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Comparative Study of Two Incentive Schemes in Malaysian Paddy Production

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Abstract: Domestic paddy production has occupied the minds of policy makers since independent. This explains the reason for the formation of granary areas where irrigation schemes enhance productivity of paddy farming. Modern infrastructures and technologies were to increase the self sufficiency and food security levels but unfortunately the country still depends on cheaper rice abroad. The paper analyzed the comparative advantage of paddy production in selected granary areas and examined the government incentive schemes before and after 2008. Two indicators of comparative advantage (Domestic Resource Costs (DRC) and Social Cost-Benefit ratio (SCB)) were used to calculate the comparative advantage of paddy production. The results showed that the new incentive scheme allocates inputs in paddy production more efficiently even in times of global food crisis.

Key words: Comparative Advantage · Paddy · Domestic Resource Costs · Social Cost-Benefit and Government Policy

INTRODUCTION

Paddy production is synonymous with food security in Malaysia. Anderson argued that if food security was to be a measure of household welfare, it has to address accessibility [1]. A consensus was reached at the World Food Summit on an encompassing definition, which is, food security at household level, is food access by all people at all times needed for healthy and active life [2]. FAO also emphasized on availability, accessibility, utilization and stability in the definition of food security [3, 4]. Achieving food security, therefore, requires efficient use of resources. With the increasing population and consequently increasing food consumption, the efficient use of productive resources is one of the possible solutions to food security.

Consumption of rice in Malaysia is far ahead of local production as such imports have become inevitable as 35% (1 million mt) of rice consumed is imported. Different policies have been implemented at various times in the history of Malaysia; the two most recent of them were analyzed in this study. The Malaysian government currently provides huge amount of incentives to paddy farmers in order to encourage paddy production solely for food security reason. The increase in yield will enhance the self sufficiency level of the nation and this will shield Malaysia from any supply disruption in rice exporting countries. Most governments intervene too much at significant cost to the budget and the efficiency of their economies [5]. It is also argued that subsidies and incentives in the rice sector increases government spending but consequently, reflected in heavy taxes on consumers [6].

The goals of the Malaysian rice policy are to provide remunerative prices for producers and to provide steady rice supplies at stable and affordable prices for low income consumers. The two instruments used to implement the rice policy are; control of the domestic market operations by employing official prices and monopolizing the international trade by appointing only one body, licensed to import rice. The net effect of government policies on producers' incentives, however, also depends on prices of inputs. It is clear that the new incentive scheme launched in 2008 has more attractions to encourage paddy production. In 2006, incentives given to farmers included fertilizer, production incentive and diesel only while the new scheme launched in 2008 included additional fertilizer, pesticide, plowing and yield increase incentives.

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Table 1: Statistics of paddy and rice in Malaysia, 2006-2010

Year	Planted areas (ha)	Average yield (kg/ha)	Paddy production (mt)	Rice production (mt)
2006	676,034	3,236	2,187,519	1,407,220
2007	676,111	3,514	2,375,604	1,530,971
2008	656,602	3,584	2,353,032	1,516,470
2009	674,928	3,720	2,511,043	1,620,259
2010	677,884	3,636	2,464,831	1,588,457

Source: Department of Agriculture (2010)

Table 2: Prices of 5% Broken Milled Rice, 2006-2012

YEAR	PRICE(USD/MT)
2006	310.00
2007	346.26
2008	700.20
2009	589.38
2010	520.55
2011	551.62
2012	578.25

Source:www.indexmundi.com/commoditie s/?co (2012)

Paddy yield actually increased following the introduction of the new incentive scheme from 3,514kg/ha in 2007 to 3,720kg/ha in 2009 (Table 1). But did the farmers produce more efficiently with the new incentives? The study of comparative advantage between the two schemes is expected to answer the question of optimal resource allocation.

This study, therefore, aims at determining the comparative advantage of paddy production in 2007 and 2009 viz α viz the incentive schemes in the respective years and comparing the differences. If there is an improvement in the level of comparative advantage then the policy should be continued.

Comparative advantage is about allocating resources efficiently at the national level. It is a theory explaining trade and optimal welfare in an undistorted world.

It indicates whether it is economically advantageous for a state, region or country to trade a commodity or expand its production. As a result, its application is useful to both inter and intra industry comparisons within a country. Different studies have been carried out to determine the comparative advantages of various crops [7-9].

In order to prevent food crisis reemerge in Malaysia, current productivity and efficiency levels of paddy must be increased in the granary areas, cost of production must be reduced and hence, comparative advantage of Malaysian rice production will be improved. The granaries are major irrigation schemes accounting for 70% of the total cultivated paddy areas and 83% of total paddy production in Peninsular Malaysia. Previous study indicated that in spite of various incentives, the production of paddy has been alarmingly inefficient [10]. Expansion of irrigation, implementation of fertilizer and credit incentives, in paddy cultivation are some of the instruments pursued by the government in order to increase domestic rice production [11]. Policies are government actions intended to change behavior of producers and consumers [12].

They employ instruments to change economic outcomes and it is necessary to have a well understood framework for agricultural policy analyses which will assist industry players in understanding the consequences of policy actions. Government policy intervention in the form of input support has been carried out by various governments [13]. The 2008 food crisis led to high cost of production among producers and as a result, the prospect of maximizing profit was dimmed. The new incentive scheme was implemented following the food crisis in order to help local paddy producers.

The cheap rice that reigned for so long came to an end when international rice prices started to rise in 2005 and escalated in 2007 and 2008 (Table 2). Much to do with control on domestic rice prices and step up supplies for domestic consumption, main exporting countries introduced export restrictions then China and Cambodia also stopped exports of rice about the same period in early 2008 [4]. From this adverse experience, Malaysia must learn the lesson well and it must be able to feed the population at all times. Thus, the objective of fulfilling food security first and comparative advantage second must be incorporated in the formulation of new agriculture policy.

Methodology: In this study, DRC and SCB ratios which are well established methods for measuring comparative advantage were used to determine the comparative advantage of paddy production under the two incentive schemes. The SCB ratio gives a more consistent ranking of activities than the DRC [14]. In view of the fact that the DRC is not favorable to activities that

make use of domestic factors it therefore understates the social profitability of such activities. Following this, we employed both ratios for comparative purposes.

Domestic Resource Costs (DRC): The DRC is the shadow value of domestic factor inputs utilized in an activity per unit of tradable value added and it is often used by policy makers to rank alternative activities or to identify socially beneficial activity as in this study [15-17]. The DRC isolates the domestic factors costs. It is a proxy measure of social profits and is calculated by dividing the economic value of domestic factors costs by the total economic revenue minus the economic value of tradable input costs. For ease of calculation, the actual equation was estimated using the equation below:

$$DRC = (p_d q_d)\,(p_o q_o - p_t q_t)^{-1}$$

where, p_o, p_d and p_t are shadow prices of output, domestic factors and tradeable goods while q_o, q_d and q_t are quantity of output, domestic factors and tradeable goods.

Social Cost Benefit (SCB): This ratio shows the relationship between cost and benefit and assesses an activity from a social view point. It uses the same data set and criterion as the DRC since they are both alternative normalization of the same profit identities to determine the social profitability or otherwise of an activity. However, the SCB has a basic advantage over the DRC, that is, the SCB will generally result in a more exact value of social profitability than the DRC.

$$SCB = (p_d q_d + p_t q_t)\,(p_o q_o)^{-1}$$

The private prices are the market prices while the social prices are the shadow prices of the inputs and outputs used in the production system. The shadow prices for tradable inputs are the parity prices (evaluated at world prices and at the utilization point).

The two indicators of comparative advantage, DRC and SBC ratios, were used in this study to determine the efficiency of resources used by paddy farmers and social profitability, respectively [13,18]. The interpretation of DRC and SCB are as follows:

DRC and SCB > 1,
production of such good is not desirable from social point of view.

DRC and SCB < 1,
production is socially desirable.

DRC and SCB = 1,
it is worthwhile to produce the commodity.

RESULTS AND DISCUSSION

Paddy production has greater comparative advantage in 2009 than in 2007 as shown in Table 3. The smaller the social cost of transforming domestic resources to yield a unit of foreign exchange, the more efficient the country uses its scarce resources. It can be argued that the new incentive scheme had a positive impact on paddy production; it included additional fertilizer, paddy production incentive, yield increase and others which were not included in the earlier scheme. The result also reflects that paddy producers use resources more efficiently in 2009 than in 2007. Probably, the incentives have affected farmers positively and this has encouraged them to put more efforts in their farms.

All the granary areas had comparative advantage except Terengganu (DRC=1.26). This value shows that one ringgit can be saved /earned by employing domestic resources of RM 1.26. This clearly indicates inefficiency. The SCB values also show profitability in paddy production in all the granaries except Terengganu which has a value greater than 1. Unlike the result in Masters and Winter Nelson, we did not find any differences in making decision between DRC and SCB. Both did not choose Terengganu in 2007. When compared the values of DRC and SBC in 2007 and 2009, one could conclude that the comparative advantage in 2009 is higher because of their lower values. The values in 2009 are consistently lower for all states. This means in general all states are better off with the new incentives. Even the comparative disadvantage state in 2007 (Terengganu), has turned better. Thus, the new incentives have successfully allocated resources more efficiently in the paddy production in the granary areas.

Table 3: Comparative Advantage Result for Selected Granary Areas, 2007 and 2009

	2007		2009	
State	DRC	SBC	DRC	SBC
Kelantan	0.94	0.95	0.43	0.52
Penang	0.61	0.66	0.47	0.56
Perak	0.84	0.85	0.54	0.61
Selangor	0.66	0.73	0.46	0.54
Terengganu	1.26	1.21	0.33	0.42

CONCLUSION

In the times of increasing food prices and input prices many agricultural activities that are profitable before are not profitable now. For the sake of many paddy farmers who are living below poverty level and for food security purposes, the Government must intervene in paddy production. The comparative policy analysis in this study highlights the importance of changes in the world prices, yield and costs on comparative advantage. The study started with identifying the relevant costs and benefits in paddy production in selected granary areas. Then, it measures the social profitability (comparative advantage) in terms of domestic resource cost and social costs benefit of paddy production. The DRC analysis shows a ratio that is less than one which indicates that paddy producers from the selected granary areas have comparative advantage. Similarly, for SCB, the result indicates that paddy farmers are efficient with ratio of less than one. In contrast with previous study we found that there exist no differences between DRC and SCB results and comparison between 2007 and 2009 proved that yield growth is vital in reducing social costs per unit of output. This suggests that the paddy production is socially profitable for all the paddy farmers in the granary areas after the introduction of the new incentive scheme.

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