MULTIFUNCTIONAL AGRICULTURE, PROTECTIONISM, AND PROSPECT OF TRADE LIBERALIZATION*

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Abstract
The concept of multifunctional agriculture has been suspected of 'disguised' or 'veiled' protectionism by proponents of market-oriented reforms since the Uruguay Round Agreement on Agriculture(URAA). In this article, I review the history and nature of agricultural protectionism and probe the concept of multifunctional agriculture from economics and broader social science perspectives. Then, I contend that agricultural protectionism in the second half of the 20th century was, in fact, a revelation of the demand for the multifunctional roles of agriculture, heightened by industrial policies designed by developed countries to secure the survival and growth of agriculture to a socially acceptable point. An implication of this contention is that we are not likely to have a trading system in agriculture as liberalized as manufacturing/industrial sectors. The frame of debate for agricultural trade is neither protectionism vs. trade liberalization nor market vs. government any longer. I propose that the relevant frame should be centered around the question of how to fine-tune government interventions and the WTO's trade rules to better serve agriculture-related goals unique to each country across the world. The traffic light box system from the Uruguay Round signified a starting point of promising mechanism that could harmonize market rules with the social demand for

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multifunctional and sustainable agriculture. The negotiators in the WTO multilateral talks should discard the perception that it is always a virtue to liberalize agricultural trade.

1. Introduction

Since the advent of the Industrial Revolution in the 18th century, agriculture has evolved into a distinctive industry across the world that demands exclusive consideration from international trade-governing organizations as well as national governments. Our history has witnessed the remarkable process of structural transformation from agrarian to industrialized economies in the West, North America, East Asia, and other regions throughout the 19th and 20th centuries. While it is almost a law that the share of agriculture declines in such a course of economic transformation(Lewis, 1954, Rostow, 1960, Johnson, 1987, Timmer, 1988), few consider the structural decline as an indication that agriculture can be neglected in an economy. Indeed, agriculture has garnered massive subsidies and protection from the governments of developed countries over the last century while undergoing rapid industrialization.

Today, as a consequence of the protection, agriculture remains to a large extent detached from the global trend of market integration across borders. Such a defiance of agriculture from the trend of integration has been persistent since the GATT(General Agreement on Trade and Tariffs) was launched in 1947 and pundits termed it as 'agricultural protectionism' to highlight its uniqueness from protectionist policies/measures in other sectors(McCalla, 1992; Sanderson, 1990; Anania et al. 2004; McCalla, 2003). By the 1980s, agricultural protectionism in developed countries had caused a number of anomalies such as mounting budgetary burdens, surplus production, and massive distortions in the world market(Runge, 1988; Sanderson, 1990; Jostling, 1997). In conjunction with the neoliberalism that was gaining momentum along with the conservative political/economic movement in the 1980s as represented by Thatcherism and Reaganomics, these problems finally motivated developed countries to take up agriculture as a major item for negotiations in the eighth multilateral trade talks at Uruguayan city of Punta del Este in 1986.

1.1. Preview of Multifunctional Agriculture

The Uruguay Round was the first serious multilateral effort to dismantle agricultural protectionism and liberalize agricultural trade with two concrete results(Ingco and Croome, 2004): (i) AoA(Agreement on Agriculture) detailing how reform would progress with respect to three major pillars(market access, domestic support, and export subsidies), and (ii) the creation of World Trade Organization(WTO) that is charged with establishing a fair and market-oriented trading system and given the legal authority for settling trade disputes. Although the Uruguay Round successfully brought agricultural and trade policies under the discipline of the WTO for the first time in history, the success was moderated by the mediocre size of planned reduction in trade barriers and domestic subsidies.[1]

What is particularly noteworthy about the Uruguay Round is that a concept called 'multifunctional agriculture'(nontrade concerns, NTC) emerged during the negotiation as manifested in the Preamble to the AoA.[2] Multifunctionality of agriculture refers to a broad range of nonmarket goods and services agriculture provides with varying degrees of jointness with either market commodities or farmlands(Vatn, 2002; Batie, 2003).[3] The emergence of the concept of multifunctional agriculture prompted the WTO to institute the so called 'traffic light box system'(green, blue, and amber boxes)[4] that catego-

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[1] The AoA specifies quantitative reduction plans of trade barriers in three areas: (i) the AoA caps export subsidies and requires the value of subsidies and the volume of subsidized exports to be reduced by 36 and 21 percent, respectively over six years, (ii) it requires aggregate domestic support provided to farmers to be reduced by 20 percent, and it requires conversion of nontariff barriers into tariff equivalents, binds all tariffs, and opens minimum access quotas for products whose trade was largely blocked by past policy(Schott, 1994, pp. 43-54).

[2] The preamble states "Commitments under the reform programme should be made in an equitable way among all Members, having regard to NTC, including food security and the need to protect the environment; having regard to the agreement that special and differential treatment for developing countries is an integral element of the negotiations.

[3] Such nonmarket goods and services include national food security, rural amenities, recreational opportunities, viable rural economy, and a broad range of ecosystem services (e.g., flood control, nutrient recycling, groundwater recharge, wildlife habitat, atmospheric carbon dioxide sequestration.

[4] Domestic subsidies categorized as green box (e.g., crop insurance, environmental

rizes agricultural policies and subsidies based on two criteria: (i) whether or not they distort trade patterns and (ii) whether or not they are targeted at supporting the multifunctional roles of agriculture. The box system is designed to permit countries to foster the supply of nonmarket goods and services of agriculture while ensuring that such support is decoupled from production decision, thereby minimizing trade distortion. This creative device fundamentally reshaped the nature of discourse about the way government influences the operation of agricultural market, specifically giving rise to the now widely used terms like decoupling, targeting, devolution, and cross-compliance(Potter and Barney, 2002).

The Doha Development Round(DDR) was launched in Doha, Qatar in November 2001 in observance of the article 20 of the AoA mandating a new round of trade negotiations to begin by 2000. With the recognition by developing countries that they did not gain much from the URAA and by developed countries of widening economic inequalities across countries and pervasive poverty in developing countries, the overriding goal of the DDR was to devise global trade rules that would help developing countries achieve economic growth and reduce poverty. Agriculture was again the most critical and contentious area with the specific goal of advancing AoA in terms of the following three areas: (1) substantial improvement in market access, (2) elimination of export subsidies, and (3) substantial reduction in trade-distorting domestic support. Progress in these areas was perceived a critical factor for liberalizing agricultural trade and fueling economic growth in developing countries by enhancing their access to agricultural markets in developed countries. With respect to the multifunctional roles of agriculture, the DDR regarded it as an important issue to be negotiated as stated in the Doha Declaration,

> "We take note of the non-trade concerns reflected in the negotiating proposals submitted by Members and confirm that non-trade concerns will be taken into account in the negotiations as provided for in the Agreement on Agriculture"

After a number of ministerial meetings at Cancun, Geneva(three times), Hong

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protection, extension services, rural development) are supposed to be non-trade distorting programs and exempt from the reduction requirements. In addition, subsidies linked to production restraints are categorized as 'blue box' and exempt from the reduction requirements, too. Subsidies classified as trade-distorting 'amber box' are subject to the reduction requirements.

Kong, Paris, and Potsdam, the DDR officially broke down in 2008 due to failures to reach agreement between developed and developing countries and within developed countries on the size of reduction in trade-distorting subsidies and on issues largely related to the multifunctional roles of agriculture(i.e., whether to abolish the blue box; whether to expand the scope of the green box; and to what extent to allow sensitive and special products(Josling, 2004; Anania and Bureau, 2005; Blanford and Boisvert, 2005).[5]

1.2. Research Objectives

The pervasiveness of agricultural protectionism and the emergence of the concept of multifunctional agriculture combined with the institutional response(by the WTO) to deal with them were probably the most prominent phenomena characterizing global agriculture in the second half of the 20th century. At a time when globalization is proceeding in earnest to restructure rules governing the operation of international markets for goods, services, capital, and labor, the interplay of agricultural protectionism, multifunctionality and the WTO raises a number of questions of fundamental interest to academic researchers and farm policy-makers such as:

- Is multifunctionality a grand enough ideology that it does compete with the globalization process?
- Is the explicit consideration of multifunctionality in designing new trade rules conducive to enhancing the liberalization of agricultural trade?
- Is multifunctional agriculture a new form of protectionism?
- If not, can we systematically quantify the benefits of multifunctional agriculture?
- Can WTO legitimately and fully accommodate the concept of multifunctionality in designing new trade rules conducive to freer trade?

The major goal of this article is to offer insights into these questions and shed lights on the forces shaping the course of trade liberalization talks.

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[5] Developed countries were concerned about import-sensitive products that are particularly more susceptible to competition from foreign countries, while developing countries(e.g., India, China) were insisting that special products should be exempt from reductions in protection because of their importance in development, food security, and rural livelihood.

To this end, this article is structured in the following order. The next section provides a brief history of agricultural protectionism with a review of literature in the 1980s and 1990s. The third section reviews literature on the concept of multifunctional agriculture from economics and broader social science perspectives: economics approach streamlines our thought process as to what needs to be done to resolve the controversies surrounding multifunctionality, while social science approach takes a critical look at the relative impact on rural/farm policy-making process of two ideologies(neoliberalism and multifunctionality). Diverse forces in play for and against freer trade in agriculture are assessed in the fourth section with a particular focus on the role of agricultural sustainability and expected imbalances in food demand and supply in the near future. Synthesizing all the preceding discussion affecting the agricultural trade liberalization process, the final section presents an assessment of where we are and where we should be headed in terms of the WTO multilateral trade talks.

2. Agricultural Protectionism

2.1. Theories of Protectionism

Built on the principle of comparative advantage by David Ricardo, the doctrine of free trade constitutes the mainstream thinking that has played a central role in shaping international trade policies across countries(Bhagwati, 1971). Yet, there are two interrelated lines of alternative theories challenging the preaching of free trade: (i) the infant industry argument and (ii) theory of strategic trade and industrial policies.

First, the infant industry argument for protection was first used by Alexander Hamilton as described in his report in 1791 recommending strategies designed to protect the U.S. industry in its infancy against imports from advanced British manufacturers(Chang, 2008; pp 48-51). Later, Friedrich List further developed the argument with his book as an economic rationale to temporarily shield German industries from outright competition with British manufacturers. Since then, it has become a very persuasive argument justifying the need for an interventionist stance for late-starters of industrialization. In his books illuminating the history of economic development in the West,

Chang(1995; 2008) discovers considerable elements of infant industry protection policies during the initial course of economic development of almost every industrialized country in the West. In light of these historical findings, he advocates protectionism as a measure necessary for developing countries aspiring to join the ranks of industrialized nations.

Second, the theory of strategic trade and industrial policies integrates international trade with industrial organization models. This theory shows that interventionist policies can have strategic beneficial effects when industries exhibit deviations from standard conditions of competitive market structure such as increasing returns to scale, imperfect competition, or external economies (Brander and Spencer, 1983; Krugman, 1986; 1987; Helpman and Krugman, 1989). Strategic behavior refers to actions of a firm(nation) that do not directly raise profits, but that are intended to intimidate and deter rivals from aggressive behavior. There is ample evidence demonstrating the usefulness of strategic trade and industrial policies in recent history of the economic development of industrialized countries(e.g., protection of Airbus by Europe, protection by Japan of steel, automobiles, computer chips industries).

2.2. Political Economy of Agricultural Protectionism

When it comes specifically to agriculture, the history of protectionism goes as far back as the corn laws enacted in 1815 to restrict the import of grains and other food products into the United Kingdom(McCalla, 1968; Hollander, 1992). The corn laws were designed primarily to protect the interests of agricultural landlords in Britain, but repealed in 1846 in the face of aggressive opposition from merchants and manufacturers. Government manipulation of agricultural markets has restarted during the period between WWI and WWII and has been ubiquitous across industrialized countries. In particular, government intervention in the US started during the era of Great Depression to provide safety nets for the one-fourth of the population engaged in farming and to reduce the disparity in incomes between the farm and non-farm sectors(Cochrane, 1993). Although farm incomes surpassed the nonfarm sector's income by the mid-1980s(Tweeten, 1997) agricultural protection did neither disappear nor diminish, but grew consistently over the last half century. The European Union(EU) introduced a highly protectionist and distortive system of government intervention in agricultural markets in

1968 with the Common Agricultural Policy(CAP). While the CAP has undergone several reforms to address surplus production and the harmful consequences of intensified production practices, the EU's protectionist position has been reinforced over the last four decades.

The rise and persistency of agricultural protection in industrialized countries coincides with the long-term decline in the share of agricultural labor from the total labor force and in the share of agriculture from their overall GDP(Binswanger, Deininger, 1997; Thies and Porche, 2005). Confounded by this paradox of growing protection and declining share of agriculture(Gardner, 1992), agricultural economists devoted considerable efforts in the 80s and 90s to explain such intervention and offered two broad groups of explanations: (i) the traditional market failure argument, and (ii) political economy analysis. The traditional argument is that government is trying to correct market failures inherent in the farm sector such as instability in prices and incomes, imbalance in market power between farmers and middlemen, provision of information, and investment in research and development(Gardner, 1992).

The political economy theory(theory of collective action; rent-seeking behavior) hypothesizes that the interests of politicians, bureaucrats, and farm organizations are the driving forces increasing government protection(Swinnen and van Der Zee, 1993; Josling et al, 2010). Supporting this view, Gardner(1994) argued that agricultural economists(i.e., Gale Johnson, Tweeten) changed their view on agricultural protectionism from problem-solving to interest-group politics. The theory rests on the premise that small but well-organized groups with specialized interests can be more effective in advancing their economic objectives in a democratic society than large groups with more diffuse interests. While farmers find it easy to band together to press for legislation in support of their products, the resistance from consumers and taxpayers is minimal given the cost of the support to farmers is widely dispersed across much larger interest group of consumers.

Along with the theoretical explanations from market failure and political economy arguments, there is a large body of empirical research identifying economic and other characteristics associated with the growth of agricultural protectionism in developed countries. For example, Gardner (1987) examined why the extent of government intervention(in the form of

farm price support programs) differs by commodities in the US. The study showed that self-sufficiency rates in agricultural products were negatively related to the protection rates: i.e., if the commodity faces import competition, it is likely to receive greater protection. Low elasticities of demand and supply were positively associated with it. The share of commodities in aggregate agricultural output had a positive effect on the protection. In addition, Swinnen(1994) highlighted the role of relative farm incomes and the countercyclical nature of agricultural protection. After controlling for the effects of economic development, terms of trade, comparative advantages, and constraints on tax collection feasibility, Beghin and Kherallah(1993) showed that agricultural protection levels increase as the political system moves to a more pluralistic one. Yet, the study showed that further transition to democratization causes partial dissipation of protection and agricultural protection may persist if transactions costs in connection with eliminating/reducing farm programs/policies are substantial. In line with this importance of political system, Thies and Porche(2005) examined political institutional factors on a more detailed level and showed that veto players, federalism, party fragmentation and the timing of elections are as important as other economic factors in explaining agricultural protection in the OECD.[6]

In summary, political economy explanations in combination with market failure arguments present a persuasive case why agricultural protection has risen and defied a globalization trend over many decades. While market failure arguments constitute the backbone of the birth of agricultural protection, the political economy analysis provides explanations useful to comprehending why such protection has grown beyond economic reasoning(Josling et al, 2010). Subsequent sections offer further insights into the causes of agricultural protectionism by probing the nature and extent of the impact of multifunctionality on agricultural policy-making and the process of WTO trade liberalization talks.

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[6] In the most recent article, Swinnen(2010) notes that the failure of the DDR to reach agreement and food price crises of 2008 have brought interest in agricultural policies back to the forefront of research agenda for agricultural economists and reviews recent developments in political economy theories and empirical analysis on government intervention.

3. Understanding Multifunctional Agriculture

3.1. Surfacing of the Concept of Multifunctional Agriculture

An undeniable fact emerging from the discussion above is that all developed countries(except for Australia and New Zealand in recent decades) have been practicing agricultural protectionism. The Uruguay Round was ostensibly a multilateral talk(encompassing countries from every continent in the world) designed to reverse the trend of agricultural protectionism. However, the underlying cause of the talk was the escalating agricultural subsidy war(particularly export subsidy) between the U.S. and EU(Josling, 1997).[7] The two sides facing the Atlantic Ocean needed to use the Uruguay Round as an external motivator to put an end to the subsidy war, curb growing budgetary burdens, and mollify other countries' criticisms of the disarray in agricultural markets. Reluctantly involved in the talks, other developed countries such as Norway, Switzerland, Japan, Korea and other so called "Friends of Multifunctional Agriculture"(now called G10 countries) were in need of a mechanism that would protect their agriculture from the forces of globalization and liberalized trade. In collaboration with the EU, they concocted the term 'non-trade concerns(NTC; multifunctionality)' that integrate various positive externalities associated with agricultural outputs, farmlands and other social goals.[8] The EU and Friends of Multifunctional Agriculture banded together in the Uruguay Round to put forth the concept of multifunctional agriculture and succeeded in developing a formal institution(box system) in support of it.[9] Ironically, the Uruguay Round started

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[7] Although the transatlantic conflict between the US and the EU due to agricultural subsidies started upon the inception of the CAP in 1960s, the conflict was sharply heightened in the 1980s with the EU emerging as a major exporter in temperate-zone markets in third countries by means of subsidies rather than fair competition (Josling, 1997).

[8] See Swinbank (2001), Losch (2004) and Sakuyama (2005) for a detailed delineation of the process how the concept has gained legitimacy during the Uruguay Round talks and subsequent international conferences hosted by FAO, WTO, and OECD in the late 1990s and early 2000s.

[9] On one hand, the EU had an internal incentive to be proactive in the negotiation in order to push the reform of the CAP and stop the subsidy war with the U.S. It needed on the other hand to continue to protect its farmers and agriculture to

with the lofty goal of dismantling agricultural protectionism, but ended up with legitimizing it in the form of green payment and direct income subsidy that is supposedly decoupled from production decisions.[10]

Since the Uruguay Round trade talks, academic researchers have shown a great deal of interest in exploring a wide range of issues related to the concept of multifunctional agriculture. The discourse on it falls into two broad types of research: (i) an economics approach, and (ii) a broader social science approach encompassing political economy, sociology, and geography. While the economics approach strictly follows the neoclassical methodology, the social science approach probes the implications of multifunctional agriculture in the context of not only rural economies but also as an ideology in competition with neoliberalism and globalization to shape the future of agriculture. Whereas research using the economics approach is found both in the U.S. and Europe, the social science research approach has been largely conducted in Europe. These discrepancies in orientation of academic research shows that while the U.S. is bent on resolving the controversies surrounding the multifunctionality of agriculture primarily based on economic principles, the Europe wants to be informed on how neoliberalism/globalization influences the future of European agriculture and how multifuncitonality alters such a process.[11]

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preserve European Model of Agriculture(EMA).

10 There has been considerable controversy over whether 'decoupled' policies are truly minimally trade-distorting. For example, Josling(2004) presents three points in suspicion of the minimal effects: (i) any payment can encourage production if it relieves income constraints on investment, (ii) even when payments are based on historical acres and yields, expectations of the eventual reassessment of those bases can cause farmers to retain land in production of particular crops, and (iii) safety-net policies that reduce the downside risk of fluctuations in income clearly can have an effect of keeping resources in farming.

11 The U.S. was concerned about countries abusing the concept of multifunctional agriculture as protectionism and therefore reluctant to accept the concept. Therefore, it wanted to scrutinize the concept from the economics perspective and downplay its importance or role in domestic farm policy-making and trade liberalization talks, citing its vagueness in defining the goods and services that belong to the multifunctional agriculture. Freshwater(2002) offers seven reasons why the U.S. is skeptical about the concept: (i) there is a tendency in the U.S. not to overuse federal authority to manage private property rights, (ii) U.S. policy already has been dealing with agriculture-related environmental issues, (iii) land-use management in the U.S. is generally considered a local issue, (iv) given the huge size of the U.S., most agricultural production is detached from urban areas where most people live, (v) in-

3.2. Economics Approach to Understanding Multifunctional Agriculture

Economic analysis of multifunctional agriculture starts with the identification of economic characteristics of multifunctional outputs. Blandford and Boisvert (2005) place multifunctional outputs into three types: (i) public goods that possess nonexclusiveness and nonrivalry in consumption(e.g., landscape amenities, cultural heritage), (ii) technical externalities that can be exclusive and rival(e.g., ecosystem services such as carbon sequestration or groundwater recharge), and (iii) pecuniary externalities(food security, food safety and quality, animal welfare, and rural development).[12] The common characteristics of the first two types are that there are no organized markets for them and accordingly they are not priced. Farmers have little incentive to consider the external costs or benefits when making production decisions, thus leading to sub-optimal resource allocations.

Inquiry into multifunctionality using economic principles incorporates such externalities into general equilibrium or optimization models to determine socially optimal solutions to resource allocation problems between agricultural and nonagricultural sectors. For example, Thornsbury, Moss, and Schmitz(2003) specify a social utility function integrating agricultural externalities and derive optimal conditions for internalizing such externalities. They show that the magnitude of optimal distortion(government intervention) increases for the following two cases; (i) when the strength of the jointness between market and nonmarket goods becomes stronger, (ii) when the economy becomes more affluent and the marginal utility of income declines. Similarly, Parrlberg, Bredahl, and Lee

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corporating the concept of multifunctionality requires a major renovation in the philosophy underlying the U.S. farm policy process, (vi) multifunctionality gives rise to conflicts for those countries seeking more open and transparent agricultural policy, lastly (vii) the difficulties associated with valuing nonmarket outputs makes it hard to gain broad support.

12 Since Pigou identified and defined externalities in economics a century ago, the concept has been taking a peripheral place in the theory and practice of economics except for the case of negative externalities of industrial activities harming the environment. In recent decades, however, pronounced roles of externalities were identified in association with technological advancement(spillover effects) and geography in explaining the process of economic development(Krugman, 1991). The controversies on multifunctional agriculture have taken the issue of externalities to a higher level of case in economic research.

(2002) develop a social utility function that incorporates agricultural nonmarket goods and show that, while domestic subsidies designed to correct externalities can enhance social welfare, trade intervention would never be justified.

In practice, for such conceptual models to be useful in the real world, all types of positive externalities need to be identified and magnitudes of such externalities(discrepancy between social and private demand curves) need to be valued via nonmarket valuation methods. Lee, Paarlberg, and Bredahl(2005) and Blanford and Boisvert(2005) discuss challenges and complexities associated with such identification of the multifunctional goods and services(i.e., determination of scope and scale of multifunctional goods and whether to use social preferences or local preferences). Randall(2003) further discusses challenges and promises associated with valuing multifunctional outputs, while offering some scheme that can be empirically implemented. Once such issues are resolved, then researchers can use nonmarket valuation methods to assign monetary value to the multifunctional outputs of agriculture. While still controversial with a number of potential biases, nonmarket valuation methods have progressed significantly over the last three decades and gained considerable ground for claiming legitimacy of the methods.[13]

While the theoretical and conceptual research above helped articulate economic issues in relation to multifunctional agriculture, they are of little practical value to policy makers and negotiators in trade liberalization talks. Hence, research scrutinizing farm policy options for dealing with the multifunctional roles of agriculture has attracted a great deal of attention from both the U.S. and Europe. The discussion of policies for multifunctional outputs necessarily raises two issues: (i) the nature/degree of jointness between agricultural outputs and nonmarket goods and (ii) transaction costs associated with decoupled policies targeted at specific multifunctional goods. These two issues need to be resolved for any substantive discussion to take place with respect to selecting the most appropriate policies addressing the multifunctional roles of agriculture.

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[13] The literature on the valuation of multifunctional agriculture has been growing lately particularly in Europe. Hall, McVittie, and Moran(2004) present a comprehensive review of research valuing multifunctionality in the U.K. In the U.S. Bergstrom and Ready(2009) review a few dozens of published articles attempting to assign economic values on farmland amenity in the U.S. In contrast to the European studies conducted at the national scale, most studies in the U.S. are at the state or county level(Moon, 2010).

The degree of jointness between multifunctional and market goods needs to be evaluated to determine whether or not production-linked subsides are justified. When there is no jointness, policy should be decoupled from farm outputs decisions and targeted at the specific multifunctional output. Production-linked subsidies can be justified when joint relationship is empirically established. However, potential nonlinear joint relationships can make the distinction between decoupled policy and production-linked subsidy less straightforward. Further, the jointness of multifunctional outputs could be stemming from not only farm outputs but also farmlands, rural lands, farming methods(Irwin, Nickerson and Libby, 2003). Hence, potential jointness needs to be assessed with respect to such attributes of agriculture.[14]

As shown earlier, public policy needs to be decoupled from production and specifically targeted at the multifunctional output at a local level when there is weak jointness between market and multifunctional output. Yet, Vatn(2002) argues transaction costs associated with a targeted policy need to be evaluated so as to ensure that such a policy is truly socially optimal. Transactions costs refer to 'the costs of gathering information, making decision/contracting, and controlling/policing to ensure that the results are what was intended'(Vatn, 2001; Abler, 2004).[15] There is a trade-off between precision of a targeted program and transaction costs with the precision defined as 'the degree to which the set goals are attained': i.e., as the degree of precision of targeting and implementation of a policy increases, the size of transaction costs would rise. This signifies that if the size of transaction costs is excessively high, conventional policies linked to market output may be justified on econom-

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[14] Abler(2001) synthesizes reports on jointness from 21 countries for 12 different types of multifunctional outputs including landscape and open space amenities, cultural heritage, rural economic viability, enhanced food security, prevention of natural hazards, groundwater recharge, biodiversity, water pollution, animal welfare, irrigation overuse, and greenhouse gas emissions.

[15] Costs to the government of a targeted direct payment are associated with designing the policy, obtaining legislative and executive approval, establishing selection criteria for which farmers will receive payments, establishing criteria for what farmers must do to obtain payments, monitoring and auditing payments, and evaluating policy outcomes, while costs to farmers are linked to learning about the policy, deciding whether to apply for payments, the application process, depositing payments, and complying with audits and other reporting requirements(Vatn, 2001; Vatn, 2002).

ic grounds. He argues that under such circumstances it is not efficient to have a single market for agricultural commodities.

Vatn's discussion of the economic role of transaction costs in justifying production-linked, therefore trade-distorting policies for dealing with multifunctional outputs then raises an international politics/diplomatic/value issue regarding who should be given priority between, for example, a developed country attempting to protect multifunctional agriculture and a developing country encountering diminished export opportunities. In this regard, Simpson(2005) offers an intriguing perspective: he views the issue from the standpoint of human's basic right to 'decide how to use their resources' and invokes United Nations (UN) such as the International Covenant on Economic, Social and Cultural Rights(ICESCR) whose article 25 says 'nothing in the present covenant shall be interpreted as impairing the inherent right of all peoples to enjoy and utilize fully and freely their natural wealth and resources.' He seems to be in favor of endowing countries the right to pursue goals related to multifunctional agriculture, particularly, national food security.

The last note in the economic inquiry approach concerns potential interdependence in the production of multifunctional outputs. Specifically, there may exist cost complementarities among various multifunctional outputs if an increase in the production of one type of multifunctional output lowers the marginal costs of other multifunctional outputs.[16] For example, Brunstad, Gaasland, and Vardal(2005) show that there is cost complementarity between the production of landscape preservation and food security.[17] Given that agricultural production is associated with multiple multifunctional outputs such as farmland amenity, food security, cultural heritage, rural development, wildlife habitat, and other ecosystem services, such cost complementarity need not be confined to two products: i.e., an increase in the production of a multifunctional output may lower marginal costs of multiple numbers of multifunctional outputs.

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16 There is definitely cost complementarity between market and nonmarket outputs when they are jointly produced. Cost complementarity can arise even when there is no joint production relationship.

17 Their study was designed to show that the current amount of subsidy is larger than optimal when cost complementarity is considered between food security and landscape preservation. Yet, the present article is invoking the concept of cost complementarities to argue that it will cost excessively high to produce various multifunctional outputs separately.

When considered individually, each of the positive externalities does not appear to be very robust to the criticism that a particular multifunctional output can be produced cost-effectively by targeted policies/programs that are not linked to agricultural production. Specifically, food security may be enhanced by developing domestic or international storage programs(Sumner, 2000); rural employment can be enhanced by boosting nonfarm employment opportunities, not by expanding agricultural production; flood mitigation can be achieved by means other than paddy fields. Hence, opponents of multifunctionality argue that providing production-linked support is an indirect, high-cost and ineffective way to achieve enhanced spillover benefits from agriculture: they prefer policies specifically targeted at each externality. However, when all positive externalities are simultaneously considered, farm subsidies linked to production may turn out to be lower-cost way of producing various multifunctional outputs jointly when compared to the aggregation of individual policies targeted at specific multifunctional outputs.

In summary, the economic approach is based on the notion of externalities and subsequent market failure that result in suboptimal resource allocations.[18] To correct the market failure and enhance social welfare for an economy that is believed to involve nonmarket goods and services associated with agriculture, the following five steps need to be undertaken: (i) precise identification of the type, scale and scope of multifunctional outputs, (ii) verification of the existence of social demand for them and systematic valuation, (iii) assessment of jointness relationship, and (iv) assessment of transaction costs associated with targeted policies, (v) assessment of cost complementarities, (vi) selection of the most efficient policies in consideration of the prior five steps, and (vii) evaluating the policy options from non-economic(political, diplomatic, or value) perspectives.

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[18] In an alternative to the Pigouvian subsidy approach discussed above, OECD (2005) explores non-governmental approaches(e.g., market creation or voluntary provision) toward coordinating the demand and supply of multifunctional outputs of agriculture. The OECD study provides a typology of nongovernmental approaches that include three cases(market provision, club provision, and voluntary provision) for positive externalities and another three (market-based, direct transactions, and farmer-led voluntary) for negative externalities.

3.3. Social Science Approach to Understanding Multifunctional Agriculture

Quite contrary to the economic approach of reducing multifunctional agriculture to particular types of externalities that can be internalized via the Pigouvian subsidies/taxes, social science research views the concept as a much broader socio-political ideology that sets the tone for political discourse on agro-food policies. Therefore, the concept is believed to possess important ramifications in holistically managing agricultural production, environmental qualities, ecological services, and rural development. The social science literature compares/contrasts multifunctionality to other concepts that have exerted profound impacts on agricultural policy-making process including productivism, post-productivism, neoliberalism, and the European Model of Agriculture(EMA).[19] Productivism is an agricultural ideology that describes two tendencies in the second half of the 20th century including (i) the mode of production that is characterized by ever-increasing application of agri-chemicals, machinery and Fordist-type management practices[20] and (ii) stable government support for maximization of production through subsidization, price guarantees, and protectionist policies(Bjorkhaug and Richards, 2008). The consequence is increased exploitation of natural resources and detrimental effects on the environment, likely compromising sustainability of agricultural production(Bjorkhaug and Richards, 2008). Post-productivism refers to the transition to a mode of production that followed productivism, as reflected in the CAP reform efforts to reduce the impacts of intensified production practices on the environment and rural societies,(Walford, 2003). To be realistic, both productivistic and post-pro-

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[19] Bergstrom(2002) defines post-productivism as ‘characterized by more diverse economic activities and attitudes in relation to land, and with amenity values as well commodity values. In contrast, productivism is about productivity and market competitiveness. Rooted deep in European culture and politics, European Model of Agriculture(EMA) is a particular way of viewing the relationship among agriculture, environment, and rural society(Potter, 2006). From the moment of the creation of the CAP in Europe, there has been an implicit recognition that European agriculture is unique in terms of its socio-cultural contribution and in terms of the vulnerability of its constituent operating units to unfettered market forces(Potter, 2006).

[20] Fordist-style refers to management practices that reduce labor inputs and lock producers into a treadmill of production that is geared toward increases of production and profit (Gray and Lawrence, 2001).

ductivistic modes exist side by side in Europe with two forces in play simultaneously: (i) growing resistance against intensified production practices from consumer and environmental advocates groups, and (ii) predominant neoliberal trends impacting the agricultural policy process across Europe. Hence, transition to a post-productivism has not taken place yet. Mather, Hill, and Nijnik(2006) argue that, while used too widely and too loosely, post-productivism has much utility to offer in helping us better understand the transition's emphasis(that has been taking place in some parts of the developed world) in terms of rural land use management from material production to the provision of environmental services and amenities.

Many researchers concur that multifunctional agriculture is a term that better conceptualizes contemporary changes in agricultural policies and rural societies because it does not discount the importance of the production and profitability of market commodities(Wilson, 2001; McCarthy, 2005). In particular, McCarthy(2005) believes that multifunctionality has succeeded post-productivism as a framework with which to inquire about changes taking place in contemporary rural areas. In addition, Josling(2003) identifies multifunctionality of agriculture as one of four paradigms that is shaping agricultural policies within OECD countries along with Dependent, Competitive(market-oriented), and Global paradigms(Josling, 2003).[21] Under this categorization, the WTO trade liberalization talks were considered as a forum for multifunctional and competitive paradigms to collide with the Cairns group and the U. S. pushing for continued reform of the trade rules and proponents of multifunctionality attempting to secure enough scope in the green box to address the multifunctional goals of agriculture.

Arguing that neoliberalism is far from being universally accepted as the model for the future governance of agriculture, Potter(2006) lays out post-Fordism, post-productivism, and multifunctionality as alternative ideas that challenge neoliberalism for shaping the nature of the debate on the future of

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[21] Dependent agriculture paradigm is the old view of agriculture where farmers are allowed to focus on production, then government would take care of remaining tasks such as finding markets, border protection, buying surplus and assist with export if needed; competitive agriculture paradigm views agriculture as having the capability to stand on its own two feet; global agriculture paradigm sees agriculture as one stage in a global supply chain stretching from chemical and biological input suppliers to retail stores and niche markets(Josling, 2003).

European agriculture. He identifies two types of policy models: (i) decoupled and linked directly to the environmental goods and services, and (ii) seeking to defend a model of the countryside as pre-eminently a working agricultural space. While indicating that Europe is finding it increasingly difficult to adopt the second model given the relentless neoliberalistic and globalization forces in play under the auspices of the WTO(at least up through 2005 or so), he concludes that a productivist agriculture will exist side by side with post-productivism and multifunctionality and the sustainability of this uneasy conjunction will define the terms of public debate about the future countryside for some time to come.

Notwithstanding the apparent popularity that post-productivism and multifunctionality have gained in recent decades in the discourse of agricultural policies, many pundits cast doubts about whether or not they have exerted a sufficiently measurable effect on farm and rural landscapes to be compared with the influences of neoliberalism. For example, nearly a decade ago Evans, Morris, and Winter(2002) assessed how prevalent the practice of post-productivism was in Europe against the following five criteria: (i) a shift in emphasis away from quantity to quality in food production; (ii) the growth of alternative farm enterprises, conceptualized as a pluriactivity; (iii) state efforts to encourage the development of more traditional and sustainable farming systems through agri-environmental policy; the growing environmental regulation of agriculture; and (iv) the progressive restructuring of government support of agriculture (Ilberty and Kneafsey, 1997). They note that observed shifts in agrarian policies in Europe in recent years do not quite measure up to be termed as post-productivistic and conclude that post-productivism is not a valid idea conceptualizing the current agricultural situation. More recently, Potter and Tilzey(2005) argued that the shift toward post-productivist agriculture has not yet materialized and the ideology of a free market is the dominant doctrine that frames the terms of international and European agricultural policy reform which is leading to further integration of large parts of European agriculture into agro-food circuits of capital. Their view of the current agricultural situation is that the European policy stance as revealed in recent efforts to reform the CAP is both a resistance to unfettered liberalization and an effort to combine elements of the neoliberal program with continued commitment to state assistance in various forms. Corroborating the views of these studies specifically for UK, Marsden and Sonnino(2008) assess that, although UK rural policies have had a propen-

sity toward recognizing its multifunctional character, they have failed to turn multifunctional activities into a real development option.

3.4. Cross-Cultural Reserach

The concept of multifunctional agriculture is conceived differently across regions(Freshwater, 2002; Blandford and Boisvert, 2004). For example, in the U.S., ecosystem services, wildlife habitat, and open spaces are highlighted. In contrast, EU is more interested in keeping marginal producers in farming and maintaining rural landscapes. Importantly, East Asia and G10 countries are overwhelmingly concerned about national food security. Hence, it is of value to conduct comparative studies across countries with different socio-economic and political backgrounds. Such comparative studies have been growing, particularly in recent years, shedding light on questions like how differentially the idea of multifunctionality is translated into actual policies across countries.

Australia offers an interesting case for comparative research because the country is divergent from the EU in terms of socio-political and macro-economic environment. For example, Dibden, Potter, and Cocklin(2009) analyze the EU and Australia in the context of how the neoliberal agenda have been affecting agricultural discourse. Characterizing the EU's dealing with the WTO's push for trade liberalization as anticipatory and risk-averting and Australia's as compensatory and harm-minimizing, they argue that neo-liberalization as a policy agenda is reshaped in different states and regions through processes of resistance and accommodation arising from particular geographical, historical, political, and institutional contexts, and as a response to crises.

There are substantial differences in the way multifuncitonality is received even within the Europe. For example, noting that the CAP reform has reoriented agricultural policies more toward rural development and multi-functionality, Daniel and Perraud(2009) compare the content and implementation of these policies between France and the Netherlands. They show that the two countries reveal two divergent models of multifunctionality: the Netherlands restricted the application of multifucntionality to nature and landscape protection (liberal environmentalist model) while France still maintains a highly institutionalized relationship between farmers' organizations and the state (state-farmers co-management model).

4. Forces Impacting Agricultural Trade Liberalization

4.1. Forces for Freer Trade

Agricultural protectionism was lamented as early as 1972 when Dale G. Johnson wrote his book entitled 'World Agriculture in Disarray.'[22] Since then, many economists, journalists, and politicians have criticized the massive government intervention in agricultural markets by the developed world. In particular, McCalla (1993; 2003) expressed his frustration at the inability of the developed world to remove farm subsidies and liberalize agricultural trade on two occasions; first in his fellow address at the 1992 Western Agricultural Economics Association meeting right before the conclusion of the Uruguay Round, and second in his 2003 article in the middle of the Doha Development Round.[23] In more recent years, Kym Anderson and other economists at the World Bank have been vigorously advocating agricultural policy and trade reform in developed and developing countries with a number of books and articles demonstrating substantial positive welfare impacts of such reforms (e.g., Anderson, 2009, Anderson and Martin, 2006; Anderson, 2005)

As indicated earlier, the focus on agriculture in the Uruguay Round as a major target for negotiations was motivated by internal problems within the EU along with the U.S. facing budgetary burdens, growing surplus production and consequent need to dispose of surpluses in world markets using export subsidies disturbing trade patterns, and internal demand for market-oriented reforms. In particular, market-oriented reformers were fed up with the extremely well-organized lobbies of farm organizations and with the subsidies generating unintended incentives for farmers to adopt intensive production practices that degrade the environment and fertility of soils. Strengthening the case for liberalized trade, proponents of trade liberalization brought in other rationales such as the recovery of the deadweight losses of intervention(i.e., increase in economic

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22 Johnson observed in 1987 that he was incorrectly optimistic that trade negotiations would reduce the barriers to trade and government intervention in farm products when he wrote his book in 1972. He noted that "policy makers in the industrialized countries paid almost no attention." (Johnson, 1987).

23 Other prominent economists in the U.S. advocating market-oriented reform include Daniel Sumner, Luther Tweeten, and Bruce Gardner.

welfare largely accruing to consumers), using it as an engine for further global economic growth in the face of limited possibility of doing so with respect to the manufacturing sector; and most importantly, helping developing countries accelerate their economic development(Anderson, 1999, McCallar, 2003). When combined, the case of liberalizing trade in agriculture appeared strong and convincing.

4.2. Forces Against Freer Trade

Nonetheless, the reality is that the world has witnessed little progress in trade liberalization beyond the symbolic accomplishment of the URAA. Evidenced from the literature review in the preceding section, the growing legitimacy of the concept of multifunctionality has played a key role in challenging the forces mentioned above for freer trade and consequently in preventing agricultural trade from being more radically reformed. On top of the arguments for market failure, interest group politics, and the multifunctional roles of agriculture, two additional rationales that make it harder to push for unfettered liberalization of trade are offered: (i) expected imbalance in global food demand and supply, and (ii) agricultural sustainability.

Global food demand is expected to double by 2050 with global population projected to increase from approximately 6 billion to 9 billion. Consequently, there is a great deal of uncertainty as to whether or not world agriculture will be capable of meeting the increases in food demand that will stem not only from growth in population and but also from a projected 2.4 fold increase in per capita real income along with dietary shifts towards a higher proportion of meat(McCalla, 1998; Tilman, 2002; FAO, 2009; Alston, Beddow, and Pardey, 2009; Pingali, 2009). In particular, pointing to diminishing agricultural productivity growth since the 1980s due to decreasing agricultural research investment, Alston, Beddow, and Pardey(2009) argue that the developed world needs to increase research investment to avoid potential food shortages in the near future. The food demand-supply scenario is exacerbated by expanding uses of agricultural commodities beyond food and feed given the concerns about global warming and consequent climate changes due to carbon dioxide emitted from fossil fuels. The result has been exponentially growing awareness of the need for developing alternative renewable energy sources, leading to ethanol produced from corn and biodiesel made from oilseeds(Runge and Senauer,

2007). Indeed, according the U.S. Department of Agriculture, it is expected that a federal mandate in the U.S. will quadruple ethanol production by 2022 with 35 percent of U.S. corn use likely to be devoted to ethanol production. Further, soybeans have increasingly been used as an environmentally-friendly ingredient for industrial products. The expanded uses of such commodities connote that agriculture is increasingly becoming a strategic industry where its products are sought not only for food and feed but also for fuel and ingredients for industrial products. The lagging productivity growth, coupled with expanding uses of agricultural commodities, can trigger major food price hikes like the one experienced in 2008(Timmer, 2010). In sum, unless the uncertainties about adequate food supply are mollified, countries will have a strategic incentive to protect their own agricultural production base to the point their economies can sustain.

More importantly, there is a question of whether or not agricultural sustainability and free trade are congruent(Toman, 1994; Ekins, et al, 1994; Roepke, 1994; Ikerd, 2005).[24] Since the UN conference on Environment and Development in 1992, the concept of sustainability has emerged as a prominent issue that penetrates deep into research agenda for economic development, environmental economics, and agricultural production. Sustainable agriculture can be defined in a narrow sense as the ability to meet the current generations' food needs while not compromising the ability to meet those of future generations.[25] Hence, the concept of sustainable agriculture integrates long-term planning and

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24 While there is a large literature dealing with the relationship between trade and the environment (e.g., Muradian and Martinez-Alier, 2001; Yu et al, 2002), there are relatively fewer studies focusing specifically on the linkage between agricultural trade and the environment or sustainability.

25 Sustainable agriculture is a response to overcome the problems associated with conventional agriculture such as depletion of non-renewable resources, soil degradation, health and environmental effects of agricultural chemicals, inequity, declining rural communities, loss of traditional agrarian values, food quality, farm worker safety, decline in self-sufficiency, and decreasing number and increasing size of farms (Hansen, 1996). The US Congress defines sustainable agriculture as "an integrated system of plant and animal production practices having a site-specific application that will over the long term: satisfy (i) human food and fiber needs; (ii) enhance environmental quality and the natural resource base upon which the agriculture economy depends; (iii) make the most efficient use of non-renewable resources and integrate where appropriate, natural biological cycles and control; (iv) sustain the economic viability of farm operations; and (v) enhance the quality of life for farmers and society as a whole" (US Congress, 1990 Farm Bill).

future generations' welfare into current economic decisions. In contrast, liberalized trade or market-oriented reform is rooted in concepts such as improvements in efficiency, competitiveness, and productivity in the short-run, and inherently deficient in addressing long-term considerations(Ikerd, 2005).[26]

Agricultural production involves a vast amount of land, soil, and water resources, being at the forefront in managing many natural resources, and fundamentally differs from industrial production process. Short-sighted measures to improve productivity can degrade soils and the water resource base and compromise food safety/quality because unfettered competition in agriculture motivates producers to use more chemicals(fertilizers, pesticides, herbicides) and soil-eroding practices.[27] When free trade prevails, farm producers have an incentive to improve agricultural productivity by employing more intensified production methods. Under this environment, investment in research designed to develop innovative farming technology fostering long-term sustainability in agricultural production is likely to be far below social optimums, at least in view of social planners who care about intergenerational equity issues.

In brief, sustainability is associated with a long-term horizon and supposed to be unique to the economic, ecological, and social conditions of each country. Thus, it is not congruent with the notion of free trade underscoring standardization, uniformity, and myopic price competition. While the WTO has a number of measures in place that are designed to remedy the deficiencies of market mechanisms such as Sanitary and Phytosanitary Measures(SPS), and the Agreement on Technical Barriers to Trade(TBT), there is little evidence that they are effective simultaneously in facilitating trade and protecting the environment(and thereby enhancing sustainability) when it comes to agricultural trade(Mahe, 1997; Runge, 1998; UNEP, 2000).[28]

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26 Ikerd(2005) proposes 'Sustainable Capitalism' that integrates economic, social, ecological, and ethical values. He believes that an economy can not be sustained without a solid foundation of social responsibility and ecological integrity.

27 Especially, industrialized agricultural systems of large farms are characterized by the followings: (i) high energy-using, (ii) high chemical-using, (iii) requiring intensive management, (iv) placing a high premium on uniformity rather than diversity of both products and environments, and (v) depending on the results of continuing research for the maintenance of their productivity(Tisdell, 1994).

28 Toman(1996) suggests that the concept of 'safe minimum standard' may provide a common ground for debate about sustainability for ecologists, economists and philosophers. Runge(1998) proposes four principles that can be used to design rules

5. Conclusions: Where Are We Headed?

5.1. How to View Agricultural Protectionism?

I have assigned somewhat prolonged space to the discussion of agricultural protectionism and multifunctional agriculture. The literature on agricultural protectionism offers economic and political rationales useful in comprehending why government intervention has been ever growing even with the condition that had prompted initial government involvement disappeared(i.e., average farm income exceeding urban wage workers). Some rationales for agricultural protectionism overlaps with what proponents of multifunctional agriculture argue nowadays. For example, a major goal of agricultural protection after the Second World War was to boost farm incomes and make them comparable to urban wage earners, thereby promoting rural economic vitality. Considering that rural vitality is an important component of multifunctional agriculture, it can be conjectured that agricultural protection in the 70s and 80s was a partial result of the social demand for some aspects of multifunctionality arguments: i.e., policy-makers and legislators dealing with farm policies may have been aware of the strategic importance of farms and their positive externalities even before the term "multifunctional agriculture" emerged. Without the general public's implicit support for subsidizing agriculture(as revealed in the behaviors of the legislators), farm lobbies and legislations enabling farm subsidies may not have been sustainable over time. Further, it is asserted that agricultural subsidies in developed countries in the last few decades could have been motivated by the desire to acquire comparative advantages in agricultural commodities: i.e., agricultural subsidies in some countries were a type of industrial policies designed to secure the survival and growth of agriculture to a socially acceptable point.

Taken together, agricultural protectionism can be interpreted as a response to: (i) market failures inherent in agriculture, (ii) the demand for multifunctional agriculture, and (iii) the strategic need to strengthen the foundation of agricultural production. Interest group politics and rent-seeking behaviors of farm organizations likely have caused such protection to overshoot anyone's expectation and grow irrationally. The bottom line is that agricultural protection-

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and regulations optimizing environmental benefits from expanded trade.

ism is a truly multifaceted phenomenon that differs intrinsically from protectionist's stance in other sectors.

5.2. WTO Trade Talks and Multifunctionality

The economic and social science literature on multifunctional agriculture scrutinizes whether it is a viable concept that is qualified theoretically and practically to symbolize the trend toward recognizing the intimate connection between agriculture and its impact on the environment, ecosystem services, and open space amenities. On the one hand, research within the neoclassical economic framework identifies all the essential issues required for the concept of multifunctional agriculture to be legitimately incorporated into the WTO trade-rule making process. The economics approach played a key role in streamlining our thought process as to what needs to be done to resolve the controversy over multifunctional agriculture in the WTO multilateral trade talks, while pointing to a number of difficulties in operationalizing economic concepts associated with multifunctional agriculture. Yet, the lack of systematic and credible methods in the operationalization of the economic approach is accountable for causing disputes and controversies over the boundaries of the green box and also for derailing the DDR. The burden is on the science of economics to advance the frontier of research that would permit full operationalization of the economics approach to the WTO trade-rule making process.

On the other hand, research within the alternative broader social science framework has helped to assess the extent of the impact of multifunctionality relative to neoliberalism and market-oriented reformers. Upon reviewing changes in policies and programs in European countries that have been taking place over the last few decades, social science research has tended to share the view that neoliberalism is the mainstream force that shapes the agenda of international trade talks, yet with the concept of multifunctionality challenging and redirecting the path of neoliberalistic agenda. In sum, despite the difficulties of operationalizing the concept of multifunctional agriculture using economic methodology, the literature suggests that transition toward multifunctional agriculture from productivism has substantially progressed and appears to be nonreversible.

The central question underlying a lengthy discussion of agricultural protectionism and multifunctionality in this article has been whether or not we

can take apart massive government intervention in agriculture and achieve liberalized trade. Upon observing various multilateral trade negotiations, documenting the emergence of the notion of multifunctional agriculture, considering concerns about meeting future food demand and sustainability of agricultural production, it is contended that the dichotomous frame of neither free trade vs. protectionism nor market vs. government are pertinent any longer when it comes to agricultural matters. The use of such frameworks in analyzing agricultural markets is a convention that should be discarded in the wake of the growing importance of pursuing sustainability and multifunctional agriculture. The relevant framework should focus on the question of how to devise global agricultural trade rules that provides a setting where countries can devote their efforts to making public intervention more effective in achieving sustainability- and multifunctional agricultural related goals while minimizing disruptions to market-based rules. In this context, the traffic light box system of the URAA really marked the beginning of a promising institution that can harmoniously integrate market forces with the social demand for multifunctionality. In brief, although many pundits have downplayed the achievements of the URAA from the perspective of the old frame of protectionism vs. free trade, I believe that the box system contained in the URAA is an innovative institution in line with the new thinking of fine-tuning government's roles to better serve countries in pursuing agriculture-related goals.

The Uruguay Round was a forum that various disparate forces(as represented by different groups of countries) came to debate and compete with the eventual convergence to the URAA, thereby showing future talks a clear direction as to where to go from there. However, as the failure of the DDR eloquently shows, it is never an easy task to advance the box institution because any reforms should be able to address and balance the interests of various groups of countries participating in the negotiation including some countries still predisposed by the mentality of disciplining agricultural protectionism in pursuit of trade liberalization.[29] The trade liberalization talks in the DDR could experience much less friction if the negotiators were to distance themselves

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[29] For example, Hertel and Keeney(2006) estimate that eliminating all agricultural subsidies and moving to complete free trade would boost global welfare by $151 billion a year. While useful in understanding the magnitudes of distortions brought by such subsidies, this type of analysis is blind to sustainability- and multifunctionality-related issues of agriculture

from the perception that it is always a virtue to liberalize trade. This reality is likely to entail a degree of liberalization in agriculture far below what market-oriented reformers would have anticipated from WTO multilateral trade talks.

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