

## ASSESSING ECONOMIC SUSTAINABILITY OF MALAYSIAN RICE FARMING (1972-2014)

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### Abstract

The recent focus of agricultural planning is on sustainable development which is very pertinent to Malaysian rice industry. Therefore, this study intends to assess the long term economic sustainability of Malaysian rice farming (1972-2014), by reviewing the bottom line of prices and the purchasing power of rice (PPR). Statistical information of time series data on farm harvest price of rice (PR), wholesale commodity price (WP) and rice production for 42 years period was obtained and compiled from the AGROSTAT system of the statistical division of the Food and Agriculture Organization (FAO), the United States Department of Agriculture (USDA), World Bank and the Department of Statistics, Malaysia. The data was analysed using Abdullah's analysis of the impact of changes the value and purchasing power of money and wheat in real terms (2013, p.71). The outcome reveals that the PR follows the general price trend in commodities, even with increased productivity. Thus, the index value of PR in 2014 at 375% of 1972 prices and WP generally at 614%, then the PPR or 'real rice' was only 61% of what it was in 1972, and therefore had lost 39% of its purchasing power, signifying that rice was relatively low in price.

**Keywords:** Rice farming, Nominal price, Real Price.

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### Introduction

Rice sector has been recognized as one of the strategic sectors for food security in Malaysia for contributing less than 1% to the gross domestic product (GDP) which emphasizes on the significance of rice as an important crop in Malaysia (Tan, 1987).

However, problems in rice sector are seldom closely related with the socio-economics level of the farmers. It is reported that poor paddy productivity has usually resulted in low farmer's income with average earning of RM 1,400 per month and this earning includes price support of RM248.00 per metric ton provided by the government (Najim *et al.*, 2007). In regard to this scenario, it can be presumed that an inadequate return on investment will lead to a wide range of social and environmental adverse effects which carries significant costs in term of economy. An inadequate return on investment is therefore not sustainable in the long run from either an economic or an ecological perspective.

Norsida (2009) stated that there were about 300,000 rice farmers who rely on rice farming as their main source of income. Rice farmers in Malaysia are usually settled in eight main granaries and several small granaries across the peninsular. Paddy planted area throughout Malaysia is estimated to be 672,000 hectares the average national paddy production is 3,660

metric ton per hectare. Poverty is usually synonymous with the agricultural community, especially rice farming community which comprising mainly of Bumiputera.

According to the systematically recorded of a World Bank study in 1988 as cited by Pio Lopez (2007), Malaysia is categorized as an inefficient producer of rice. This was related to the producer price which was twice higher than imported rice. The study estimated that 74% of paddy farmer's monthly income derived from income support measures. Thus, the study concluded that the Malaysian paddy sub-sector is non-viable and non-sustainable.

It is presumed that the ability of the paddy farmers to generate an adequate income from rice farming will actually enable them to devote resources to quality food production. In order to generate adequate farmers' income for future sustainable rice production, the economic viability of the farmers need to be assessed.

Therefore, this study aims to assess the long term economic sustainability of Malaysian rice farming from a macroeconomic perspective, by reviewing the bottom line of prices and the purchasing power of rice in the quest to address the gap presents between nominal and real price of rice which contribute to farmers' on-farm income.

### **Theoretical Framework**

Sustainable agriculture has been defined and described in various ways. Certain definition highlights on farmers' economic viability in term of sustainable farm income and good quality of life as such as per definition by The American Society of Agronomy whom defined sustainable agriculture as the one that, over the long term: (1) enhances environmental quality and the resource base on which agriculture depends, (2) provides for basic human food and fiber needs, (3) is economically viable, and (4) enhances the quality of life for farmers and society as a whole.

Another comprehensive definition given by the United States Department of Agriculture (USDA) regarding to the sustainable agriculture terminology, refers it as an integrated system of plant and animal production practices having a site-specific application that will over the long-term: (1) satisfy human food and fiber needs, (2) enhance environmental quality and the natural resource base upon which the agriculture economy depends, (3) make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls, (4) sustain the economic viability of farm operations and (5) enhance the quality of life for farmers and society as a whole.

As such in most of economic debate, sustainable development is often regarded as the need to maintain a permanent income for humankind, generated from non-declining capital stocks (Hicksian income). The ability of the paddy farmers to generate an adequate income from rice farming will actually enable them to devote resources to quality food production. In attempt to generate adequate farmers' income, their economic viability has to be assessed.

Thus, the utility maximization existed via exchange and the ratio of exchange indicates value or purchasing power. The price of rice can be expressed as the ratio of the supply and demand of rice and the demand and supply of money.

$$\text{Price of rice} = \frac{\frac{\text{Demand for rice}}{\text{Supply of rice}}}{\frac{\text{Demand for money}}{\text{Supply of money}}}$$

### Research Methodology

Statistical information of time series data on farm harvest price of rice, wholesale commodity price and rice production per metric ton for 42 years period was obtained and compiled from the AGROSTAT system of the statistical division of the Food and Agriculture Organization (FAO), the United States Department of Agriculture (USDA), World Bank and the Department of Statistics, Malaysia. Compilation of time series data were shown as in table 1, table 2 and table 3.

Table 1. Compilation of paddy production ('000 metric tons)

Source	Year
Food and Agriculture Organization (FAO)	1972-2010
Department of Agriculture, Malaysia	2011-2014

Table 2. Compilation of farm harvest price of rice (RM)

Source	Year
Food and Agriculture Organization (FAO)	1972-2010
Department of of Agriculture, Malaysia	2011-2014

Table 3. Compilation of wholesale commodity price (RM)

Source	Year
Department of Statistics, Malaysia	1972-2014

The data was analyzed using Abdullah's analysis of the impact of changes the value and purchasing power of money and wheat in real terms (2013, p.71). Rice productions (RP), farm harvest price of rice (PR), wholesale commodity price (WP) and purchasing power of rice (PPR) were presented in index values (base year 19872 = 1.00).

$$\text{Purchasing power of rice (PPR)} = \frac{\text{Farm harvest price of rice (PR)}}{\text{Wholesale commodity price (WP)}}$$

### Results and Discussion

From a macroeconomic perspective, we can assess the economic sustainability of rice farming, by exploring the nature of prices and the purchasing power of rice. The maximization of utility occurs through exchange and the ratio of exchange reflects value or purchasing power. The price of rice, for example, may be expressed as the ratio of the supply and demand of rice and the demand and supply of money.

The price of rice is thus the ratio of two values, each determined by its' own respective supply and demand. If the supply of rice increases then its' price reduces, if demand increases so does its price; on the other hand, if the supply of money increases, it increases the price of rice; if the supply decreases or the demand for money decreases, it decreases the price of rice.

General trend lines of rice production (RP), farm harvest price (PR) and Wholesale commodity price (WP) were illustrated in values. Since value is comparative, we can measure the value of something other than itself.

As illustrated in Figure 1, the price of rice falls during 1990s due to economic depression, stagnant until 1994 and begin to increase from the year 1995 and onwards following the trend of rice productivity. However, rice productivity generally increased during the particular period, therefore, the general rice production do not follows the trend of rice price.

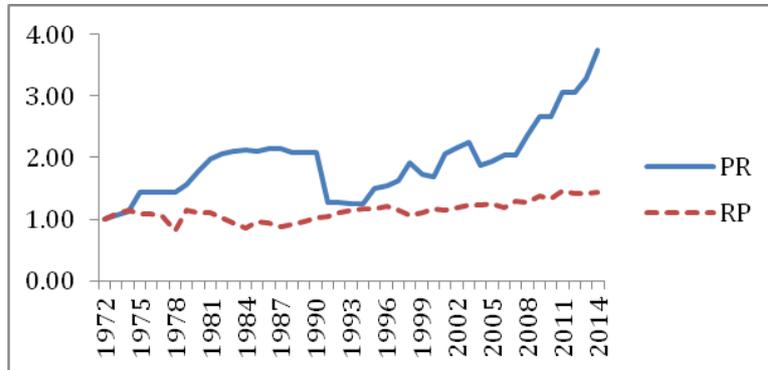


Figure 1. Indices of price of rice (PR) and rice production (RP), Malaysia, 1972-2014

During 1990-1994, the price of rice also fluctuates away from the price of other commodities due to early 1990s recession. The combined effect of nominal depreciation and low domestic inflation, the real exchange rate depreciated continuously from 1986: the degree of depreciation between 1984 and 1990 was nearly 40% (Athukorala, 2010) due to Asian financial crisis and begin to follow the general trend price of other commodities from the year 1995 onwards (Figure 2). Estimates suggest that real gross domestic product declined in 1998 by 6.7% in Malaysia (IMF, 1999).

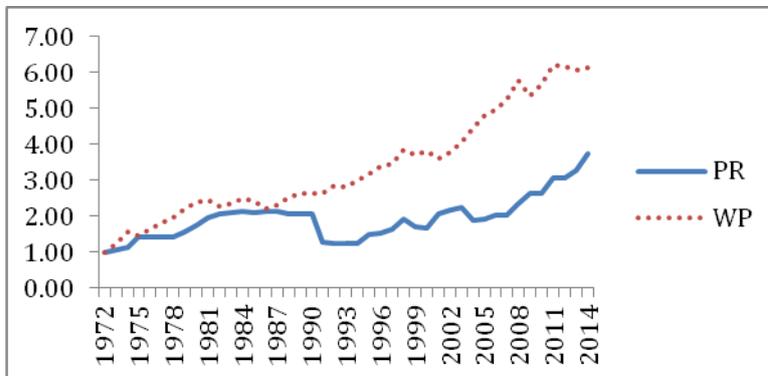


Figure 2. Indices of price of rice (PR) and wholesale price of all commodities (WP), Malaysia, 1972-2014

Meanwhile, the price of rice follows the general price trend in commodities, even with increased productivity (Figure 3) since some might attribute weaker prices due to improved sustainable farm management and practices.

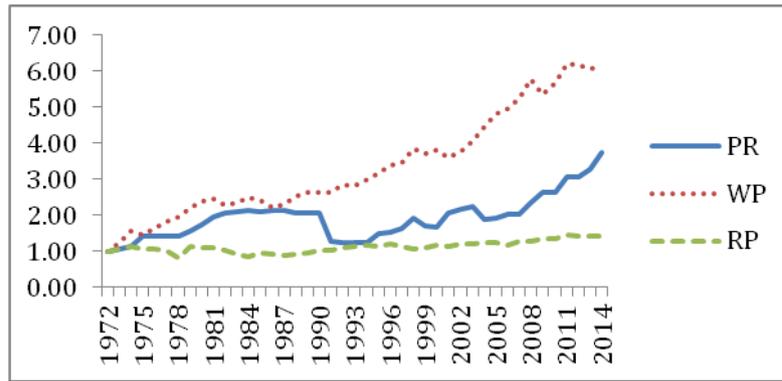


Figure 3. Indices of rice production (RP) on price of rice (PR) and wholesale price of all commodities (WP), Malaysia, 1972-2014

In table 4, with the price of rice (PR) in 2014 at 375% of 1972 prices and wholesale commodity prices (WP) generally at 614%, then the purchasing power of rice (PPR) or ‘real rice’ was only 61% of what it was in 1972, and therefore had lost 39% of its purchasing power, implying that rice was relatively low in price: in fact, we can present the long term PR and the PPR in Figure 4.

Table 4. Index values for the price of rice, wholesale commodities and the purchasing power of rice, 1972 & 2014 (1972=1.00)

	PR	WP	PPR = (PR / WP)
1972	1.00	1.00	1.00
2014	3.75	6.14	0.61
	3.75	6.14	0.61

Sources: PR-FAO, WP-Department of Statistic, Malaysia

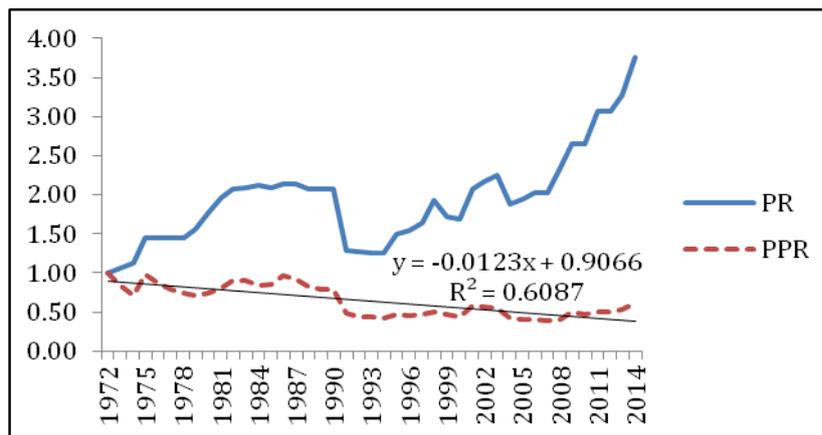


Figure 4. Indices of price of rice (PR) and the purchasing power of rice (PPR), Malaysia, 1972-2014

### **Conclusion**

As with Abdullah's analysis of the impact of changes the value and purchasing power of money and wheat in real terms (2013, p.71), so we can also conclude that cycles in the PR are due to the variations in the supply and demand for rice and reflected in the PPR, however, fluctuations in the PR away from the PPR are due the supply and demand of money. The PR might be high in spite of an excess supply of rice, and if the power purchase of money (PPM) is low, then the PPR reveals the true position of the rice business in relation to all commodities. If money was stable in value, the curves for the PR and the PPR would be similar. If the value of money is constant, a collapse in WP would increase the PPM, as result of a fall in the demand for commodities. The fall in demand would represent a fall in agricultural income, and cause an increase in the default rate on loans, and for fractional reserve banks, a reduction in their loan book would involve a reduction in banking assets that requires an equal reduction in their liabilities in the form of deposits. Banks, businesses and farmers would become insolvent, thereby causing unemployment and deepen any agricultural recession.

### **Future Recommendation**

Future rice policy should couple area expansion with vital intensification measures to help lighten the adverse impact from sole expansion of area harvested as per advice of Boansi (2003) in his previous study on 'Rice yield in Ghana: Macro-level response and some prescriptions'. He added measures should as well be put in place to ensure appropriate transmission of prices with least distortion as such distortionary measures usually lead to increases in input prices through secondary effects. Hence, increase in input price will subsequently distort farmers' net income.

Excessive credits or loans above farmers' financial capability have to be refrained especially from banking institution. This is due to surplus of money supply by the banks in domestic economy which will subsequently increase inflation rate and at the meantime reduce purchasing power of rice commodity that will lead to inadequate income of farmers. High interest rates imposed by the banks also might as well direct farmers into serious debt level.

Current price of rice which is set at RM 1200 per metric ton imposed by the Ministry of Agriculture and Agro-Based Industry has to be reconsidered since there is a significant wide gap between nominal price and real price of rice that is significantly addressed as illustrated in Figure 4. The price of rice will contribute to farmers' direct income. Therefore, it need to be adjusted to inflation in order to secure and sustain farmers' income as being previously mentioned by Hicks (1939) in his definition on income where he defined income as the maximum amount in a given period of time that can be consumed in that period while keeping real wealth unchanged.

Hence, nominal price and real price subject need to be taken into consideration not only toward the price of commodity but also inputs. Input price should be adjusted to farmers' real income in order to spawn an equilibrium market. This will enhance farmers' survival in perpetuating their rice business ventures in long term.

Thus, any research emphasizes on farmers' income need to address real price subject in the quest to gain accurate information and well understanding of their on-farm economic viability level. Income assessment also needs to be evaluated from a macroeconomic perspective to identify external issues that circulate the farmers. These external issues are among of those beyond the control of farmers which sometimes would affect farmers' income. Therefore, authorities need to impose policy that could accommodate the farmers' need.

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