overstocking which harm smaller firms more than larger ones. [A]

Keywords: globalization: information technology; sector/commodities: food; supply chains: game theory, vertical integration.

Moschini, G. and H. Lapan (1997). Intellectual property rights and the welfare effects of agricultural R&D. *American Journal of Agricultural Economics* 79(4), November: 1229-42.

This paper reviews intellectual property rights in agriculture and outlines a modeling framework that accounts for relevant institutional features of agricultural R&D. The analysis emphasizes vertical market linkages whereby agricultural innovations adopted by farmers are produced upsteam by input suppliers. It argues that the conventional assumption of competitive pricing cannot hold when new technologies are produced by private firms because such innovations are typically protected by intellectual property rights that confer monopoly rights to discoverers. The implications of intellectual property rights for the welfare evaluation of agricultural R&D are derived and it is shown that conventional methods usually overestimate the welfare gains from agricultural innovations. [A]

Keywords: differentiable goods: intellectual property rights; trade modeling: differentiable goods, partial equilibrium.

Moss, C.B. and A. Schmitz (2002). Vertical integration and trade policy: the case of sugar. *Agribusiness* 18(1): 49-60.

The degree of vertical integration in the U.S. sugar industry between raw-sugar processing and sugar refining cannot be explained using theories of vertical integration based only on transaction costs. In this paper, the economic rents accruing to each level participant in the marketing channel are graphically decomposed. Different strategies of several major sugar producing, processing, and refining entities with regard to sugar quota policy are explored. Firms that are integrated from sugar production through to sugar marketing are less impacted by freer trade than are those that concentrate solely on production. [A]

Keywords: sector/commodity: specialty crops; supply chains: business economics/organization; vertical integration; trade patterns: producer/consumer linkages.

Neary, J.P. (2002). Globalisation and market structure. Presented at the European Economic Association Annual Conference, Venice, 22-24 August 2002.

This paper reviews some puzzling economic aspects of globalization and argues that they cannot be satisfactorily addressed in perfectly or monopolistically competitive models. Drawing on recent work, a model of oligopoly in general equilibrium is sketched. The model ensures theoretical consistency by assuming that firms are large in their own markets but small in the economy as a whole, and ensures tractability by assuming quadratic preferences defined over a continuum of goods. Applications considered include the effects of trade liberalization on industrial structure, on cross-border merger waves, and on the distribution of income between skilled and unskilled workers.[A]

Keywords: globalization; trade modeling: general equilibrium, partial equilibrium.

Neary, J.P. (2000). Monopolistic competition and international trade theory. Presented at the conference on The Monopolistic Competition Revolution after Twenty-Five Years, University of Groningen, 30-31 October 2000.

Almost twenty-five years after the appearance of Dixit and Stiglitz's (DS) paper on monopolistic competition and optimum product diversity, this paper attempts to take stock of the progress which has been made in applying their approach to international trade theory. It reviews the principal applications to trade theory and presents a new one by embedding DS preferences in a specific-factors framework, and sketches a model which shows how multinational

corporations can emerge even between countries with similar factor endowments. Finally, it addresses some limitations of the approach, including its treatment of variety, returns to scale, entry and firms' strategies.

Keywords: globalization: multinational corporations; trade modeling: general equilibrium

Nielsen, C.P., S. Robinson and K. Thierfelder (2001). Genetic engineering and trade: panacea or dilemma for developing countries. *World Development* 29(8): 1307-24.

This paper offers a preliminary quantitative assessment of the impact that consumers' changing attitude toward genetic modification might have on world trade patterns, with emphasis on the developing countries. For this purpose, a multiregional computable general equilibrium (CGE) model is used. The analysis finds that world markets for maize and soybeans will adjust well to these changes and also that developing countries will divert their trade patterns in response to preference changes in important trading partner countries. [A]

Keywords: differentiable goods: consumer preference, genetically modified organisms; trade modeling: general equilibrium; trade patterns: regional.

OECD (1996). *Multifunctionality: towards an analytic framework.* Paris: OECD.

This is the final version of a study that was carried out under the 1999-2000 Program of Work of the OECD's Committee for Agriculture. It contains the results of the first phase of the work on multifunctionality and aims to provide a conceptual basis for policy discussions. It focuses on production, externality, and public goods aspects of multifunctionality. [A]

Keywords: globalization: environmental regulation; trade modeling: partial equilibrium, trade policy.

Otsuki, T., J.S. Wilson and M. Sewadeh (2001). Saving two in a billion: quantifying the trade effect of European food safety standards on African exports. *Food Policy* 26: 495-514.

A growing concern over health risks associated with food products has prompted close examination of sanitary and phytosanitary standards in industrialized countries. This paper quantifies the impact of a new harmonized aflatoxin standard set by the EU on food exports from Africa. A gravity model is employed to estimate the impact of changes in differing levels of protection based on the EU standard, in contrast to those suggested by international standards. The analysis is based on trade and regulatory survey data for the EU-15 and nine African countries between 1989 and 1998. The new EU standard, which would reduce health risk by approximately 1.4 deaths per billion a year, will decrease these African exports by 64% or US$ 670 million, in contrast to regulation set through an international standard. [A]

Keywords: differentiable goods: sanitary/phytosanitary, technical barriers; sector/commodity: food; trade modeling: gravity model; trade policy: non-tariff measures.

Paarlberg, P.L., M. Bredahl, J.G. Lee (2002). Multifunctionality and agricultural trade negotiations. *Review of Agricultural Economics* 24(2): 322-335.

This paper discusses the differing views of multifunctionality and how they continue to be an obstacle in World Trade Organization (WTO) negotiations. Some nations see multifunctionality as justifying subsidies to agricultural production; others see it as disguised protectionism. This paper shows that while multifunctionality never justifies trade interventions, it can justify production subsidies or taxes. Recognizing that the subsidies or taxes can be economically efficient policies, nations must precisely define and value the externalities in order

to design policies and defend those interventions in the WTO. Trade rules are developed that accommodate domestic policy intervention while preventing disguised protection. [A]

Keywords: trade modeling: general equilibrium, trade policy; trade policy: producer support programs, trade agreements, trade liberalization.

Paarlberg, P.L. and J.G. Lee (1998). Import restrictions in the presence of a health risk: an illustration using FMD. *American Journal of Agricultural Economics* 80(1), February: 175-83.

This paper presents a simple model linking infection risk from imports to a tariff (e.g. the risk of disease causes the exporter of the infected product to face a higher tariff than would otherwise be the case). A numerical example is developed for U.S. beef imports from nations with Foot-and-Mouth Disease (FMD). The additional tariffs are sensitive to the specification of risk and the expected magnitude of loss due to a FMD outbreak. For a low risk of importing FMD, the tariffs levied against the exporter of FMD-infected beef are not prohibitive but become so as the risk of expected output loss rises. [A]

Keywords: differentiable goods: sanitary/phytosanitary; sector/commodity: meat; trade modeling: partial equilibrium, uncertainty/risk; trade policy: tariffs.

Panagariya, A. and R. Duttagupta (2002). Politics of free trade areas: tariffs versus quotas. *Journal of International Economics* 58: 413-27.

The political viability of bilateral Free Trade Area Agreements (FTA) in the presence of tariffs and quotas are compared and contrasted. It is shown that the political viability of FTAs varies according to whether trade restrictions take the form of tariffs or quotas. A key result is that whereas an FTA is unambiguously rejected by one of the countries under a tariff, it may be endorsed by both trading partners under a voluntary export quota or import quota that provides the same protection as the tariff. [A]

Keywords: trade modeling: strategic trade, trade policy; trade policy: tariffs, trade agreements.

Parrott, N., N. Wilson and J. Murdoch (2002). Spatializing quality: regional protection and the alternative geography of food. *European Urban and Regional Studies* 9(3): 241-61.

This explores the background to the development of the Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) labels, which illustrate differences between ‘northern’ and ‘southern’ food cultures and agricultural systems within Europe. In stylized terms, it is argued that the former places greater emphasis on ‘efficient’ production of commodities while the latter retains strong affiliations to ‘terroir’, tradition and artisan production. Analysis of the spatial distribution of registered regional foodstuffs reflects this north–south divide, with more than 75 percent of the products registered in five southern EU states (France, Italy, Greece, Portugal and Spain). The analysis, which compares the two ‘cultures of food’ shows that spatial differentiation also exists at a regional level and that a similar proportion of PDO products originates from Less Favored Areas (LFAs). This implies that the new geography of ‘alternative’ foods is becoming increasingly complex. [A]

Keywords: differentiable goods: consumer preference, geographic indicators/trademarks, labeling/brands.

Perry, M.K. (1989). Vertical integration: determinants and effects. In Schmalensee, R. and R.D. Willig, *Handbook of Industrial Organization, Vol. I*. Amsterdam: North Holland: 183-255.

This chapter provides an overview of issues and literature on verticalization. It provides a brief synopsis of the development of the literature on verticalization, stemming from imperfect competition and market uncertainty. A brief review of transaction cost economics and incomplete contracts is also presented.

Keywords: supply chains: business economics/organization, vertical integration.

Peterson, E. and D. Orden (2002). Effects of tariffs and technical barriers on high- and low-value poultry trade. Presented at the American Agricultural Economics Association Meeting, Long Beach, CA, July 28-31.

A perfectly competitive spatial partial equilibrium model is constructed to evaluate some of the policy effects on world poultry trade. The model simulates the trade flows among six key exporting and importing countries and two aggregate rest-of-world regions. Effects of removal of restrictions based on tariffs, tariff-rate quotas (TRQs) and sanitary regulations are evaluated maintaining a distinction between "high-value" (mostly white meat) and "low-value" (mostly dark meat) poultry products. Results suggest that removal of sanitary barriers alone has relatively little effect compared to the removal of tariffs and TRQs, but has more effect if sanitary and other barriers are removed simultaneously. Imposition of new sanitary barriers against US products by Russia would also shift trade flows, with production rising in Brazil. [A]

Keywords: differentiable goods: sanitary/phytosanitary, technical barriers; sector/commodity: meat; trade modeling: partial equilibrium, spatial; trade policy: non-tariff barriers, tariffs.

Phillips, P.W.B. and H. McNeill (2000). A survey of national labeling policies for GM foods. *AgBioForum* 3(4): 219-24.

Rising consumer concerns with genetically modified foods and products has led a number of countries around the world to introduce rules for labeling the presence of genetically modified (GM) ingredients. This paper presents a survey of the countries around the world that have adopted or indicate that they plan to adopt rules to govern labels in the marketplace. So far, more than 26 countries have either adopted provisions or announced plans for rules to assist the market to develop and deliver labeled products. The challenge facing industry, national governments and international trade organizations is that each of the systems being developed has different tolerances, diverging application, and weak or inconsistent enforcement, compounding the tasks of international trade. [A]

Keywords: differentiable goods: genetically modified organisms, labeling/brands.

Porter, M.E. (2001). Strategy and the internet. *Harvard Business Review* 79(March): 62-78.

This article addresses the role of the internet on company structure and the need to incorporate new management strategies to remain profitable. A primary focus of the new strategies hinges on the ability of the company to capture added value which can be derived from the internet. Additionally, the internet provides better opportunities for companies to establish distinctive strategic positioning than did previous generations of information technology.

Keywords: globalization: information technology; supply chains: strategic management.

Rafiquzzaman, M. (2002). The impact of patent rights on international trade: evidence from Canada. *Canadian Journal of Economics* 35(2), May: 307-30.

This paper examines the extent to which Canadian manufacturing exports are sensitive to national differences in patent rights. A gravity model is used to examine the extent to which Canadian exports are sensitive to differences in patent rights across importing nations. Stronger patent protection induces Canadians to export relatively more to high-income than low-income countries. In addition, the effect of stronger patent rights is to increase exports to those countries that pose a strong threat of imitation and to reduce exports to those countries that pose the weakest threat of imitation. [A]

Keywords: globalization: intellectual property rights; trade modeling: gravity model.

Redding, S. and A.J. Venables (2003). Geography and export performance: external market access and internal supply capacity. NBER Working Paper No. 9637.

This paper investigates the determinants of countries' export performance by examining the role of international product market linkages. It begins with a novel decomposition of the growth in countries' exports into the contribution from increases in external demand and improved internal supply-side conditions. Building on the results of this decomposition, the authors move on to an econometric analysis of the determinants of export performance. Results include the finding that poor external geography, poor internal geography, and poor institutional quality contribute in approximately equal measure to explaining Sub-Saharan Africa's poor export performance. [A]

Keywords: trade modeling: econometric, gravity model; trade patterns: regional.

Rindfleisch, A. and J.B. Heide (1997). Transaction cost analysis: past, present and future applications. *Journal of Marketing* 61(4), October: 30-54.

Over the past decade, transaction cost analysis (TCA) has received considerable attention in the marketing literature. Marketing scholars have made important contributions in extending and refining TCA's original conceptual framework. The authors provide a synthesis and integration of recent contributions to TCA by both marketers and scholars in related disciplines, an evaluation of recent critiques of TCA and an agenda for further research on TCA. [A]

Keywords: supply chains: business economics/organization.

Roberts, D. (1999). Analyzing technical trade barriers in agricultural markets: challenges and priorities. *Agribusiness* 15(3): 335-54.

Technical trade barriers are increasingly important in the international exchange of primary and processed agricultural products. Designing technical trade measures that can satisfy the growing demand for food safety, product differentiation, environmental amenities and product information at the lowest cost to the consumer and to the international trading system requires an understanding of the complex economics of regulatory import barriers. This article proposes a definition and classification scheme to frame discussion and evaluation of such measures. [A]

Keywords: differentiable goods: technical barriers; trade policy: non-tariff measures.

Roberts, D., T. Josling, and D. Orden (1999). A framework for analyzing technical trade barriers in agricultural markets. Washington D.C.: U.S. Department of Agriculture, ERS Technical Bulletin No. 1876, March.

Designing technical trade measures that can satisfy the growing demand for food safety, product differentiation, environmental amenities, and product information at the lowest cost to the consumer and to the international trading system requires an understanding of the complex economics of regulatory import barriers. This report proposes a definition and classification scheme to frame discussion and evaluation of such measures. Open-economy models that complement the classification scheme are developed graphically to highlight the basic elements that affect the economic impacts of changes in technical trade barriers. [A]

Keywords: differentiable goods: sanitary/phytosanitary, technical barriers; trade modeling: trade policy; trade policy: non-tariff measures.

Robinson, S. and K. Thierfelder (2002). Trade liberalisation and regional integration: the search for large numbers. *The Australian Journal of Agriculture and Resource Economics* 46(4): 585-604.

This article surveys the empirical literature that uses multi-country computable general equilibrium models to analyze potential and actual regional trade agreements (RTAs). The studies indicate that these RTAs improve welfare, that trade creation greatly exceeds trade diversion and that they are consistent with further global liberalization. The welfare gains are larger when models incorporate aspects of "new trade theory" such as increasing returns, imperfect competition and links between trade liberalization, total factor productivity growth and capital accumulation. It is also conjectured that a RTA expands market size and stability, allowing firms to pursue economies of specialization, generating additional "Smithian" efficiency gains. [A]

Keywords: globalization: market integration; trade modeling: econometric, general equilibrium; trade patterns: regional; trade policy: trade liberalization.

Roe, B. and I. Sheldon (2001). The impacts of labeling on the production and trade of vertically differentiated goods with process attributes. Presented at the American Agricultural Economics Association Meeting, Chicago, IL, August 5-8.

A model of vertical quality differentiation is used to analyze the introduction of continuous and binary labeling in a market for credence goods with process attributes under autarky and free trade. The results indicate that continuous labeling increases welfare under autarky and free trade so long as labeling is not too expensive. With binary labeling, consumer welfare is increased if the standard is set above the level that would be chosen under continuous labeling under autarky. In the case of free trade, the effects depend on whether binary labeling is harmonized or whether there is mutual recognition of different standards. [A]

Keywords: differentiated goods: labeling/brands; supply chains: game theory; trade policy: non-trade measures.

Rosen, S. (1974). Hedonic prices and implicit markets: product differentiation in pure competition. *The Journal of Political Economy* 82(1): 34-55.

A class of differentiated products is completely described by a vector of objectively measured characteristics. Observed product prices and the specific amounts of characteristics associated with each good define a set of implicit or "hedonic" prices. A theory of hedonic prices

is formulated as a problem in the economics of spatial equilibrium in which the entire set of implicit prices guides both consumer and producer locational decisions in characterics space. Buyer and seller choices, as well as the meaning and nature of market equilibrium, are analyzed. Empirical implications for hedonic price regressions and index number construction are pointed out. [A]

Trade modeling: differentiable goods, partial equilibrium, spatial.

Roy, S. and J.-M. Viaene (1998). Preferences, country bias, and international trade. *Review of International Economics* 6(2): 204-19.

This paper analyzes international trade in a Ricardian world where consumer preferences exhibit country bias. In particular, consumers differentiate between identical physical goods by country of manufacture. In contrast to the classical Ricardian model, the pattern of international specialization in production depends on the preference structure. Possible equilibrium configurations include ones where both countries specialize incompletely and trade in both commodities, as well as situations where the pattern of specialization and trade is the reverse of that in the classical Ricardian world. Both intra- and inter-industry trade can occur simultaneously, though there are no market imperfections or scale economies. [A]

Keywords: differentiable goods: consumer preference; trade modeling: differentiable goods, partial equilibrium.

Royer, J.S. and R.T. Rogers (1998). *The industrialization of agriculture*. Aldershot, UK: Ashgate.

This book contains papers presented at the NE-165 research conference, "Vertical coordination in the food system," held in Washington D.C., June 5-6, 1995. The papers discuss the changes in structure, i.e. industrialization, of the agricultural sector. The book is broken into four parts: an overview of vertical coordination, contracts, grading and the marketing channel, industrialization of the pork sector and foreign investment, and consumer impacts and agricultural cooperatives. Some theoretical constructs are given, but mostly papers deal with issues descriptively.

Keywords: globalization: foreign direct investment, market integration, multinational corporations; sector/commodity: meat; supply chains: vertical integration.

Ryan, J. (2002). Assessing the impact of food policy research: rice trade policies in Viet Nam. *Food Policy* 27(1): 1-27.

The economic impact of marketing and trade policy research in Viet Nam conducted by the International Food Policy Research Institute (IFPRI) is assessed using a novel benefit–cost framework. It measures the economic value of the time saved in hastening the policy responses of the Government of Vietnam. Linking a spatial equilibrium model with income distribution analysis based on national household surveys, allowed IFPRI to satisfy policymakers that relaxing rice export quotas and internal trade restrictions on rice would not adversely impact on regional disparities and food security, and would have beneficial effects on farm prices and poverty. The policy assessment framework is used to measure the economic impact of the policy changes themselves, and in particular, the contribution of IFPRI's work with Viet Nam on the policies from 1995 to 1997. [A]

Keywords: trade modeling: trade policy; trade policy: export subsidies, trade liberalization.

Saunders, C., A. Moxey and V.O. Ronigen (2001). Trade and the environment: linking a partial equilibrium trade model with production systems and their environmental consequences. Presented at the Symposium on Trade in Livestock Products ITRAC.

The link between trade and the environment has aroused considerable interest in terms of both the impact of trade liberalization on the environment but also the impact of environmental policy on production and trade. As an example of economic analysis of these issues, this paper presents a partial-equilibrium model of international trade in dairy products. The trade model is based upon the model building shell VORSIM, but has been extended to include physical dairy production systems and their effect on water quality. This combined model is used to simulate the effects of various policy options on trade flows, dairying production systems and groundwater nitrate levels across different international trading partners. [A]

Keywords: globalization: environmental regulations; trade modeling: partial equilibrium; trade policy: non-tariff measures.

Schotzko, R.T. and R.A. Hinson (2000). Supply chain management in perishables: a produce application. *Journal of Food Distribution Research* 31(2): 17-25.

The objective of supply chain management (SCM) is to remove time and cost from supply chains, improving profitability and/or competitiveness. It is possible through conceptual advances, utilization of computer hardware and software and other advances in electronic technology. Business literature is used to define the concept. Most applications and benefits have resulted from alliances between large retailers and large packaged goods vendors. Specific applications of SCM in the produce industry, with emphasis on factors such as perishability and production variability, are discussed. Firm-size implications are important. While small and mid-sized growers may find the cost to be high, the innovation of logistics provided by outside suppliers is an alternative. A third-party provider was interviewed; its approach and services are documented; and industry implications are discussed. [A]

Keywords: globalization: information technology; sector/commodity: food; supply chains: management strategies, vertical integration.

Senhadji, A.S. (1997). Two common problems related to the use of the Armington aggregator in computable general equilibrium models. *Applied Economic Letters* 4(1): 23-5.

This note highlights two common problems with the application of the population CES aggregator introduced by Armington (1969). Both are related to the dependence of the input shares on the elasticity of substitution even when relative prices are held constant. A modified CES aggregator is proposed which avoids these problems. [A]

Keywords: trade modeling: Armington.

Sheldon, I.M. (2002). Regulation of biotechnology: will we ever 'freely' trade GMOs? *European Review of Agricultural Economics* 29(1): 155-76.

In this paper, the issue of regulation of and trade in genetically modified organisms (GMOs) is examined. It is shown that, despite rapid adoption of GMOs by a few exporters, many importers have developed relatively restrictive procedures for pre-market approval of GMOs and are requiring mandatory labeling. Although exporters have yet to seek a ruling on these regulation, a trade dispute over GMOs is likely to occur. An analysis of the reasons for such a dispute is presented in the paper, along with a discussion of whether such a dispute can be resolved through existing World Trade Organization procedures. [A]

Keywords: differentiable goods: genetically modified organisms labeling/brands, sanitary/phytosanitary; trade policy: market access, non-tariff measures, trade agreements.

Simpson, J.D. and D. Hosken (2000). Have supermarket mergers raised prices? An event study analysis. Federal Trade Commission.

Antitrust enforcement of supermarket merger activity during the late 1980s and early 1990s was less stringent than it had been before or has been since. For six announcements of supermarket acquisitions during this period, this study examines the abnormal stock returns of rival firms to determine if investors believed these acquisitions would lead to higher retail prices. These abnormal returns imply that the average retail price change associated with these types of acquisitions ranges from a 0.1 percent decrease to a 0.05 percent increase. Thus, the results suggest that investors generally did not view these acquisitions as anticompetitive. [A]

Keywords: sector/commodity: food; trade modeling: event analysis, uncertainty/risk.

Smith, P.J. (2002). Patent rights and trade: analysis of biological products, medicinals and botanicals, and pharmaceuticals. *American Journal of Agricultural Economics* 84(2), May: 495-512.

This article analyzes the effects of foreign patent rights on U.S. bilateral exports. The empirical analysis covers three highly disaggregated drug industries over three decades. We estimate bilateral trade equations for each industry using cross-country data on the strength of national patent rights. The findings show that strong foreign patent rights enhance the market power of U.S. drug exporters across countries with weak imitative abilities. Alternatively, strong foreign patent rights stimulate the market expansion of U.S. drug exports across countries with strong imitative abilities. These effects are larger in magnitude during the 1980–90s relative to the 1970s. [A]

Keywords: trade modeling: econometric, gravity model; trade policy: intellectual property rights, market access.

Smyth, S. and P.W.B. Phillips (2002). Product differentiation alternatives: identity preservation, segregation, and traceability. *AgBioForum* 5(2): 30-42.

Numerous terminologies exist to describe product differentiation systems. The leading terms are identity preservation, segregation, and traceability. Frequently, the terminology surrounding these distinct systems is used interchangeably. This creates confusion within the agrifood industry. This paper offers working definitions and a practical taxonomy for identity preservation, segregation, and traceability. [A]

Keywords: differentiable goods: intellectual property rights, traceability; supply chains: management strategies.

Sobolevsky, A., G. Moschini and H. Lapan (2002). Genetically modified crop innovations and product differentiation: trade and welfare effects in the soybean complex. Center for Agricultural and Rural Development, Working Paper 02-WP 319.

This paper develops a new partial equilibrium, four-region world trade model for the soybean complex comprising soybeans, soybean oil, and soybean meal. The calibrated model is solved for equilibrium prices, quantities, production patterns, trade flows, and welfare changes under different assumptions regarding regional government's production and trade policies, differentiated consumer tastes, and several other demand and supply parameters. The United States, Argentina, Brazil and the Rest of the World all gain from the introduction of Round Up

Ready soybeans, although some groups of agents (producers or consumers) may lose. The distribution of welfare between consumers and producers appears to be sensitive to several parameters of the model, but region-level outcomes are robust with respect to most of them and are sensitive only to parameters defining the share of consumers conscious of genetically modified organisms and the elasticity of demand for conventional product varieties.

Keywords: differentiable goods: genetically modified organisms; globalization: intellectual property rights; sector/commodity: field crops; trade modeling: differentiable goods, partial equilibrium; trade policy: producer support programs, non-tariff measures

Spencer, B.J. and R.W. Jones (1991). Vertical foreclosure and international trade policy. *The Review of Economic Studies* 58(1), January: 153-70.

International differences in the cost of production of a key intermediate product can mean that a domestic firm is dependent on supplies from a foreign vertically integrated firm. This paper considers the incentives for the foreign firm and foreign country to supply the domestic firm when the firms compete in a Cournot or Bertrand market for the final product. The vertical supply decision is significantly affected by domestic supply conditions for the input and a domestic tariff on final product imports. Optimal policy by the exporting country may require a tax on both exports, or a subsidy for both exports. [A]

Keywords: supply chains: management strategies, vertical integration.

Steiner, B. (2000). In Vino Veritas: does origin truly matter? In Sylvander, B., D. Barjolle and F. Arfini (eds.). *The socio-economics of origin labeled products in agri-food supply chains: spatial, institutional and co-ordination aspects*. Paris: Institut national de la recherché agronomique, Économie et sociologie rurales, Actes et Communications No. 17-1, November: 99-115.

This paper applies hedonic analysis for an identification of the values which consumers place on attributes of origin as they are listed on the labels of bottles of wine. In particular, region and country of origin are examined with respect to the consumers' degree of product indentification. GLS (WLS) regressions are employed to infer the implicit valuation of information about wine attributes from explicit market prices in the British off-license sector. The analysis allows for differentials effect between attributes. While considering interactions between the attributes, it is shown what potential gains or losses they may have to face as they intend a stock-transfer of wines from different origins. See Sylvander (2000) for more on this subject. [A]

Keywords: differentiable goods: consumer preference, geographical indicators/trademarks, labeling/brands; trade modeling: differentiable goods.

Stone, S., A. Matysek and A. Dolling (2002). *Modelling Possible Impacts of GM Crops on Australian Trade*. Productivity Commission Staff Research Paper, Melbourne, October.

The possible trade implications for Australia of global trade in GM crops and related impacts on economic welfare are analyzed in this paper. The evidence on farm-level effects of GM crops is reviewed, along with the consumer and regulatory environments that have been emerging in recent years, and which are likely to shape the circumstances under which GM crops are produced. The trade and economic welfare implications for Australia are quantified under several regulatory and consumer response scenarios. The two major GM crop types considered are oilseeds (which includes cottonseed, soybeans and canola) and grains (which includes

corn/maize, sorghum and barley, but excludes wheat). The modeling was undertaken using the global general equilibrium model GTAP (Global Trade Analysis Project) and its database for 1997.

Keywords: differentiable goods: genetically modified organisms; sector/commodities: field crops; trade modeling: general equilibrium; trade policy: non-trade measures.

Sumner, D.A. and H. Lee (1997). Sanitary and phytosanitary trade barriers and empirical trade modeling. In Orden, D. and D. Roberts (eds.). ***Understanding Technical Barriers to Agricultural Trade*****. St. Paul, MN: University of Minnesota, Dept. of Applied Economics, International Agricultural Trade Research Consortium: 273-85.**

This paper explores ways in which sanitary and phytosanitary (SPS) and other trade barriers affect and can be introduced into empirical analysis of agricultural trade and trade policy. In particular, common types of SPS rules and how these may be represented in export supply and import demand functions are discussed. The perspective is that of empirical simulation models that incorporate trade policy components, which need to account for SPS and other technical rules. The model focuses on supply and demand of rice and horticultural products. [A]

Keywords: differentiated products: sanitary/phytosanitary, technical barriers; trade modeling: partial equilibrium; trade policy: non-tariff measures.

Sylvander, B., D. Barjolle and F. Arfini (eds.) (2000). ***The socio-economics of origin labeled products in agri-food supply chains: spatial, institutional and co-ordination aspects*****. Paris: Institut national de la recherché agronomique, Économie et sociologie rurales, Actes et Communications No. 17, November.**

The two volumes which comprise this are papers presented at the 67th European Association of Agricultural Economics Seminar held in Le Mans,28-30 October 1999. The focus of the seminar dealt with labeling of products, both regional and national. Several papers from these volumes are excerpted in this annotated literature review; however, both volumes of proceedings are noteworthy for accessing further studies on these subjects. Many papers address European consumer preferences toward regional or country origin of labeled products.

Keywords: differentiable goods: consumer preference, geographical indicators/trademarks, labeling/brands; supply chains: management strategies, vertical integration; trade modeling: differentiable goods, spatial.

Taylor, C.R. and S.N. Wiggins (1997). Competition or compensation: supplier incentive under the American and Japanese subcontracting systems. ***American Economic Review*** **87(4): 598-618.**

This paper presents two fundamentally different subcontracting systems, which arise as distinct solutions to quality control problems facing an input buyer. The "American" system involves competitive bidding on each contract, large orders, and inspections. The "Japanese" system involves repeat purchases from a supplier who earns a premium, small orders and no inspections. Both systems may coexist as local solutions, but the global optimum is determined by the ratio of set-up to inspection costs. This suggests that the adoption of flexible manufacturing equipment and rising product complexity may be responsible for the shift from the American to the Japanese system observed in many industries. [A]

Keywords: supply chains: logistics, management strategies, vertical integration.

Taylor, M.S. (1994). TRIPS, trade and growth. ***International Economic Review*** **35(2), May: 361-381**

This paper presents a two country model of endogenous growth to assess the importance of intellectual property rights to trade, growth, and technology transfer. The paper provides theoretical results linking the intellectual property rights regime to trade patterns, aggregate R&D, worldwide growth and aggregate welfare measures. Failure to provide patent protection for foreign made innovations forces innovators to employ less than the best practice research technologies, reduces aggregate R&D activities worldwide, effectively eliminates technology transfer across countries and reduces worldwide growth. [A]

Keywords: trade modeling: general equilibrium; trade policy: intellectual property rights.

Taylor, M.S. (1993). TRIPS, trade and technology transfer. ***Canadian Journal of Economics*** **26(3), August: 625-37.**

A north-south model of unintentional technology transfer is developed where the stringency of southern patent protection provides the institutional backdrop for a strategic game in a high-tech goods market. The appropriability regime is set endogenously and combines elements of imperfect southern patent protection with the protection afforded by market-made northern technology 'masquing'. Less stringent protection of northern intellectual property can 'work' much like other strategic trade policies; therefore, developed countries appear to be right in demanding discussion of intellectual property rights in GATT. [A]

Keywords: globalization: intellectual property rights; trade modeling: partial equilibrium, strategic trade.

Tongeren, F.W. van and J.C.M van Meijl (2001). ***European policy issues in a global trade analysis framework*****. The Hague, Agricultural Economics Research Institute (LEI) Report 6.01.06.**

This report contains four papers on quantitative, model-based assessments of policy reforms in the European Union. The prospect of a new round of trade negotiations and the perspective of enlargement increase the need to deepen the reforms of the Union's agricultural policies, as set out in Agenda 2000. The outcomes of negotiation rounds such as WTO trade negotiations and the Kyoto environmental summit bear implications for European farmers, related supplying and processing industries and European consumers. The assessment of the likely policy impact is bound to be complex and should be supported by quantitative modeling analysis that explicitly links the relations of European countries with third countries. The applications reported here all utilize the Global Trade Analysis Project (GTAP) model as a starting point and tailor the model and its database to the specific needs of the policy question.

Keywords: trade modeling: econometric, trade policy; trade policy: export subsidies, producer support programs, non-trade measures.

Trefler, D. (1993). Trade liberalization and the theory of endogenous protection: an econometric study of U.S. import policy. ***Journal of Political Economy*** **101(1): 38-60.**

The main goal of this paper is to estimate the impact on U.S. imports of the elimination of all U.S. non-tariff barriers to trade in manufacturing. Trade theorists continue to puzzle over their surprisingly small estimates of the impact of trade liberalization on imports. All explanations of the puzzle treat trade liberalization inappropriately as a given. The theory of endogenous protection predicts that higher levels of import penetration will lead to greater

protection. This paper finds that when trade protection is modeled endogenously, its restrictive impact on imports is large. [A]

Keywords: trade modeling: econometric, trade policy; trade policy: non-tariff measures, tariffs, trade liberalization.

Trienkens, J.H. and A.J.M. Beulens (2001). Views on inter-enterprise relationships. *Production Planning & Control* 12(5): 466-77.

This article gives an overview of major approaches to inter-enterprise relationships from different perspectives and shows that they can be used as complementary tools for understanding and designing inter-enterprise collaboration. The approaches can be used to help a company in an inter-enterprise collaboration decide what government structure and what type of control system it should choose, how far it should gear its processes and information and decision systems and what factors are important for positioning the company in its environment. [A]

Keywords: supply chains: business economics/organization; management strategies, networks.

Uri, N.D. and B. Hyberg (1996). Differentiation and implicit prices of U.S. wheat exports. *Journal of Food Distribution Research* 27(2): 8-21.

This investigation looks at whether the grade determining and official criteria factors identified by the Federal Grain Inspection Service influence the price of wheat for export and, in turn, the competitiveness of United States wheat in the world market. Using data on the transactions price for hard red winter wheat, hard red spring wheat, and soft white wheat and the associated quality characteristics covering the period January 1990 through December 1991 and exported to 63 countries, the results suggest that the test weight, the percentage of shrunken and broken kernels, the protein content, the presence of aflatoxin, the presence of insects, and the falling number are characteristics consistently valued by the market. [A]

Keywords: differentiable goods: consumer preference, technical barriers; sector/commodity: field crops; trade modeling: differentiable goods, econometric; trade policy: non-tariff measures

Vatn, A. (2002). Multifunction agriculture: some consequences for international trade regimes. *European Review of Agricultural Economics* 29(3): 309-327.

The debate over agricultural trade rules is marked by substantial disagreement. The paper starts by clarifying the positions. The apparent divergences stem largely from differences in assumptions—not least which relationships are assumed between the private and public goods involved. The paper analyzes the implications for trade policy if private and public goods are interrelated in production and transaction costs are positive. It is shown that the core issue is the trade-off between precision and policy-specific transaction costs. It is concluded that under the defined assumptions, it is not rational to opt for a single market for agricultural commodities. [A]

Keywords: globalization: environmental regulation; trade modeling: partial equilibrium, trade policy.

Venables, A.J. (1987). Trade and trade policy with differentiated products: a Chamberlinian-Ricardian model. *The Economic Journal* 97(September): 700-17.

The aim of this paper is to develop a theory of trade in differentiated products with assumptions which permit the possibility that firms have different market shares in the various

markets in which they operate. In so doing, the paper follows and extends Krugman (1980, American Economic Review 70:950-9), in which the presence of transportation costs gives firms different shares in their domestic and foreign markets. The second aim is to analyze tariff and industrial policies. [A]

Keywords: trade modeling: differentiable goods, general equilibrium, trade policy; trade policy: tariffs.

Verbeke, W. and R.W. Ward (2001). A fresh meat almost ideal demand system incorporating TV press and advertising impact. *Agricultural Economics* 25: 359-74.

This paper investigates fresh meat consumption in Belgium during 1995–1998 through the specification of a three-equation almost ideal demand system (AIDS) incorporating a media index of TV coverage and advertising expenditures as explanatory variables. Estimated parameters and elasticity coefficients are plausible and consistent with demand theory. Own-price elasticities are relatively low, indicating a low fresh meat demand sensitivity to price changes over this period which was dominated by mass media reports about the potential health risks associated with meat consumption. Specifically, the impact of television publicity is shown to have been particularly negative on beef/veal expenditures in favor of pork/mixture. [A]

Keywords: sector/commodity: meat; trade modeling: event analysis, uncertainty/risk.

Verbeke, W., R.W. Ward and J. Viaene (2000). Probit analysis of fresh meat consumption in Belgium: exploring BSE and television communication impact. *Agribusiness* 16(2): 215-34.

This article focuses on factors influencing consumer decision making toward fresh meat consumption in Belgium. Discrete choice models are specified for explaining consumer decisions to decrease fresh meat consumption since the BSE-crisis and toward the future. Demographic consumer characteristics, consumption frequency and attention to television coverage are included as explanatory variables in the models. A major focus is the impact of television, which has carried several negative reports about meat safety during recent years. Television coverage is found to have a highly negative impact on decision making toward fresh red meat consumption. Findings include implications for future livestock production and the need for communication by the meat industry. [A]

Keywords: sector/commodity: meat; trade modeling: event analysis, uncertainty/risk.

Vishwasrao, S. (1997). North-South technology transfer through licensing. *International Trade Journal* 11(4): 485-513.

The incentives of Southern governments to protect intellectual property rights are examined when Northern innovating firms license technology to Southern firms in a game with asymmetric information. Southern firms may or may not be able to imitate after they license the technology and Northern firms do not know whether the Southern firm can imitate. The form of the licensing contract and the distribution of the gains from licensing will affect the incentives of Southern countries to protect patents. Southern consumers gain from patent infringement but at the expense of Southern firms that cannot acquire licenses at the most favorable terms. [A]

Keywords: globalization: intellectual property rights; supply chains: game theory; trade policy: intellectual property rights.

Wang, Q., F. Fuller, D. Hayes and C. Halbrendt (1998). Chinese consumer demand for animal products and implications for U.S. pork and poultry exports. *Journal of Agricultural and Applied Economics* 30(1), July: 127-40.

This paper examines Chinese consumer preferences for major animal products and assesses the potential impacts of a reduction in China's import tariff on its pork and poultry demand and net import. The analysis suggest that China's demand for animal products will continue to grow as income increases. Using a trade model, results of the scenario analysis indicate that a reduction in China's import tariffs will significantly increase its net pork and poultry imports and the U.S. will capture most of the increases. Nevertheless, the impact on the market price in China and the U.S. is likely to be very small. [A]

Keywords: differentiable goods: consumer preference; sector/commodity: meat; trade modeling: econometric, partial equilibrium; trade policy: tariffs.

Williamson, O.E. (1989). Transaction cost economics. In Schmalensee, R. and R.D. Willig, *Handbook of Industrial Organization, Vol. I*. Amsterdam: North Holland: 135-82.

Transaction cost economics (TCE) adopts a contractual approach to the study of economic organization. This chapter highlights the development of TCE and provides a synopsis of current research in the field. It provides a rich bibliography that contains references to the preceding literature which has developed these concepts.

Keywords: supply chains: business economics/organization, industrial organization.

Wilson, W.W. (1989). Differentiation and implicit prices in export wheat markets. *Western Journal of Agricultural Economics* 14(1): 67-77.

This paper describes the extent and characteristics of differentiation in the international wheat market. Results indicate that the degree of differentiation has increased in the last 15 years. A hedonic price function is specified and estimated to examine implicit prices for characteristics and their change through time. [A]

Keywords: sector/commodities: field crops; trade modeling: differentiable goods, econometric.

Wilson, W. and B. Dahl (2003). The logistical costs of marketing identity preserved GM wheat. Presented at the Symposium "Product differentiation and market segmentation in grains and oilseeds." Washington D.C.: U.S. Department of Agriculture, Economic Research Service and The Farm Foundation, January 27-28.

In this paper, a stochastic optimization model was developed in this study to determine optimal testing strategies. The model chooses the optimal testing strategy that maximizes utility (minimizes disutility) of additional system costs due to testing and rejection and allows estimation of the risk premium required for sellers to undertake dual marketing of GM/Non-GM segregations over a Non-GM system. Cost elements include testing, rejection, and risk premium and were estimated for a grain export chain. The model includes elements of costs and risks within the marketing chain including that of adventitious commingling at all stages of the marketing chain, variety declaration, grower truth-telling, and accuracy of testing technologies. [A]

Keywords: differentiable goods: genetically modified organisms, labeling/brands, traceability; sector: field crops; supply chains: logistics.

Wilson, W.W., D.C.E. Carlson and B.L. Dahl (2001). Logistics and supply chain strategies in grain exporting. North Dakota State University Agribusiness & Applied Economics Report No. 457, August.

During the past decade, the grain shipping industry has become highly competitive and technologically advanced. These changes, along with the introduction of innovative shipping mechanisms, have made logistics management an important source of opportunity and risk for grain shippers. In this study, a stochastic simulation model was developed to evaluate the tradeoffs and effects of key variables on logistical performance in managing the grain supply chain. Average demurrage cost for the supply chain was $2.03 million with the greatest cost for railcars and the least cost for barges. Of the stochastic variables modeled, changes in export demand had the greatest impact on demurrage costs. [A]

Keywords: supply chains: logistics, management strategies; trade modeling: risk/uncertainty.

Wisniewski, S.L.W. (2003). Effects of foreign intellectual property rights on U.S. bilateral exports of biotechnology related agricultural inputs. Presented at the American Agricultural Economist Association Meetings, July 27-30.

This paper examines the effect of foreign intellectual property right (IPR) systems and the policies that comprise them on U.S. exports of biotechnology related agricultural input industries. Extending the empirical and theoretical work of Smith (2002), this paper uses a gravity model to analyze how IPRs affect the market power and market expansion effects of exports to countries with differing abilities to imitate technology. The findings suggest that strengthening global IPRs grant a market power effect to U.S. exporters; strong IPRs reduce U.S. exports by awarding a temporary monopoly over the protected good. However, the analysis of the individual policy components of an IPR system reveal which components inhibit trade through market power effects and which components counterbalance it through market expansion effects, increasing the flow of trade and access to biotechnology related agricultural inputs. [A]

Keywords: globalization: intellectual property rights; trade modeling: gravity; trade policy: intellectual property rights.

Zahniser, S. and J. Link, eds. (2002). *Effects of North American Free Trade Agreement on agriculture and the rural economy*. Washington D.C.: U.S. Department of Agriculture, WRS-02-1, July.

This paper describes the affects attributed to U.S. agricultural trade with Canada and Mexico since the implementation of the North American Free Trade Agreement (NAFTA). While only responsible for a portion of the overall trade increase NAFTA has allowed competitive market forces to play a more dominant role in agricultural trade flows. In addition, NAFTA has established rules and institutions that mitigate potential trade frictions and promote foreign direct investment. The paper highlights that NAFTA should be judged not just in the context of the trade gains associated with the agreement's agricultural provisions, but also in terms of the benefits derived from "locking in" key trade, investment, and institutional reforms in an increasingly integrated North American market. [A]

Keywords: trade patterns: regional, trade organization; trade policy: trade agreements, trade liberalization.

Zahniser, S.S., D. Pick, G. Pompelli and M.J. Gehlhar (2002). Regionalism in the western hemisphere and its impact on U.S. agricultural exports: a gravity-model analysis. ***American Journal of Agricultural Economics*** **84(3): 791-97.**

In this context, it is important to evaluate the impact of the Hemisphere's existing trade agreements. To this end, this paper employs a series of modified gravity models, as suggested by Cheng and Wall, to explore changes in U.S. agricultural exports to the members of NAFTA and MERCOSUR. The primary objective is to identify significant changes in this trade, both at the aggregate level and for individual commodities.

Keywords: trade modeling: gravity model; trade patterns: regional, trade organizations; trade policy: trade agreements, trade liberalization.

Ziss, S. (1997). Strategic trade policy and vertical structure. ***Review of International Economics*** **5(1): 142-52.**

In this article, intermediaries are introduced into the Brander-Spencer model of strategic trade policy. A key finding is that in regimes involving independent retailers, output competition and linear pricing, the optimal policy involves an export tax instead of a subsidy. If firms commit to vertical structure before governments commit to a policy then under output competition, firms choose integration. Whereas, if policy precedes structure, then at least one firm chooses separation. Under price competition separation is a dominant strategy regardless of whether the structure decision is made before or after the policy decision. [A]

Keywords: supply chains: vertical integration; trade modeling: strategic trade, trade policy; trade modeling: export subsidies, special/differential treatment.

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Goodman, D. Globalising food: agrarian questions and global restructuring.

Hummels, D. The nature of growth of vertical specialization in world trade.

Kinsey, J. Information technology in the retail food industry

McLaren, J. "Globalization" and vertical structure.

Robinson, S. Trade liberalisation and regional integration: the search for large numbers.

Royer, J.S. The industrialization of agriculture.

- **Multinational corporations**

Goodman, D. Globalising food: agrarian questions and global restructuring.

Helpman, E. Market Structure and Foreign Trade.

Lee, B.-H. FDI from developing countries: a vector for trade and development.

Lipsey, R.E. Trade and production networks of the U.S. MNCs and exports by their Asian affiliates.

Krugman, P. Globalization and the inequality of nations.

Neary, J.P. Monopolistic competition and international trade theory.

Royer, J.S. The industrialization of agriculture.

- **Trade agreements**

Bhagwati, J. The economics of preferential trade agreements.

Diao, X. A dynamic evaluation of the effects a Free Trade Area of the Americas – an intertemporal, global general equilibrium model.

Esty, D.C. Greening the GATT: trade, environment and the future.

3. Sector/commodity

- **Field crops**

Ara, S. Consumer willingness to pay for multiple attributes of organic rice: a case study in the Philippines.

Chau, H.N. Disentangling the production and export consequences of direct farm income payments.

Chen, C.-C. Spatial equilibrium modeling with imperfectly competitive markets: an application to rice trade.

Frahan, B.H. Impact of the new EU novel food and feed regulation on the supply chains for animal products.

Haley, S.L. Product differentiation in wheat trade modeling.

Mohanty, S. Estimation of demand for wheat by classes for the United States and the European Union.

Sobolevsky, A. Genetically modified crop innovations and product differentiation: trade and welfare effects in the soybean complex.

Stone, S. Modeling Possible Impacts of GM Crops on Australian Trade.

Uri, N.D. Differentiation and implicit prices of U.S. wheat exports.

Wilson, W.W. Differentiation and implicit prices in export wheat markets.

Wilson, W. The logistical costs of marketing identity preserved GM wheat.

- **Food**

Bunte, F. Price setting and vertical coordination in food chains: a game theoretical approach.

Connor, J.M. The changing structure of global food markets: dimensions, effects and policy implications.

Digal, L.N. Market power analysis in the retail food industry: a survey of methods.

Galizzi, G. Vertical Relationships and coordination in the food system.

Golan, E. Traceability for food marketing & food safety: what's the next step?

Golan, E. Economics of food labeling.

Hayes, D.J. A new brand of agriculture? Farmer-owned brands reward innovation.

Hobbs, J.E. International E-commerce: a solution to penetrating niche markets for food.

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Kinsey, J.D. A faster, leaner, supply chain: new uses of information technology.

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Mohtadi, H. A model of information and I.T. adoption in food supply chains.

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Schotzko, R.T. Supply chain management in perishables: a produce application.

Simpson, J.D. Have supermarket mergers raised prices? An event study analysis.

- **Meat**

Alston, J.M. A differentiated goods model of the effects of European policies in international poultry models.

Frahan, B.H. Impact of the new EU novel food and feed regulation on the supply chains for animal products.

Lusk, J.L. Country of origin labeling on meat producers and consumers.

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Metcalfe, M. Environmental regulation and implications for competitiveness in international pork trade.

Paarlberg, P.L. Import restrictions in the presence of a health risk: an illustration using FMD.

Peterson, E. Effects of tariffs and technical barriers on high- and low-value poultry trade.

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Verbeke, W. A fresh meat almost ideal demand system incorporating TV press and advertising impact.

Verbeke, W. Probit analysis of fresh meat consumption in Belgium: exploring BSE and television communication impact.

Wang, Q. Chinese consumer demand for animal products and implications for U.S. pork and poultry exports.

- **Specialty crops**

Moss, C.B. Vertical integration and trade policy: the case of sugar.

- **Non-agricultural**

Bergstrand, J.H. The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade.

Berry, S. Automobile prices in market equilibrium.

Berry, S. Differentiated products demand systems from a combination of micro and macro data: the new car market.

Berry, S. Voluntary export restraints on automobiles: evaluating a trade policy.

Blundell, R. Latent separability: grouping goods without weak separability.

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Dardis, R. The demand for small cars in the United States: implications for energy conservation strategies.

Eaton, J. Technology and bilateral trade.

Goldberg, P.K. Product differentiation and oligopoly in international markets: the case of the U.S. automobile industry.

4. Supply chains

- **Business economics/organization**

MacDonald, J.M. Consolidation in U.S. meatpacking.

Moss, C.B. Vertical integration and trade policy: the case of sugar.

Perry, M.K. Vertical integration: determinants and effects.

Rindfleisch, A. Transaction cost analysis: past, present and future applications.

Trienkens, J.H. Views on inter-enterprise relationships.

Williamson, O.E. Transaction cost economics.

- **Game theory**

Bunte, F. Price setting and vertical coordination in food chains: a game theoretical approach.

Collie, D.R. Bilateralism is good: trade blocs and strategic export subsidies.

Giannakas, K. Infringement of intellectual property rights: causes and consequences.

Holm, P. Vertically integrated oligopoly and international trade policy.

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Roe, B. The impacts of labeling on the production and trade of vertically differentiated goods with process attributes.

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Buccirossi, P. Competition policy and the agribusiness sector in the European Union.

Connor, J.M. The changing structure of global food markets: dimensions, effects and policy implications.

Digal, L.N. Market power analysis in the retail food industry: a survey of methods.

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Hummels, D. The nature of growth of vertical specialization in world trade.

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McCorriston, S. Perspectives on the state trading issue in the WTO negotiations.

McLaren, J. "Globalization" and vertical structure.

Williamson, O.E. Transaction cost economics.

- **Logistics**

Akkermans, H. Virtuous and vicious cycles on the road towards international supply chain management.

Boehlje, M. changes in the agriculture industries: how do we measure, analyze and understand them?

Chen, Y. Trade liberalization and strategic outsourcing.

Cooper, M.C. Supply chain management: more than a new name for logistics.

Davis, T. Effective supply chain management.

Galizzi, G. Vertical Relationships and coordination in the food system.

Henderson, J. E-business and distribution channel strategies in agribusiness industries.

Kinsey, J.D. Emerging trends in the new food economy: consumers, firms and science.

Lambert, D.M. Issues in supply chain management.

Taylor, C.R. Competition or compensation: supplier incentive under the American and Japanese subcontracting systems.

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Akkermans, H. Virtuous and vicious cycles on the road towards international supply chain management.

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Buhr, B. Traceability, trade and COOL: lessons from the EU meat and poultry industry.

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Trienkens, J.H. Views on inter-enterprise relationships.

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- **Networks**

Hakansson, H. Developing relationships in business networks.

Hummels, D. Vertical specialization and the changing nature of world trade.

Lambert, D.M. Issues in supply chain management.

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- **Vertical integration**

Boehlje, M. changes in the agriculture industries: how do we measure, analyze and understand them?

Buccirossi, P. Competition policy and the agribusiness sector in the European Union.

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Perry, M.K. Vertical integration: determinants and effects.

Ziss, S. Strategic trade policy and vertical structure.

5. Trade modeling

- **Armington**

Abbott, P.C. Wheat-importing state trading enterprises: impacts on the world wheat market.

Alston, J.M. Wither Armington trade models?

Alston, J.M. A differentiated goods model of the effects of European policies in international poultry models.

Armington, P.S. A theory of demand for products distinguished by place of production.

Blonigen, B.A. Explaining Armington: what determines substitutability between home and foreign goods?

Bockel, D.W. On apparent problems with the use of the Armington aggregator in computable general equilibrium models.

Feenstra, R.C. Using the gravity equation to differentiate among alternative theories of trade.

Haley, S.L. Product differentiation in wheat trade modeling.

MacLaren, D. Implications of new trade theory for modeling imperfect substitutes in agricultural trade.

Senhadji, A.S. Two common problems related to the use of the Armington aggregator in computable general equilibrium models.

- **Differentiable goods**

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Alston, J.M. A differentiated goods model of the effects of European policies in international poultry models.

Ara, S. Consumer willingness to pay for multiple attributes of organic rice: a case study in the Philippines.

Armington, P.S. A theory of demand for products distinguished by place of production.

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Carlson, R.L. Seemingly unrelated regression and the demand for automobiles of different sizes 1965-75: a disaggregate approach.

Dahr, T. An economic analysis of product differentiation under latent separability.

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DeSantis, R.A. A computable general equilibrium model for open economies with imperfect competition and product differentiation.

Devadoss, S. Trade in imperfectly competitive industries: the role of market size and consumer preferences.

Elad, R.L. Hedonic estimation applied to the farmland market in Georgia.

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Goldberg, P.K. Product differentiation and oligopoly in international markets: the case of the U.S. automobile industry.

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Helpman, E. The structure of foreign trade.

Helpman, E. Market Structure and Foreign Trade.

Hummels, D. Monopolistic competition and international trade: reconsidering the evidence.

Just, R.E. Addressing the changing nature of uncertainty in agriculture.

Lanclos, D.K. Endogenous product differentiation and trade policy: implications for the U.S. food industry.

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Mohanty, S. Estimation of demand for wheat by classes for the United States and the European Union.

Moschini, G. Intellectual property rights and the welfare effects of agricultural R&D.

Rosen, S. Hedonic prices and implicit markets: product differentiation in pure competition.

Roy, S. Preferences, country bias, and international trade.

Sobolevsky, A. Genetically modified crop innovations and product differentiation: trade and welfare effects in the soybean complex.

Steiner, B. In Vino Veritas: does origin truly matter?

Sylvander, B. The socio-economics of origin labeled products in agri-food supply chains: spatial, institutional and co-ordination aspects.

Uri, N.D. Differentiation and implicit prices of U.S. wheat exports.

Venables, A.J. Trade and trade policy with differentiated products: a Chamberlinian-Ricardian model.

Wilson, W.W. Differentiation and implicit prices in export wheat markets.

- **Econometric**

Abbott, P.C. Wheat-importing state trading enterprises: impacts on the world wheat market.

Anderson, J.E. A theoretical foundation for the gravity equation.

Ara, S. Consumer willingness to pay for multiple attributes of organic rice: a case study in the Philippines.

Bergstrand, J.H. The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade.

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Diao, X. A dynamic evaluation of the effects a Free Trade Area of the Americas – an intertemporal, global general equilibrium model.

Fink, C. How stronger protection of intellectual property rights affects international trade flows.

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Jackson, L.A. An econometric model of agricultural labeling policy harmonization in international trading systems.

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Maskus, K.E. How trade-related are intellectual property rights?

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Robinson, S. Trade liberalisation and regional integration: the search for large numbers.

Smith, P.J. Patent rights and trade: analysis of biological products, medicinals and botanicals, and pharmaceuticals.

Tongeren, F.W. van. European policy issues in a global trade analysis framework.

Trefler, D. Trade liberalization and the theory of endogenous protection: an econometric study of U.S. import policy.

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Wang, Q. Chinese consumer demand for animal products and implications for U.S. pork and poultry exports.

Wilson, W.W. Differentiation and implicit prices in export wheat markets.

- **Event analysis**

Simpson, J.D. Have supermarket mergers raised prices? An event study analysis.

Verbeke, W. A fresh meat almost ideal demand system incorporating TV press and advertising impact.

Verbeke, W. Probit analysis of fresh meat consumption in Belgium: exploring BSE and television communication impact.

- **Foreign investment**

Lee, B.-H. FDI from developing countries: a vector for trade and development.

- **General equilibrium**

Anderson J.E. The mercantilist index of trade policy.

Anderson, J.E. A new approach to evaluating trade policy.

Bockel, D.W. On apparent problems with the use of the Armington aggregator in computable general equilibrium models.

Chen, C.-C. Spatial equilibrium modeling with imperfectly competitive markets: an application to rice trade.

Chen, Y. Trade liberalization and strategic outsourcing.

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Neary, J.P. Globalisation and market structure.

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Robinson, S. Trade liberalisation and regional integration: the search for large numbers.

Stone, S. Modeling Possible Impacts of GM Crops on Australian Trade.

Taylor, M.S. TRIPS, trade and growth.

Venables, A.J. Trade and trade policy with differentiated products: a Chamberlinian-Ricardian model.

- **Gravity model**

Anderson, J.E. A theoretical foundation for the gravity equation.

Bergstrand, J.H. The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade.

Bergstrand, J.H. The gravity equation and international trade: some microeconomic foundations and empirical evidence.

Cho, G. Exchange rate uncertainty and agricultural trade.

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Otsuki, T. Saving two in a billion: quantifying the trade effect of European food safety standards on African exports.

Rafiquzzaman, M. The impact of patent rights on international trade: evidence from Canada.

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Smith, P.J. Patent rights and trade: analysis of biological products, medicinals and botanicals, and pharmaceuticals.

Wisniewski, S.L.W. Effects of foreign intellectual property rights on U.S. bilateral exports of biotechnology related agricultural inputs.

Zahniser, S.S. Regionalism in the western hemisphere and its impact on U.S. agricultural exports: a gravity-model analysis.

- **Partial equilibrium**

Andaluz, J. On protection and vertical product differentiation.

Bagwell, K. Strategic trade, competitive industries and agricultural trade disputes.

Berry, S. Automobile prices in market equilibrium.

Bunte, F. Price setting and vertical coordination in food chains: a game theoretical approach.

Elad, R.L. Hedonic estimation applied to the farmland market in Georgia.

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Fuller, S. Effect of liberalized U.S.-Mexico rice trade: a spatial, multiproduct equilibrium analysis.

Haley, S.L. Product differentiation in wheat trade modeling.

Helpman, E. The structure of foreign trade.

Lanclos, D.K. Endogenous product differentiation and trade policy: implications for the U.S. food industry.

Larson, B.A. The impact of environmental regulations on exports: case study results from Cyprus, Jordan, Morocco, Syria, Tunesia and Turkey.

McCorriston, S. Perspectives on the state trading issue in the WTO negotiations.

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OECD. Multifunctionality: towards an analytic framework.

Paarlberg, P.L. Import restrictions in the presence of a health risk: an illustration using FMD.

Peterson, E. Effects of tariffs and technical barriers on high- and low-value poultry trade.

Rosen, S. Hedonic prices and implicit markets: product differentiation in pure competition.

Roy, S. Preferences, country bias, and international trade.

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Sobolevsky, A. Genetically modified crop innovations and product differentiation: trade and welfare effects in the soybean complex.

Sumner, D.A. Sanitary and phytosanitary trade barriers and empirical trade modeling.

Taylor, M.S. TRIPS, trade and technology transfer.

Vatn, A. Multifunction agriculture: some consequences for international trade regimes.

Wang, Q. Chinese consumer demand for animal products and implications for U.S. pork and poultry exports.

- **Spatial**

Andaluz, J. On protection and vertical product differentiation.

Chen, C.-C. Spatial equilibrium modeling with imperfectly competitive markets: an application to rice trade.

Fuller, S. Effect of liberalized U.S.-Mexico rice trade: a spatial, multiproduct equilibrium analysis.

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Rosen, S. Hedonic prices and implicit markets: product differentiation in pure competition.

Sylvander, B. The socio-economics of origin labeled products in agri-food supply chains: spatial, institutional and co-ordination aspects.

- **Strategic trade**

Bagwell, K. Strategic trade, competitive industries and agricultural trade disputes.

Collie, D.R. Bilateralism is good: trade blocs and strategic export subsidies.

Konan, D.E. The vertical multinational enterprise and international trade.

Panagariya, A. Politics of free trade areas: tariffs versus quotas.

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Ziss, S. Strategic trade policy and vertical structure.

- **Trade policy**

Andaluz, J. On protection and vertical product differentiation.

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Venables, A.J. Trade and trade policy with differentiated products: a Chamberlinian-Ricardian model.

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- **Uncertainty/risk**

Cho, G. Exchange rate uncertainty and agricultural trade.

Emons, W. Good times, bad times, and vertical upstream integration.

Erwin, A. The impact of exchange rate risk on intercountry trade and production.

Just, R.E. Addressing the changing nature of uncertainty in agriculture.

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Hennessy, D.A. The production effects of agricultural income support policies under uncertainty.

Ker, A.P. Modeling technical trade barriers under uncertainty.

MacLaren, D. Uncertainty aversion and technical barriers to trade: an Australian example.

Paarlberg, P.L. Import restrictions in the presence of a health risk: an illustration using FMD.

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Wilson, W.W. Logistics and supply chain strategies in grain exporting.

6. Trade patterns

- **Multinational companies**

Baldwin, R.E. Two waves of globalization: superficial similarities, fundamental differences.

Lee, B.-H. FDI from developing countries: a vector for trade and development.

- **Producer/consumer linkages**

Boehlje, M. changes in the agriculture industries: how do we measure, analyze and understand them?

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Hobbs, J.E. International E-commerce: a solution to penetrating niche markets for food.

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Kinsey, J.D. The new food economy: consumers, farms, pharms and science.

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- **Regional**

Baldwin, R. The causes of regionalism.

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Bhagwati, J. Trading Preferentially: theory and policy.

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- **Trade organizations**

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7. Trade policy

- **Export subsidies**

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- **Trade liberalization**

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