Democracy, organized interests, and rice policy in Thailand

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Abstract

This paper examines the factors affecting the Thai government's decision to increase (or reduce) policy controls on rice. It is proposed that authoritarian governments are more likely to impose more control programs on rice, whereas democratic governments are more likely to reduce such controls on the sector. Also, when the agricultural industry coalesces, and when farmers are united, the government reduces controls on the sector. In studying rice policy in Thailand and using multiple regression models for the analysis, the author finds democratic regimes to be likely to reduce control programs in the rice sector. In addition, the Thai government is likely to reduce such controls on the rice sector when rice businesses are highly coordinated. On the other hand, the unity of rice growers does not have a significant impact on the government's degree of intervention. The results indicate a difference in the ability to influence policy. The industry has an influence on the government's policy. In contrast, agricultural farmers struggle to participate in the Thai government's policymaking.

Keywords: democracy, authoritarian regime, agriculture, rice, nominal rate of assistance for farmers, Thailand

บทคัดย่อ

บทความชิ้นนี้ตรวจสอบปัจจัยที่มีผลกระทบต่อการตัดสินใจของรัฐบาลไทยในการเพิ่มหรือลดการควบคุมเชิงนโยบายในข้าว ข้อโต้แย้ง หลักคือรัฐบาลเผด็จการมักจะเพิ่มโปรแกรมการควบคุมข้าว ในขณะที่รัฐบาลประชาธิปไตยมักจะลดโปรแกรมการควบคุม นอกจากนี้รัฐบาลมักจะลด การควบคุมข้าวเมื่อกลุ่มอุตสาหกรรมการเกษตรและเกษตรกรสามารถรวมตัวกันอย่างเป็นเอกภาพ จากการศึกษานโยบายข้าวของไทย ผู้วิจัยพบว่า รัฐบาลประชาธิปไตยมีแนวโน้มที่จะลดโปรแกรมการควบคุมสินค้าข้าว นอกจากนี้รัฐบาลมักจะลดการควบคุมลงเมื่อกลุ่มอุตสาหกรรมการเกษตร สามารถรวมตัวกันได้อย่างแนบแน่น ในขณะที่การรวมตัวกันของเกษตรกร ไม่มีผลกระทบต่อการตัดสินใจในการเพิ่มการควบคุมในสินค้าเกษตร ผลการทดลองชี้ให้เห็นถึงความแตกต่างของความสามารถในการควบคุมนโยบาย อุตสาหกรรมการเกษตรมีอิทธิพลต่อการตัดสินใจของรัฐบาล ในขณะที่เกษตรกรยังไม่สามารถมีบทบาทได้อย่างเต็มที่

คำสำคัญ: ประชาธิปไตย, ระบอบเผด็จการ, เกษตรกรรม, ข้าว, อัตราเสมือนจริง การช่วยเหลือเกษตรกร, ประเทศไทย

1. Introduction

Developing countries have shifted their trade policy on major agricultural commodities from heavily taxing the commodities and controlling the prices to increasingly providing short-term subsidies for the producers. Similar to other developing countries, Thailand has abandoned imposing taxes and controls on its major commodities and subsidized the producers by guaranteeing a price floor. Concerning rice, the most important crop and staple food in Thailand, the government has shifted its policy from imposing taxes on rice exports to increasingly procuring paddy rice from rice growers and setting the guaranteed price above market levels. Inevitably, the government's rice policy (i.e., trade

and price) has an impact on Thai people and the country (in terms of its agricultural trade competitiveness in the global market). Therefore, it is very important to examine the factors affecting the government's decision to put more or fewer control programs (i.e., taxing the commodity, controlling its inputs, and controlling price floor) on the sector.

Social scientists have examined the factors affecting the government's agricultural trade policies on major crops in developing countries. Some emphasize how political regime types affect the government decision to impose more or fewer controls (Bates, 1997; Kasara, 2007; Varshney, 1995). Some focus on how a shift to industrialization and trade openness contribute to

subsidizing the producers (Anderson, 2009a, 2009b, 2009c; Krueger, 1991). Regarding rice policy in Thailand, scholars argue that electoral competition in rural areas encourages the government to increasingly procure paddy rice from the growers and to set the price floor above the market price (Siamwalla & Puapongsakorn, 2009; Siamwalla & Setboonsarng, 1991). While previous studies focused on the impact of macro-level factors, they did not pay much attention on whether sector-level factors affect the government's decision to impose more or fewer controls on the sector. Businesses and farmers' associations are likely to pressure and lobby for (or against) any policies affecting their interests. Whether they successfully pressure the government to impose fewer controls on their sectors depends on whether leaders are able to coordinate or unite their members.

Previously, agricultural industries were assumed to comply with the government's taxes on their sector in exchange for the government's trade authorization (Bates, 1981; Krueger, 1991). However, they frequently unite to put more effective pressure on the government to reduce the government's control programs. They expect the government to implement policies that increase their income or benefits (Becker, 1983; Hojnacki, 1997). Since the government imposes taxes on agricultural commodities and strictly controls prices, the government programs have a negative effect on the industries. Industries within the agricultural sector have a greater incentive to collaborate with each other when the government increases tax rates affecting their businesses.

Similarly, unity of farmers' associations can pressure the government to reduce taxes on their sector. The farmers' associations form a coalition to increase their bargaining power. The associations have an incentive to unite because they want the government to protect them from foreign competition and the fluctuation of commodity prices. Nonetheless, farmers' associations do not necessarily unite when they perceive government policies to be conflicting with their interests. The farmers' associations are more likely to mobilize individually than to act collectively if they expect coalitions to distribute benefits unequally among members.

We argue that if agricultural industries and farmers' associations are able to coordinate or unite their members, the government is more likely to impose fewer controls (i.e., reducing taxes or setting high guaranteed price) on their sector in order to appeal to their political support. We hypothesize that within democratic systems, unity of agricultural industries[1] and unity of farmers' associations[2] lead to the reduction of the government's control over the sector. Elected governments reduce agricultural taxes because elected politicians want to appease agricultural industries and rural farmers for their support. Elected officials do not want to implement policies negatively affecting the interests of a highly unified agricultural industry and highly organized farmers. We include these sector-level factors in an analysis to investigate whether organized interests are able to influence the government's policy decision. In other words, we can learn how the government responds to the demands of the organized interests. Examining the politics of rice trade policy in Thailand, this study provides a first insight into whether and how the policy-making process in developing countries is influenced by organized interests and how political and economic conditions affect the government's decision to intervene.

2. Objectives

This study has two objectives. First, it predicts and estimates the influence of the degree of organization among agricultural industry and farmers' associations on the government's decision to impose more (or fewer) control programs on the rice sector.

Second, it predicts and estimates the impact of the political system on the government's decision to impose more or fewer control programs on the sectors, given economic conditions such as inflation, agricultural GDP and the government's expenditures. With the agricultural sector contributing a large proportion of GDP, most governments in developing states often rely on agricultural taxes, such as agricultural export duties, as their primary source of revenue. However, the degree of agricultural taxes also depends on the political regime. Democratic regimes are more likely to decrease taxes on the agricultural sector than authoritarian regimes. In developing countries, where a large proportion of the

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[1] "Unity of rice industry" refers to the efforts of rice businesses to collaborate with each other to protect their business interests and represent the businesses' general opinions regarding the state's agricultural policies.
[2] "Unity of rice growers" refers to the attempts of rice growers' associations to unite the growers in their sectors and pressure the government for resource transfer to their sectors.

population lives in rural areas, elected politicians want to appeal to farmers for their votes. Poor people, including farmers in rural constituencies, are likely to demand greater redistribution from the government (Boix, 2003; Meltzer & Richard, 1981). In rural societies such voters are of great electoral importance and likely vote for politicians who promise to decrease taxes on their sector and provide governmental assistance programs. Therefore, we want to examine whether an elected government is more likely to subsidize the producers than its authoritarian counterpart.

3. Hypotheses

We argue that elected officials try to appeal to businesses for their financial support and the growers for their votes through supporting reduced control programs (i.e., tax or price control) and raising the commodity price floor. Therefore, we expect to see a decrease in taxes and price control programs on the rice sector under an elected government. The association between political regime and taxes on rice is summarized in hypothesis 1:

Hypothesis 1: Democratic regimes are associated with a reduction in taxes on the rice sector, whereas authoritarian regimes are associated with tax increases.

We argue that, when the rice industry (i.e., the rice exporters and rice millers) can collaborate with each other, the government is likely to reduce control programs on rice. The rice industry is one of the most influential agricultural interests in Thailand. Rice exporters have continuously pressured the government to abandon export taxes and restrictions. Rice millers have continuously lobbied the government to guarantee rice prices. The exporters have access to substantial financial resources. Interest-group theorists have argued that business interests have an influence on policymaking because they can afford the costs of lobbying public officials and advertising on the issues (Yackee & Yackee, 2006). The exporters can use their financial power to acquire information and lobby politicians and state bureaucrats. Rice millers are politically active, including many who are elected politicians themselves.

In the Thai rice industry, the exporters can enter into conflict with the millers when the millers try to sell their rice at the highest prices and the exporters try to purchase rice at the lowest prices (Siamwalla & NaRanong, 1990). When some exporters and millers benefit from particular policies at the expense of others, conflict among rice businesses is likely to occur. However, if government policies favor both exporters' and millers' interests such conflict does not occur and cooperation among these two is expected. In sum, when the rice industry can coalesce, the government reduces taxes on the sector. However, when coalitions do not exist and exporters and millers are engaged in conflict the government imposes heavy taxes on the sector.

Hypothesis 2: Collaboration between rice exporters and rice millers is likely to be associated with more favorable nominal assistance rates (NRA) for the rice sector.

We argue that the government is likely to reduce taxes on rice when rice growers are unified. A high degree of rice growers' unity is evident when they successfully act together as a coalition of rice growers. Along with collective action and interest-group theorists (Olson, 1965; Walker, 1983), we argue that rice growers join coalitions because they expect that they will increase their benefits, such as an increase in the guaranteed prices. For instance, in 2008, the coalition of rice growers from central provinces rallied in Bangkok to pressure the government to increase the guaranteed prices. The newly elected government increased the guaranteed prices of paddy rice to avoid long-term protests (Pongpao & Inchan, 2008). Once rice growers' associations from different regions are unified, the government is likely to reduce taxes on the sector. In contrast, when the growers' associations are not unified, the government imposes more taxes on the sector.

Hypothesis 3: A high level of unity among rice growers is associated with a decrease in taxes on the rice sector.

4. Data and methods
4.1 Thai rice sector

We choose to study the influence of organized interests and political regime on the government's rice policy in Thailand. Rice-related policies in Thailand can be divided into two distinct periods: the *Rice Premium* regime (1955-1986) and the *Rice-pledging* regime (1986-present). During the first period, there were four major policies that made up the Rice Premium regime. Rice Premium was the most important rice policy in this period. The government imposed the premiums on rice exporters as export

permission. The premium rates varied in accordance with the grades of exported rice and Thai rice prices on the international market. The second policy was the Export Duty, involving ad valorem duties that were levied on rice exporters in accordance with the prices of the exported goods on the market or the prices estimated by the government. The duties ranged from 2.5% to 10%. The third policy was the Export Quota Restriction on the export volumes of individual rice exporters. The quotas depended on the export volumes that the exporters had previously sold on the international market (Siamwalla & Setboonsarng, 1987). The government used this export restriction to control rice exports. The fourth policy was the Rice Reserve Requirement, a consumer subsidy program requiring rice exporters to sell some portion of the exported rice to the government at prices well below the global market prices. The program was administered by the Department of Internal Trade (DIT). There were more implicit taxes on the rice sector, such as taxes on imported fertilizers and machines that indirectly taxed the consumers. According to Meenaphant (1981), the government heavily imposed this restriction on exporters from 1966-1968, 1973-1974, and 1977-1980, when the price of rice on the global market increased sharply.

The second period is the Rice-pledging regime (1986-present). Since the beginning of this period, the government has intervened in the rice market via price-guarantee programs (i.e., guaranteeing the price of paddy rice). Such price-guarantee programs are usually called *rice-pledging schemes*. The schemes are intended to shore up the prices of paddy rice by procuring the growers' paddy rice. The government procures considerable amounts of paddy rice from rice growers and stores it in government (or authorized private) warehouses.[3] It delays the release of

procured paddy rice to reduce over-supply. Once the prices of paddy rice begin to increase due to the demand for rice, the government begins to release the procured paddy rice. Using the pledging schemes, the government is indirectly subsidizing rice growers.

Rice-guarantee programs during the 2000s illustrate the efforts of elected politicians to appeal to rice growers for their votes by setting guaranteed rice prices above market prices. After the election in late 2007, the government led by the populist People's Power Party (PPP) implemented the pledging schemes during the food crisis years (2007-2008). In 2008, the market price was almost 10,000 Baht per ton, while the government set the guaranteed price at 11,850 Baht per ton. Even though the market price was already high, the government purchased the paddy rice from rice growers at prices above the market rates. The PPP intended to appeal to the rice growers because the majority of the party's representatives were elected from the northern and northeastern regions, where the majority of rice growers live.

Figure 1 shows that the nominal rate of assistance (NRA) percentage was negative because the government heavily taxed the rice industry and controlled rice prices via consumer subsidy programs during these years. From 1970 to 1986 (i.e., the Rice Premium tax regime), the Thai government imposed high taxes on rice. Nonetheless, the NRA was higher during the period when the government implemented a rice-pledging scheme. From 1987 to 2004 (i.e., the Rice-pledging regime), the government lowered taxes on rice and increasingly allocated revenues to the sector via price-guarantee programs.

Rice exporters and rice millers were in conflict over the rice export quota programs from 1970-1975 and from 1977-1982. In 1976, rice exporters and rice millers settled their conflicts since the government abandoned the rice export quota programs. From 1983 to 1999, the exporters and the millers both tended to support the rice-pledging

[3]The pledging schemes are managed and implemented by three state agencies. The Bank of Agriculture and Agricultural Cooperatives (BAAC) is responsible for distributing the scheme's expenditures to the Public Warehouse Organization (PWO) and the Marketing Organization for Farmers (MOF). The PWO and MOF are responsible for purchasing and storing the procured paddy rice. However, these agencies do not have adequate warehouses to store large amounts of the procured paddy rice or the capacity to mill the paddy rice. Thus, the agencies have to rent private warehouses to store the procured paddy rice, hire local millers to refine the paddy rice, and authorize private surveyors to

control the quality of the milled rice. The government pays for the costs of storing, milling, maintaining the quality of milled rice and packing and transporting the milled rice to the ports. Due to the large amounts of paddy rice produced, the government has expended a lot of money on these costs. Indeed, the private warehouse owners, local millers, and private surveyors want to receive government contracts and become authorized in the rice businesses.

programs. Also, the exporters and the millers were in conflict over the government's price-guarantee programs from 2002-2004. The rice industry has an incentive to collaborate with each other when the government tries to intervene in the sector too intrusively.
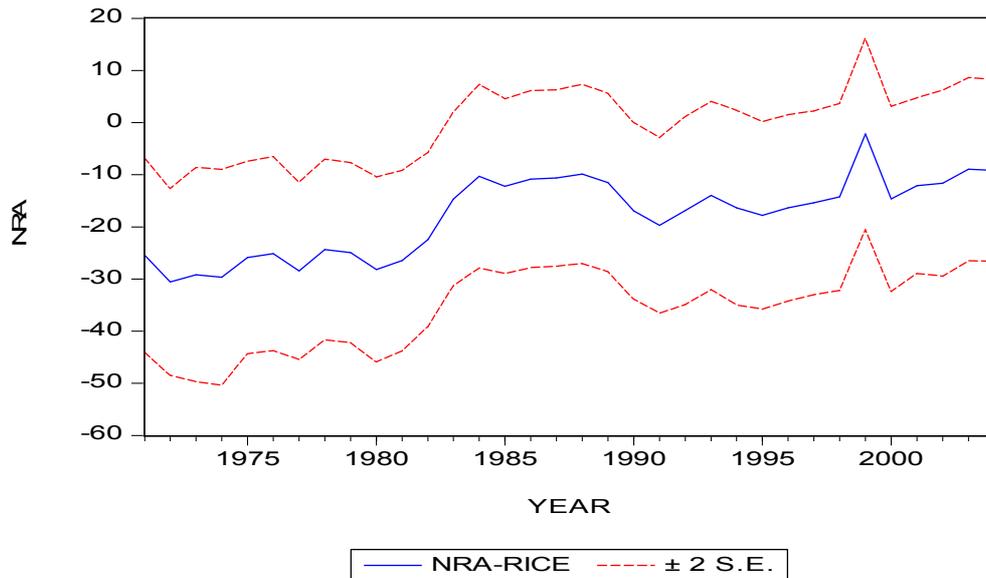

Figure 1 Nominal rate of assistance (NRA) for rice in Thailand, 1970-2004 (Unit: Percentage)

The cancellation of the government's plan to increase the premiums of rice exports to European Union (EU) countries highlights the influence of highly coordinated rice exporters. This occurred at a time in which Thailand's economy was in severe recession due to the Asian financial crisis and the devaluation of the Baht in 1997. Several businesses had gone bankrupt, and the government could not accrue revenues from the industrial sector. The minister of commerce at that time planned to increase the premiums of rice exports to the EU countries (Daily News, 1997). When the plan became public, several exporters publicly rejected the plan and vowed to oppose the incumbent party in the upcoming 2000 general election (The Public Opinion Weekly Magazine, 1997).

In contrast, when the rice industry is highly conflicted, the government imposes more taxes on the rice sector. The implementation of the rice reserve requirement (i.e., the consumer subsidy program) during the early 1980s illustrates the association of resource extraction from rice and a weakly coordinated rice industry. From 1982-1983, the government decided to implement the program to help low-income consumers and rank-and-file bureaucrats (Siamwalla & Setboonsarng, 1987). The program was supported by rice millers because the government needed the millers to mill, store, and distribute the government's rice (Siamwalla & Setboonsarng, 1987, 1991). However, rice exporters opposed the program because the government required the exporters to sell export rice to the government at prices much lower than the global market prices. The implementation of the rice reserve requirement shows that, when rice exporters and rice millers are in conflict over rice policy, the government is able to impose direct or indirect tax programs on rice producers.

Rice growers united under a coalition of rice growers' associations from the same region. Northeastern rice growers united and protested under the coalition of Northeastern Farmer Federation from 1973-1974 and 1976, while they united and protested under the Poor Northeastern Farmer Assembly from

1992-1994 and from 2001-2004. Central rice growers united and protested against the government's price guarantee policy. On the other hand, rice growers from the Northern, Northeastern, and Central regions united under a coalition of rice growers' associations from different regions in 1975 and under a coalition of the Poor Assembly from 1995-2000.

4.2 Dependent variable

The dependent variable is the nominal rate of assistance for the rice sector from 1970 to 2004 (Warr & Kohpaiboon, 2009). The NRA is "computed as the percentage by which government policies have raised gross return to farmers above what they would be without the government's intervention (or lowered them, if the NRA is less than zero)" (Anderson, 2009, p. 11). The NRA is a function of the government's assistance for farmers via inputs and outputs.

$$NRA = NRA_i + NRA_o$$
(Anderson, 2009, p. 573)
NRA_i = Nominal Rate of Assistance for producers via farm inputs
NRA_o = Nominal rate of assistance for producers via farm outputs

The government is likely to assist or discriminate against the producers via price control or price support policy. The government intervenes in the commodity's border price (i.e., export price). On the one hand, the government controls the agricultural commodity price by imposing export taxes and duties on the producers, overvaluing the exchange rate, and controlling the price floor at the farm outputs by consumer subsidy programs. On the other hand, the government subsidizes the producers by abandoning taxes, supporting the price of farm inputs, raising the price floor, and imposing high tariff on imported commodities.

$$NRA_{BS} = \frac{E \times P(1 + t_m) - E \times P}{EXP}$$
(Anderson, 2009, p. 568)

NRA_{BS} = Nominal rate of assistance for producers at the border price
E = Domestic currency price of foreign exchange

P = Foreign currency price of the commodity price in the international market
t_m = Tariff of the imported commodity

4.3 Independent variables

To operationalize the political regime variable, we use the Polity version (IV). The variable captures the characteristics of Thailand's political institutions in terms of whether the public office is elected periodically, how much the executive branch is balanced by the legislative and the judicial branches, and how much citizens can express their opinion (Marshall, Jaggers, & Gurr, 2009). The variable ranges from -10 (the most authoritarian regime) to 10 (the most democratic regime). There are a couple of years that the Polity IV coded as -88, which refers to a transitional year. The Polity IV suggests coding those years as 0. We comply with the suggestion by recoding those years as 0. The first independent variable is political regime.

To operationalize the coordination of agricultural industry variable and test hypothesis 2, we emphasize the cooperation and conflict of the rice industry. The variable measures whether rice exporters and rice millers were in conflict from 1970 to 2004. The variable is binary. We code with 0 those years in which rice exporters and rice millers were in conflict over the government's rice policies. We code with 1 those years in which the exporters and millers had low or no conflicts over the government's rice policies. For information on the conflict and coordination of the rice industry, we consult Siamwalla (1978), Siamwalla and Setboonsarng (1991), Dalodom (2009), and Pratruangkrai (2009) since these studies reviewed the response of exporters and millers to the government's rice policies. The coordination of the rice industry is expected to have a positive association with the NRA for the rice sector.

To test hypothesis 3, we use the unity of the rice growers. This variable measures rice growers' unity between 1970 and 2004. Rice growers unite either under coalitions of rice growers from the same region or coalitions of rice growers across regions. To better understand how these two types of rice growers' unity affect the NRA for rice, we create two dummy variables to capture the unity of rice growers in different periods. The first dummy variable (i.e., same-region coalition) captures the

years in which the growers united under a coalition of rice growers from the same region. The second dummy variable (i.e., different-region coalition) captures the years in which the growers united under a coalition of rice growers across different regions. In coding the unity and coalitions of rice growers from 1970 to 1999, we consult Thabchumpol and Subsomboon (1999). In assessing the unity of rice growers from 2000 to 2004, we consult Nimmanit (2009). We expect to find a positive association between the unity of rice growers and the NRA for rice.

4.4 Control variables

To control for economic conditions, we use data on inflation from 1970 to 2004. High and volatile inflation is likely to lead to an increase in taxes on the rice sector. The government is likely to control food prices when inflation is soaring (Krueger, 1991; Lipton, 1977; Sowell, 2007). Controlling food prices has a negative impact on the rice sector because the government is likely to control rice prices before controlling the prices of other staple foods. Controlling rice prices means that the government is extracting revenues from the sector in that rice growers cannot sell their paddy rice at the prices they would receive on the market. We rely on information from the International Monetary Fund (2009) for Thailand's inflation rate. Thailand faced high inflation (more than 5%) from 1970 to 1985 and from 1995 to 1999, while its inflation was low (less than 5%) from 1986 to 1994 and from 2000 to 2004. A negative association between inflation and the NRA for the rice sector is expected.

We also control for the effect of Thailand's agricultural growth. The growth of the agricultural sector can lead to revenue transfer to the rice sector.

The growth of agricultural exports accounts for the main source of revenues to the country. Previously, the government imposed heavy taxes on rice and other growers, but agricultural taxes were likely to impede the growth of agricultural productivity because growers and the industry did not have an incentive to produce (Schultz, 1976; Anderson, 2009a). The government decided to reduce taxes on the agricultural sector (including rice) in order to incentivize the producers to increase their productivity. In assessing the growth of Thailand's agriculture, we rely on information from the National Economic and Social Development Board (2008) for the percentage change in Thailand's agricultural GDP. We expect to find a positive association between the agricultural GDP and the NRA for the rice sector.

The share of agricultural expenditures is used to control for the impact of the government's agricultural policy. High expenditures in agriculture are likely to have a negative impact on rice growers. Previously, the government had to develop infrastructure (irrigation, roads, and railways) in rural areas to increase productivity and improve the transportation of agricultural commodities to Bangkok ports. Therefore, it had to tax and to accrue revenues from the rice sector, which was the main source of government revenues at that time. The agricultural expenditure variable captures the annual percentage share of Thailand's agricultural expenditures on public agricultural programs. We rely on information from the Bureau of Budget (1971, 1976, 1981, 1985, 1989, 1993, 1997, 2001, 2005) for the percentage share of agricultural expenditures. We expect to find a negative association between agricultural expenditures and the NRA for the rice sector. Table 1 contains the summary statistics of the variables.

Table 1 Summary statistics

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
NRA for Rice Growers	35	-18.09	10.41	-52	-2
Political Regime	35	3.77	4.82	-7	9
Coordination of the Rice Industry	35	0.51	0.51	0	1
Same-Region Coalition	35	0.43	0.50	0	1
Across-Region Coalition	35	0.20	0.41	0	1
Inflation (Logged)	34	1.36	0.99	-1.18	3.19
Agricultural Growth (Percentage)	35	3.64	4.19	-4.68	12.68
Agricultural Expenditures (Percentage)	35	8.68	1.16	5.90	11.19

To examine the effects of the rice industry, rice growers, and political regime, we use an ordinary least squares (OLS) analysis. We employ a battery of diagnostic tests to examine the validity of the statistical inferences. The diagnostic tests allow us to see whether the OLS estimates are white noise. To test for hypothesis 1, 2, and 3, we estimate the effects of political regime, the rice industry, and rice growers with all control variables in model 1.

In addressing the robustness of the important variables (i.e., political regime, the coordination of rice businesses, and the unity of rice growers' associations), we use the extreme bounds analysis (EBA) proposed by Leamer (1983). EBA examines whether the statistical inferences are "robust"[4] given changes in the list of control variables (Leamer, 1983). EBA allows us to determine which explanatory variables are robust with respect to the government's decision to transfer resources to or from the rice sector. The explanatory variables are considered robust when their parameter estimates show consistently expected results given the changing contexts. Furthermore, the results from EBA allow us to determine whether we can strongly accept the hypotheses proposed.

The EBA test process is as follows: we start with a standard OLS model with independent variables and all control variables. Then we randomly exclude and include the control variables, which are questionable in terms of whether they affect the government's revenue transfer decisions. Meanwhile, political regime, the rice industry, and rice grower variables remain in the models. Using this method, we can observe the change in the important variables' coefficient estimates. If an explanatory variable's estimate is negative in one model while it is positive in another model, the explanatory variable is less likely to be robust.

5. Results

Table 2 shows the effects of political regime, the unity of the rice industry, and the unity of rice growers' associations on the NRA for the rice sector. According to the results, model 1 outperforms other models because it is not affected by any statistical problems. Even though the

Durbin-Watson statistics show that the model can be affected by autocorrelation, the LM statistics indicate that the model is not affected by serial correlation. The results show that political regime and the unity of the rice industry variables are statistically significant, and the coefficient estimates show the expected sign. The results support a positive association between political regime, the unity of the rice industry, and a reduction of control programs in rice proposed in hypotheses 1 and 2. The unity of rice growers' associations variable, however, is not statistically significant at $p < 0.05$, and the estimates show unexpected signs. Contrary to hypothesis 3, the results do not suggest a positive association between the unity of rice growers' associations and a tax reduction in the sector.

The results indicate that the more democratic the country, the more likely the government will reduce control programs on rice. We plot the marginal effects of political regimes on the NRA for rice over the range of the political and economic factors to better understand how much political regime affects the government's decision to tax the rice sector. Figure 2 illustrates that the assistance rates on the rice sector are likely to increase when political regimes become more democratic. Elected governments tend to control the sector to a lesser degree than authoritarian ones. Increase of the assistance rate on rice suggests that elected officials reduce control programs to appeal to rice growers for support.

When rice exporters and rice millers are highly coordinated, the NRA for rice tends to be higher. The coordination of the rice industry is positively associated with the assistance rate on the rice sector. It is statistically significant at $p < 0.01$. Once the rice businesses lack internal conflicts, they are better able to extract tax concessions from the government. Contrary to expectations, the unity of rice growers has a negative impact on the NRA for rice. Greater unity among rice growers appears to be associated with a lower NRA for rice. The rice growers' unity variables are statistically significant at $p < 0.10$. Although the growers try to unite, they do not have a significant impact on the government's decisions.

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[4] Coefficient estimates are considered robust if they do not change from positive to negative (or negative to positive) terms when circumstances (i.e., the list of control variables) change.

Table 2 Effects of the rice industry, rice growers, and political regime on the Nominal Rate of Assistance (NRA) for the rice sector

Variables	Model 1	Model 2	Model3	Model 4
Political Regime	0.91**	0.88**	0.92**	0.97**
	(0.36)	(0.35)	(0.37)	(0.39)
Coordination of the Rice Industry	8.84***	8.78***	10.34***	7.16**
	(3.16)	(3.11)	(3.17)	(3.31)
Same-Region Coalition	-7.30*	-6.84*	-7.48*	-3.88
	(3.93)	(3.78)	(4.11)	(3.93)
Different-Region Coalition	-10.22*	-10.00*	-10.36*	-7.68
	(5.02)	(4.93)	(5.25)	(5.28)
Inflation (Logged)	-3.19**	-3.21**		-3.83**
	(1.47)	(1.45)		(1.55)
Agricultural Growth	0.19		0.23	0.13
	(0.34)		(0.35)	(0.37)
Agricultural Expenditures	-3.33**	-3.28**	-3.76**	
	(1.48)	(1.41)	(1.40)	
Constant	11.67	11.23	9.61	-17.72***
	(12.96)	(12.79)	(13.06)	(3.96)
N	34	34	35	34
Standard Error of Regression	7.84	7.74	8.23	8.45
Adjusted R^2	0.44	0.45	0.37	0.35
F-Statistics	4.70***	5.58***	4.40***	3.94***
Durbin-Watson	1.62	1.64	1.45	1.59
LM ($\chi^2(1)$)	1.34	1.24	2.82	1.08
RESET	1.87	2.53*	2.02*	1.16
Normality ($\chi^2(2)$)	3.72			
White ($\chi^2(1)$)	1.45	1.74	1.24	2.09*
VIF	1.55	1.56	1.62	1.51
AIC	243.39	241.78	253.05	247.81
BIC	255.60	252.46	263.94	258.49

Note: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$. Numbers in parentheses are standard errors. VIF stands for variance inflation for independent factors.
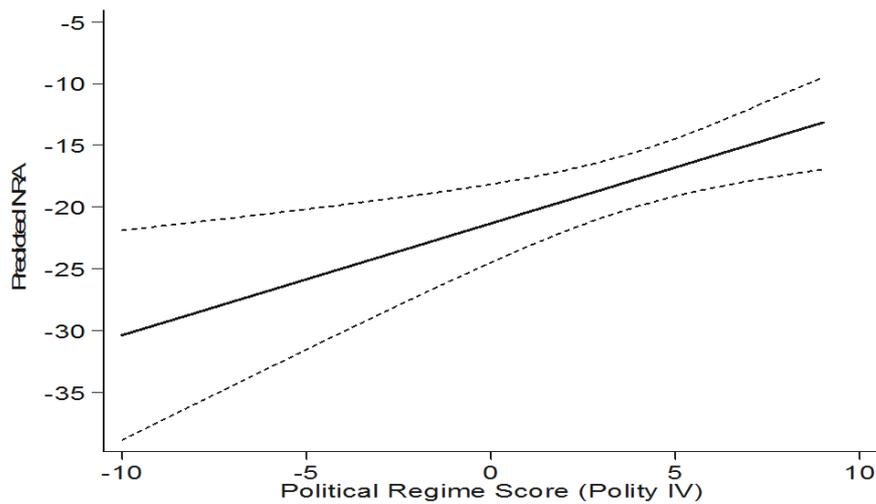

Figure 2 Marginal effects of political regimes on the Nominal Rate of Assistance (NRA) for rice

High inflation has a negative effect on the rice sector. The variable is statistically significant at $p < 0.05$. The negative association between inflation and the NRA for rice indicates that the government prefers consumers to rice producers when the country is facing economic downturn. An increase in agricultural expenditures has a negative impact on the rice sector. It is statistically significant at $p < 0.05$. This implies that, when the government increases agricultural expenditures, it is likely to heavily extract resources from the sector, via raising tax rates, controlling the price floor, and implementing consumer subsidy programs. While the government allocates agricultural expenditures to other groups of rural farmers, rice growers are negatively affected by the government's decision. In contrast, agricultural GDP does not have an impact on revenue transfer to the rice sector.

The misspecification tests are shown in F-statistics terms. In model 1, the Lagrange multiplier first-order serial correlation is 1.34 (with a p-value of 0.26), while the Ramsay RESET result is 1.87 (with a p-value of 0.13). White's heteroskedasticity test result is 1.45 (with a p-value of 0.23). The result of the VIF test is 1.55. Although the F-statistic of the normality test is high, it is not statistically significant (3.72 with a p-value of 0.16). Model 1 is not affected by serial correlation, omitted variable bias, the heteroskedasticity of errors, and multi-collinearity.

Table 3 provides the results of extreme bounds analysis (EBA). The coefficient estimates of the rice industry and political regime variables (model 1) are within the intervals of their extreme bounds. This means that, no matter how the independent variables are manipulated, the magnitude of their coefficient estimates should not be much different. Furthermore, the signs of the extreme bounds are not reversed. This indicates that, no matter how the independent variables of interest are manipulated, the signs of their coefficients will not be reversed from positive to negative (or negative to positive). The parameter estimates of the coordination of the rice industry and political regime are robust. The results strongly support hypotheses 1 and 2.

Table 3 Extreme Bounds Analysis (EBA)

Variables	Maximum Estimates	Coefficient Estimates (Model 1)	Minimum Estimates
Political Regime	0.97 (0.39) [0.17 to 1.76]	0.91 (0.36) [0.16 to 1.65]	0.88 (0.35) [0.16 to 1.61]
Coordination of the Rice Industry	10.34 (3.17) [3.86 to 16.82]	8.84 (3.15) [2.36 to 15.33]	7.14 (3.26) [0.46 to 13.81]
Same-Region Coalition	-2.76 (4.09) [-11.13 to 5.10]	-7.30 (3.93) [-15.37 to 0.77]	-7.48 (4.11) [-15.90 to 0.93]
Different-Region Coalition	-7.56 (5.19) [-18.18 to 3.06]	-10.22 (5.02) [-20.53 to 0.09]	-10.36 (5.25) [-21.12 to 0.39]

Note: Numbers in parentheses are standard errors. Numbers in brackets are the 95% confidence intervals.

The extreme bounds of the political regime coefficient range from 0.88 to 0.97 indicating that a regression of the NRA percentage for the rice sector on the rice industry, rice grower, and political regime variables and a combination of some controlling variables yields an estimate of an increase in the NRA percentage to the rice sector of anywhere between 0.88 and 0.97. The results indicate that the political regime variable is stable in that its parameter estimate in model 1 (0.91) is within the extreme bounds and the sign of the estimate does not change.

The extreme bounds of the rice industry coefficient range from 7.14 to 10.34. This indicates that a regression of the NRA percentage for the rice sector on the rice industry, rice grower, and political regime variables and a combination of some controlling variables yields an estimate of an increase in the NRA percentage for the rice sector by anywhere between 7.14 and 10.34. The results

indicate that coordination of the rice industry is robust in that its parameter estimate in model 1 (8.84) is within the extreme bounds and the sign of the parameter estimate does not change. The rice growers' unity variables are not consistent in that their parameter estimates are not within their extreme bounds. The variables are not consistently statistically significant.

6. Discussion

The results from this study are similar to previous studies. In her seminal synthesis of agricultural pricing policy in developing countries, Krueger (1991) argued that elected governments are likely to reduce tax programs and guarantee price in order to appease farmer voters. Kasara (2007) also found that democratic governments in African countries are likely to provide more subsidies for farmers. In developing countries, farmers are the major voting bloc. Similar to other developing countries, the majority of representatives are elected from rural voters. Elected politicians, especially rural representatives, support reductions of tax and price control programs in agriculture to appeal to their farmer constituents for votes. The tax reduction on the rice sector stems, in part, from the increase in short-term subsidies. In Thailand, the coalition government is pressured by parliament members from rural constituencies, who support short-term assistance programs such as rice price guarantees and fertilizer subsidies.

The statistical results show an association between greater coordination and lower tax burdens on rice, suggesting that industry coordination influences the government to reduce taxes on rice. Agricultural industries have an influence on agricultural policy-making in developing countries. They are able to influence the government in its rice policies through their representation in a national committee on rice. The presidents of the Thai Rice Exporters Association and the Thai Rice Millers Association are appointed as members of the National Rice Committee. As a result, they have an opportunity to pressure the government to pursue or abolish certain policies.

In contrast, unity of rice growers does not lead to lower taxes on the rice sector. When growers unite and organize to protest against the government's policy, the government is likely to impose taxes on rice growers. Why does the unity of growers appear to have the opposite effect from the one hypothesized? We argue that the overall level of cohesiveness has always been rather low – in general, rice growers have not been well-organized. Having studied the relation between the strength of civil society groups and the transition to democracy in Thailand (1973-1993), LoGerfo (1997) found that, among the Thai civil society groups, cooperatives of rice growers are poorly organized. Although the cooperatives have branches at the local and regional levels, these branches are not organized to pressure the government to reduce taxes on rice. More importantly, some rice growers' associations are often mobilized by rural politicians to pressure the government to comply with their agendas (Pintobtang, 2003). For instance, the coalition of rice growers from the central provinces in 1985 was mobilized by representatives from the Chart Thai Party (Thai Nation Party), the major opposition party at that time.[5] Having appealed to the central rice growers, their major constituents, the party publicly supported the demands of the rice growers, and the party leaders joined the rice growers' protests themselves.[6]

We argue that the unity of rice growers fails to influence the government because, overall, the majority of rice growers appear to be weakly united – that is, there is relatively little variation regarding this variable during the period studied. Rice growers are, generally, not very interested in tax programs. Rather than pressuring the government to reduce taxes on rice growers, several coalitions of rice growers mobilize their members to demand an increase of guaranteed prices. Once the government promises to increase the guaranteed prices or extend rice-pledging schemes, they call off the mobilization or protest.

7. Conclusion

In this paper, we examine the impact of political regime, agricultural industry, and rural farmers on agricultural policy.

The statistical results show that more democracy appears to be associated with lower taxes on the rice sector. This is consistent with the idea that elected politicians want to appeal to rice growers, the biggest group of Thai voters, for their votes. They promise to deliver price-guarantee and loan programs to the growers who need the government assistance urgently.

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[5] See *The Bangkok Post*, "Chart Thai acts on paddy rice issues," October 9, 1985, p. B2.
[6] See *The Bangkok World*, "Chart Thai issues riot threat," January 9, 1985, p. B2.

The results also show that, when rice businesses are highly collaborative, the government is likely to reduce taxes on rice. Once rice exporters and rice millers are able to collaborate, they are likely to make effective demands on the government. However, when they have internal conflict due to the government's policies, the ability of the exporters and millers to pressure the government to cut the tax burden is reduced. Weak coordination among rice businesses opens an opportunity for the government to regulate the rice market and extract resources from rice producers.

The unity of rice growers does not always have a significant impact on rice policy. According to the statistical results, the government is likely to impose taxes on the rice sector even when the growers try to unite. The failure of the rice growers to influence rice policies stems from the fact that the majority of the growers are not interested in tax programs. They join associations to pressure the government for an increase in guaranteed prices or to gain access to governmental assistance, but they do not aim to pressure the government to reduce taxes on rice. This implies that rural farmers struggle to influence the government's policy.

We want to further examine why the rice growers in Thailand (and other developing countries) are not able to participate in and influence the policy-making process. More importantly, since the government has increasingly implemented short-term subsidy programs, we want to examine whether the assistance programs such as price guarantees contribute to improving farmers' lives and their productivity. We want to explore whether the short-term subsidy programs really help the farmers and the sector in the long run.

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