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**Agricultural Protection, Domestic Politics, and International Political Economy:
What is the Role of the State in Explaining Agricultural Protection?**

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Agricultural Protection, Domestic Politics, and International Political Economy: What is the Role of the State in Explaining Agricultural Protection?

Abstract

The extant explanations of agricultural protection centers around domestic factors such as interest group politics within countries. Relatively little research effort has been paid to factors relating to conflictual international relations. The paper considers the state as a major decision-making unit and inter-state relations as an additional force shaping agricultural protectionism. The paper pursues two objectives: (i) developing a theory concerning states' behavior in terms of protecting their agricultural sectors from foreign competition and promoting domestic agriculture; and (ii) developing empirical models to test the theory. The theory highlights inter-state conflicts and competition as a fundamental force driving agricultural protection that would be designed to promote domestic agricultural production capacity that would fit each state's economic, political, and ecological conditions. The empirical models testing the theory would shed light on the role of the state's desire to promote national food security in explaining agricultural protectionism in developed and developing countries.

1. Introduction

Agricultural protection/taxation and consequent distortions in agricultural markets have been a contentious issue throughout much of the 20th century and continues to be so in the 21st century (Gardner, 1992; Binswanger and Deininger, 1997; Swinnen, 2009). Policy-induced distortions tended to be pro-agriculture in high-income countries but anti-agriculture in low-income countries. Such biases are found to be diminishing in recent years and on average converging to a similar level of distortions across countries with different income levels, although the speed of change differs across countries and commodities (Anderson, Rausser, and Swinnen, 2013). The political economy literature including public-choice and Olson's collective action theories (known as the rational choice models) explains such stylized facts of agricultural protection and distortions using rent-seeking activities of groups with specialized interests.

The political economy theories are based on self-seeking domestic politics within countries and rooted in methodological individualism. Therefore, the primary unit of analysis is individuals such as farm producers, agribusiness firms, politicians, or bureaucrats pursuing their

own interests within domestic political contexts. What is missing from the conventional explanations is the state. The state has no role to play in such models viewing agricultural protection as consequences of rent-seeking producer interests-based politics. Doesn't the state have its own agenda as a collective decision-making unit apart from the goals of individual politicians or policy-makers? If there were no lobbies from farm organizations, would there be no farm support? Would a state be willing to rely entirely on international agricultural commodity markets for food its people are in need of? These are questions of importance in state-centered political economy theories such as statism, nationalism, or realism.

This paper considers the state as a major decision-making unit and inter-state relations as an additional force shaping agricultural protectionism along with the three well-publicized forces including (1) the need to stabilize agricultural prices/income that arises due to economic characteristics intrinsic to agricultural production and markets (e.g., inelastic supply/demand, asset fixity and irreversible supply), (2) the need of promoting the multifunctional roles of agriculture, and (3) domestic interests-based politics. Given that the first two issues involve market failures or public goods/externalities, they represent legitimate rationales justifying government intervention in agricultural production and markets, although there are controversies about what types of policy instruments are permissible. The other two issues belong to political spheres (domestic and international) in nature, and therefore often turn out to be the sources of stalemates in international trade negotiations.

Given the recognition of the state as a distinctive decision-making unit, this paper pursues two objectives: (i) developing a theory concerning states' behavior in terms of protecting their agricultural sectors from foreign competition and promoting domestic agriculture; and (ii) developing empirical models to test the theory. The theory highlights inter-state conflicts and

competition as a fundamental force driving agricultural protection that would promote domestic agricultural production capacity that would fit each state's economic, political, and ecological conditions. The theory builds on two fundamental presumptions in relation to the role of inter-state relations in agricultural protectionism: (i) every country desires to maintain a certain size of its own agriculture or makes conscious efforts to do so and would not give up entirely on its agriculture based on efficiency or comparative advantage criteria; and (ii) states have legitimate reasons to feel vulnerable to food insecurity particularly when they have to depend on international markets for a significant portion of its food supply. It is then rational for states to take measures to strengthen their domestic agricultural production capacity, and agricultural protection is not an anomaly that needs to be fixed, but a legitimate step that states may take in order to reduce the extent of food dependence on other states and promote its own food/national security. The empirical models testing the theory are designed to shed light on the role of the state's desire to promote national food security in explaining agricultural protectionism in developed and developing countries. Specifically, we develop econometric models linking measures of agricultural protection (PSE, CSE, NRA, RRA) to indicators of states' desires to promote national food security including the share of arable land, food self-sufficiency rates, food import-export ratio, and per capita income. The above variables are assumed to reflect individual countries' vulnerability to national food insecurity, which is hypothesized to lead to heightened agricultural protection.

2. Diverse Forces Affecting Agricultural Protection

The pattern of agricultural protection and trade has evolved over the last century in connection with economic and political factors at the national level as well as the international

political/economic order that underpins the world economy. Following a brief period of free trade (1840s ~ 1870s) in agriculture that was spearheaded by British after the repeal of the Corn Laws in 1846, agricultural protection has widely spread across the developed world. In addition to the farm programs in the US that has started during the Great Depression era, 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 growth of agricultural protection in industrialized countries coincides with the long-term decline in the share of agricultural labor from total labor force and in the share of agriculture from 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 to explicate such intervention and offered various explanations. Reflecting research efforts over the last decades, figure 1 shows that agricultural protectionism is shaped by four broad forces including (i) economic characteristics intrinsic to agricultural/food industry, (ii) domestic politics as reflected in public choice theories and rent-seeking behaviors of farm/agribusiness organizations, (iii) multifunctionality of agriculture, and (iv) international political relations.

It is commonly known that agricultural industry is characterized by a number of idiosyncrasies that distinguish agricultural/food markets from other sectors. The idiosyncrasies would influence the nature of demand, supply, market structure/firm behavior/performance (most importantly, farm incomes), and vertical coordination, bringing about in inelastic demand and

supply functions; asset fixity and associated irreversible supply functions; large number of farm producers widely dispersed across regions coupled with relatively concentrated marketing and processing sectors; and consequent imbalance in access to market information and bargaining power between farmers and middlemen. These peculiar economic characteristics would give rise to market failures, uncertainty, and instability, which justify government intervention that is aimed at rectifying market failures and reduce uncertainty and instability, thereby improving social welfare (Gardner, 1992).

Public choice and collective action theories hypothesize 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) suggests that the nature of agricultural protectionism has shifted 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.

The market failure and political economy arguments gave rise to a body of empirical research identifying economic, political 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 commodity in aggregate agricultural output had a positive effect on the protection. In addition, Swinnen (1994) highlighted the role of relative farm incomes and 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 level increases as the political system moves to a more pluralistic. 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.¹

Since the launching of the Uruguay Round (UR) in Punta del Este in 1986, the concept of multifunctional agriculture has played a pivotal role in the discourse of agricultural protectionism (Potter and Burney, 2002; Potter and Tilzey, 2005). Multifunctionality of agriculture refers to an array of nonmarket goods and services agriculture provides with varying degrees of jointness with either market commodities or farmlands (Vatn, 2002; Batie, 2003).² The UR was the first serious multilateral effort to reduce agricultural protectionism and produced the AoA

¹Swinnen (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.

²Such 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).

(Agreement on Agriculture) detailing how reform would progress with respect to three major pillars (market access, domestic support, and export subsidies). The AoA contains the so called ‘traffic light box system’ (green, blue, and amber boxes)³ that categorizes 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. The box system fundamentally reshaped the nature of discourse about the way the government influences the operation of agricultural market and gave rise to the now widely used terms like decoupling, targeting, devolution, and cross-compliance. Undergoing a number of ministerial meetings since 2001, the Doha Round broke down officially 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 blue box; whether to expand the scope of green box; to what extent to allow sensitive and special products.⁴

The fourth force sustaining agricultural protectionism concerns international relations/politics that underpins international trade in agriculture and the crafting of trade rules through the WTO (Warly, 1976; Potter and Tilzey, 2005). The field of international political economy (IPE) provides theories alternative to economic liberalism such as Mercantilism,

³ Domestic subsidies categorized as green box (e.g., crop insurance, environmental 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.

⁴Developed 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.

Statism, Nationalism, and Realism. While the IPE theories are projected to explain interstate relations that would materialize as consequences of states' pursuit of national economic gains relative to other states, this paper makes use of them to explain interstate relations specifically with respect to agriculture given its distinctive position in national economies and its sharp divergence from manufacturing/industrial sectors in terms of the extent of international specialization and globalization.

When taken together, the four forces above provide insightful explanations for the rise and persistency of agricultural protectionism and why it is so difficult to liberalize agricultural trade. While it is difficult to gauge the relative contributions of the four forces in explaining agricultural protection, the interactions among them should have reinforced the phenomenon of agricultural protection. For instance, the distinctive economic characteristics of agricultural production and market was the initial impetus for giving rise to agricultural protection and later provided unifying themes for the rent-seeking behaviors of farmers' organizations.

3. State-Centered Theories: Institutional Political Economy

Given that the focus of the paper is on the international relations shaping agricultural protection, this section attempts to identify theories that can shed light on the role of the state in national and international affairs. State-centered theories are developed and used typically in international economics, political science, political economy, and international political economy. In an effort to illustrate state-centered theories, we use the institutional political economy framework developed by Moon (2016) that encompass all such academic fields. The framework poses states (along with the firm and the market) as major resource allocation decision-making entities in the global economy. Within the framework we can contrast state-centered theories with

liberal theories that are based on methodological individualism.⁵ The state is studied by political science and the relationship between states is studied by international politics/relations, while the firm is studied by the science of management and the market is studied by the science of economics. The first step of the development of the institutional political economy framework is to conceive that states, the firm, and the market can be analyzed by the methodologies of each of the disciplines of management, economics, political science, and international relations. That is, the state can be probed not only from Political Science but also from Management, Economics, and International Relations. The conception views the relationship between politics and economics not simply as the interaction between the state and the market but more appropriately as political science susceptible to analysis by economic methods/theories and economics susceptible to analysis by political science methods/theories (Caporaso and Levine, 1992). Similarly, the relationship between Economics and International Relations is viewed not simply as the interaction between economics (the market) and international relations (foreign states) but also as Economics susceptible to analysis by international relations theories/methods and International Relations susceptible to analysis by economics methods. Among these various relationships between distinctive disciplines, the applications of economics to firms, the state,

⁵ There are three other types of units/organizations that are pertinent in discussing resource allocation decision-makings: households, civil society, and community. Households produce nonmarket goods and services (e.g., cooked meals, educating children) and their decisions of how to allocate household incomes (and time) among competing needs within the household is an important topic of study. Further, civil society (referring to the sphere representing social movements, NGOs, and watchdogs standing between the firm, the market, and the state) exerts increasingly significant influences on decision-making processes of the firm, the market, the state, and foreign states. While used in various different contexts, the institution named “community” as a decision-making unit for resource allocations takes a central place in Elinor Ostrom’s study of economic governance for common property resources such as forests, fisheries, irrigation systems, or grazing lands. She recognizes the community as an institutional arrangement alternative to government regulation (the state) or privatization (the firm) for efficient use of common property resources. The three institutions constitutes important components of economics, political economy, politics, or broadly social sciences and deserve a close look.

and foreign states have been most visible and fertile in academics as have been shown in the public choice school, positive political economy, economics of firms, and economic liberalism.

According to neoclassical economics, the state is an institution correcting market failures (caused by externalities, free-riders associated with public goods, and imperfect competition) and providing institutional/legal frameworks for protecting private property rights and setting basic rules and regulations for the market and firms. In general, the liberal theory assumes that the state serves common/public interest in public affairs. In this theory, the state is an unprejudiced organization harmonizing interests across different constituent groups and calculating the optimal path for the nation collectively. The libertarian theory (public choice school in economics) posits that the state consists of politicians and bureaucrats who have agenda for their own interests rather than the interests of voters or national interests. The Marxists assumes that the state serves the interests of the capitalists. Some development scholars posit that the state in some developing countries is an authoritarian developmental state dedicated to accelerating industrialization and modernization to catch up with advanced economies of the West. Positive political economy (non-ideological) poses the state as an entity that would coordinate conflicting interests among various constituent groups within the country, without necessarily presuming about the resulting outcomes of such processes. According to this view, the state does not have its own agenda or autonomy, but a passive entity dependent upon various forces within its national economic system.

Table 3 shows disciplinary theories along with diverse interdisciplinary theories resulting from the interactions among management, economics, politics, and international relations. The horizontal row represents the four different decision-making units, while the vertical column depicting distinctive methods of inquiry associated with Management, Economics, Politics, and

International Relations. Therefore, the three cells in the first row represent interdisciplinary academic fields using the methods of management; the next three cells in the second row representing academic fields using the methods of economics; and the third row representing academic fields using the methods of politics; and the last row representing academic fields using the methods of IR. Below we identify interdisciplinary approaches between economics, politics, and international relations that can be classified as state-centered political economy theories.

Cell 6 denotes traditional economics. Cell 7 depicts the application of economic methods to the state politics. As a branch of the field of political economy, the public choice theory belongs to this category. It presumes that politics is inherently economic and all participants in the state politics behave to serve their own interests. The optimization concepts (e.g., self-interest seeking, utility maximization, profit maximization, cost minimization) in neoclassical economics are readily applicable to politicians' and bureaucrats' behaviors. Cell 8 shows the application of economic methods to international economic and political relations. It would encompass international economics (comparative advantage theory; infant industry protection; strategic trade theory) and International Political Economy theories such as Mercantilism, Protectionism, Nationalism. Cell 9 shows the application of politics methods to business management. The role of power and authority distribution in hierarchical business organizations is studied. Cell 10 denotes the application of politics methods to the market. As a branch of the field of political economy, it emphasizes the role of political/market power in determining market outcomes. It presumes that the market is a political construct, and therefore economics is political. Cell 11 shows the traditional political science. Cell 12 represents part of International Relations (IR) focused on foreign policies. Cell 14 shows the application of IR to the market,

giving rise to IPE theories such as statism, realism, NeoMarxism, Imperialism, World-Systems Approach, and Dependency theory. Cell 15 shows International Relations focusing on the analysis of the influences of foreign states on domestic politics/policies. Cell 16 represents traditional international relations.

While four theories (mercantilism; nationalism; realism; statism) in IPE share some commonality such as their emphasis on the strong role of the state in determining trade patterns, they differ in other main aspects. The mercantilists' main concern was to enlarge national wealth via trade policies encouraging exports while limiting imports. The mercantilism as expressed in the writings of Alexander Hamilton (Secretary of States of the US, 1780-1785) provides the intellectual origin of economic nationalism of the nineteenth century in the form of German Historical School as represented by Friedrich List (Gilpin, 1987, pages 180 –184). It put forth an earlier form of dynamic theory of economic development underscoring the importance of manufacturing over agriculture. Economic nationalists contend that free trade would favor the most industrially advanced economy and advocate for state control of trade in light of the belief that free trade would place late-starting states at distinctive disadvantages. To the nationalists, free trade/laissez-faire was an ideology that served the interests of advanced economies.

Whereas mercantilism and nationalism are rooted in the traditions of classical political economy, statism and realism represent theories that have originated from modern International Relations (IR). Statism highlights the role of the state in managing international economic relations with each state seeking to make gains relative to other states. Realism underscores the world view that states are the principal actors in the international arena whose primary concern is to secure their survival and promote their own national interests, prestige, and power. Hence, the realist perspective emphasizes the competitive and conflictual side of international politics in

contrast to liberalism/idealism highlighting the possibility of cooperation and harmony of interests among states. Fundamentally rooted in the view of human beings as inherently egoistic and self-interested, the realist perspective believes that the anarchic environment (the absence of the world government which has the sort of authority that states are subordinate to) plays the central role in shaping international political outcomes (e.g., peace, war). To the realists, numerous wars of varying scales in our world history eloquently corroborate their view of the world as conflictual and anarchic rather than harmonious and orderly.

Realism in the IR tradition is largely concerned with grand scale geopolitical issues such as war, peace/stability, security, and military power. The field of IPE shifts the spotlight to the interdependent nature of the relationship between the market (economics) and the state (politics) that arises in the process of states interacting with each other in the global economy. Realism within the IPE represents a theory/perspective highlighting international economic relations characterized by an anarchical environment in which states compete with one another for greater economic power, prestige, and influence. When applied to interstate relations in agriculture, the realist perspective is well poised to explain the state's aspiration to maximize its food security and minimize food dependence on other states, thereby offering a compelling explanation for the prevalence of agricultural protection across developed countries and its spreading to developing countries. Indeed, the ability to grow food is increasingly considered as a new form of leverage in geopolitical competition (McMichael, 2013). The realists' perspective posits that the state would have the desire to promote its agricultural production capacity and reduce its dependence on foreign states, thereby maximizing national food security in the events of international crises such as war, natural disasters, or growing scarcity of natural resources.

4. State-Centered Theory of Agricultural Protection

We theorize that agricultural protection represents an effort to promote national food security and minimize food dependence on foreign countries. Rooted in the realist view of the world, the theory suggests that a state's concern about food dependence on foreign countries or about national food insecurity would be heightened as the extent of vulnerability to national food insecurity increases and as per capita income rises. In turn, concern about national food insecurity in a country is hypothesized to lead to growth in agricultural protection. The following causal models depict the above theorization leading to the protection of the agricultural sector.

$$AgP_{it} = f (X_{1it}; X_{2it}; X_{3it}; X_{4it}) \quad (1)$$

Where the subscript *i* is for a country and *t* for time; AgP is agricultural protection; X_1 represents a country's desire to reduce food dependence on foreign countries; X_2 represents a vector of variables reflecting the need for price/income stabilization; X_3 represents a vector of variables reflecting social demand for multifunctional agriculture; and X_4 represents a vector of variables capturing interest group politics such as lobbying. The desire of countries to reduce their food dependence on foreign countries is hypothesized to be explained by income and the degree of vulnerability to national food insecurity:

$$X_{1it} = f (INC_{it}; VFS_{it}) \quad (2)$$

Where *INC* is the per capita GDP; *VFS* is an indicator of a country's vulnerability to national food security. A country's vulnerability to national food security is further assumed to be explained by a list of variables including per capita arable land, food self-sufficiency rate, and the ration of food import to export:

$$VFS_{it} = f (AL_{it}; FSR_{it}; FIE_{it}; X_{6it}) \quad (3)$$

Where AL is the per capita arable land; FSR is a country's food self-sufficiency rate; FIE is the ratio of food imports to exports.

5. Empirical Models and Data

Equation (4) represents the reduced form model regressing agricultural protection to the variables representing vulnerability to national food insecurity.

$$AgP_{it} = \delta_0 + \delta_1 AL_{it} + \delta_2 FSR_{it} + \delta_3 FIE_{it} + \delta_4 X_{6it} + \varepsilon_{4it}, \quad (4)$$

where, AgP is agricultural protection; AL is the per capita arable land; FSR is a country's food self-sufficiency rate; FIE is the ratio of food imports to exports; X_6 is a vector of interaction terms and other variables; and ε_{3it} is the error term.

We use four alternative measures of government protection: the consumer support estimate (CSE), producer support estimate (PSE), nominal rate of assistance (NRA), and relative rate of assistance (RRA). While the CSE and the PSE measure the gross transfers to consumer and producers of agricultural food, respectively, the NRA and RRA captures the effect of government assistance on the farmer returns. These four measures allow us to check the robustness of our results under alternative measures of government protection. The CSE and PSE are obtained from the OECD dataset and the NRA and RRA are obtained from the Anderson and Nelgen (2012) dataset. Arable land is measured as the area equipped for irrigation as a percentage of the agricultural land. The food self-sufficiency rate is measured as the ratio of (country production plus imports minus exports) to population. The country production, imports, and exports are measured in tons, and population in 1,000 people. The ratio of imports to export is computed by using the annual values in US\$ 1,000. Income is proxied by the per capita GDP (US\$ 1,000). The source of arable land, imports (tons and value in US\$ 1,000), and exports (tons

and value in US\$ 1,000) corresponds to the database of the Food and Agriculture Organization of the United Nations (FAO). Population and per capita GDP are obtained from the database of the United Nations.

Our sample covers the annual period from 1970 to 2013; however, the sample for the alternative estimations, i.e. different measures of protection and subsample of countries, varies depending on the availability of information. In particular, both the NRA and RRA are available from 1970 to 2010 and both the CSE and PSE are available from 1986 to 2013. Our sample studies 189 countries which can be classified into four groups according to the World Bank classification of countries, i.e. low income (29 countries), lower-middle income (50 countries), upper-middle income (51 countries), and high income countries (59 countries). Table 2 presents a descriptive statistics of the variables used in this study. Table 3 presents estimation results of fixed effects models for the panel data consisting of 189 countries over the period of 1970 – 2013. The models were estimated for four different measures of agricultural protection (CSE; PSE; NRA; RRA) for subsamples (high income; upper-middle income; lower middle income; low income).

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Figure 1. Four Forces Shaping Agricultural Protection

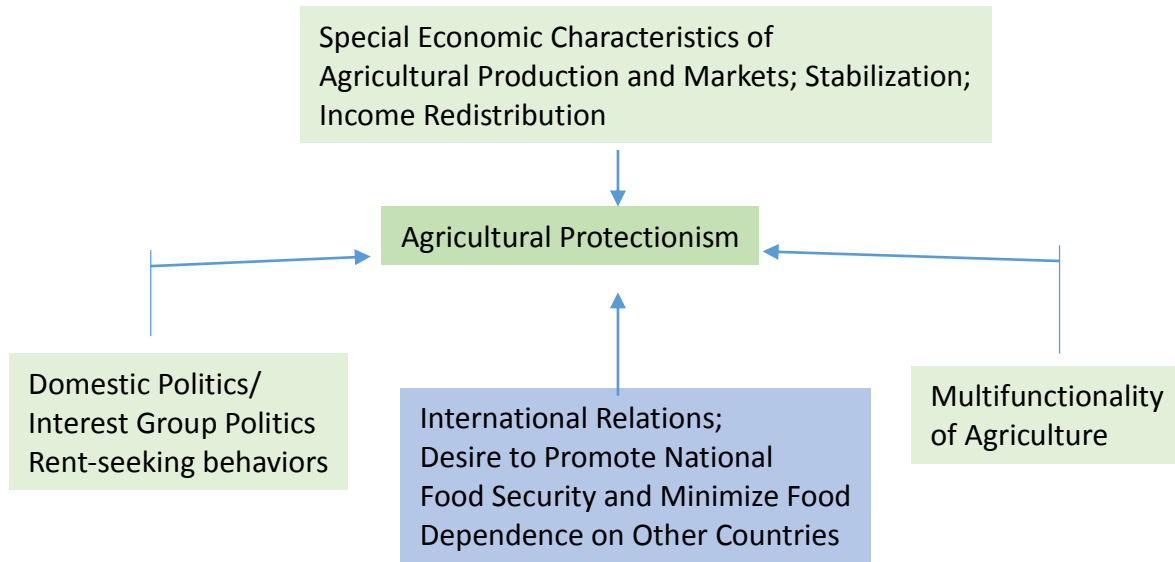


Table 1. Disciplinary and interdisciplinary theories to the firm, the market, and states and their interactions.

Resource Allocation Decision-Making Units					
	The Firm	The Market	The State	Foreign states	
Disciplinary Methods	Business	Management	Competitive Strategies: Strategic Management	Public Administration	International Business; International Marketing; International Finance
	Economics	Economics of the firm: Managerial Economics; New Institutional Economics; Schumpeterian economics;	Economics:	Politics is economic; positive political economy; public choice theory; Olson's collective action theory;	International Economics: international politics is economic; Comparative Advantage Theory; Mercantilism; Protectionism; Infant Industry Protection; Strategic Trade Theory; Open Economy Politics (OEP)
	Politics	Power; Authority; Hierarchy Analysis	Market is a political construct; Economics is political; Polanyian political economy; Power-centered, Justice-centered, and State-centered political economy	Political Science	States' Foreign Policies
	International Relations	Globalization; TNCs	International Political Economy; International economy is political; Statism; Realism	Influences of international relations on domestic politics/policies; State-centered political economy	International Relations; Liberalism; Realism; Statism; Nationalism

Table 2. Definitions and descriptive statistics of variables used in the empirical models

Variable	Description	Mean (SD)
DEPENDENT VARIABLES:		
CSE	Consumer Support Estimate indicates the monetary value of gross transfers to consumers of agricultural food	-10763.54 (21541.45)
PSE	Producer Support Estimate indicates the monetary value of gross transfers from consumers and taxpayers to producers of agricultural food	673.19 (6752.36)
NRA	Nominal Rate of Assistance indicates de percentage by which government policies raised gross returns to farmers above what they would be without the government assistance	0.19 (0.51)
RRA	Relative Rate of Assistance adds non-products-specific agricultural subsidies or taxes to the NRA	0.10 (0.58)
INDEPENDENT VARIABLES:		
Income	Income is proxied by the per capita GDP (US\$ 1,000)	8303.45 (13169.34)
Arable land	Arable land is proxied by the area equipped for irrigation as percentage of the total agricultural area (%)	8.22 (13.74)
FSSR for Processed food	Food self-sufficiency rate is measured as (country production+imports-exports)/population (tons per 1,000 people)	402.63 (591.29)
FSSR for Non-processed food		1114.06 (1099.09)
FSSR for Grains		328.59 (268.11)
Im-Ex ratio for Processed food	The ratio of imports to exports is computed by using the value of exports and imports (US\$ 1,000)	114.44 (2364.12)
Im-Ex ratio for Non-processed food		87.27 (1757.33)
Im-Ex ratio for Grains		1357.18 (28569.13)

Table 3. Parameter Estimates for Fixed Effects Models

Consumer Support Estimate

Variable	Level of Development					
	High		Upper-Middle		Whole sample	
	Coef	t-stat	Coef	t-stat	Coef	t-stat
Income	0.31	0.98	-2.14	-3.29***	0.32	1.05
Arable land	548.20	0.62	-361.74	-0.76	237.95	0.29
FSSR	-1.80	-1.28	3.87	0.37	-1.45	-1.12
Im-Ex ratio	-941.44	-1.86*	-2168.11	-16.81***	-1046.78	-2.73***
Constant	-20178.72	-1.99**	13764.93	3.48***	-14696.52	-1.74*
R^2						
0.11		0.55		0.08		

*, **, and *** implies significance at the 10%, 5%, and 1% level, respectively.

Producer Support Estimate

Variable	Level of Development					
	High		Upper-Middle		Whole sample	
	Coef	t-stat	Coef	t-stat	Coef	t-stat
Income	0.21	1.63	0.35	1.28	0.21	1.69*
Arable land	-24.64	-0.73	11.33	0.65	-5.67	-0.34
FSSR	0.24	0.27	-0.60	-1.14	-0.14	-0.48
Im-Ex ratio	0.21	1.15	-0.01	-0.67	0.01	0.43
Constant	-2930.29	-1.02	-824.00	-0.99	-963.14	-1.14
R^2						
0.07		0.08		0.07		

*, **, and *** implies significance at the 10%, 5%, and 1% level, respectively.

Nominal Rate of Assistance

Variable	Level of Development									
	High		Upper-Middle		Lower-Middle		Lower		Whole sample	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
Income	-2.E-05	-2.94***	1.E-04	4.47***	1.E-04	1.96*	5.E-04	1.86*	-2.E-05	-3.07***
Arable land	0.01	0.60	-9.E-04	-0.39	-5.E-04	-0.33	0.10	1.84*	4.E-03	1.21
FSSR	2.E-04	1.31	-9.E-05	-3.29***	-3.E-05	-0.09	6.E-05	0.06	1.E-04	1.99**
Im-Ex ratio	2.E-03	0.23	0.11	6.40***	4.E-04	1.95*	-8.E-05	-0.48	4.E-04	3.15***
Constant	0.63	3.22***	-0.41	-9.49***	-0.14	-2.64***	-0.33	-1.78*	0.22	3.53***
R^2										
0.13		0.34		0.03		0.03		0.08		

*, **, and *** implies significance at the 10%, 5%, and 1% level, respectively.

Relative Rate of Assistance

Variable	Level of Development									
	High		Upper-Middle		Lower-Middle		Lower		Whole sample	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
Income	-2.E-05	-2.55**	1.E-04	4.11***	1.E-04	0.98	2.E-03	3.03***	-2.E-05	-2.69***
Arable land	0.01	0.66	6.E-04	0.11	5.E-03	0.96	0.41	2.88***	0.01	1.70*
FSSR	3.E-04	1.78*	-1.E-04	-2.94***	4.E-04	1.07	3.E-03	0.53	2.E-04	2.34**
Im-Ex ratio	-0.01	-0.73	0.09	7.21***	1.E-04	0.44	2.E-03	2.54**	2.E-04	0.73
Constant	0.49	2.39**	-0.63	-8.49***	-0.42	-4.22***	-1.84	-2.70***	0.04	0.41
R^2										
0.12		0.41		0.05		0.19		0.08		

*, **, and *** implies significance at the 10%, 5%, and 1% level, respectively.