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Effectiveness of State Trading Enterprises in Achieving Food Security:

Case Studies from Bernas in Malaysia and Bulog in Indonesia

by Fatimah Mohamed Arshad, Bustanul Arifin, and Yeong Sheng Tey

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Introduction

The issue of food security is of vital concern to many developing countries and various kinds of policy instruments have been employed to achieve stable food sources for growing demands. One of the most predominant policy instruments in both the developed and developing world involves centralised state trading through what are called State Trading Enterprises (STEs). State trading is more prevalent in the agriculture industry as countries utilise these entities as a means to achieve agricultural policy objectives such as stabilising domestic prices, eliminating marketing inefficiencies and ensuring the availability of food supplies (WTO, 1995). STEs are therefore often an integral aspect of a policy package implemented to address the challenges in achieving the food security objectives of a country. However, although these entities are recognised as an instrument for addressing market challenges, STEs have also been criticised for their distortion of trade and markets through the monopolistic power and government support. Therefore, it is necessary to assess the effectiveness of STEs at achieving the objective of food security, as well as consider the potential market distortions that arise with STEs and the common policies associated with them.

This report brings together insights from two STEs in Southeast Asia, namely Bernas in Malaysia and Bulog in Indonesia. Each study offers a historical perspective to the financial, economic and social contributions of the STEs, their effectiveness in achieving the domestic food security agenda and several policy suggestions to mitigate the issues within each country. This report will be broken down as follows:

- The first part of this report introduces the case studies by looking into state trading enterprises, food security and the contextual backgrounds of Malaysia and Indonesia's agricultural policies;
- The second portion will present the country case studies that are designed to analyse how state trading enterprises and their associated food-related policies have affected the agriculture and food trade sectors in Malaysia and Indonesia;
- Finally, the report will conclude with a summary of the country case study findings and the implications for agriculture and food trade policies in other developing countries.

STEs and Food Security

The issue of state trading has been in existence for as long as the General Agreement on Tariffs and Trade (GATT). State trading enterprises are legal entities and their activities have been defined principally in Article XVII of GATT 1947 and repeated again in GATT 1994. Prior to GATT 1994, several definitions of state trading were proposed and revolved around government conduct and monopolisation of trade, through an entity either wholly or partially owned (Hazard, 1959; Baldwin, 1970; Ghai, 1973). However, no consensus had been reached on the definitions up until 1994, when a formal definition was provided within “The Understanding on the Interpretation of Article XVII of the General Agreement on Tariffs and Trade 1994”, which defines a state trading enterprise as:

“Governmental and non-governmental enterprises, including marketing boards, which have been granted exclusive or special rights or privileges, including statutory or constitutional powers, in the exercise of which they influence through their purchases or sales the level or direction of imports or exports.” (WTO 1995a, p. 25)

The types of state trading enterprise vary across countries and the WTO has classified them into seven groups, of which only five are relevant to agricultural commodities (WTO 1995b, pp. 3-14).

Table 1.
Types of State Trading Enterprises in Agriculture

Statutory marketing boards	The most common type and are important for grains and dairy products. Their principal activities appear to be domestic price stabilisation and regulation, income support for producers and the control of trade.
Export marketing boards	Tend to be more independent of government than statutory marketing boards and are often assumed to pursue profit-maximising strategies in international markets.
Regulatory marketing boards	Tend not to trade directly but they can influence trade through setting prices or quantities of traded goods.
Canalising agencies	Often found in developing countries. Their aims are to achieve economies of scale (bulk discounts on imports and higher prices for exports) in trading operations through restricting imports and/or exports through specific channels.
Foreign trade enterprises/ organisations	A feature of non-market economies. They hold monopoly rights on international trade transactions.

Source: WTO 1995b

However, it has become clear that many STEs around the world have multidimensional aspects that make them a combination of more than one of these STE classifications. For example, Bernas in Malaysia has been mandated with the responsibilities to stabilise consumer and producer prices, decide on rice trade volumes, act as a canalising agency, and at the same time serve as a profit-maximising private entity. Recognising that these classifications are often neither non-exclusive nor exhaustive, some have stressed that the definition of an STE should focus on the relationship between state and enterprise rather than the structure and function of the enterprise itself. It is not ownership per se that matters, but the nature of the exclusive rights or special privileges that are bestowed on organisations that are of crucial significance behind the GATT 1994 definition (McCorrison & MacLaren, 2004). These exclusive rights are often bestowed in order for governments to operationalise their policy objectives, such as food security obligations in the agriculture sector.

Food security is related to how a society can control food accessibility, availability, utilization and stability (FAO, 2009). The concept of food security is a response to the concept of *food self-sufficiency*, in which a country expects to fulfill its food needs from its own production, usually in the form of staple foods (IFPRI, 2010). However, not all countries are able to domestically fulfill growing food demands and thus many increasingly rely on food importation to supply their deficit in production, which is often implemented through STEs.

Despite the prevalence of STEs in Southeast Asia, relatively little work has been devoted to try and identify the consequences of these centralised food trading entities in achieving food security objectives. Bautista and Valdès (1993) show that the operations of state trading organisations in agriculture increased the inefficiency of the system and the bias against the producers. Dorward et al. (2004) argue that although these institutions have been important for developing countries that are in a critical stage of support and protection of their agriculture sector, most of these nations have passed this stage and are now left with relatively liberal trade policies and a weakly developed agriculture sector. Thomas and Morrison (2006) suggest that greater openness to international markets has had limited positive effects on poverty and food insecurity. Given the complexity of the linkages between trade policies and food security (see, for example, FAO, 2003), as well as the heterogeneity of STEs and their effects on developed and developing countries (Morrison and Sarris, 2007), it is therefore necessary to assess on a country case basis in order to understand the specific successes and failures of STEs in achieving food security.

Case Studies: Malaysia and Indonesia

As the staple food of most Southeast Asian peoples, rice is an especially important commodity in the region. In the process of transitioning from food self-sufficiency to food security, many of these countries have utilised STEs to conduct food trading as well as to achieve some agricultural policy objectives. Malaysia's Bernas was originally established to facilitate the marketing activities of the paddy industry with a mandate to fulfill several social obligations. Over the decades, Bernas has continually acted as a gatekeeper of rice trade under the argument that such a role is crucial in providing economic regulations to benefit the welfare of farmers (Carvalho, 2018). However, critical assessments of the monopoly have raised concerns over the true socio-economic benefits that arise from a private enterprise that acts as the implementer of government policies. Consequently, the Malaysian government has responded with the decision to open up rice trade by discontinuing Bernas' import monopoly in 2021 and to implement a new model of rice trade that mitigates the potential pitfalls of the STE system (The Star, 2018).

In Indonesia, Bulog was initially founded to 'ensure the security of food provision in order to uphold the existence of the new regime' when Soeharto began to assume the mantle of the President of Indonesia. Under his regime, the commodities controlled under Bulog expanded to not only include rice but also sugar, wheat, flour, soybean, animal feed and other foodstuffs. The economic crisis in 1997 and the resulting IMF intervention forced Bulog to retain only rice and sugar, and later only rice. Historically, Bulog has always conducted rice imports on behalf of the government. This agency has a legal mandate as the country's sole rice importer, with minor exceptions: the private sector is allowed to import rice for industrial purposes, and also exotic variants of rice. However, the Bulog system has been criticised due to the rice importation being dependent on coordination meetings between relevant ministries, which results in an inefficient decision-making process that lags behind rice price changes in the international market.

The STEs in Malaysia and Indonesia have been selected for analysis due to their similarity as being instrumental entities holding state-mandated monopoly power over the trade of the nation's staple food. In the following sections, the two cases have been analysed further to discuss to what extent the respective STEs have affected the domestic food and agriculture industry and the role they have played in achieving food security. The Bernas case study, written by Fatimah Mohamed Arshad and Yeong Sheng Tey, analyses the linkage between the ability of an STE in achieving interconnected agriculture policies and thus the extent to which the industry grows and food security is ensured in Malaysia. The Bulog case, written by Bustanul Arifin, takes a deeper look into the bureaucratic challenges and threats to food security arising from the centralisation of food trade in Indonesia.

The purpose of this report is to uncover the effectiveness of state trade as a means of achieving a crucial issue of sustainable economic growth in developing economies. By analysing Malaysia and Indonesia, it aims to build a clearer picture of the nexus between STEs, agricultural and food trade policies, as well as food security. It also discusses the potential motivations behind these policy decisions and how future trade policy reforms can be designed to achieve better agricultural outcomes and thus food security in developing nations. It is hoped that this report will stimulate further discussion and work into the linkages between food policy instruments – particularly state trading enterprises – and achieving food security outcomes.

The Evaluation of Bernas in Achieving Food Security

Fatimah Mohamed Arshad and Yeong Sheng Tey

A. Introduction

Rice holds a special place in the socio-economic and political fabric of Malaysian's life. It is the staple for almost all the population and the first item in their food pyramid. The industry provided employment to 197,189 people and utilised about 741,455 ha of land (MOA, 2016). The paddy farming community is an important pool for political votes, but even today in 2019, the majority are in the bottom 40% (B40) category of income (MOA, 2019). The sector was much worse in the 1970s, as high incidences of poverty among farmers¹ and consumers alike rendered the availability of rice availability to be a major priority. Amidst a fragile industry in the face of a highly thin and unstable international market, the government believed that a powerful and authoritative agency in the form of a state trading enterprise (STE) was the panacea for all the weaknesses and vulnerabilities endured by the paddy industry. With that premise, a full-fledged STE named the National Paddy and Rice Authority (or *Lembaga Padi dan Beras Negara*/LPN) was established in 1971 to protect, and at the same time, develop the industry. Parallel to that – in the name of food security – a strict protectionist regime was instituted through price controls, the restriction of rice movement, and the licencing of industry players to insulate the industry from market vagaries and shocks. An updated summary of the typology of market interventions is shown in Appendix Figure 1. Supports and incentives in the form of subsidies and income transfers were also provided to incentivise producers and hence production (Appendix Figure 2).

The country's food security policy was first defined indirectly in 1971, embedded as the function of LPN, which was considered as the "single integrated agency responsible for the formulation of overall national policies for the rice industry" (Malaysia, 1971). Food security was then defined in terms of "ensuring a fair and stable price for both producers and consumers and to ensure sufficient supply of rice to meet any contingency". Note that the sufficient supply of rice is measured by the "self-sufficiency level" (SSL) of rice, which appears in all the country's agricultural policy documents. Despite the confliction of the objectives, the definition of food security has remained intact until today, even though the 1996 World Food Summit has defined it as "a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2003). The policy strategies were reproduced in the National Food Security Policy, which was formulated in 2008, i.e. during the rice crisis year (Malaysia, 2008). Under the Agrofood Policy (2011-2020), the SSL target was set at 70% by 2020 (Malaysia, 2011).

¹ In 1970, the incidence of poverty among farmers was 88% (Malaysia, 1971).

LPN more or less ruled the industry for more than two decades (1971-1993) and was tainted

with a number of scandals and organisational weaknesses² that led to its transformation to a private corporation called Bernas or *Padiberas Nasional Berhad* in 1994, which has lasted until today. The policy shift was based on the perception that a private-run STE would perform better than a state-run one. For almost five decades, the paddy and rice industry has neither seen nor been exposed to a free market experience. Hence, Bernas was given the liberty to function as a private entity (with some social obligations attached) in a highly protected industry from input to retail sub-sectors.

The evidence of industry sluggishness in the last five decades, such as slow growth of productivity and low returns to farmers – despite a triple increase in subsidies under a virtually unchanged structure – calls for a re-examination of the paddy industry’s structure and its major determinants. Market structure determines the behaviour and performance of an industry, and vice versa (Sterman, 2010). In the case of paddy and rice in Malaysia, among the major institutions that define the structure and the resultant conduct is Bernas, as it is the sole importer of rice and involved in marketing and distributive activities (besides the assigned social obligations). Their presence shaped the landscape of competition, organisational behaviour and efficiency of the industry. Hence, this study attempts to briefly evaluate the role of Bernas in fulfilling its entrusted functions and obligations to ensure food security for the country.

Apart from a few exceptions, an STE in most cases causes large market distortions that result in incidences of inefficiency in resource allocations³ (Lundberg, 2005; Roslina, 2017). The paddy and rice industry has been driven by STEs (LPN and Bernas) for almost half century (1971 till to date), thus an alternative paddy market does not exist for a temporal comparison of efficiency. The pre-1970s era may not be comparable as certain parameters were different then. To evaluate the Bernas performance, the approach taken for the review is a mixed one. To analyse its economic role, the study combines evidence from past literatures as well as secondary data. In addition, a critical view of the ecosystem of the industry was carried out to examine the system’s elements that influence Bernas’s functions, and vice versa. Its business organisation, evolution and strategies are analysed from the perspective of the “resource dependency theory” to trace how its internal transformations unfolded, and their impact on its delivery of its designated functions under the private sector orientation. Its efficiency is evaluated in terms of market distortions, fulfilment of its economic and social roles and the unintended consequences to the industry.

The paper is organised as follows:

- The following section traces the evolution of Bernas as an STE which covers: definition of an STE, policy premises for the establishment of LPN and Bernas, evolution of Bernas and the ecosystem of Malaysia’s paddy and rice industry;
- It is then followed by discussions on the business transformation of Bernas and an evaluation of its economic and social roles;
- The last section provides a conclusion to the discussion and some indications of policy considerations.

² These are discussed in Tan Siew Huey (1987), Diana Wong (1981) and World Bank (1984).

³ Domestic resource cost or DRC measures the efficiency of the entire a production system as it serves as a proxy measure for social profits. The DRC coefficient for Malaysia is estimated at 3.62, which demonstrates that Malaysia has no comparative advantage in domestic rice production (Roslina, 2017)

The Evaluation of Bernas as an STE

A. Definition of STE

Generally, an STE is a government or quasi-government enterprise or parastatal that operates with special protections and privileges granted by the country's central authority. The purposes for an STE are either for revenue generation through taxes on domestic industry and imports or to increase profits from sales for domestic producers, processors and other marketing chain operations (FAO, 2002 and 2007).

The formal definitions of an STE evolved and they are marked by the fundamental focus of the entity, such as state conduct or operation (Hazard, 1959), government monopoly (Baldwin, 1970), government ownership of an enterprise (Ghai, 1973), functions (Kostecki, 1982) and trading strategies (Sorenson, 1991). A relatively more encompassing definition taking into account the importance of structure, special privileges and trading activities was proposed by WTO (1995) who defined an STE as follows:

"...governmental and nongovernmental enterprises, including marketing boards, which have been granted exclusive or special rights or privileges, including statutory or constitutional powers, in the exercise of which they influence through their purchases or sales the level or direction of imports or exports."

Agricultural STEs have many forms and functions and can be categorised as statutory market boards, export marketing boards, regulatory marketing boards, fiscal monopolies, canalising agencies and foreign trade enterprises (Roberts, 2001). Among these, the statutory market boards have extensive power and are most common in agricultural sector. They are characterised by having objectives such as domestic price stabilisation, market regulation, and control and promotion of trades. This definition explains the scope and functions of LPN as an STE in that it was a state-sanctioned monopoly with exclusive authority for a wide range of market interventions, such as regulation and purchase of domestic distribution and conducting foreign trade. The scope and function of Bernas are somewhat narrower than LPN's, with regulatory functions returned to the government and no involvement in direct market intervention.

B. Policy Premises

The story of Bernas is printed in its historical footprints, which began with the formation of LPN in 1971. The formation of LPN, on the other hand, was founded on a number of strong policy premises which shaped its entity and functions and hence their influence on the industry. Understanding the premises helps to identify the gaps between the policy presuppositions set in the 1970s and their relevance in the current era. The policy premises are narrated below.

1. "Self-sufficiency" was believed to be the axis for the nation's food security

Green Revolution succeeded in enhancing production through the use of high-yield crop varieties, fertilisers, and pesticides (Pingali and Raney, 2005). Hence, farmers' incomes were uplifted above poverty in the 1960s and 1970s. The "availability" of rice to consumers at large

was a major concern as the incidence of poverty among consumers were high during the time.⁴ Availability is measured as the self-sufficiency level, which is a ratio of the local production to total consumption. The incidence of the international rice crisis from 1971 to 1972 led the government to believe that “availability” was highly vulnerable and hence the need for an STE to take full control of the market (Orden et al., 2007). The emphasis on the availability aspect of food security was understandable as the country was at the early stage of developing infrastructure to enhance local production of rice to feed the population.

SSL targets are used as proxies to the food security status of the country. The SSL target was first mentioned in the Third Malaysia Plan (Malaysia, 1976)⁵ and the consequent five-year plans, the National Agricultural Policies (or NAPs I to III)⁶, the National Food Security Plan (or NAFS 2008), and the recent National Agrofood Policy (or NAFP, MoA⁷, 2011) and Economic Transformation Programme⁸. Food security was first defined along the World Food Summit 1996 in the NAP III (1998-2020) and beyond. Among the policy documents, NAFS (2008) stated explicitly the goals of food security and laid out comprehensive strategies to achieve them. However, NAFS is no longer applicable as it has been overtaken by the new NAFP and the new Economic Transformation Programme (2011-2020).

2. Serious structural deficiency

In the early stage of the country’s development, the paddy and rice market in Malaya⁹ was undeveloped, with many structural weaknesses that warranted interventions supposedly to rectify the situation. As shown in the literatures, the structural problems of the paddy and rice industry in the 1950s to 1970s can be summarised as follows. First, farm structure is characterised by small farm size and low yield due to poor practices and technology¹⁰ (IBRD, 1955, Hill, 2013). These rendered the farmers with low return and highly dependent on credit sourced from the middlemen or buyers to finance farm expenses. Second, beyond farm, the market was characterised by established, highly commercialised and skilful middlemen (buyers and millers). The desperation of farmers created an asymmetric marketing and credit relationship with the middlemen/buyers, with the latter having a stronger bargaining power over the former (Thompson, 1954; Wharton, 1962; Ungku Aziz, 1964). Myrdal (1956) argued for government control in economic management as a means of responding to a poorly functioning market. The rice market was described as being highly monopolistic in some localities as well as oligopsonistic (with limited number of buyers), exploitative, collusive, economically inefficient and operating with high profit margins for the traders through predatory pricing; which were detrimental to the farmers who were left as price takers (Rice Committee, 1953 and 1954; Thompson, 1954; Biggs, 1971 and Ungku Aziz, 1964).

⁴According to the Household Expenditure Survey conducted in the Peninsular Malaysia 1980 (Dept of Statistics, 1986), 28.4% of the monthly household expenditure was spent on food, with 15% went to rice. 1973 similar study stated 24%.

⁵The SSL target under the Third Malaysia Plan or 3MP (100%), 4MP (80-85%), 5MP (80-85%), 6MP – 8MP (65%), 9MP (90%), 10MP (70%) (see Malaysia, various years).

⁶The SSL target under the NAP I was set at 80-85%, NAP II (65%) and NAP III (65%) (MoA, various years).

⁷ Ministry of Agriculture and Agro-based Industry.

⁸ The SSL target under the Food Security Policy (MoA, 2008) was set at 80% and 70% under the Agrofood Policy (MoA, 2011). Under the ETP, the SSL target was set at 85% (Malaysia, 2011).

⁹ Refers to the Peninsular Malaysia before it became part of Malaysia in 1963.

¹⁰The average farms size was 0.89 ha and yield was about 1 tonne/acre in the 1960s (Hill, 2013).

As concluded by Malaysia (1966):

“ the paddy marketing system was beset with a host of market imperfections which arise interalia, from limited bargaining power, lack of market information, lack of grades and standards, middlemen monopsony, cartels and price fixing. The outcome of such a(n) imperfect structure was that farmers were open to exploitation and generally obtain a return which is incommensurate with their productive efforts...”

Despite the Green Revolution and the support of drainage and irrigation, the farmers did not have adequate infrastructures at the farms (e.g. transportation, harvesting machines, drying and milling facilities among others). With the increase in production, bulk handling necessitated for large drying and milling capacities. With the inefficient marketing system, there was a need for an alternative marketing channel besides the conventional shopkeepers, middlemen and millers. The flow of information is sticky and distorted as the farmers were “isolated” and distant from the market centres. Market information plays a role in strengthening the bargaining position of farmers who had much poorer access to alternative sources of information (Coulter and Golob, 1992; FAO, 1997). These inadequacies necessitated an institution large enough to provide the infrastructures, infostructures, logistics, drying and milling capacities that were perceived as needed by the farmers.

3. The need for protection and market insulation both for the producers and consumers from the instability in the international market.

The above structural deficiencies were aggravated by an unstable international market which has been proven in the 1971-72 rice crisis. The 1970s era recorded a high coefficient of variation at 44.6% as well as during the first decade of the 21st Century (52.5%)¹¹, where in 2008 the world rice market experienced a record increase in price volatility and height. The impact of the crisis was exacerbated by the covariance problems. For example, poor consumers were affected in terms of their purchasing power, market manipulations such as hoarding practices were rampant, and dissatisfaction of the people over the government’s failure in addressing transitory food insecurity. The latter posed a threat to the-then government due to the possibility of votes swinging to the opposition parties. Protection of the producers were deemed necessary to ensure fair prices and returns amidst uncertainty.

4. The need to secure a strong political hold on the industry

Aside from their votes, paddy farmers command a special place in the political mosaic of the country as they hold the key to the food security requirement. Any instability or disruption in supply may cause broader social discontent, which may translate into political upheaval and reversal particularly from the rural and urban poor who accounted a significant portion of the voting pool. Aside from political stability, government-controlled systems provided a source of political patronage and often provided politicians and government officials with funding for discretionary expenditures (Akiyama et al., 2001, Davidson, 2018).

¹¹ Authors’ calculation using data from www.imf.org. The coefficient of variations (CV) for 1960s (17.9%), 1970s (44.6%), 1980s (31.5%), 1990s (16.8%), 2000-10 (52.5%) and 2010-April 2019 (17.8%).

C. From LPN to Bernas

The above premises laid the foundation of the trajectory of an STE-driven paddy and rice industry. The first move was the establishment of a marketing board called the Federal Agricultural Marketing Authority (FAMA) in 1965 – whose function was to “intervene in agricultural markets where such operations prevail to rationalise, discipline and build them up so that they will serve the general welfare better and stimulate productive expansion effectively” (Malaysia, 1971). But this entity proved to be inadequate to handle external challenges as had happened during the rice crisis in 1971. During this year, a full state controlled STE named LPN was formed with a bigger responsibility.

According to Akta LPN (1971), the functions of LPN covered the following: (i) to conserve and maintain an adequate supply of padi and rice; (ii) to ensure a fair and stable price of padi for farmers; (iii) to ensure a fair and stable price of rice for consumers; (iv) to ensure sufficient supply of rice to meet all emergencies; (v) to make recommendations to the Government on policies designed to promote the development of the padi and rice industry, and (vi) to co-ordinate and assist in the implementation of (v). LPN was given extensive power to regulate the paddy and rice market (including milling sector and trade), control the movement of paddy and rice in the country, and determine the equity participation in paddy and rice businesses and contracts.

Clearly, LPN is a heavy-handed government STE along the supply chain and trade. However, it could not sustain much longer than its 23 years of existence due to heavy use of public money, its inefficient and costly operations (milling and distributions) and minimal productivity improvement (Diana Wong, 1981; Tan Siew Huey, 1987; Fatimah et al., 1984; World Bank, 1988; Tamin and Meyanathan, 1990; MIER, 2010). The full control of LPN in the paddy and rice affairs compared to FAMA and Bernas is depicted in Appendix Table 1.

With the above inefficiencies, the wave of privatisation led to the corporatisation of LPN to a new entity called Bernas or Padiberas Nasional Berhad in 1994. The privatisation of LPN was deemed necessary to reduce the fiscal burden on the government and the premise that a private-sector STE is efficiency-driven in their operations. Bernas was created as a public limited company - limited by shares registered under the Companies Act 1965 - to carry out the relevant function for the Government besides its own commercial activities. The Government of Malaysia, via the Ministry of Finance (MOF) Incorporated, holds one Special Right Redeemable Preference Share (or known as a “golden share”¹²) in Bernas.

The three major duties of Bernas were: to ensure fair and stable price, sufficient supply of rice, and quality and standard. Bernas has also to carry out the following “social obligations”: (i) to conserve, maintain and manage the National Paddy/Rice Stockpile; (ii) to undertake the purchase of paddy from paddy farmers at the Guaranteed Minimum Price (GMP) as determined by Government from time to time; (iii) to act as the Buyer of Last Resort (BoLR) for paddy farmers;

¹² Adopted from European and American privatisation programs, golden share gives government veto power changes to the company’s charter in order to protect national interests and preserve national independence. According to international legal understanding, golden share “provides a legal instrument for fighting off takeovers of strategically important privatised companies” (Pezard, 1995).

(iv) to undertake the management of the disbursement of subsidies to paddy farmers under the Paddy Price Subsidy Scheme; and (v) to undertake the management of the Bumiputera Rice Millers Schemes (Privatisation and Concession Agreement, Bernas, 1996).

The commercial activities of Bernas include paddy seed production, paddy farming, paddy procurement and rice processing, distribution and trading of rice and its by-products and rice importation. Bernas was given the right to import rice into Malaysia (previously undertaken by the National Paddy and Rice Board). However, as a company, Bernas has no statutory power or authority. On the contrary, it is subjected to the same laws and rules as other rice millers and traders in the country.

It is assumed that the new Bernas could achieve efficiency through economies of scale, skilled and dedicated personnel, competencies in rice management and processing, together with a pool of specialised skills in specific areas, and sophisticated plant and equipment, all situated at specific geographic locations (Rashid et al., 2005). Additionally, through its scales Bernas would have higher (somewhat monopsonic) bargaining power to negotiate for lower import prices with importers comprising of large private importers as well as other STEs (Rashid, 2007; Mohammad, 2013).

When Bernas came into the picture, the ecosystem of market interventions and the changes thereof in the paddy and rice system are depicted in Appendix Figure 1. The market environment facing Bernas was an insulated one such that: farm price is guaranteed, rice price was fixed in 2005 onwards, input and output subsidies (cash transfer to farmers) provided pre-Bernas era were continued with some adjustments, a miller subsidy was introduced in 2008 which lasted until 2015, and Bernas continues the import monopoly.

The continuation from one STE to another is a path dependence matter with the premises presumed in the 1970s remaining relevant. This was evident in the period of rice crisis in 2008. The country saw a political tsunami when the ruling party for the first time was denied of their two-thirds majority in the parliament (The Economist, 2008). In May 2008, the world rice price reached an unprecedented height of USD1,009/tonnes, sending panic worldwide (World Bank, 2019). The increase in price of rice had affected Bernas' profitability as the cost of imported rice as well as local paddy had gone up. The consumers again were negatively affected due to price hikes. The government responded to the crisis by providing subsidies of MYR750/ tonne to millers¹³ (including Bernas) to produce Super Tempatan 15%¹⁴ (ST15%) rice, which is the lowest grade of rice. To ensure its availability for the poor consumers, its retail price was set at MYR1.65 to MYR1.80 per kg according to geographical zones (Audit Negara, 2011). However, despite the subsidy and price control, the ST15% rice was nowhere to be found in the market (National Audit Department, 2015). The rice had been mixed with higher quality rice (such as Super Special Tempatan 5%, or SST5%, Super Special Tempatan 10%, or SST10%¹⁵, as well as imported rice) to take advantage of the price difference. Due to its poor performance and abuses, the subsidy was withdrawn in 2015¹⁶.

¹³ The subsidy which costed the government excess of MYR3.9 bn (2014-2015). The miller subsidy is RM750/tonne for Peninsula Malaysia and RM600/tonne for Sabah and Sarawak <https://www.malaysiakini.com/news/299459>.

¹⁴ ST15% is Super Tempatan15% rice.

¹⁵ SST10% and SST15% rice are Super Special Tempatan 10% and 15% rice respectively

¹⁶ The scheme was withdrawn in 2015. <https://www.thestar.com.my/news/nation/2015/11/01/rice-st15-subsidy-abolished/>

Bernas' activities and business strategies are dictated by the government policy from time to time. For instance, under the 7th Malaysia Plan (1996-2000), the government envisaged the need to improve the efficiency of the milling and processing of rice through bulk handling, and through facilities such as buying centres, rice warehouses, and cleaning and packaging machines. This led to investments in upgrading the Bernas mills, buying centres and facilities. Under NAP II (1992-2010), the government decided to float selected rice prices and proposed rice outsourcing from off-shore investment.

Similarly after the 2008 crisis, a number of strategies were laid out to ensure the stable supply of rice under the 10th Malaysia Plan. These include: the stockpile quantum requirement was increased from 92,000 tonnes to 252,000 tonnes (which could last 45 days of supply), long-term contract agreements to import rice with matching agreements to export palm oil, and increasing the productivity of the granary areas through better infrastructures. NAP III (1998-2010) documented the need for a review of the Rice Order (Price and Grade Control) 1952 to improve paddy and rice quality. NAP III also proposed that the rice import monopoly to be opened (and liberalised) to encourage competition in the import sector. Nonetheless none of these policy recommendations are visited.

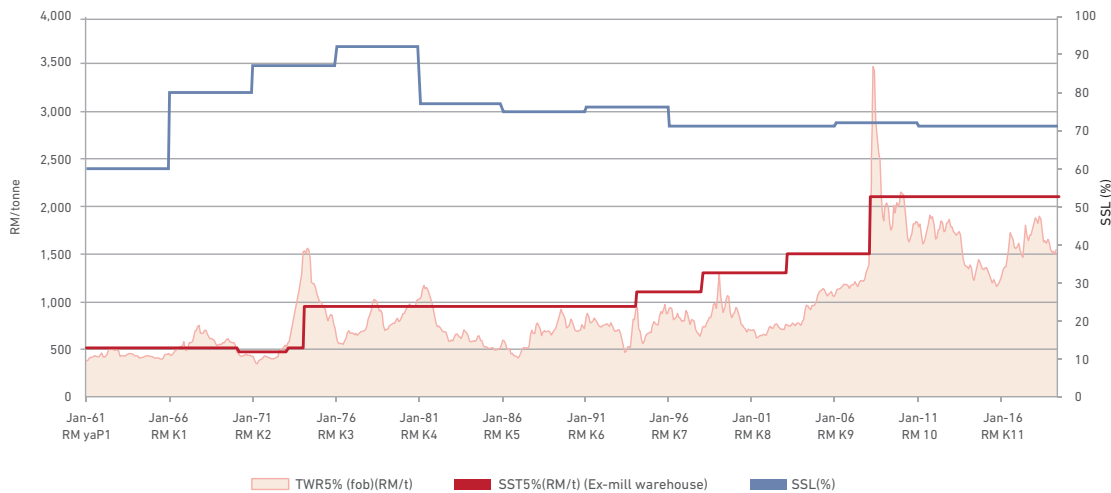
Under the 2008 Food Security Policy, the government had decided to subsidise millers MYR750/tonne (including Bernas) to produce ST15% of rice for the poor consumers. The retail price was fixed between MYR1.65 to MYR1.80 per kg at the market. The GMP was increased from MYR650/tonne to MYR750/tonne. These policies affected Bernas's marketing operations.

Under the new ETP (2011), an Entry Point Project (10) for Scaling Up and Strengthening Productivity of Paddy Farming in the Muda area was proposed. The purpose of this project was to promote commercial-scale farming, improve irrigation density and accelerate the use of new technologies with the target of increasing average yield to 8 tonnes per hectare by 2020. Towards this end, a consortium comprised of Bernas, MMC and Mada Corp was entrusted to construct irrigation facilities. A total of 24,794 ha would be acquired from farmers to install the irrigation facilities such as farm road and drainage. The first phase, which involved 2,713 ha, had a completion target date of September 2019 (Muhamad et al., 2019).

Bernas was also participating in Entry Point Project 11, which aimed at "scaling up and strengthening productivity of paddy farming in other irrigated areas". For this purpose, Bernas was involved in developing the paddy area in Batang Lupar, Sarawak. Bernas was appointed as the Anchor Company to develop infrastructure for the Batang Lupar area (2,817 ha) by the year 2020. In March 2016, the first phase was awarded to Bernas to develop 200 ha of land and was completed in May 2018. Subsequently, Bernas had to get involved in the farming activities to ensure that paddy production is run in full scale (Muhamad et al., 2019).

Figure 1 indicates the transformation of Bernas since the inception of FAMA in 1965 and the major events that drove the change as well as policy changes as discussed above. It is clear that the path of an STE was driven by not merely internal but also external factors, the dynamic links of which are discussed in the following section.

Figure 1.
Evolution of STEs in The Paddy and Rice sector
(1960 – 2019)



Note: RMyaP1 is Rancangan Malaya Pertama; RMK1- RMK11 is Rancangan Malaysia 1 to 11.

Source: SSLs are Malaysia (Five-year plans, various issues) and authors' calculation. SST5% ex-mill warehouse price was from Muhammad S. (2017) and TWR15% or Thai White Rice 5% were sourced from World Bank (2019).

D. Ecosystem of Paddy and Rice Market Intervention

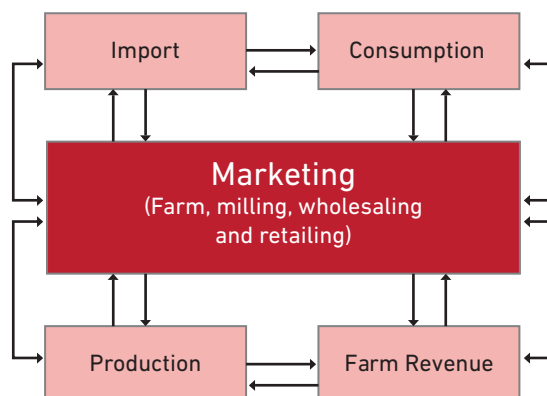
Bernas does not function in isolation. In fact, domestically it is enclaved in an insulated ecosystem of the paddy and rice industry. An ecosystem is an interconnected set of elements that is coherently organised in a way that achieves an objective (Senge, 1990 and Meadows, 2008). It comprises a number of elements that are interrelated in feedback loops, where a change in one will affect the other, and vice versa. The elements are interconnected in such a way that produce their own patterns of behaviour over time towards a set purpose.

The web of reciprocal causations between elements means that a trigger (internal or external) may trickle through the system, thereby affecting the relevant variables and hence overall outcome. For instance, an increase in the GMP may increase the cost of raw materials to the millers and reduce their profit margins if the wholesale price of rice remains unchanged. These higher costs may be transferred to producers when they sell to millers. With squeezed profits, millers may charge higher deduction rates of paddy sold by farmers to compensate their losses, and hence affecting the producers' net revenue (Rawaida et al., 2017). This in turn will affect their ability to invest in future productivity, which further depresses incomes, and the circle of causation continues in a loop until it reaches a steady state.

A simplified view of the paddy and rice ecosystem is shown in Figure 2. In the context of the current study, the major sub-sectors involved are the consumption, import, marketing, farm production and revenue. All the sub-sectors are linked to each other in a circular manner. For instance, the level of consumption determines the amount to be imported as well as the ratio of SSL (production over consumption), which is used to indicate the amount subsidies needed to increase in production. The paddy production sector produces rice, which is marketed through milling, wholesaling and retailing sector for the consumers while it provides price signals to the

producers. Price signals provides estimates of farmers' expected profitability and their capacity to invest on the farm, such as area expansion, new capital and gadgets and so on. The resultant production then enters into the ecosystem in a similar cycle of circularity as described earlier.

Figure 2.
Sub-sectors in The Ecosystem of Paddy and Rice Industry in Malaysia



The translation of the paddy and rice ecosystem in terms of causal loop diagram¹⁷ is shown in Figure 3. The discussion revolves around the four loops in the system.

1. Consumption Loop

The major driver of the industry is consumption of rice, which is derived by the multiplication of population and per capita consumption of rice. As consumption increases, it will affect the SSL level, which refers to the ratio of production over consumption which dictates the amount of imports required and the amount of subsidies required to incentivise production. The flow from the SSL: Production/Consumption creates a big loop from the consumption to the production sub-sector, which later moves into the marketing and back to the consumption sub-sector.

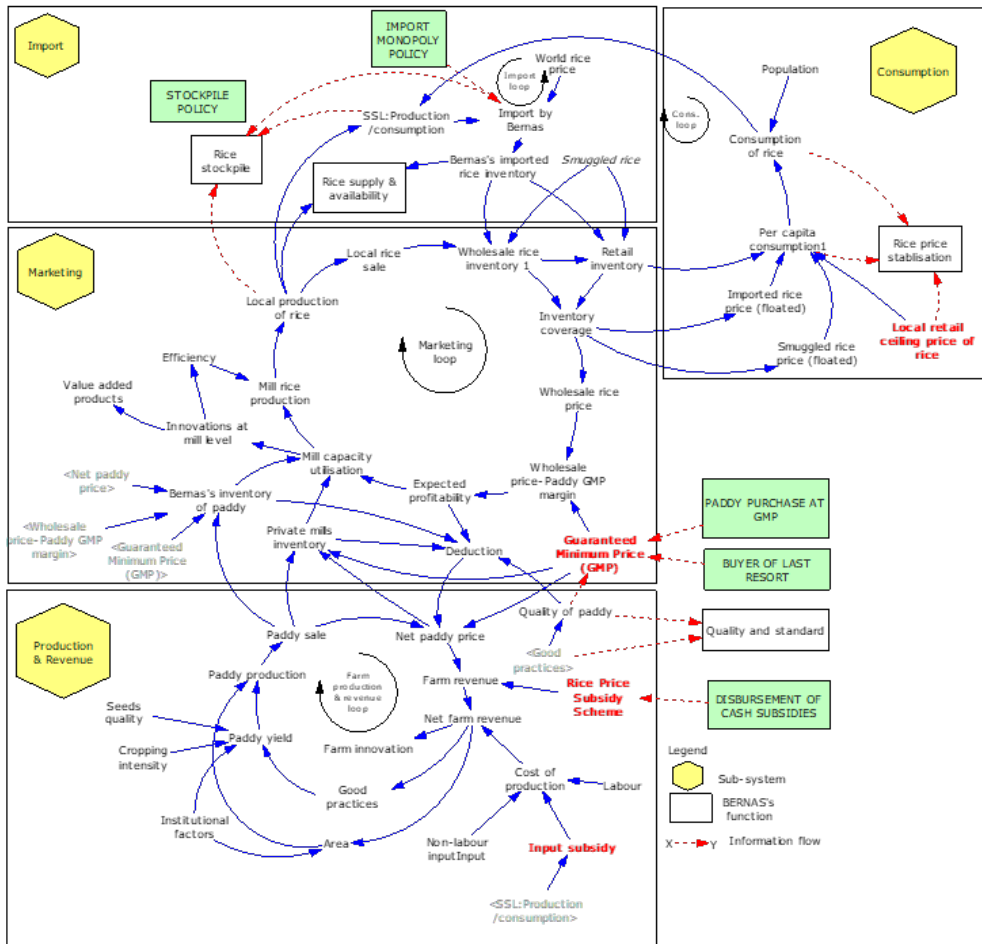
The availability of rice to consumers comprises of imports and local production. This rice supply is transferred through wholesaler and retailer until it reaches the consumers. There are three types of rice: local, imported and smuggled rice¹⁸. Note that the local rice prices are fixed (for SST5% and SST10%, ST15%)¹⁹, while prices of imported and smuggled rice are floated. The determination of imported and smuggled rice prices are dependent on the inventory coverage, which is the summation of rice (wholesale, import, retail minus consumption).

¹⁷ Causal loop diagram is explained in Sterman (2010).

¹⁸ Bernas estimated that about 26.5% of the consumption came from smuggling at the border due to arbitrage activities linked to the price differential (Bernas, 2019).

¹⁹ Price of SST5% and SST10% are fixed at MYR2.60/kg and MYR2.40/kg respectively while the range for ST15% is set at MYR1.65 to MYR1.80/kg (Bernas, 2019).

Figure 3.
Causal Loop Diagram of The Paddy and Rice Ecosystem



2. Import Loop

The gap between consumption and production provides the quantity needed to be imported by Bernas. The imported rice together with local production and smuggled rice are absorbed by the consumption sector. The consequent amount of import depends on the change in the consumption and production sub-sectors.

3. Marketing Loop

Rice price in the retail and wholesale markets are transmitted through the marketing sub-sector until it reaches the farmers. Note that the margin between the wholesale rice price and GMP is an indicator of the miller's profitability which lately has been challenged when the GMP was increased from MYR750/tonne to MYR1200/tonne in 2012. Rawaida et al., (2017) indicated that the new GMP has encouraged the millers (private and Bernas) to use deduction rates (for poor quality) to protect their margins. Fatimah et al. (2019) reported that the average deduction may reach 75% particularly during wet season. This deduction reduces the farmer's net return and hence farm capital formation. However, to the millers, the expected profitability of paddy determines the capacity utilisation or acquisition which determines the quantity of rice produced.

The rice is then sold to the consequent middlemen such as wholesaler, retailer until it reaches consumption.

3. Farm Production and Revenue

The net revenue earned by the farmer determines the capacity for farm investments such as area expansion, input and capital. The farmers are provided with input subsidies to help boost production. Input, variety, good practices, institutional factors (infrastructure) determines yield and hence paddy production. Paddy produced then enters the marketing sub-sector. The total rice production as compared to consumption would indicate the amount of import and subsidies needed for the industry.

This causal loop diagram suggests the following observations. First, the paddy sector performance is a function of a convergence of many elements that are interlinked in the sector's ecosystem. Second, the impact of Bernas permeates beyond import level to the marketing of paddy at the farm level. This is because it is involved in the distribution of rice, milling, farm level buying and its duty to ensure GMP, distribute cash price subsidies and maintain national stockpiles. However, its impact on the paddy production seems indirect (through net ex-mill price) as there are other significant factors that determine yield, such as seed, technology, farm practices, infrastructure and so on. Third, the complementarity of all the market interventions creates an almost entirely insulated market from the external market (with the exception of import and smuggled rice at the border) much like the industry in a centrally planned economy. Fourth, these protection strategies facilitate Bernas to fulfill its duties of price stabilisation, stockpile management, ensuring self-sufficiency, and the distribution of price subsidies.

Based on the ecosystem dynamics above it is clear that the performance of Bernas is inextricably linked with the market instruments laid into the industry from farm to table. Hence the question on how much the resultant impact on the industry is rooted to Bernas can be blurred when there are many other variables are at work which are examined in the next sections.

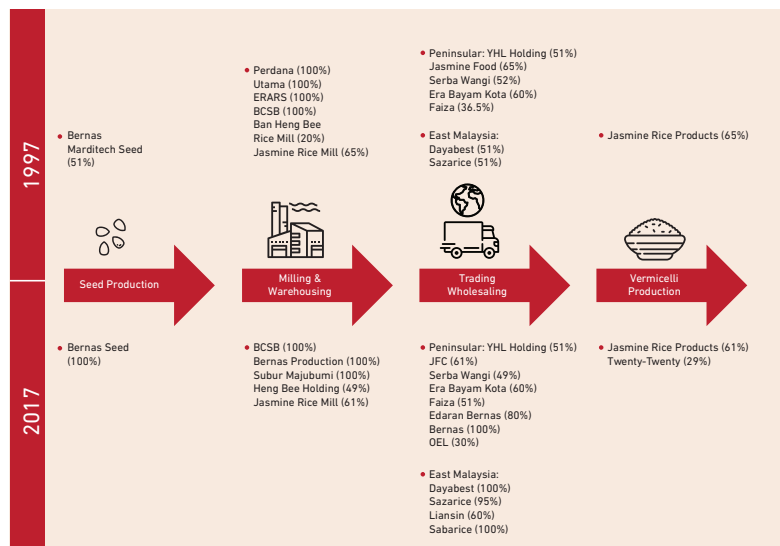
Business Transformation of Bernas

The growth strategy of Bernas is based upon a central strategic insight: the rice value chain has been fragmented and inefficient. The company set out to restructure the value chain of rice in Malaysia through various inter-organisational arrangements. Its scale expansion was further compelled by high capital need and weak pricing power (due to the substitution effect existing between imported (floated) rice and regulated local rice) to resist the corrosive effects of inflation.

Over time, Bernas' strategy has rested on vertical integration vis-à-vis consolidation (Figure 4). Its ability to achieve that strategic objective was empowered by its sole rice importation rights²⁰ (up to January 2021) and the existence of a float²¹ in the form of the current Government Stockpile (up from 92,000 tons to 150,000-200,000 tons).

The transformation of Bernas can be divided into three phases: partnerships, which aimed towards "bolt-on" partnerships (1998-2001); acquisitions, which aimed towards a controlling stake (2002-2009); and privatisation, which aimed towards autonomy (2010-2017). Each phase was highly idiosyncratic.

Figure 4.
Paddy and Rice Value Chain: Vertical Integration and Consolidation of Bernas



Notes: Bernas has undergone a few rounds of restructuring. Through subsidiaries and associates, Bernas also indirectly owns subsidiaries and associates²² of its holdings.

²⁰ While all millers are required to produce at least 30 % of local rice conforming to a stipulated quality standard, Bernas is free to determine the price of imported rice (Anderson & Martin, 2009). The profits from the imported rice are used by Bernas to compensate the required minimum production of the standard local rice (Alavi, 2011).

²¹ The stockpile is an available reserve or float, referring to the amount of rice that Bernas has management of and which only needs to be distributed during any national emergency. The government assumes the acquisition cost of the rice (i.e., a public budget of MYR725 million was allocated to import 500,000 tons in order to boost the stockpile in 2008 (The Star, 2008d)). To properly maintain rice quality, the stockpile serves as a trading stock. The float is put to economic use at a stockpile management cost of MYR30 million per annum (Che Omar, Shaharudin, & Tumin, 2019). Deficit fluctuations in excess of the amount in reserve (stockpile) are charged to the profit and loss account of the company (Bernas, 2000a).

A. “Bolt-On” Partnerships (1998-2001)

Both local and imported rice meet at the wholesaling and distribution stage (including blending and repacking services). Being a strategic checkpoint, wholesaling and distribution became the focus for segmental re-organisation through inter-organisational arrangements. This enabled Bernas’ access to partner organisation’s mills (in certain cases), distribution networks and associated partnerships with retailers. In anticipation of looming globalization challenges, this preposition was politically endorsed so that the local rice industry would be in better shape.

The joint-venture or JV with United Rice Wholesalers Sdn Bhd (which was a business entity comprising of an association of 101 local rice wholesalers)²³ and the acquisition of a 20% stake in Ban Heng Bee Rice Mill (1952) Sdn Bhd (which was the largest private miller in Malaysia)²⁴ were particularly noteworthy. A strategic alliance was brokered with the small-scale Bumiputra wholesalers through the Bumiputra Distributorship Program (Bernas, 2002a). In addition, Bernas (2000a, 2001, 2002a) also entered into a JV in organic fertilizer and vermicelli production; the wholesaling and trading of allium vegetables; 30% share acquisition of Gardenia Bakeries Sdn Bhd for its proprietary bread manufacturing; and a preference share subscription in Cosmo Restaurants Sdn Bhd. This holding would eventually give Bernas a 49% stake in Burger King.

While the approach of inter-organisational holdings was moulding a diversified food conglomerate, Bernas also proved adept at gaining footholds in the rice value chain. Its foreign JVs in Thailand, Pakistan, and China enabled better insulation against the volatility of international rice prices and currency exchange. The Thai and Pakistani JVs were ranked among the top rice exporters in their respective country (Bernas, 2002a). Counter-trade agreements with major rice exporting countries (Cambodia, Viet Nam, China and Myanmar) were not uncommon.

According to Bernas (2002a), in 2001, a total of 535,000 tonnes (cf. 1999: 614,000 tonnes) of rice was imported. In the local regime, Bernas (including its associate companies) supplied 7,000 tonnes or 16% of local demand for certified paddy seed; procured 591,000 tonnes or 36% (cf. 1999: 27.3%) of local paddy production; wholesaled and distributed 943,000 tonnes or 51% (cf. 1999: 26.8%) of the total rice demand through some 20,000 (cf. 1999: 15,000) retail outlets; sold 360,000 tons (cf. 1999: 322,000 tons) of local rice. Within the 1999-2001 period, the average return on the invested capital²⁵ (ROIC) of Bernas was 20.5% – putting it in the top tier of KLSE.

²² Abbreviations: Bernas Marditech Seed – Bernas Marditech Seed Sdn Bhd; Bernas Seed – Bernas Seed Pro Sdn Bhd (formerly known as Bernas Marditech Seed Sdn Bhd); Perdana – Bernas Perdana Sdn Bhd; Utama – Bernas Utama Sdn Bhd; ERARS – Era Rangkaian Setia Sdn Bhd; BCSB – Beras Corporation Sdn Bhd; Ban Heng Bee Mill – Ban Heng Bee (1952) Rice Mill Sdn Bhd; Ban Heng Bee Holdings – Ban Heng Bee Holdings Sdn Bhd; Bernas Production – Bernas Production Sdn Bhd; Subur Majubumi – Subur Majubumi Sdn Bhd; Jasmine Rice Mill – Jasmine Rice Mill (Tunjang) Sdn Bhd; YHL Holding – YHL Holding Sdn Bhd; Jasmine Food – Jasmin Food Corporation Sdn Bhd; Serba Wangi – Serba Wangi Sdn Bhd; Era Bayam Kota – Era Bayam Kota Sdn Bhd; Faiza – Syarikat Faiza Sdn Bhd; Edaran Bernas – Edaran Bernas Nasional Sdn Bhd; Bernas – Bernas Sdn Bhd, OEL – OEL Realty Holdings Sdn Bhd; Dayabest – Dayabest Sdn Bhd; Sazarice – Sazarice Sdn Bhd; Liansin – Liansin Trading Sdn Bhd; Sabarice – Sabarice Sdn Bhd; Jasmine Rice Products – Jasmine Rice Products Sdn Bhd; Twenty – Twenty – Twenty – Twenty Food Industry Sdn Bhd

²³ Bernas, 2000b

²⁴ Bernas, 2000a

²⁵ ROIC is immune from a firm’s chosen capital structure and share buybacks and, therefore, is the fairest measure of financial performance (Damodaran, 2007; Mauboussin & Callahan, 2014).

B. Acquisitions Toward Controlling Stake (2002-2009)

From a parastatal entity, Bernas was well on its way to becoming a private entity. In 2003, Syed Mokhtar Shah bin Syed Nor Albukhary²⁶ (SMSBSNA) – who is believed to be a major donor of the then ruling political party (Davidson, 2018) – set out to acquire the controlling interest in Bernas. He began with a share acquisition of Budaya Generasi Sdn Bhd through Gandingan Bersepadu Sdn Bhd (Bernas, 2003d). Syarikat Perniagaan Peladang (KADA) Sdn Bhd – a business arm of the Kemubu Agricultural Development Authority (KADA) was not interested in retaining its indirect ownership of Bernas and disposed its shares in Budaya Generasi (M) Sdn Bhd (Bernas, 2003c). Other government agencies and institutions also disposed their Bernas shares. The result was a dramatic shrinking of the government institutional ownership share from 7.37% in 2002 to 0.07% in 2009 (Bernas, 2003a, 2010a).

Share acquisitions became a frequent corporate exercise. Partner organisations were absorbed so as to build the largest value chain player in Malaysia's rice industry. Management continued with a clear and specific strategic mission. This called not only for expanding market share at various value chain stages, but for building up Bernas' ownership. Bernas itself bought out Dayabest Sdn Bhd (Bernas, 2002b); increased its stake in Sazarice Sdn Bhd from 51% to 68% in 2002 (Bernas, 2002c) and eventually to 95% in 2006 (Bernas, 2006a, 2006b) so as to create a larger distribution and marketing base in East Malaysia; purchased 30% of Liansin Trading Sdn Bhd's issued shares so as to expand its distribution network in East Malaysia through the partner organisation's retail market strengths (Bernas, 2005b); and added another 10% to its 50% stake in Jasmin Food Corporation Sdn Bhd so as to control the branded rice segments in West Malaysia (Bernas, 2009a).

After making early progress on JVs, Bernas turned its attention to acquiring the controlling interest. Its existing associate companies were a logical avenue to pursue. The JV with United Rice Wholesalers Sdn Bhd was bought out in exchange for 20% stake in Bernas' Edaran Beras Nasional Sdn Bhd (Bernas, 2005a).

With a change of focus towards the local rice market, international partnerships were sidelined. The final counter-trade agreement signed by Bernas (2003b) with Myanmar dated back to April 2003. From the national food security interest perspective, strong bilateral trade agreements and cross-country JVs were thought sufficient to enable robust strategic relationships for primary information and stock access in times of turbulence, if not, emergency.

²⁶ At the time of writing, this individual controls other monopolies in Malaysia, including waste management (Alam Flora Sdn Bhd), vehicle inspection (PUSPAKOM), ports and logistics (Pos Malaysia Bhd, Pelabuhan Tanjung Pelepas Sdn Bhd, Johor Port Bhd, Northport Bhd, Penang Port Sdn Bhd, Tanjung Bruas Port Sdn Bhd, and Senai Airport), gas pipelines (Gas Malaysia Bhd), water and power production (Malakoff Corporation Bhd, and tunnel (Stormwater Management and Road Tunnel) among others.

²⁷ Given that the government's "golden share" in Bernas enables it to direct the company, the government's inaction when Bernas chose to ignore its "recommendation" is at least noteworthy. This is particularly pertinent since the company's inaction forced the government to seek government-to-government sourcing and introduce the Miller Subsidy, the Subsidised Rice program and higher paddy prices which this paper will demonstrate, enable Bernas unfair competitive advantage in the domestic rice sector.

²⁸ Since rice importation is nothing more than a function of currency exchange rates and international rice prices, the cost of imported rice is the volatile variable Bernas needs to worry about. Bernas could have locked down its importation costs by buying currency exchange and rice futures, which would allow Bernas to acquire imported rice at relatively, stable prices.

²⁹ The World Trade Organisation (2014) comments that, since Bernas is the only authorised importer of rice, the company tends to have the market power to negotiate with its suppliers.

The weak link was very revealing. Bernas did not act upon the government's recommendation to create a larger stockpile amid rising international rice prices (The Star, 2007)²⁷. Combined with the absence of hedging mechanisms²⁸, Bernas was caught off guard during the 2008 Global Rice Crisis. In contrast to its actions during the Asian Financial Crisis of 1997/98, Bernas declined to absorb the increased cost²⁹, blaming private millers for (perceived) rice shortages (The Star, 2008a). The company further suggested that its share (17.8% from local rice segment and 30% market share from its importation segment) in total rice demand presented an insufficient level to stabilise the market. For Bernas, owning a larger share of local paddy and rice was the way forward in order to ensure food security and the stability of the national rice industry.

In the relatively stagnant local rice market, any share gain must be at expense of existing local players. Bernas competes with private millers in the procurement of paddy and in the marketing of milled rice (Athukorala & Loke, 2007). Bernas (2010a) reports that its total rice sales hit an unprecedented MYR2.8 billion in 2009 (rising from MYR1.75 billion in 2007). The 59% sales growth which they recorded, spectacularly exceeded the negligible demand growth rate for rice in Malaysia. This occurred after "...Bernas' (own) input and recommendation (were adopted by the government)... the government successfully interlinked an alternate subsidy scheme to millers (known as the Miller Subsidy) for... producing controlled (ST15%) grade with *minimal financial risks* (to Bernas)" (Bernas, 2009b, page 14). In FYE 2009, the Subsidised Rice Program accounted for 41% (0.53 million tonnes) of total rice sales (Bernas, 2010a, page 36).

In addition, Bernas began to receive tariff waivers for a period of five years starting from 2008 (The Sun Daily, 2014b). In this sense, the disproportionate resources of and the preferential treatment rendered to Bernas tilted the industry playing field, skewing it to the advantage of Bernas.

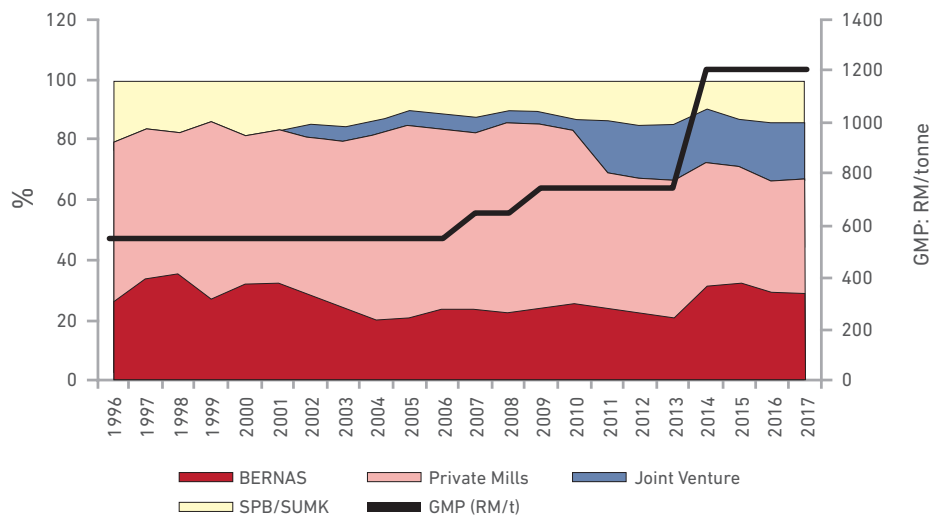
C. Privatisation for Autonomy (2010-2017)

According to Bernas (2010a), by February 2010, Tradewinds – a public listed conglomerate that controlled by SMSBSNA – owned 72.3% of the equity in Bernas. In December 2012, the parent company and joint offerors made an unconditional take-over offer for acquiring all the remaining shares at MYR3.70 each (Bernas, 2012). Subsequently, in November 2013, the board announced its intention to delist from the stock exchange (Bernas, 2013b). Bernas was then officially delisted on 18 April 2014 (Bernas, 2014c). In March 2017, the remaining 2.06% of the shares in Bernas were acquired at MYR4 each through a selective capital reduction and repayment exercise (Bernas, 2017b).

In the midst of its privatisation, Bernas remained active in enlarging its market share of the local rice industry. In mid-2010, Bernas (2010b) increased its shareholding to 60% (previously 30%) in the East Malaysia-based Liansin Trading Sdn Bhd. Following that, in order to strengthen its downstream operations Bernas increased its equity holdings from 20% to 49% in Ban Heng Bee Holdings Sdn Bhd (Bernas, 2011). Throughout 2012-2017, Bernas recorded a total of MYR176.7 million in investments in associates. Bernas (2011) indicated that "...Bernas' strategic long-term plan is to strengthen Bernas' involvement in rice downstream activities....to contribute positively to Bernas' future earnings, which eventually shall reduce Bernas' reliance on the rice concession business."

By the time the Miller Subsidy and the Subsidised Rice Program ceased at the end of 2015, both Bernas and its associates accounted for 48% of total paddy processed or approximately 33.6% of total rice demand of Malaysia (Che Omar et al., 2019). Incorporating the 30% market share it already possesses from imported rice sales, Bernas controls close to two-third of the local market. It has effectively become a monopoly (Figure 5).

Figure 5.
Share of Paddy Buying by Institutions, 1996-2017 (tonnes)



Source: Bernas (2018)

Socio-Economic Roles of Bernas

Given that the previous mentioned policy premises led to the formation and transformation of LPN to Bernas, understanding the development in those areas is of importance to present a post-hoc evaluation on the transformative roles played by the change agent. This section evaluates the socio-economic roles of Bernas. Its economic roles include: ensuring fair price to producers and consumers, sufficient rice supply and quality and standard of rice. Its social obligations include: managing a stockpile, purchasing at GMP, acting as the buyer of last resort, disbursement of subsidies and provision of the Bumiputra Rice Millers Schemes. However, some functions are interlinked, such as price stabilisation, which is made possible by the rice ceiling price, as well as the GMP, the payment of which is made together with the price subsidy. Similarly, its import function is related to the stockpile management. Hence, these linkages are discussed together.

A. Fair and Stable Prices (Farm and Retail) and Cash Subsidy Distribution

Price stabilisation function is top on the list of Bernas's economic roles. In order to achieve price stability, the major instruments applied are: Guaranteed Minimum Prices for paddy at the farm and fixed ceiling price for rice at the retail level (Figure 3 and Appendix Table 2). The farmers are also provided with cash subsidies under the Rice Price Subsidy Scheme since 1980.

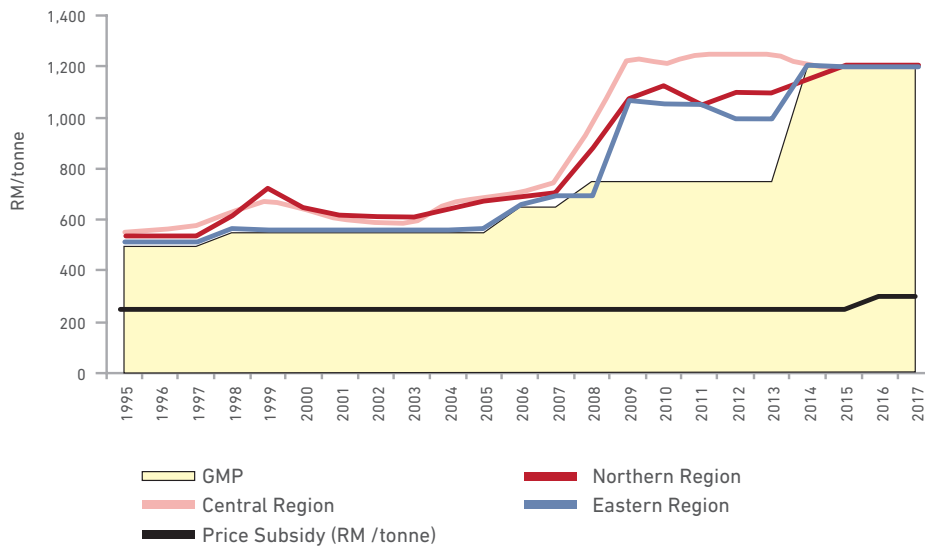
Malaysia has supported the GMP and rice ceiling price higher than the border's (Figure 6). Compared to the ASEAN countries, its GMP for paddy (adjusted to purchasing power parity (PPP)) is the fourth highest in the region. In terms of PPP, the highest paddy price is in Philippines, followed by Indonesia and Laos³⁰. Malaysia's adjusted rice price to PPP is the second lowest in the ASEAN region (Appendix Tables 3 and 4).

Determining whether Bernas was able to achieve the stabilisation of paddy and rice prices can be gauged from the historical trends of the two. By design, GMP³¹ is a floor price, hence the price levels received by producers are allowed to float in accordance to the local market conditions as shown in Figure 6. The figure suggests the following. First, between 1996-2013, prices received varied by region but remained above the GMP. The Central Region showed the highest variation with coefficient of variation of 0.34, followed by Eastern Region at 0.33, and Southern Region at 0.29. Secondly, the fixed GMP at MYR1,200/tonne is pan-seasonal and pan-territorial i.e., it is a singular price for all regions, and it doesn't allow market forces to work as in the case of the earlier GMP (though in a very limited extent). Third, since the retail price is fixed in 2005, it is stable and stayed at above the border price (Figure 7). In short, Bernas was able to ensure price stability (farm and retail) in accordance to the predetermined GMP and ceiling price of rice.

³⁰ Based on market rate, Malaysia is the second highest in ASEAN countries (Bernas, 2019)

³¹ The GMP price levels (MYR/tonne) are as follow: 1949-1973: MYR264/tonne, 1973: MYR463/tonne, 1980-1997: MYR496/tonne, 1998-2005: MYR550/tonne, 2006-2008:MYR650/tonne, 2009-2013:MYR750/tonne and 2014: MYR1200/tonne.

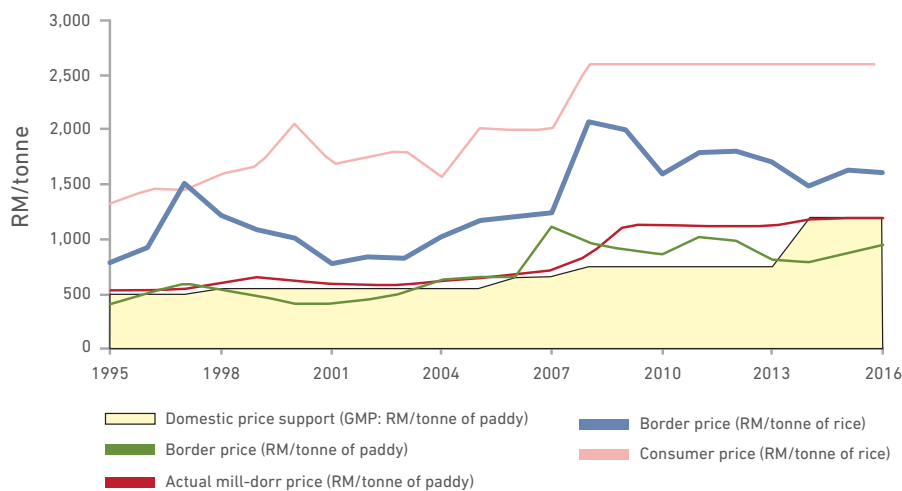
Figure 6.
Price of Paddy and Rice Paid by Bernas and Paddy Price Subsidy
(1996-2017)



Source: Bernas (2018)

Figures 7 and 8 indicates the deviations of local paddy and rice prices from the border's. The average deviation for retail price is about 35% while it varies for the farm price in that during the 2008 crisis period, the farm price was lower than the border level. These deviations indicate the extent of paddy and rice market distortion. While it is beneficial to produce and rent to Bernas, ultimately, the consumers are indirectly paying a tax on rice as most of the time the local prices are higher than the border's. Figure 9 and Appendix Table 5 indicate the distribution of producer-consumer transfer between the two stakeholders in terms of percentage and value respectively.

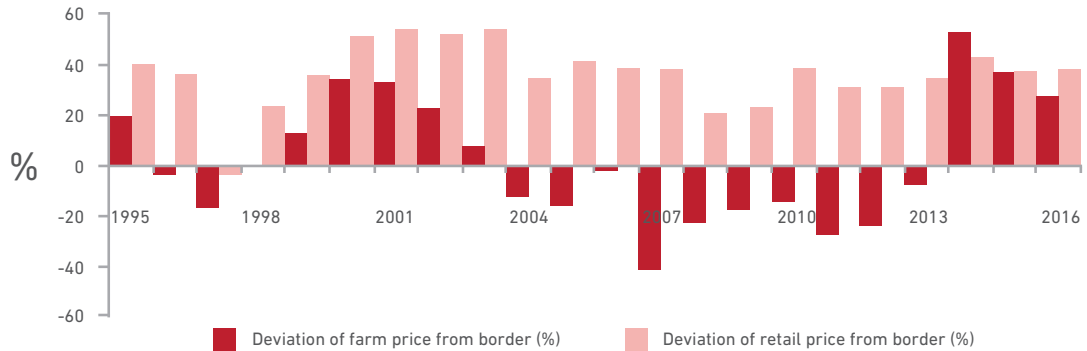
Figure 7.
Price of Paddy and Rice, 1995-2017
(1996-2017)



Source: Bernas (2018)

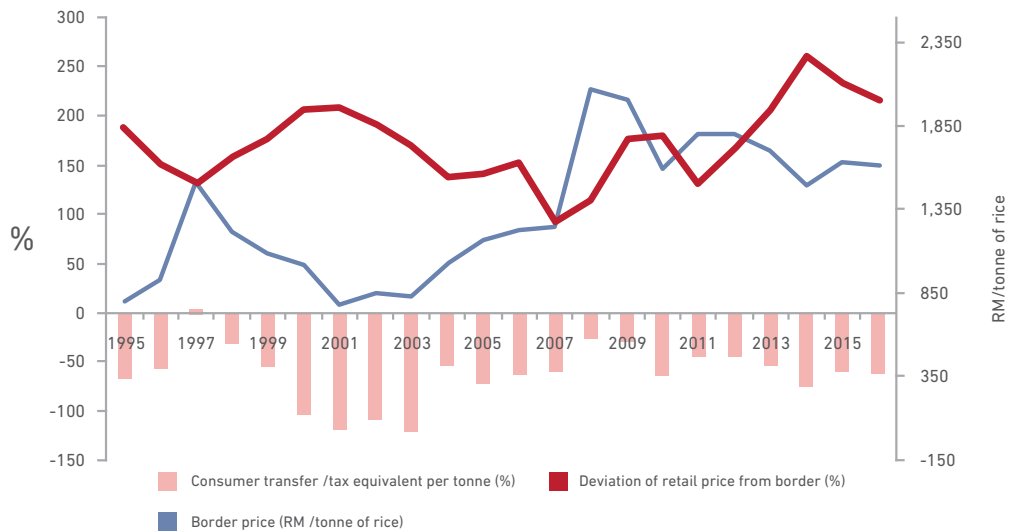
Note: Retail price of rice was floated before 2005. TWR5% (Thai White Rice 5%).

Figure 8.
Deviation of Farm and Retail Prices from The Border Prices (%)
(1995-2016)



The level of border price determines the producer and consumer transfer or tax. As shown in Figure 9, the consumers pay higher indirect tax when the border price is low as has happened during low prices (1998 to 2006). However, during high prices (2007-2010), the consumer indirect tax was relatively lower as GMP was higher than the border price. Producers on the other hand, receive higher transfers during low price and vice versa. The gross estimate of the consumer indirect tax on paddy production was about MYR2.6bn while the producer transfer was MYR764 million in 2016. The total consumer indirect tax (including import) was estimated at MYR3.5 billion while the Bernas's gain on import is estimated at MYR295 million (Appendix Tables 6 and 7). Note that poor consumers are paying relatively more indirect tax than the rich because the share of expenditure on rice is higher than the high-income group (Sahathavan, undated; Fatimah, 1996; Roslina, 2017).

Figure 9.
Producer-Consumer Transfer for Rice
(1995-2016)



As discussed earlier, in any ecosystem, a change in one variable will affect the structure and behaviour of the system. The new GMP increases the producer's revenue but increases the raw material cost³² of the small mills (<3000 tonnes capacity) as the retail price is fixed. This has resulted in some mills having to close operations as had happened in Kelantan and Kedah (PPBMM, 2017³³). Other challenges faced by these small mills include cheaper rice imports and competition from the big mills for paddy³⁴.

Similarly, the new GMP results in increases to the farmer's revenue. However, the increase in the farm price is also met by an increase in the service cost (such as harvesting and transportation) which reduces farmers' net income (PPBMM, 2015 and Fatimah et al., 2019). Despite the stable price to producers, a number of studies have shown the return to the majority of farmers are still below the B40 income line of MYR3,000³⁵ (Amin et al., 2011; Fatimah et al., 2019; MoA, 2019). Amin et al., estimated that net income of paddy farmers in MADA with farm size of 2.73 ha was MYR1,556/month and MYR1,095/month for KADA. The "farm net sustainable return³⁶" for a farmer with 2 ha and yield of 8 tonne/ha is only MYR9,516 per year, MYR6,092 for 6 tonne/ha and MYR3,232 for 4 tonne/ha.

The cost and benefit of price stabilisation has been debated intensively (for instance Timmer, 2000 and Dawe, 2001). Timmer (2000) and Rodrick (1999) have indicated that agricultural price and macro-economic stability are crucial elements in inducing private investment and growth. Timmer (1993) indicated that nominal protection coefficient (NPC) for rice in Indonesia over time were not determined by changes in domestic prices, but by movements in world rice prices and the real exchange rate. In other words, protectionism is the outcome of the interaction between domestic policy for long-term price stability and the irresistible forces of world prices and real exchange rates. The authors' calculation indicates that Malaysia's NPC is determined as much as 30% by domestic price, 50% by world price and 19% by the exchange rate³⁷.

According to Timmer (2000), the benefits of rice price stabilisation in Indonesia exceeded the costs. This is because the stabilisation cost was low as Bulog only procured 6% of the crop while the rest was in the hands of the private sector. China and India on the other hand, their STE procured about 20% of domestic production. In the case of Malaysia, the cost of stabilisation by Bernas which procured close to 48% of local paddy production is paid off by cheaper rice imports relative to domestic price where Bernas imported about 30% of the country's requirement.

³² Paddy accounts for 90% of the total cost of producing rice (Muhammad, 2017).

³³ Personal communication with PPBMM, 31 July 2017

³⁴ Sinar Harian (2019).

³⁵ Department of Statistics (2016).

³⁶ Farm net sustainable return is defined as net farm return minus depreciation (McConnell D., and Dillon J.D. (1997).

³⁷ Data from 1980-2016 were used to estimate the NPC for Malaysia's rice industry.

1. Cash Subsidy Distribution

GMP comes with a cash subsidy of MYR300/tonne on top of GMP1200/tonne since 2014 (Figure 6). As shown in Table 1 and Appendix Figure 2, the value of price subsidies allocated hovered around MYR500 million per year between 1990-2017. The number of farmers served reduced from 159,479 in 1999 to 150,000 in 2017, a reduction of 6% (Bernas, 2019). The number of employees assigned in distribution of the subsidies has declined by two-thirds from 505 to 170, while the administrative cost has increased by 26% indicating efficiency in the administrative process.

However, Fatimah et al., (1983) and World Bank (1984) indicated that the subsidy distribution is inequitable. It has been shown that 60% of the farmers received only 12% of the total value of subsidies distributed while the top 2% of the farmers accounted for about 13% of the total value subsidies distributed (Fatimah et al., 1983). In other words, the distribution of cash subsidy is skewed towards bigger farm size. The latest data is not available for an update. Nevertheless, data from MADA (2018) shows that only 12.5% of the farms are more than 4 ha. Bernas (2006) estimated that only 12.5% of the 148,331 farmers who received the subsidies owned more than 4 ha of paddy area. About 60% owned less than 2 ha. In short, the scheme has a regressive effect on income distribution of the farmers.

Table 2.
Distribution of Cash Price Subsidies, Selected Years

Year	SSHP (MYR mn)	No. of farmers	No. of sub. employees	Administrative cost (MYR mn)
1999	404	159,479	505	12.5
2000	318	138,445	498	13.4
2005	439	148,644	299	10.1
2008	458	142,357	280	10.3
2017	514	150,000	170	17.0

Source: Bernas (2018)

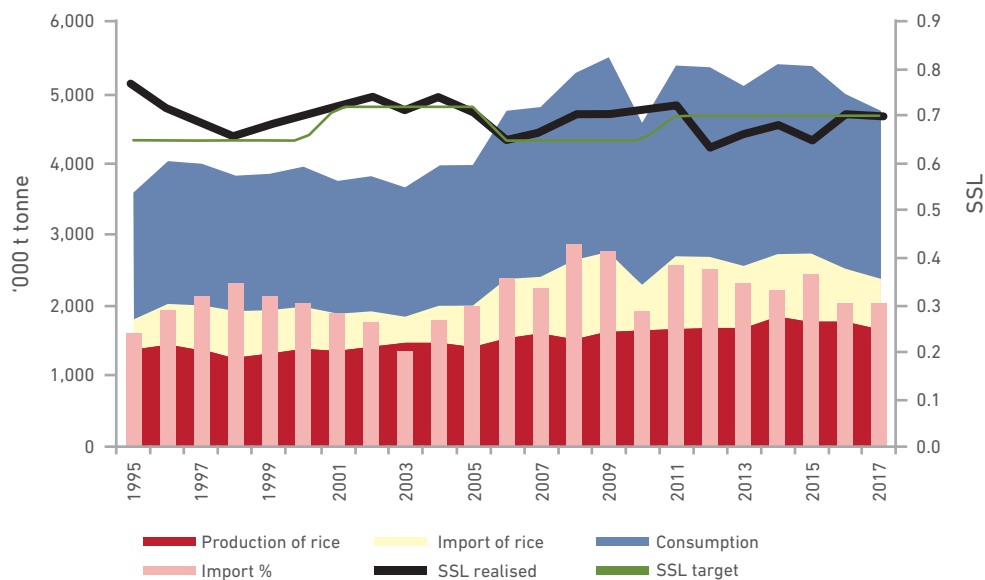
B. Sufficient Supply of Rice

On the aggregate level, Bernas has succeeded in maintaining a sufficient supply of rice by importing the difference between the production and consumption of rice in the country. As shown in Figure 10, SSL is dependent upon the behaviour of two major variables: production and consumption. The rice production increased from 1.3 million tonnes in 1995 to 1.6 million tonnes in 2017 with an average annual rate of growth (ARoG) of less than 1%. This is in contrast to consumption which has increased from 1.8 million tonnes to 2.4 million tonnes during the same period with an ARoG of 1.6%. This is largely due to the increase in population and income as well as the influx of 2.7 million of rice-eating immigrants into the country³⁸. The production

³⁸In 2017, the number of immigrants was estimated at 2.7 mn (www.statistica.com)

and consumption gap is filled with rice imports³⁹ by Bernas, which has increased from 427,556 tonnes to 721,143 tonnes at an ARoG of 5%. The SSL achieved has reduced from 76% to 70% with an ARoG of -0.26%. Rice price hikes in 2008 has challenged the Bernas capacity to import and curtail both the domestic increases in the price of rice and the limited supply of low grade rice (ST15%) for the poor consumers (MIER, 2010). The government had to intervene by introducing the miller subsidy to Bernas and private mills to produce ST15% rice. This incidence indicates that Bernas was not equipped to face extreme external shock and needed the government support to continue its normal operations. Aside from this disruption episode, these data show that on aggregate Bernas was able to fulfil the production-consumption gap (on average 30%) while maintaining the SSL targeted by the government⁴⁰.

Figure 10.
Production, Consumption and Import of Rice (tonne), SSL and Import Fractions (1995-2017)



Source: Ministry of Agriculture and FAOStat, SSL levels (target and realised are from 7th to 11th Malaysia Plan). Note that under RMK9, the targeted SSL was 90% but under NAP III, it was 65%.

C. Stockpile Management

Besides imports, related to the issue of sufficient supply is the stockpile management. During the crisis period of 2008, the government has increased the national stockpile level from 92,000 metric tonnes to 292,000 (MoA, 2008). However the level has been reduced to 150,000 in 2016 to minimise the storage cost as Bernas had adequate trading stocks (180,000 tonnes) to fulfil the

³⁹ FAO (2007) views Bernas's role "is to reduce import dependence but its performance in this regard has not met expectation. Besides, Bernas in addition to benefiting from rents on its monopoly in imports is transforming itself into a consumer goods company, building up operations in a diversified range of food products". Clearly this view needs a mention or relook.

⁴⁰ The SSL targets are 65% (under RMK7 to RMK9), 70% under RMK10, 72% under RMK11 and 70% under the Agrofood Policy (2011-2020). Source: Malaysia's Five Year Plans (various years) and MOA (2011).

stockpile requirement (Malaysia, 2016)⁴¹. Besides, there are about 314,000 tonnes of rice at the wholesale and retail levels. Hence, the total stockpile available in the country sums up to 644,000 tonnes, which is enough to supply 95-100 days requirement. The location and distribution of stockpile in the country is shown in Appendix Table 8.

The statistics shows that Bernas was able to achieve the required quantum for the stockpile by monitoring the supply and demand situation (Bernas, 2019). However, MIER (2010) observed that Bernas was unprepared to face the big price hike in 2008 and the consequent tight supply which made the stockpile strategy thus far questionable. Bernas was responsible in persuading the government to introduce the miller subsidy scheme (MYR750/tonne) which costed the government MYR3.6bn (Bernas, 2009b, p.14). The miller subsidy was meant to help the millers, including Bernas, to produce ST15% rice for the poor consumers. It is reported that Bernas still received the subsidy even during low prices in 2014 and 2015 (Malaysiakini, 2015). The subsidy was terminated in 2015 due to many leakages and its failure to achieve its objective in providing cheap rice to the targeted group.

The stockpile arms Bernas with a strategic resource – awash in working capital through the float (inventory). All stockpile volumes were purchased through public expenditure. Falling international rice prices allowed Bernas to replenish the stockpile with cheaper rice. Consequently, the government purchased high-priced rice, which was sold on a stock recovery and profit basis. As required, the stockpile was replenished but, since the cost of the price was lower, a cash windfall was gained.

Armed with this capital, Bernas deliberately altered the business environment, willingly sustaining losses (in 2008) in order to terminally hurt and eliminate its small competitors through the initiation of the Miller Subsidy and the Subsidised Rice Program in tandem with revised paddy floor prices. When the Miller Subsidy was introduced in 2008, there were 226 mills (Wong et al., 2010). In tandem with that intervention, the price of paddy price was revised from MYR700/ton to MYR1,000/ton, and rising once more to the current MYR1,200/ton. Intertwined with the predatory pricing of ST15%, private millers struggled to cope with both the enforced cash shortfalls and the credit crunch, and thus were not able to compete. Many went into receivership. Consequently, the “crowding out effect” squeezed many private mills out of the local paddy and rice industry. The number of mills had reduced by approximately one-third (to 157 mills) by 2015 (MOA, 2016). The whole episode has costed the government to the tune of MYR3.4bn. Bernas, however, was able to endure these temporary losses and fluctuating earnings. As the anti-rollup strategy unfolded, its reward was a larger market share without undertaking any consolidation initiatives, i.e. its competitive advantage grew.

⁴¹ Parlimen Ketiga Belas Penggal Keempat Mesyuarat Ketiga (2016).

Aside from the above costly digression of Bernas' stockpile management, the other pertinent issues that need to be analysed include the following. First: What is the optimal size of stockpile needed for emergency reserves? Experiences from other countries indicate that large reserves are unnecessary as it is costly and the time duration needs to be reconsidered since the risk and probable trade reaction of other countries and natural calamities are likely to be short-lived (World Bank 2012 and personal communication⁴²). Second, in view of the physical distance of Sabah and Sarawak and their poor logistics, these two states may require a longer period for rice supply compared to Peninsular Malaysia. Hence, there is a need to reconsider the stockpile requirements of these regions taking into account the delay in transportations. Third, is a stockpile the only effective mechanism to ensure price stability? The Bernas 2008 episode described above challenges this belief. As discussed by World Bank (2012), experiences in other countries has not been encouraging and the role of stockpile has been questioned. In most cases, decisions on stock purchases and releases often are politicised. There may be better instruments to stabilise prices to consumers such as variable tariffs and cash transfers to the needy. Additionally, Bernas's role could be outsourced by NGOs and/or private sectors⁴³. Those counter arguments point towards the need to relook at the stockpile policy in terms of its objectives and strategies.

D. Maintain Quality and Standard of Rice

MIER (2010) has clearly indicated that Malaysia's rice standard has not been revised since the 1970s. Despite the call for the review of Rice Order (Price and Grade Control, 1952) under the NAP III, little attempt has been made thus far. This speaks loudly to the state of affairs of the variety, quality, and standard of Malaysian rice.

Varietal development remains relatively slow compared to India, the Philippines, and Thailand. Of about 50 varieties that were released by the Malaysian Agricultural Research and Development Institute (MARDI), MR220 CL2, MR263 and MR219 remain as the popular paddy varieties (Zainal, 2012). While these varieties offer some agronomic advantages, their milled outputs do not possess any significant attributes (e.g., fragrant and nutritional value) that may give rise to product differentiation. Since 2000, the grading of paddy by length of the grain (e.g. long, medium) was abandoned, which indicates less concern on product differentiation or uniqueness.

The general inefficiency of mills also contributed to the low quality of rice throughput. About 1/5 of paddy sold to millers are low quality with deductions of more than 28%, which affects milling efficiency. According to Bernas⁴⁴, their mills are capable of producing only 56% of graded ricem while broken rice constitutes more than 20%. Similarly, on average the big mills could only produce 60% of graded rice and less than 20% of broken rice. In addition, all the paddy are not differentiated in terms of quality or origin during drying and milling stage. Consequently, local rice remains a largely homogenous product.

⁴² Personal communication with Dr Larry Wong Chee Keong, July 2019

⁴³ Op. cit.

⁴⁴ Personal communication, Zainuri Kurmain, 12 July 2018

Unlike differentiated foreign rice, local rice is marketed according to the broken content. Due to the significant value gap between grades in the strict pricing regime, market irregularities are rampant norms. These include adulteration of rice in terms of grades (higher percentage of broken than stipulated), local rice being sold as “imported rice”, and false claim of country of origin. While these irregularities contribute to the market disappearance of ST15, lower-income groups seem to have adapted to the present market offerings.

E. Bumiputra Miller Scheme

Besides its commercial and economic roles, Bernas has to deliver its social obligation to help improve the Bumiputra mills through the Bumiputra Millers Schemes (BMS). There are three types of schemes: Skim Pusat Belian (SPB), Skim Upah Mengering dan Kisar (SUMK) and Skim Upah Kisar (SUK). On the one hand, the objective of the scheme is to provide assistance to Bumiputra millers to have a supply of wet paddy (for SPB and SUMK) and supply of dried paddy (for SUK) and on the other hand, to overcome shortages in Bernas’ drying and milling capacity and in order to implement GMP (MIER, 2010).

According to the Privatisation Agreement, under the SPB, Bernas will buy paddy at the Bumiputra miller’s premise and will hand over to the mill for drying and storage. The miller shall then, in stages, purchase the padi from Bernas for milling and shall be given 90 days credit.

For the SUMK, Bernas supplies wet paddy to the mill for drying and milling to produce rice per Bernas’s specification, at a 68% recovery rate. In return, Bernas shall pay MYR10.50 for every 100kg of dried and milled rice produced. For the SUK Bernas shall supply dried paddy to the mill for processing and pay MYR2.15 for every 100 kg produced. However these terms have been adjusted in accordance to the changes taken place in the industry (MIER, 2010).

Table 3.
Bumiputera Miller Scheme

Year	Active	Inactive	Legal proceedings	M & A (by BERNAS)	Total
1996	39	15	51		105
2007	45	22			67
May 2018	30	9	16	1	56

Note: M&A - Merger and acquisition
Source: Bernas (2019)

The success of this programme is summarised in Table 2. When Bernas took over BMS in 1996, there were 105 registered Bumiputera mills. Out of 105 mills, 39 were active, 15 inactive and 51 were under NPL (non-performing loan) and most of them have stopped operating. Their quota of paddy increased from 121,000 tonnes in 1996 to 137,500 tonnes in 2007. This has encouraged participation from other Bumiputera mills in 2007 to 45 being active. By 2018, the total number of mills reduced by half to 56 mills, with 30 of them being active (with accumulated debt amounting

to MYR103 million), 16 inactive and under legal proceedings (MYR53 million debt), and 9 inactive (MYR22 million debt), with one to be acquired by Bernas (MYR15 million debt). The total debt is estimated at MYR193 million (Bernas, 2019). The total paddy purchased from this scheme reduced from 339,129 tonnes in 1999 to 242,702 tonnes in 2017, a decrease by one third. This programme cost Bernas MYR300 million in assistance of working capital, 61 workers and other related costs totalling MYR36 million.

Despite its good intentions, the above data shows the failure of the Bumiputra Millers Scheme. It reveals a number of pertinent connotations. The success of this scheme lies in the effectiveness of the symbiotic synergy between the two parties. The scheme was perceived workable under the LPN era, where the two parties were able to comply with the intended arrangement (PPBMM, 2017). In contrast, the synergy had seemingly failed under Bernas despite the injection of MYR300 million working capital to these millers (Bernas, 2019).

Discussions with Bumiputra millers and available literatures provide the following perspectives. According to the millers, LPN was a public STE while Bernas is a private entity and hence differed in its business orientation. Unlike LPN, Bernas made a number of joint-ventures with selected millers and wholesalers to secure its paddy procurement and rice distribution respectively. As mentioned earlier, this strategy has created a strong synergy between them, gaining efficiency through large scale operation and mutual cooperation. This structure is in stark contrast to the independent small mills, which were at a disadvantage due to heavy indebtedness (from inherited loans during LPN days), limited working capital, management inefficiency, stock depreciation as well as limited supply of paddy from Bernas⁴⁵. It is only natural that Bernas put more emphasis to its business partners for profit compared to the debt-laden and problematic small mills. Conversations with some Bernas officials mentioned that the lack of skills and commitment of the millers' to manage the resources towards improving their milling efficiency largely contributed to the failure of the partnership. Without taking sides, if the facts are verified, both are right in their stances. Clearly this theme deserves deeper interrogation.

Nevertheless, the millers' claim of low margin is no surprise as the new upgraded GMP and retail price had altered their mills' production cost structure in a negative way, evident in the closure of small mills in Kelantan (PPBMM, 2015). Additionally, the millers were not allowed to sell to non-Bernas buyers, which limited their marketing coverage (MTEM, 2018). With limited margins and heavy indebtedness, the millers had little surplus to improve their capacity and efficiency.

A possible explanation to the failure of this scheme may be the underrating and disregard for the entrepreneurial component. The development of an SME requires comprehensive package which includes entrepreneurship training and education, technological adoption, machine management, human resource and risk management skills, all of which are arguably beyond Bernas' interest and capacity. It may have been short-sighted for policymakers at the time to assume that entrepreneurs would arise from the provision of working capital and mutual arrangements alone.

⁴⁵ According MTEM (2018), the supply of paddy from Bernas at times were below the breakeven quantity of the small mills, hence inadequate to cover operation cost. Similarly PPBMM (2015) reported stock depreciation in value due to late collection from Bernas.

In a nutshell, this scheme is an asymmetric synergy between the two parties and a mismatch between the supports given and the actual needs of the millers. Nevertheless, the death of small mills over the years signifies the growing concentration of the rice milling sector and hence the erosion of competition.

F. Buyer of Last Resort (BoLR)

Under the Privatisation Agreement, Bernas is obliged to purchase any paddy which is offered for sale to any of its owned or managed purchasing centres. As concluded by MIER (2010), this function, which is linked to the GMP, was considered irrelevant as the paddy market was lopsided to a “buyers’ market”. In the early days of LPN’s existence, there were insufficient drying and milling capacities to accommodate the increase in production in granary areas of MADA and KADA. With the emergence of new private millers and upgraded facilities, the supply of paddy has become insufficient during certain periods of the year, thus necessitating the interstate movement of paddy. The BoLR role is therefore relevant where no mills are present or where it is uneconomical for Bernas to establish a mill. Areas where mills are limited include those in non-granary areas such as Langkawi, Pahang and Johor (MIER, 2010).

However, the introduction of the new GMP at MYR1,200/tonne and the actual deduction rate system changed the market game. The millers, whether big or small, suffered smaller profit margins and hence opted for higher deductions of paddy sold by farmers in order to maintain a profit (Rawaida, 2017 and PPBMM, 2015). Private millers may end up being highly selective in the quality of paddy bought to ensure high quality rice. Furthermore, the closing down of small mills in Kelantan had left little choice for the paddy farmers to sell their paddy (Bernas’ paddy market share in the eastern region was 92% in 2017). About 20% of the paddy produced by farmers are of low quality due to factors such as harvesting inefficiency and poor variety, among others (Rawaida et al., 2017). According to Bernas, about three-quarters of the paddy bought (130,000 tonnes) were of low quality (Muhamad et al., 2019). The convergence of all of these factors has increased Bernas’ role as the buyer of last resort since 2014. The influx of low quality paddy to Bernas’ mills incurred high costs which include: low recovery rate, transport and storage cost and quality degradation. At times Bernas had to absorb high volumes of poor quality paddy, reaching three to four times higher than its normal monthly rice stock. This reduced its import, which is made worse due to ample smuggled rice domestically. With low quality throughput, the output is equally bad with low quality rice being produced. It is estimated that Bernas could only produce 57% of graded rice compared to 60% by the private mills. The BoLR function is very costly to both Bernas and society, as the milling efficiency is suboptimal and consumers are the ones bearing the final costs.

The BoLR function is almost equivalent to a “market clearing” function of low quality or unwanted produce. Under an open market, the disposal of low quality produce is minimised as the system has its own way of discouraging and clearing unwanted products (via low buying price and diversion to value added uses). In other words, the existence of BoLR discourage the production of high quality paddy and diminishes innovations in value creation of poor quality rice (for alternative uses).

G. Value Chain Development

Upon its inception, Bernas aspired to restructure the previously fragmented value chain of paddy and rice of Malaysia. Consolidation was a necessary transitional stage, ideally through a rollout approach to acquire and merge small, weaker players whilst allowing the big, stronger ones to develop. Contrary to that expectation, shakeouts prevailed and ultimately resulted in a growing monopoly and a monopsony that consistently takes shares from private players. Rivalry, and thus hostility, rose above the critical need to intensify value chain development.

This may also represent a consequence of agricultural policy that has overtly emphasised on achieving a certain level of self-sufficiency through up-stream interventions. Without any incentives for downstream development, rice remains the single end-use of paddy in Malaysia.

The stagnant development in the paddy and rice industry can be described as premature deindustrialisation, which can be seen through the limited investment in technology and capacity while the investment climate appears lacklustre. Such transformation is starkly at odds with the revolution in Asian rice value chains that is observed by Reardon et al. (2014). Where value chain is manifested with developmental investments, China, India and Viet Nam witnessed technological improvement, scale expansion, quality refinement, consolidation, vertical coordination and integration. Their transformation proves to be enhancing food security, lowering consumer rice prices, improving rice quality, and increasing rice and end-use diversity.

Unintended Consequences

The signs of time run through fast in the last 50 years, but they were not elemental in instituting change to the industry's structure and policy. However, the prospects for reform had emerged with Malaysia's change in government on 9 May 2018. During the period running up to the election, liberalisation of imports was one of the promises made within the political manifesto of the new ruling government (Pakatan Harapan, 2018). Even without the manifesto promise, the underlying conditions for an STE has changed so much that it warrants a reexamination of the role and relevance of an STE in the current era. To gauge the cost of having Bernas is to assess the lost to the society by examining the unintended consequences and missed opportunities.

A. Overlooked Changing Dynamics

As the world evolves, it is clear that some of the policy premises held in the 1970-1990s are no longer relevant in the current era (Rashid, 2005). The following are the changes in the global landscapes that challenge the assumed policy premises:

- "Availability", or SSL, as an axis of food security is no longer adequate as other concerns are equally crucial such as nutrition security, sustainability of resources and stability of the economy (FAO, 1996). A system approach is needed to address this multi-functional paradigm.
- Lack of infrastructure no longer holds, with the exception of the non-granary areas. Heterogeneous areas are best served by local market players such as those in the hinterlands of Sabah and Sarawak (MIER, 2010).
- Market structure deficiencies are addressable and price asymmetry may no longer be relevant. ICT enables producers to by-pass middlemen through on-line business. Similarly, market information is speedy and accessible to all market participants (Rashid et al., 2008).
- Market insulation and protection have been proven in some parts of the world as distortive, inefficient, costly and hindering growth (World Bank, 1984 and 2012; Krueger et al., 1991; Jenkins and Lai, 1991; Dixit and Josling, 1997).
- With globalisation, international grain markets are more robust compared to the 1970s. Hence, global availability and accessibility is within reach.
- Institutional innovations in governance, civil society organisations, and services such as finance, insurance, and information services imply an increased role of the private sector and civil society, and a more decentralised but smaller presence of the state (Byerlee, 2009).

In short, holding the old premises in the current time is no longer persuasive. However, the political importance of the rice industry has not lost its stronghold as proven by the significant increase in the input and price subsidies after the 2008 crisis until today. Similarly, structural deficiencies continue to persist as discussed in the following paragraphs.

B. Missed Opportunities

A competitive market ensures an efficient allocation of resources so as to maximise aggregate welfare. Bernas may have shown touches of professionalism in fulfilling their functions and obligations, but their existence has overshadowed the potential improvements in sectoral performance that would have been realised under a relatively liberalised structure. Data for the sector are not available to prove this presumption, but experiences from some countries are more than convincing (World Bank, 1984; Jenkins and Lai, 1988; Timmer, 1996 and Bappenas et al., 2003). As indicated in the causal loop diagram both the coexistence of Bernas and other market interventions are responsible in impacting the market performance. The major unintended consequences are as follows.

(i) Competition and cooptation are undermined and hence all the benefits that come with it

Even though the intention underlying the Bernas establishment are developmental rather than predatory, their import monopoly and procurement strengthening strategies (joint venture with traders and millers) have in some ways reduced competition. The growing concentration in the milling sector is an example. After a decade of existence, the number of mills have reduced from 1,800⁴⁶ in 1968 to 1,597⁴⁷ in 1981 and 295 in 1987⁴⁸. By 2015, the number of mills have reduced to 157⁴⁹, a reduction of 90% between 1968-2015. The reduction was attributed to the institutional settings of LPN, GMP and subsidy policies, which necessitated the farmers to sell to either LPN's mills or registered private mills. These market interventions were continued and further reinforced through Bernas's joint venture activities which have created high barriers to entry for newcomers including farmers, Farmer's Associations or cooperatives. In retrospective, the structure then (in 1970s) was more competitive and inclusive (albeit sometimes inefficient). Better still, about 60% were cooperatives owned or run by the farmers and 70% of the millers were Bumiputra (Fatimah, 1980, Vokes, 1984 and PPBMM, 2015⁵⁰). In other words, this structure provided opportunities for vertical mobility for the farmers to venture into value added activities unlike the current industry setup. Similarly, very little room is available for farmers to venture into agribusiness in the inputs sector, as the input distribution has been centralised through NAFAS⁵¹ for almost 60 years.

(ii) The monopoly and oligopolistic structure of the import and milling sector, respectively, are not conducive to innovations

As concluded by FAO (2007) a monopoly or single gate keeper divorces producers from consumers as well as discourages product and marketing innovations as they add on to their operational cost. As summarised by Gulatia and Narayanan (2003), Malaysia's rice industry in general is inefficient with little innovations. "Status quo" is preferable and thus denying the changes in technology and consumer preferences. It also precludes

⁴⁶ From U Thet Zin (1970).

⁴⁷ National Paddy and Rice Authority (1981)

⁴⁸ Shamsuddin and Hashifah (1988).

⁴⁹ Ministry of Agriculture (2017).

⁵⁰ Personal communication with PPBMM, 31 July, 2017

⁵¹ NAFAS is National Farmer Association.

the development of alternative market structures — for example, informal and formal integration between producers, marketers and processors and direct relationships with customers Gropp et al., 2000).

- (iii) Limited upstream development (i.e. product growth and innovation, machines and mills for small farms for additional income and agricultural services). These developments are necessary to improve market prospect to the farmers.

This occurred due to the heavy presence of Bernas in the supply chain supported with pan-seasonal and pan-territorial producer pricing, and fixed retail pricing systems which effectively eliminated incentives for private arbitrage, investments in fixed capital by producers, and marketing intermediaries (Barrett, 2005, Jones. 1995). Low returns cause minimal investment in productivity improvement at the farm thus causing very little farm innovations. Similarly, competition amongst millers and incentives for service innovation is hampered by the low margins and the stronghold of Bernas over the supply chain of rice.

- (iv) Downstream development was virtually missing. Rice remains a single-use product in Malaysia

Other than vermicelli and rice-based feed for livestock, the paddy and rice based value added development is negligible due to strict price regime and monopolistic and monopsonistic in the import and milling sectors⁵² respectively. Aside from expanding the value creation of the industry, value added products increase the prices of rice and paddy received by farmers. There is a wide range of rice-based feedstock and consumer products which are non-existent in Malaysia. These value-added products include egg-roll wrappers, edible rice paper, rice flour, cakes and dumplings, rice-based alcoholic beverages, rice vinegar, milk and syrup. Rice-based convenience foods include rice starch, which is used as a thickening agent in food preparation, such as in infant formula. Industrial products include roofing material, livestock feed, fertilizer, fuel, bedding, incubation material, a seedbed medium, as well as being sometimes incorporated in livestock feeds, concrete blocks, tiles, fiberboard, ceramics, cement, filters, charcoal briquettes, and cooking gas production. Also rice for medicinal and beauty products (ricepedia.org).

- (v) Incubation programmes were not undertaken. Pro-competition and co-competition behaviours are necessary to nurture both upstream and downstream development

The importance of entrepreneurial development was overlooked in the BMS which partially explained for its failure. Local participation in the paddy and rice industry, especially by the small and medium enterprises (SMEs), could have been

⁵² Jomo Kwame Sundaram and Tan Zhai Gen (2019)

encouraged through vendor development and other entrepreneurial programmes. These programs would develop SMEs to be more competitive and progress from the basic business scope to using complex value-adding technologies, and eventually towards competing in the open market locally and internationally.

(vi) “One measure fits all” tragedy: Rich local paddy varieties are suppressed and sustainable farming practices are side lined

Each locality differs in geophysical condition, endowment and market dynamics. Therefore, pan-territorial and pan-seasonal pricing as well as the concentrated distribution networks impaired the enhancement of local diversity in variety and farming techniques, particularly in Sabah and Sarawak. The number of commercial paddy varieties planted are less than 20. However, in some regions in Malaysia, particularly Sabah and Sarawak, have more than 200 local varieties⁵³ not explored and commercialised. The fixed pricing also encouraged arbitrage activities at the border with Thailand. Bernas reported that about 27% of national consumption came from smuggling or subsistence farming⁵⁴. In some states, especially in Kelantan where the Thailand border meets Malaysia, the local market is overwhelmed (90%) with smuggled rice at the expense of the development of local varieties. Similarly, fixed pricing, standardised input subsidies and big mills disincentivise environmentally-friendly farm practices for sustainability.

(vii) Non-transparent market information system left paddy producers and small scale industry players “isolated” with limited bargaining power

The market information on paddy and rice by the public sector is confined to macro data, while Bernas as a private company does not share their business or market data with industry participants. The combination of non-transparent data coupled with the lack of competition precludes the possibility of discovering prices through an open bidding process, particularly to Bernas’s distributors (FAO, 2007). These data include market trends, changing consumer taste, quality, prices and so on. An efficient market information has positive benefits for farmers, traders and policymakers. An up-to-date, or current, market information enables farmers to negotiate with traders from a position of greater strength. Well-analysed historical market information enables farmers to make planting decisions in line with urban consumer demand, including those related to new crops (FAO, 1997). It allows traders to make better decisions regarding the viability of intra and, perhaps, inter-seasonal storage. The benefits also apply to policy makers and researchers as well. Limited data has denied Malaysia the benefits of critical comparison studies carried out by external researchers or agencies on the industry⁵⁵.

⁵³ Personal communication with Dr Anni Mitin, Executive Director, Southeast Asia Council for Food Security and Fair Trade (Seacon).

⁵⁴ Bernas (2019).

⁵⁵ Personal Communication with Dr. Samuel Taffesse, World Bank, 9 November 2019.

Conclusion and Policy Considerations

A. Conclusions

By default, the sphere of influence of Bernas functions are confined to those agreed in the Privatisation Agreement 1996, which focusses on the downstream sector such as the import monopoly, stockpile management, price stabilisation, sufficient supply of rice, BoLR and BMS. On the aggregate level, Bernas was able to achieve the targets of some of the functions with full professionalism and sharp business acumen. Their biggest contributions are: ensuring price stability, sufficient supply and adequate stockpile supported by the market protection instruments. This stabilisation effect is highly persuasive because it is an inducer of economic growth (Timmer, 2000). However, the paddy and rice eco-system is such that everything is intertwined in a circular loop. Hence, together with the protection strategies, Bernas's business activities are impacting the industry structure and behaviour with far-reaching implications. Bernas' activities, reinforced by the intervention strategies, resulted in unintended consequences which are counter-productive and beyond their intended sphere of influence. These include: distortive and uncompetitive markets (beyond farm) with high barriers to entry, little innovations upstream and downstream, low value addition and slow development of SMEs, limited mobility to producers, unsustainable farms (economically and ecologically), market irregularities and malpractices. Fast forward, without any reformation these problems will magnify.

The fiscal implications to the government is also high, comprising MYR2.2 billion for subsidies (input and output) in 2015 and MYR3.6 billion for ST15% production (2008-2015)⁵⁶. Despite indirectly taxing the public to support a high GMP, 90% of farmers are under the B40 category (MoA, 2019).

The above unintended consequences are the economic cost of having Bernas as an STE and the protectionist regime. The trade-offs of the policies are clear. The short term objective of stabilisation (price and supply) through an STE is achieved at the expense of resource efficiency, equity, growth and sustainability in the long term. Making a choice between the two is no easy feat.

B. Policy Considerations

To provide a comprehensive recommendation is beyond the scope of this paper as it requires a thorough study and policy simulation analysis. Nevertheless, suffice to conclude that the available performance data of Bernas are very telling and the arguments on the unintended consequences and counter-productive effect are strong until proven otherwise. Business-as-usual will create more of the same outcomes, hence, restructuring is imminent. The study observations provide cues on the fundamental considerations necessary for a shift in policy on the future of the STE in the paddy and rice industry.

⁵⁶ The petroleum subsidy valued at MYR5bn in 2018 (focusmalaysia.my)

In order to seek what is next after 48 years of an STE driven rice industry, the paper proposes a number of premises or policy considerations to guide the future restructuring of the industry. Being cognisant of the eco-system view, the following considerations are proposed:

- (i) Producers are the pillars of the industry, hence there is a need to improve the producer's income and welfare to sustain production and hence food security. The case of Malaysia's cocoa industry proves that low return pushes the producers out of the farm that caused the industry to collapse⁵⁷. In the case of rice, besides growth inducers, a competitive market should be provided to allow producers to take advantage of the value added as well as agribusiness ventures. This would mean the import, wholesaling and milling sectors have to be competitive by allowing more participants, efficiency and dynamism.
- (ii) Innovations (upstream and downstream) and paddy and rice-based SMEs are crucial developments to creating value addition and hence higher returns to the industry participants, including the producers. Innovations include: new products, marketing channels (online, direct marketing) and services (input, machines and advisory). Similarly, only a competitive market is able to nurture such creativity.
- (iii) The country has attempted to resolve the so called "market failure" through an STE to "get prices" right with enormous market distortions and costs. Hence, it is ripe now that Malaysia to focus on getting the "institution right" to achieve a truly food secured economy. Institutions refer to farm institutions such as farmer associations, input suppliers, market intelligence providers, service providers, millers, middlemen, and traders that are operating in a highly competitive environment to allow equitable distribution, efficiency and dynamism.
- (iv) A smooth transition is a must to minimise social disruption and erroneous decision that may backfire. The choices available are gradual, "meso-" and shock approaches⁵⁸.
- (v) An environmentally friendly paddy farming defines the food security of the future in terms of safety and resource sustainability.
- (vi) World rice volatility is given and beyond the country's control, but domestic capacity development is within the country's grasp.

Without the above considerations in the policy strategies, there will be no change to the industry. The list may go on, but these measures are the bare minimum needed to institute a meaningful change.

Besides the above considerations, based on the earlier deliberations, the following suggestions are equally convincing. First, the changing landscape of technology provides a new paradigm of doing business. As argued by Shahidur et al. (2005) an STE may not be that relevant under the new dynamics as some functions can be carried out by farmers themselves and the private sector with the help of technology. For instance, distribution and sourcing (including input) functions can be done i.e., online bypassing of Bernas, NAFAS and middlemen. Towards this end, new start-ups should be encouraged to take advantage of this opening. Exchanging technological information

⁵⁷ Fatimah et al., 2015.

⁵⁸ Meso-approach refers to a middle path option (Ofosu-Asare, K. (2018).

and experiences can be done in a similar manner. With ICT and IoT, a level playing field provides equal opportunities to all market participants, particularly the farmers, to venture beyond their territories.

Secondly, the experiences in other countries show that a deregulated market is a relatively efficient alternative to an STE. The experiences of Bangladesh, the Philippines, Ghana and Mexico should provide some leads to Malaysia. Bangladesh paved the way towards a private sector driven rice industry with heavy support from the government in terms of regulatory framework and facilitating function (Chowdhury et al., 2010). In the Philippines, the import monopoly of the National Food Authority has been eliminated. Their imports are now handled by 34 large private importers and 99 producer organisations (Larry Wong, 2019). Ghana has taken a “meso-approach” or middle path by liberalising some of the para-statal marketing activities⁵⁹. The results have been mixed, but are worth noting. These cases are evidenced on the plausibility of some deregulations to be emulated with local modifications.

Market deregulation will require the government to play a more active role in the management of paddy and rice prices for food security. Price stabilisation is still a relevant policy objective but it does not necessarily equate to fixated levels at all times. The floor price for paddy and ceiling prices for rice become indefensible when causing losses to millers and/or drifting too far away from world rice prices. A commensurate profit margin should be a conscious element in any policy related to the stabilisation of paddy and rice prices. In such policy making, informed decisions must rise above political interest for building a progressive and competitive private sector.

Alternative price support mechanisms that do not distort the market should be examined. This may include a deficiency payment method to support the price of paddy. It is freely traded on the open market and the government subsequently pays the producer the difference between the price obtained in the market and the declared support price. The advantage of the scheme is that it allows trade and marketing to proceed unfettered. However, it may impose a heavy burden in terms of budgetary expenditures. Producers are assured of guaranteed price irrespective of price movements in the market. Consumers are likely to pay a lower price with such a scheme than with a direct subsidy scheme.

As for income stabilisation, the other alternatives are institutional in nature. These include: collective impact through farmer cooperatives to improve bargaining power; improving farmers’ mobility through forward and backward value added activities, facilitated through the liberalisation of markets as well as the milling and trading sectors; and to encourage crop-mixing or multi-entreprises on the farm to improve income while minimising risk.

Third, building an efficient, growing paddy and rice industry is necessarily a lengthy process to boost food security. It involves institutional reformation encompassing the industry participants: private sector as investors and government participation as provider of a conducive economic

⁵⁹Op. cit.

environment. The crucial institutional supports include: infrastructure, R&D and extension, innovation, farmer institution, input development, machines and mills for small scale producers, ICT and IOT applications, precision farming among others.

Fourth, the continuance of the national rice stockpile represents an additional complexity. Were rice reserve to be entrusted to a single entity again, history could repeat itself. Access to and responsibility for the maintenance of the stockpile could be shared among a subsector of importers. While all importers would need to fulfil basic requirements before they can obtain a license, only those who can meet and demonstrate that they continue to maintain “capital adequacy standards⁶⁰” would be permitted access to this asset. Such players would be advantaged, but, as access would be shared and standards maintained, manipulations would be less likely.

Fifth, collective action may provide the substitute for or replace action by the government or the private parastatal (Staatz et al., 1993). There is a dire need to revive the framework for new cooperatives that are genuinely independent and self-governing among the producers or the small millers. This is so because in the past they have been discredited by government interference in their management. According to Staatz, a critical requirement for policy towards collective action is to reduce the scope for creating barriers to entry beside empowering them with skills, technology and entrepreneurship.

Sixth, an agency is needed to undertake a long-term structural transformation. The re-introduction of a “National Rice (Value Chain) Board”, which would, ideally, be funded by taxes imposed on rice imports and exports (cf. palm oil cess), would enable regulatory, research and developmental work as well as enabling monitoring and evaluation functions. The board would become the central research, policy and business exchange platform for co-managing value chain development. This strategy would nurture and maintain a resilient, inclusive, competitive and (both nature and business) environmentally-friendly rice industry. The Malaysian Palm Oil Board is a successful template worthy of reference.

Lastly, a thorough economic analysis and policy simulation modelling (preferably system dynamics methodology or other relevant techniques) are urgently needed to provide evidence-based policy recommendations.

⁶⁰ Governments routinely set such benchmarks and standards, especially for critically important sectors of an economy such as the Financial institutions

Food Policy at The Crossroads: Wither Roles of Bulog?

Bustanul Arifin⁶¹

A. Introduction

Food policy in Indonesia seems to have reached a crossroads, whether it proceeds in the direction of market reforms or strengthens the role of government by establishing the new National Food Agency (*Badan Pangan Nasional*) as mandated by Food Law No. 18/2012. In the staple food sector, existing price policies intend to protect farmers from price decreases during harvest season and to protect poor consumers from price spikes during non-harvest or planting seasons. However, these policies face serious structural enforcement issues and the policies do not work effectively in the field.

In the rice distribution system, the process starts at the upstream stage and ends at the downstream stage. At the upstream stage policies are directed towards the producing industry. Presidential Instruction (*Inpres*) No. 5/2015 on Rice Procurement Policies and Rice Distribution sets the reference purchasing price (*Harga Pembelian Pemerintah/HPP*) at IDR3,700/kg at the farm level and IDR4,600/kg at the mill level. In theory, HPP should be above the market price, as during the harvest season the price usually falls below the equilibrium. In this case, the government ensures that the price of grain or non-husked rice does not fall below the HPP.

Bulog is a state-owned enterprise that operates in the food sector and plays important roles in national food regulation policies. It procures national food stocks by buying the non-husked rice and milled rice, as the market usually experiences an excess supply of rice. When the market price recently rose above the reference price, the government responded by giving the HPP the flexibility to increase by 10% to more than IDR4,000/kg at the farm level. The hope was that Bulog would meet the target of procuring 1.5-2.0 million tonnes of rice for stability purposes. During 2018, however, Bulog did not meet the target because the market price of rice was very high and production was not sufficient. As a result, the government took the decision to import 500,000 tonnes of rice mostly from Thailand and Vietnam. Total rice imports in 2018 reached a record high of 2.25 million tonnes, worth more than USD1 billion or around IDR15 trillion.

At the downstream stage of the consumer market, the government sets a maximum retail price (*Harga Eceran Tertinggi/HET*) for rice based on the Ministry of Trade (MOT) Regulation No. 57/2017. The HET for medium and premium quality rice differs across Indonesia: IDR9,450 and IDR12,800/kg respectively in Java, Lampung, South Sumatra, Bali, West Nusa Tenggara, and Sulawesi; IDR9,950 and IDR13,300/kg in Sumatra other than Lampung, South Sumatra, East Nusa Tenggara and Kalimantan; and IDR10,250 and IDR13,600/kg in Maluku and Papua. The HET

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policy is meant for administrative purposes only – as a signal for Bulog to release rice into the

market and possibly also trigger import decisions. However, the enforcement of this policy has proven difficult. The national police established a special Task Force for Food (Satuan Tugas Pangan/Satgas Pangan) that goes after suppliers who sell above the HET, but the number of rice retailers and traditional markets are simply too many to track them all down.

Bulog also plays a role in the Non-Cash Food Assistance (*Bantuan Pangan Non-Tunai*/BPNT) program, which was initiated by the government in 2018, starting in pilot projects in 44 districts/cities. BPNT essentially replaced the “rice for the poor” (*Raskin* or *Rastra*) policy, which provided subsidized rice to targeted poor family households (*Rumah Tangga Sasaran*/RTS). Instead, BPNT is a food aid program for underprivileged beneficiary families (*Keluarga Penerima Manfaat*/KPM). The design of the BPNT policy is actually simple, using vouchers or smart cards that are being topped up every month with USD 7.8 (IDR110,000) and distributed to poor KPM families. Vouchers can be redeemed to buy rice and eggs at market prices at traditional market traders and registered stalls. The aim is to provide balanced nutritious food (rice-carbohydrate and egg-protein) to poor families. BPNT also intends to improve basic food choices of the poor, not only rice but also protein, as well as to encourage local retail businesses and community stalls to grow and serve the poor. Gradually, the BPNT policy will shift Bulog’s role from distributing subsidized rice to supplying rice to a number of retail businesses and stalls in each district. Special treatment will be given to remote locations that are not covered by the internet or data connections. They will continue to receive in-kind assistance or rice for the poor and underprivileged families.

This paper examines the current food policy in Indonesia, in particular the role of Bulog, given the most recent developments in the policy content and context of the Indonesian economy. Section 2 discusses the main rationale for food price stabilisation in Indonesia. Section 3 evaluates the food policy at the upstream and downstream stages with special attention to the introduction of BPNT in recent years. Section 4 provides concluding remarks and options for future policy changes.

B. Food Price Stability

For the past four decades, food price stability has been a policy priority to achieve food security in Indonesia but its effectiveness has recently been questioned. In the past, the food price policy aimed at keeping food prices stable at the farm and consumer levels, especially for rice as the staple food. The price stabilisation policy was praised as credible and effectively enforced from central to regional levels of government. Two major policies were implemented. First, a floor price kept the farm-gate price of rice well above production costs. The government mandated Bulog to buy rice that was not absorbed by the market, especially during harvest season. The procured rice was used to build a national buffer stock. The economic rationale behind maintaining the floor price above the market-clearing level was to protect against market failure, to ensure profitability for farmers, and to procure enough rice for Bulog’s operations. Second, a ceiling price made rice affordable to low-income households, especially in urban areas. Whenever prices went above the ceiling due to drought and other natural calamities, Bulog would conduct market operations and sell cheaper rice to targeted consumers (Arifin *et al.*, 2019).

The argument in support of such market interventions was to avoid price spikes, which could trigger social unrest, such as those that happened under Indonesia’s first President Soekarno (1945-67). This price policy is known as a “price band”, where fluctuations occur within the band of floor and ceiling prices. However, as the Indonesian economic policy shifted toward

greater openness, including deregulation policies in international trade, banking, and finance, Bulog's closed and centralised management system started losing its effectiveness and acceptability. Significant problems arose when the rice trade and distribution activities were mismanaged, including the rice price stabilisation and consumption subsidies. Indonesia had adopted an economic decentralisation policy in 1999 allowing local governments across the country to formulate and implement their own food policy, including managing food stocks and stabilising prices. There was significant uncertainty in food policies during the first two years of decentralisation, until the government revised the formal structure of Bulog from a government agency to a state-owned enterprise (SOE) in the form of a public company (*Perusahaan Umum/Perum*) in 2003.

Table 1 lists the evolution of food price stabilisation and the role of Bulog in the national food policy. During the centralised era of President Soeharto (1967-98), the role of Bulog was quite outstanding, serving as the main guardian of stable rice prices. As a military general, President Soeharto saw "logistics" (*urusan logistik*) from a military perspective and gave rice a priority in the logistics system to be prepared for times of war. Those who control the logistics will improve their chances to win the war. Bulog was established as a vertical-line logistics agency, from the central, to provincial, and down to the district level. At that time, Generals Bustanil Arifin and Achmad Tirta Sudiro made Bulog well known for its tight and militaristic management that was able to stabilize prices. Price fluctuations were tolerated as long as they did not go higher than the upper limit of the price band (ceiling price) and not lower than the lower limit of price band (floor price). Village cooperatives (*Koperasi Unit Desa/KUD*) were required to implement the price stabilisation policy. They directly purchased rice from farmers, as long as technical requirements were met, such as moisture content, length of the rice kernel (small or large broken), foreign material, etc.

The price stabilisation policy was under a linear, top-down, militaristic management until the fall of President Soeharto in 1998. Thereafter, Indonesia's food policy and Bulog had to go through a difficult transition that involved legal and governance issues and high-level political interference in stock management, distribution, and price stabilisation. Bulog as a parastatal agency was transformed into a state-owned enterprise (SOE). It was entrusted with the business of securing high quality staple foods in sufficient amounts to fulfill the demand for food by all Indonesians. The transformation triggered skeptical questions, whether it will improve the governance and effectiveness of the food policy or maintain a strong control by the central government over food security in general and food policy in particular.

Government Regulation (*Peraturan Pemerintah/PP*) No. 7/2003 defined the new role of *Perum* Bulog but it was immediately facing changes in the internal and external environment of food policy. Just a few months later, the mandate of Bulog was amended in Government Regulation PP No. 16/2003, providing Bulog with the flexibility and some discretionary powers to maintain a balance between its corporate (i.e. profit maximization) and public obligations.⁶²

⁶² The transition of Bulog from successful food price stabilisation to its troubled present performance has been examined more thoroughly elsewhere (Arifin, 2008).

The current administration of President Joko Widodo issued Government Regulation PP No.

13/2016 to increase the effectiveness of the food price policy and to improve the performance of Perum Bulog. Previous rules and regulations such as PP No. 7/2003 and PP No. 16/2003 remain valid as long as they do not contradict with new regulations of PP No. 13/2016. Moreover, Presidential Regulation (Peraturan Presiden/Perpres) No. 48/2016 mandates Bulog to ensure food availability and price stabilisation of 11 food commodities, namely: rice, maize, soybeans, sugar, cooking oil, wheat flour, onions, chilies, beef, chicken, and eggs. Other SOEs are contributing to ensuring food availability and price stabilisation for other foods, except for rice, maize, and soybeans.

Table 1.
Evolution of Food-Price Stabilization and the Roles of Bulog

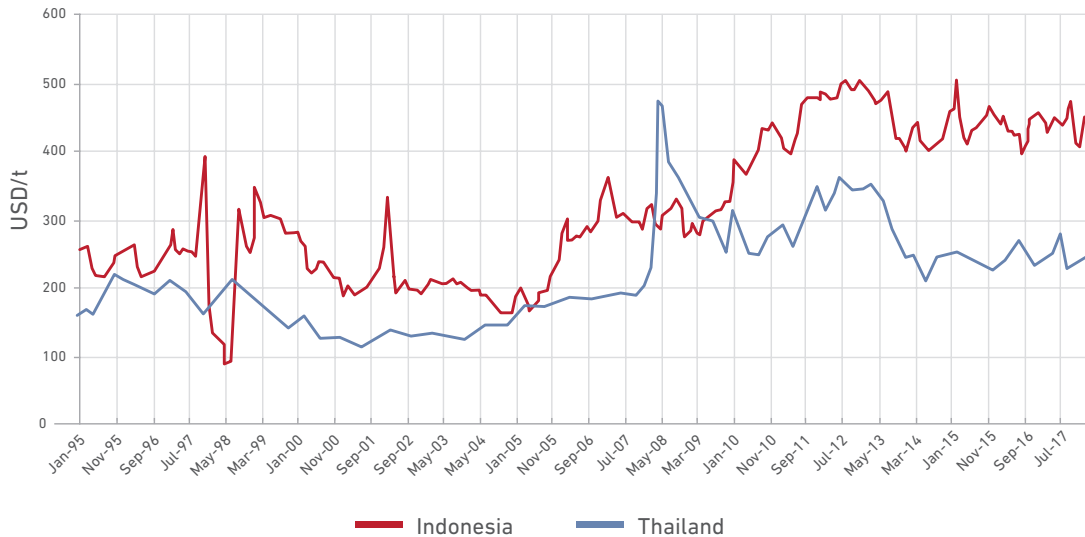
Before 1998	BULOG is a parastatal or government agency for food logistics.
1998 - 2001	The food policy and BULOG are facing a difficult transition, especially influenced by decentralisation and regional autonomy.
2001 - 2003	The difficult transition continues, some legal and governance cases emerge, where stock management, distribution and price stabilisation become matters of high-level politics.
PP No. 7/2003	The food policy and BULOG are facing a difficult transition, especially influenced by decentralisation and regional autonomy.
PP No. 16/2003	Flexibility and discretionary powers were granted to BULOG to maintain the balance between corporate and public obligations.
Presidential Instruction / Inpres No. 2/2005	The price-band policy changed into a floor-price procurement policy (HDPP). The food policy also covers rice subsidies for the poor and a certain amount of rice managed by BULOG to meet community needs for rice during food shortages, price fluctuations and emergencies (Government rice reserves / <i>Cadangan Beras Pemerintah/CBP</i>). The ceiling price policy is fully integrated with market operations and the "Rice For The Poor" (<i>Raskin</i>) program.
Inpres No. 3/2007	Similar to Inpres No. 2/2005 - sets new procurement price for rice.
Inpres No. 1/2008	Similar to Inpres No. 3/2007 - sets new procurement price for rice.

Inpres No. 7/2009	Similar to Inpres No. 1/2008 - sets new procurement price for rice.
Inpres No. 8/2011	The food policy and BULOG are facing a difficult transition, especially influenced by decentralisation and regional autonomy.
Inpres No. 3/2012	A more pragmatic policy that sets a new procurement price for rice.
Inpres No. 5/2015	Similar to Inpres No. 3/2012 - sets new procurement price for rice.
Ministry of Trade Regulation / Permendag No. 57/2017	Sets ceiling reference price (HET) by region, but no new procurement price for rice.
Presidential Regulation / Perpres No. 63/2017	Non-Cash Food Assistance (BPNT). Rice for the poor (<i>Rastra</i>) is implemented by the Ministry of Social Affairs. BULOG lost significant authority in rice distribution.

Source: Synthesized by the author, from several sources

Despite the powerful position of Bulog, the widening gap between global and domestic rice prices since 2010 posed serious challenges to food-price stability and food security in Indonesia. The average domestic price of medium quality rice has exceeded IDR10,000/kg, which created significant food access problems, especially among the poor, while the average world price of rice was only around USD300/tonne or about IDR6,000/kg.

Figure 1.
Widening Gap Between Global and Domestic Prices of Rice: A Serious Challenge



Source: OECD, 2018

The average domestic price of medium quality rice has exceeded IDR10,000/kg, which created significant food access problems, especially among the poor, while the average world price of rice was only around USD300/tonne or about IDR6,000/kg.

This rapidly increasing price differential is one indication of the high cost of Indonesia's food self-sufficiency policy. Prices for beef and other food commodities are also well above international prices. These price premiums are estimated to have 'taxed' Indonesian consumers approximately USD 98 billion between 2013 and 2015 (Heufers and Patunru, 2018). For 2010, OECD calculated the total support estimated for agriculture (costs that support the agricultural sector borne by the overall economy) to be USD26.9 billion (OECD, 2012). By comparison, all development expenditures for agriculture (including infrastructure, research and development, agricultural schools, inspection services, etc.) was only USD1.6 billion (OECD 2012). The high domestic food prices also do not benefit most farmers, because two-thirds of Indonesian farmers are net consumers of food and therefore face inflated food prices themselves.

In this context, the food-price instability appears related to the inefficiencies of food-value chains in Indonesia; rice and other strategic foods pass through the hands of traders, distributors, and retailers under asymmetric information and non-competitive market structures. Rice passes from farmers through about five types of intermediaries before reaching consumers – namely middlemen, rice millers, major wholesalers, minor wholesalers, and retailers. Moreover, the Indonesian Competition Commission (*Komisi Pengawas Persaingan Usaha/KPPU*) suspects a handful of large wholesalers to control the distribution process and therefore retail prices (KPPU 2016; Bhinadi, 2012; Pradana, 2015).

The allegations of the KPPU need to be thoroughly investigated and cases of restrictive business practices need to be punished. Research has shown that wholesalers and large-scale rice millers make the largest share of the profit (61,1%) in West Java but the situation is different in other parts of Indonesia. In East Java, 80,4% goes to middlemen and rice millers. Meanwhile, in North

Sulawesi farmers gain most and middlemen and rice millers only capture 15,7% of the profit.

The production and distribution chain cannot be artificially cut short as it is caused by the geography of the Indonesian archipelago. Middlemen are needed to aggregate rice from farmers and sell them to millers, who pass their products to regional and local distribution chains of wholesalers and retailers. This chain can only be shortened if farmers had more market information and better market access to reach millers directly. This requires strong government support for the development of physical infrastructure and information technology. Moreover, the vertical integration of retailers, millers, and farmers should be encouraged if it can increase efficiency.

In addition, the high domestic rice price is also driven by restrictions on imports, an increase in production costs including labor costs and land rental, and the high costs in transportation and marketing. When imports are permitted, importers have to go through a complex licensing process that involves several government authorities. The Coordinating Ministry of Economic Affairs Regulation No. 05/2018 stipulates that the quantity of rice imports by Bulog is decided through a coordinating meeting involving the Ministry of Agriculture, the Ministry of Trade, the Ministry of Finance, the Ministry of State-Owned Enterprises and the Managing Director of Bulog. Any setting and revisions of the import quota require such meetings, which can invoke serious disagreements between government agencies that cause import delays.⁶³ They also send signals of a pending procurement decision to the international markets, giving them a reason and opportunity to raise their purchase prices. Once the coordinating meeting has agreed on the import quantities, a recommendation letter from the Ministry of Agriculture must be issued. Thereafter, Ministry of Trade Regulation No. 01/2018 Article 17 requires Bulog to electronically submit the required documents to MOT to receive an import permit.

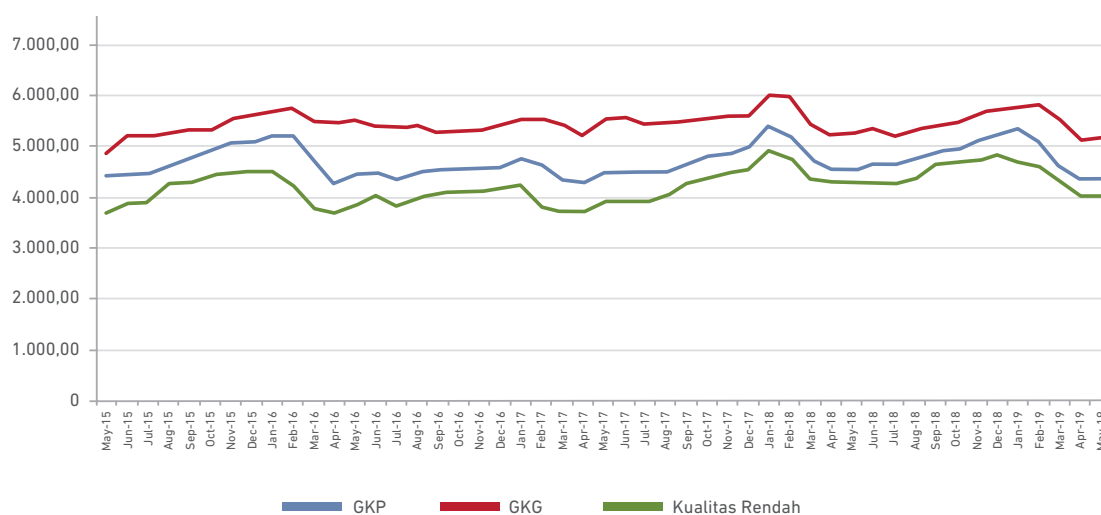
Delays caused by these bureaucratic procedures can be costly. From January 2010 to March 2017, Bulog often imported rice when the international rice price was higher than the price in the preceding month. This happened in 2010 (November and December), 2011 (September), 2012 (December), 2013 (January), 2014 (October and December), 2015 (June), 2016 (January and February), and 2017 (March). A study by the Center for Indonesian Policy Studies calculated that Bulog could have saved more than IDR303 billion (USD22 million) had it been able to purchase rice when the price was lower (Respatiadi and Nabila, 2017). This has an effect on Bulog's financial situation. From the beginning of January 2010 to the end of December 2015, Bulog's debts and liabilities grew by 74% from IDR12.7 trillion to more than 22.1 trillion, equaling about 80% of its overall assets (Bulog Annual Report, 2011-2015).

During 2018, the current food policy was in a political bind when the actual rice production was lower than reported by the government and also influenced by the extreme weather of El Niño in 2017. In January 2018, the government decided to import 500,000 tonnes of rice, mostly from Thailand and Vietnam, which sparked public controversy. The situation only calmed down after the government announced that, after re-calculating the national rice production in 2018,

⁶³ The most recent case was the disagreement in August 2018 over the permit granted by MOT to Bulog to import 1 million tons of medium-quality rice for the second half of the year, making the year's total rice imports reach 2 million tons, the highest since 2011. The controversy involved the President, MOT, MOA, Bulog and the national parliament.

Indonesia only harvested 56.54 million tonnes of dry husked rice (*Gabah Kering Giling/GKG*). The new estimate relied on a new area sampling frame method (*Kerangka Sampel Area/KSA*) that combines spatial data for the harvested area with a statistical sampling method for the rice yield or productivity. The new KSA method found that 26.46 million less hectares were used for rice production than estimated by the conventional method using eye-observations, which is a difference of 31,88%. The harvested area as measured by the KSA in 2018 was only 10.9 million hectares, far lower than the 16 million hectares of the eye-estimates. The difference of 5.1 million ha is too high to be tolerable statistically, causing biases in development planning for fertilizer, seed subsidies, agricultural machinery and equipment, etc.⁶⁴

Figure 2.
Farm-gate Prices of Dry Unhusked (GKP), Dry Husked (GKG), and Low-Quality Rice (2015-2019)



Source: Collected from Monthly Statistics by Statistics Indonesia (BPS)

According to a 2018 survey by Indonesia's national statistics agency (Statistics Indonesia/BPS), the total production cost of rice was IDR13.56 million per hectare. Labor costs contribute the highest share (48,79%), followed by land rent (25,61%), and fertilizer costs (9,43%). These estimates are in line with comparative studies among six Asian rice-producing countries (Bordey, *et al.*, 2018) that found rice production costs in Indonesia at IDR4,079/kg. Indonesian production costs are about 2.5 times higher than in Vietnam and about twice as high as in Thailand and India. Similarly, labor costs of IDR1,115/kg in Indonesia are nearly 10 times higher than labor costs in Vietnam (IDR120/kg) or about 8 times the labor costs in Thailand (IDR 172/kg).

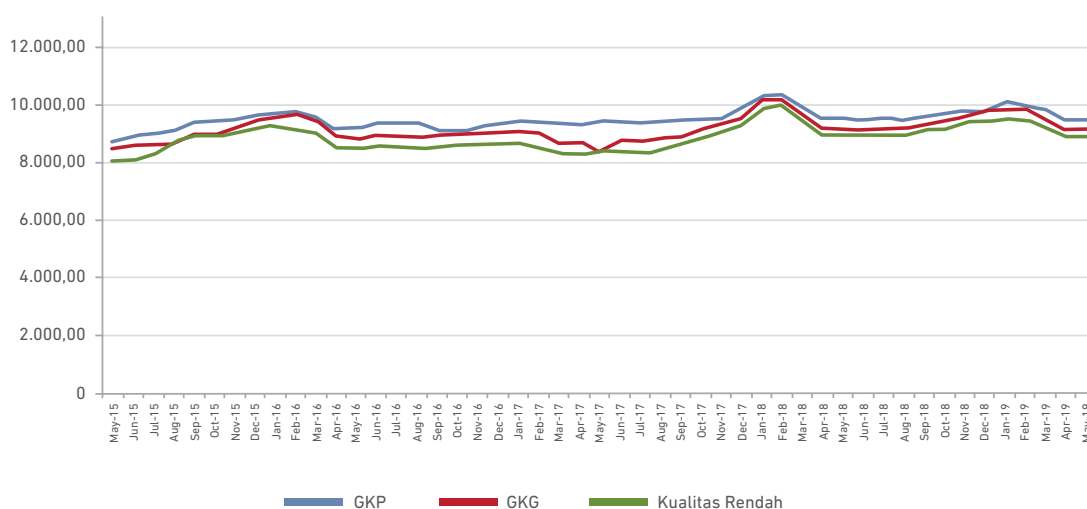
Despite these production costs, the price of unhusked rice (GKP, 20 % of moisture content) at farm level fell to IDR4,357/kg in April 2019, down by around IDR 1,000/kg compared to January's IDR5,353/kg or down 4,37 % of the April 2018 price of IDR4,556/kg. The market price of unhusked

⁶⁴ A detailed description of the effects of the new area sampling frame method on Indonesian food statistics was provided by the Center for Indonesian Policy Studies (Ruslan, 2019).

rice of the lowest quality has not yet fallen below the reference floor price (HPP) in the Presidential Instruction (*Inpres*) No. 5/2015 (See Figure 2).

Meanwhile, the role of Bulog in domestic rice procurement has decreased significantly from 2.96 million tonnes in 2016, which was a record high amount, to 2.16 million tonnes in 2017, and declined again to 1.49 million tonnes in 2018. Until the middle of 2019, Bulog's rice procurement reached only about 545,000 tonnes, far lower than the annual average in the last decades. This could indicate some possibilities, such as (a) low supply of rice in the market, (b) aggressiveness of private sector traders in rice procurement, and (c) increasing rice stocks by households. Bulog's objectives to maintain food availability and price stability were hard to achieve in 2019. The price of medium quality rice at the mill level in May 2019 was IDR9,144/kg. It declined by IDR800/kg compared to January 2019 prices but was higher than the price of IDR8,242/kg in May 2015 (see Figure 3). The 2019 rice prices at the mill level were very far above the floor price (HPP) of IDR7.300/kg which serves as the reference price for Bulog's market operations. The retail price of medium quality rice in April 2019 was recorded at IDR14.021/kg, much higher than the ceiling price (HET) set by Ministry of Trade Regulation No. 57/2017.

Figure 3.
Rice Prices at the Mill Level by Length of The Rice Kernel (small or large broken) 2015-2019 (IDR/kg).



Source: Collected from Monthly Statistics by Statistics Indonesia (BPS)

Bulog's stock management to maintain food availability and price stability began to face problems that were similar to the problems during the period when Bulog transitioned from an agency to its corporate structure in 2004-05. After becoming an SOE, the operational costs of Bulog were not directly covered by the state budget (APBN) anymore, but had to be financed by commercial banks. According to Bulog's Managing Director, Budi Waseso, Bulog needs to about IDR240-250 billion or about USD18 million per month to pay interest on the bank loans that were obtained to procure food commodities (Kumparan, 2019).

For the time being, Bulog still obtains operational costs from the state budget, primarily for for market operations or the distribution of the government reserves and buffer stocks (*Cadangan*

Beras Pemerintah/CBP). However, the state budget that was formerly given to Bulog for the “Rice for the Poor” (*Raskin*) program has now been allocated to the Ministry of Social Affairs that manages the BPNT budget. According to Mr. Waseso this causes a deficit that can put Bulog on the brink of bankruptcy, if Bulog’s procured rice stocks cannot be sold in the market and bank interests cannot be paid.

The economic and social benefits drawn from government interventions through Bulog to maintain food availability and price stability might not be sufficient to justify considerable transaction costs arising from such intervention, given that the consequences of these governance issues must be borne by the entire society (see Valdes and Foster, 2005; Arifin, 2008).

C. Changes from *Rastra* to Non-Cash Food Assistance

The current government administration of President Joko Widodo has changed the design of the “rice for the poor” (*Rastra*) program from a direct in-kind rice distribution to Non-Cash Food Assistance (BPNT). A total of 19.5 million poor beneficiary households (KPM) of *Rastra* are given a smart card or coupon vouchers worth IDR110.000/month that can be redeemed to buy rice (carbohydrates) and eggs (protein) from small food vendors (e-warung) or designated modern minimarkets across the country. These changes from *Rastra* to BPNT are designed to change Bulog’s rice distribution to a more market-based food distribution system and also strengthen small and medium food retailers. In 2017, the BPNT has started in 44 major cities, distributing food vouchers to 5.5 million poor households. In 2018, the beneficiary groups (KPM) increased to 9.5 million households, before implementing the full target of 19.5 million households in 2019, except those living in remote locations and not easily reached by internet or data connections. At the same time, the government has been improving the cost-effectiveness of the programs, such as providing more assistance in urban areas, tightening the eligibility criteria, increasing public awareness, improving the reporting mechanism of the beneficiaries, etc.

The rice for the poor program was previously known as the *Raskin* program, a distribution of subsidised rice to poor households. The *Raskin* program has been in place for over 20 years, developed from the Special Market Operations (OPK) program in 1998 to help reduce the impact of the Asian Economic Crisis. The *Raskin* was officially launched in 2002, a year before the major transformation of Bulog from a government agency into a state-owned enterprise. The scientific justification of the *Raskin* program was quite strong, because as much as 65% of the expenditure of poor families is allocated for food consumption and 26% is spent on rice. This condition makes poor Indonesian families highly vulnerable to rising rice prices. A study by the Center for Indonesian Policy Studies estimated that a rice price increase of IDR1,000 reduces monthly household consumption in Sumba by 0,673 kg and eventually leads to an increased probability of a household having a stunted child by 2,44% (Ilman and Wibisono, 2019). High rice prices ultimately contribute to stunted growth that affects more than 50% of children in East Nusa Tenggara (Beal, *et al.*, 2018) and about a third of all five-year-old children in Indonesia. When rice prices increased after the government had removed fuel subsidies (*Bahan Bakar Minyak*) in 2014, the national poverty rate increased to 28.59 million (11.22% of the total population) in March 2015, from the previous 27.73 million (10.96%) in September 2014. By March 2019, the poverty rate decreased to a record low of 25.14 million (9.41%) but the pace of the decrease has slowed down. The poverty rate in rural areas remains high, with 15.15 million or 62.2% of all poor people, while the urban areas has a poverty rate of 9.99 million people or 37.8%.

Social assistance in the form of subsidized rice for low-income families (*Raskin or Rastra*) is one of the four important components of Bulog's public service obligations. The other three are rice distribution to military and police personnel, providing rice during natural disasters, and market operations for food availability and price stability (*Ketersediaan Pangan dan Stabilisasi Harga/ KPSH*). While these instruments may have some effects on rice price stability, but when there are low supplies of rice like in early 2015, these instruments are questionable. At that time the price of rice increased more than 25% and the government ordered *Perum* Bulog to conduct a market operation by selling 300,000 tonnes of rice. Still, the retail rice price remained high, even though rice traders of the Cipinang Food Station were summoned to appear directly before the President in the State Palace. It appeared that national food policies, especially for rice, needs to be formulated more comprehensively, covering the upstream issues at the farmers level, distribution, trading issues, and the rice consumption level. In other words, it needs to cover the production performance, procurement of rice, reference the purchase price of the government (HPP), stock management, subsidised rice prices for poor families (*Raskin or Rastra*) and details of market operations of rice all over the country.

The absence of *Rastra* distribution from November 2014 to January 2015 provided a painful lesson that timely *Rastra* distribution affects staple food prices, especially rice. In other words, stable prices cannot be achieved with Bulog market operations alone. The government through Bulog used to distribute around 242,000 tonnes of rice in the *Rastra* program every month. The poor families, who were meant to receive free rice, apparently had to buy around 725,000 tonnes of rice during the three months. This created a significant upward price pressure. By 2016, the *Rastra* allocation returned to "normal" by distributing 2.8 million tonnes of rice to 15.5 million target households.

It should be noted that starting in 2017, the poor families that were previously known as targeted poor families (RTS) in the *Rastra* program, are now seen as beneficiary families (KPM) in the BPNT program. The changes from *Rastra* to BPNT indicate changes in the food subsidy philosophy, from a price subsidy to disadvantaged groups that aims at both price stabilisation and social protection, to just a social protection policy.

The rice price in 2019 is relatively more stable than in previous years. The average national retail price of rice has decreased to IDR13,951/kg in June 2019, a significant decline compared to prices in February 2019, which reached a high of IDR14,313/kg (Statistics Indonesia, July 2019). The harvest season in April-May had quite an impact on the stability of rice prices and there were no serious price spikes during *Ramadhan* and *Idul Fitri* 2019. Although food is still the largest contributor to inflation (1.63%), the inflation rate in the first half of 2019 remained at 2.05% and the year-on-year inflation rate stood at 3.28% in June 2019. This is within the inflation range that was anticipated by the government at the beginning of the year. A more in-depth and thorough quantitative analysis is yet to establish whether the BPNT program caused this price stability.

However, there remains a large disparity in retail rice prices between Indonesian regions, due to the different harvest seasons and production systems. In mid-July 2019, the average retail price of rice in West Nusa Tenggara Province was as low as IDR 9,700/kg, followed by South Sulawesi at IDR9,900/kg and Aceh at IDR 10,400/kg. These three provinces are rice production centers and often experience a rice surplus. At the same time, the average retail rice price in Jakarta was recorded at IDR 12,600/kg, IDR13,250/kg in Riau Islands, and IDR13,650/ kg in Central

Kalimantan. The last three provinces are centers of rice consumption which often experience rice deficits, sometimes throughout the year (Bank Indonesia, July 2019). These data reveal that inter-island trade in food is closely related to the logistics system in general, including trade infrastructure, facilities, actors, and economic governance, which are not in the scope of the current analysis.

Table 2.
Rice Allocation for Poor Households
(2015-2018)

Year	2015	2016	2017	2018
Number of Poor Households	15,530,897	15,530,897	15,530,897	15,498,936
Targeted Households-Rastra	15,530,897	15,530,897	14,212,742	12,184,439
Percentage of Poor Households	100	100	91.51	78.61
Duration (month)	14	12	12	12
Total Rice Allocation (tonnes)	3,261,488	2,795,561	2,558,293	1,142,018
Realization of Rice Distribution	3,202,022	2,782,326	2,558,293	1,142,018
Percentage of Total Allocation	98.18	99.53	100	100

Source: Bulog, 2019

After the implementation of BPNT in 2018, the total amount of rice being distributed by Bulog was only 1.14 million tonnes, a significant decrease from 3.26 million tonnes in 2015, 2.8 million tonnes in 2016, and 2.56 million tonnes in 2017. Up until June of 2019, total rice distribution by Bulog was only 213,500 tonnes, which demonstrates the decreasing role of Bulog in rice distribution to low-income families. The policy changes from *Rastra* to BPNT have resulted in Bulog's decreasing role in Indonesia's rice policy and price stabilisation. Recent reports show that the amount of government rice reserves (CBP) managed by Bulog have increased to over 1.5 million tonnes by mid 2019, due to the difficulties in distributing the rice to low-income families, hence affecting the performance of stock management in general.

The risks of rice overstocks by Bulog include high maintenance costs, decreasing rice quality, and reputational risks for Bulog as a state-owned enterprise. For the government, Bulog rice overstocks have consequences for the credibility of its policies for food availability and price stability. They reveal issues with the overall design and implementation of the food security policy, especially for price stability and social protection of poor families and their demand for rice. Policy challenges include how to integrate food policy and rice procurement policy with the management of government food reserves (CBP). Food policy integration and coordination are much needed, in particular among ministries involved directly with food policy, such as the Ministry of Agriculture, the Ministry of Trade, the Ministry of Social Affairs, the Coordinating Ministry of Economic Affairs and the Coordinating Ministry for Human Development and Cultural Affairs. In the short run, the government has allowed Bulog to reduce rice overstocks by distributing them through the BPNT program, at least until the end of 2019 (Tirto News, 2019).

D. Concluding Remarks: Food Policy Options for the Future

This paper has shown Indonesia's food policy and Bulog at the cross-roads with several policy changes that responded to the policy context. The price stabilisation policy on rice as a staple food has not changed significantly in the last four years, even though the market price of rice rose above the floor price (HPP) stipulated in Presidential Instruction No. 5/2015. Similarly, the ceiling reference price of rice (HET) as stipulated in Ministry of Trade Regulation No. 57/2017 has not been effective as the market retail price is far above the ceiling price. The change from "Rice for the Poor" (*Rastra*) to Non-Cash Food Assistance (BPNT) has shocked Bulog's management, resulting in rice overstocks that threaten to upend current policy instruments for price stability in rice and other food crops. Abandoning the price-stability objective of the *Rastra* program in the new BPNT program has changed the overall food policy implementation at the field level.

Food policy in the future should provide a guarantee regarding food availability, food accessibility, and food utilization at affordable prices to ensure sustainable, healthy, active and productive living throughout the year. Rice policy needs to focus on increasing farmers' income, improving food access and quality nutrition, and ensuring price stability across regions and throughout the year. Since the share of food expenditure is very large and rice expenditure contributes to about 65% of total food expenditure, food price stability has a major influence on the inflation rate in Indonesia. Although food consumption is more diversified among middle and high-income groups, rice price stability remains a relevant agenda for both rural and urban populations.

Efforts to increase farmers' incomes are not identical to simply increasing food production and food policies that emphasize the supply side alone are certainly not adequate. Food policies need to take into consideration the increasing the demand for food, which implies increasing people's income. Higher farmer incomes could reduce rural poverty. Lower food prices could reduce inflation, so that poverty in urban areas (and also in rural areas) may decrease. Combined strategies to increase both food production and the demand for food products can reduce poverty and encourage food price stability. Public debates regarding the proposed National Food Agency, as mandated by Article 126-129 of the Food Law No. 18/2012, might not provide comprehensive solutions for food policy problems. In terms of food policy formulation and implementation this new agency might have potential conflicts of interests with existing government agencies, such as the Ministry of Agriculture, the Ministry of Trade, the Ministry of Social Affairs, unless the President is willing to have another special super-agency on all food affairs with significant authority to ensure all aspects of food security, such as food availability, food accessibility, and food utilization from central level all the way down to the provincial and local levels.

Therefore, food policies in the future should consist of supply-side components by increasing food production through the following steps: (1) improvement of farm management, new incentive systems based on innovation and new technologies, high-yielding seeds, cultivation techniques, harvest management and post-harvest handling; (2) development of rural infrastructure to support the food supply chain; (3) development of information technology to simplify the value chains and increasing efficiency of food trade, (4) adequate budget allocation to support agricultural research and development (R&D), including promotional policies for biotechnology development, and (5) utilisation of data technology, creative, and innovative investment in the wake of "Agricultural Revolution 4.0".

In addition, food policies in the future should also pay more attention to food demand in line with increased production, through the following steps: (1) development of business aggregators that allow direct purchases from farmers using e-commerce; (2) industrial deepening or adding value to food commodities, down-streaming and diversification of food products, (3) utilization of by-products from food processing industries, such as rice bran and other processed products of food commodities; (4) diversification of food consumption by encouraging local food policy incentives and technology transfer to further process local foods, and (5) utilization of local wisdom for food value addition, development of culinary industries and improvement of community nutrition, development of small and medium enterprises and rural entrepreneurship.

Regarding the future of Bulog, the following policy options should be taken into consideration:

Firstly, if Bulog is still to be in charge of price stability, the distribution of rice needs to originate from absorbing farmers' grain harvests. Government rice reserves (CBP) need to be kept at 2.5 million tonnes providing Bulog with the flexibility to maintain food availability and price stability (KPSH). This first option certainly requires a much larger budget for Bulog to reduce the opportunity for speculation from rent-seekers in the rice business. A new financing scheme needs to be developed to increase these government rice reserves either through regular market operations, which are co-implemented with the Ministry of Trade and relevant trade services at local governments, or through the *Rastra* program, which is co-implemented with the Ministry of Social Affairs and relevant social services at local governments. The argument behind this first option is that it is too risky to solely rely on market mechanisms in food affairs. The state has to be present during episodes of price falls in the harvest season and during price soars in the dry seasons. In the case of rice, time will tell whether all 15.5 million poor households can shift the demand function of rice upwards or simply move along the existing demand function of rice, given the demand elasticity. The rice consumption among low-income families might demand higher quality rice, which provides huge challenges and opportunities for Indonesian farmers to provide an adequate supply of rice in higher quality, hence increasing farmers' income.

Secondly, Presidential Instruction (*Inpres*) No. 5/2015 on Provision Policy on Rice and Rice Distribution must be revised and improved, rather than simply increasing the reference price of rice for administrative purposes. Policy instruments and mechanisms for the procurement of grain and rice must change; especially since the rice production and consumption systems differ between regions and cultures. Bulog or any government agency responsible for food availability and price stability should find unique or more location-specific models for rice procurement that address local characteristics of food production and consumption. This policy option should contribute to the improvement of food quality produced by farmers, leading to the possibility of different reference prices for rice on multiple quality levels, instead of one quality as in the existing policy. This option shall provide incentives for local governments to play a more active role in increasing the productivity and quality of rice in their regions.

Thirdly, the management of government rice reserves (CBP) should become more flexible, in line with Government Regulation No. 71/2015 on Food and Nutrition Security that provides discretion for rice stock disposal. Government Food Reserves (*Cadangan Pangan Pemerintah* or CPP) and Government Rice Reserves (CBP) intend to address food shortages, food price fluctuations, natural disasters, social disasters, and/or emergencies, as well as international cooperation and the provision of foreign food aid. Provisions in the state budget (APBN) for CPP and CBP are based

on budget availability, not based on reserve requirements. The budget for food security should be transferred from the central government to the regional and local governments through special allocation funds (*Dana Alokasi Khusus* or DAK) that cover the provision of food services and nutritional improvement in urban and rural areas. CPP and CBP financing mechanisms could be implemented entirely either by the government through the state budget, or partially implemented in partnership with the private sector. The implementation of the concept of partial financing is certainly not easy, because the issue of governance has not been resolved entirely and not all private actors in the rice business are willing to be audited by the State Audit Board (*Badan Pemeriksa Keuangan* or BPK). However, the market mechanism needs to involve the private sector for the future of the rice economy in Indonesia.

Conclusions

Due to the importance of rice in Southeast Asia, state trading enterprises in the paddy and rice industry, such as Bulog and Indonesia and Bernas in Malaysia as analysed above, have often been formed to operationalise the government's goals of ensuring food security. These organisations were thus created with the intent to address market imbalances, such as correcting market deficiencies, as well as to provide social objectives such as ensuring food availability and affordability for consumers and guaranteed buyers for producers. With staple foods such as rice, one of the most important functional roles of STEs is in providing insulation and protection from global market instability to ensure the availability of food even during times of international crises.

Although much has been discussed in previous works to analyse the international trade effects of STEs, the country case studies above attempt to fill a gap in research on the effectiveness of food STEs in achieving their goal of ensuring food security. An analysis of both country situations show that on aggregate, the respective STEs have been relatively successful in achieving the goal of food availability and affordability through the support of their market protection instruments. However, what becomes clear is that a tradeoff appears between ensuring food security through a centralised trading agency and nurturing a strong domestic food industry. Several commonalities appear in the analyses of Malaysia and Indonesia.

Firstly, the rice policies in each country that were intended to achieve food security through price stabilisation and availability have, to a larger extent, resulted in windfall losses to the paddy and rice industry. Arshad and Tey, in their exploration of the ecosystem dynamics of state intervention linkages with market instruments, show that STEs and their associated policies have broader impacts to the industry and market players. For the Malaysian case, the controlled rice prices in the country have led to a gradual monopolisation of the paddy and rice supply chain, and thus stifling competition and innovation. Similarly, as presented by Arifin, the protectionist rice policies and centralised industry structure in Indonesia has consequently resulted in the welfare losses of the consumer due to the widening gap of the domestic and global rice price differential.

Secondly, food security objectives – as conventionally seen through the lense of accessibility, availability, utilisation and stability (FAO, 2009) – has generally been achieved by the functionalities of the STEs. However, the resulting structural imbalances of having a state monopolistic and monopsonistic (in Malaysia) organisation give way to unintended market distorting outcomes. These outcomes include an uncompetitive market and limited innovation, little opportunity of upward mobility for low-income producers, and limited access to high quality and affordable nutrition for consumers. These distortions are not only detrimental to the long-term growth and contribution of the industry, but also to the development of the economy as a whole.

Thirdly, the price stabilisation instruments employed by each country have largely been successful at protecting both paddy producers and rice consumers from international price shocks. However, this stabilisation policy comes at the cost of consumers, who bear the burden of indirect taxation, particularly when global rice prices fall below the domestic price of rice.

Program costs associated with the STE functions, which in fail in cases such as the Bumiputra Miller Scheme in Malaysia, also incur a cost to the taxpayer.

Finally, the global and domestic landscape – and hence the so-called ‘market failures’ and policy premises surrounding STE justifications – have differed immensely since their initial establishment. The currently available ICT and e-commerce technology have significantly decreased the cost of importation and diminishes the need for a centralised agency to conduct trade. Rapid development of hard and soft infrastructure has addressed the issue of food trade logistics. Furthermore, the discussion of food security now encapsulates nutritional security and environmental sustainability, which go beyond the accessibility and availability scope of many STEs. It is therefore necessary to reassess the need and objectives of STEs against the current landscape of food security challenges.

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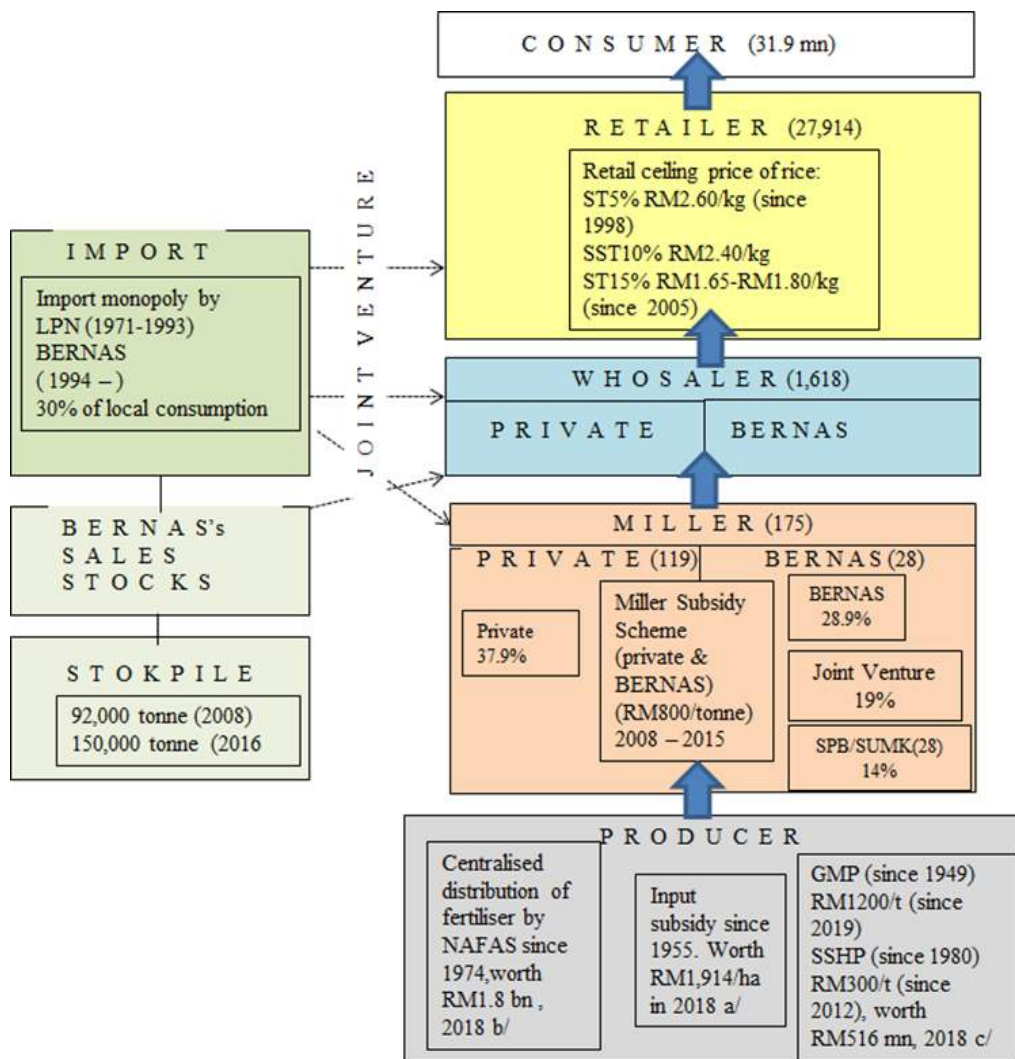
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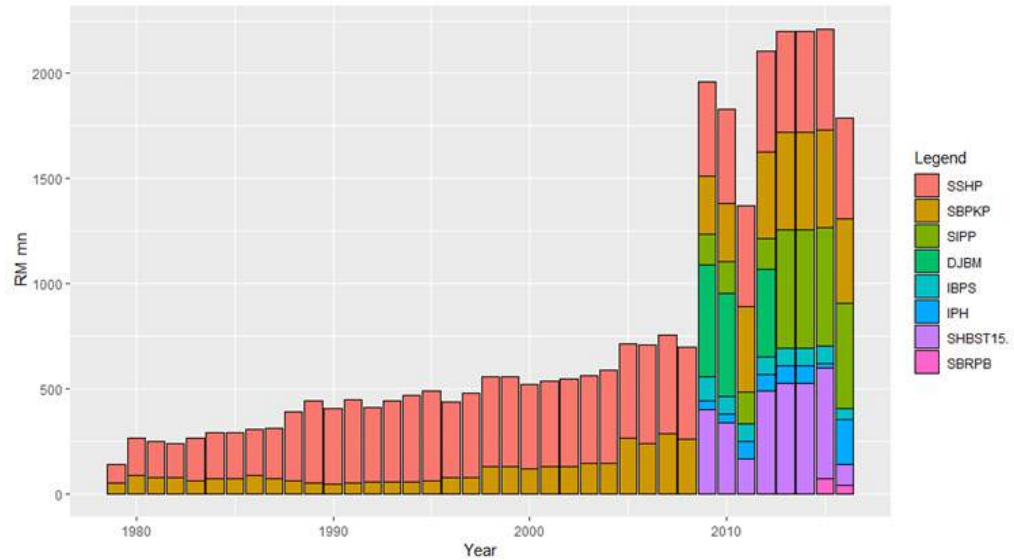
Appendix

Appendix Figure 1.
Typology of Market Protection Instruments in the Paddy and Rice Industry in Malaysia, 2018



Source: Bernas (2019). a/ Fatimah et al., (2019) and b/ and c/ from and Paddy and Rice Section, MoA (2016).
 Note: NAFAS- National Farmers Associations, SSHHP- Skim Subsidi Harga Padi (Paddy Price Subsidy Scheme),
 SST5% and SST10% - Super Special Tempatan 5% and 10%, ST15% - Super Tempatan 15%.

Appendix Figure 2.
Allocation of Subsidies to Paddy and Rice Industry, 1980-2016 (MYR mn)



Source: Ministry of Agriculture and Agrobased Industry (various years)

Note: Data for other types of inputs before 2008 are not available.

SSHP – Skim Subsidi Harga Padi (Paddy Price Subsidy Scheme), SBPKP – Subsidi Baja Padi Kerajaan Persekutuan (Federal Government Fertiliser Subsidy Scheme), SIPP – Skim Insentif Pengeluaran Padi (Paddy Production Incentive Scheme), DJBM – Peruntukan Dasar Jaminan Bekalan Makanan – Food Security Policy Allocation, IBPS – Insentif Benih Padi Sah (Certified Paddy Seeds Incentive), IPH – Insentif Peningkatan Hasil (Production Increment Incentive), SHBST15 – Subsidi Harga Beras ST15 (ST15 Rice Price Subsidy), SBRPB – Skim Subsidi Baja dan Racun Padi Bukit/Huma (Fertiliser and Pesticides Subsidies for Hill Rice).

Appendix Table 1.
The Evolution of STE Roles in the Paddy and Rice Industry

STE/Period /Function	FAMA	NPRA	BERNAS
	1971	1971-1996	1996 -
<i>Economic</i>	Procure paddy at GMP	Protect farmers' income	Fair and stable price
		Protect consumers' interest	Sufficient supply
		Ensure food security	Quality and standard
Commercial		Paddy purchase and milling activities	Rice processing
		Paddy and rice marketing	Sufficient supply
		Rice importation	Trading of rice
			Rice importation
Social	Procure paddy at GMP	Buyer of last resort	Fair and stable price
		Managing rice stockpile	Managing rice stockpile
		Managing the Paddy Price Subsidy Scheme	Disbursement of paddy subsidy
		Managing Purchasing Centre Scheme	Purchase paddy at the GMP
			Bumiputra Rice Millers Scheme
Regulatory	Import and distribution of rice (MCI)	Licensing & enforcement	Licensing & enforcement
		Control smuggling	Control smuggling
		Control price and grade of paddy and rice	Control price and grade of paddy and rice
		Managing Purchasing Centre Scheme	Protect farmers' and consumers' interest
		Control paddy and rice interstate movement	Control paddy and rice interstate movement

Note: MCI is Ministry of Commerce and Industry
Source: MIER (2010) and Bernas (1996)

Appendix Table 2.
GMP for paddy, ceiling price for rice and Rice Price Subsidy Scheme

Item/Year	1974a/	Dec. 1997 b/	27 Sept 2006	May 2008	2014 -
GMP (MYR/tonne)	426.90 -496	516.90-550	650	750	1200
Year	1990-2011	2012 -			
PPSS (MYR/tonne)	248	300			
Year	1992	1998	2001	Jun-08	Nov.2008
Rice ceiling price (MYR/kg)					
Standard	0.98 - 1.04	na	na	na	na
Premium	1.04 - 1.11	na	na	na	na
ST15%	Floated	1.65 -1.80	1.65 -1.80	1.65 -1.80	1.65 -1.80
SST5%	na	na	Floated	2.8	2.6
SST10%	na	na	Floated	2.7	2.4
Year	1980-1990	1990-2011	2012 -		
Rice Price Subsidy Scheme (MYR/tonne)	165	248	300		

Source: MIER (2010) and MoA (2016).
Note: a/ and b/ refers to medium and long grain paddy. After 2000, only single grade of paddy.
PPSS – Paddy Price Subsidy Scheme

Appendix Table 3.
GMP for paddy, ceiling price for rice and Rice Price Subsidy Scheme

Country	MYR/tonne	Rank	
		Market rate	Adjust to PPP
Indonesia	1048	5	2
Philippines	1359	1	1
Cambodia	1000	7	6
Laos	1200	3	3
Vietnam	1043	6	5
Thailand	1052	4	7
Malaysia	1200	2	4

Note: Calculated by authors

Source: BERNAS, 2019 (personal communication). Data on exchange rate is sourced from <https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx> and Purchasing Power Parity is from https://data.worldbank.org/indicator/PA.NUS.PPP?end=2018&most_recent_year_desc=true&start=2003

**Appendix Table 4.
Producer and Consumer Surplus**

Transfer/tax	1995	2000	2005	2006	2007	2008	
Producer transfer/tax							
Border price (MYR/tonne of paddy)	416	412	652	661	1,123	969	
Actual mill-door price (MYR/tonne of paddy)	534	615	641	684	717	847	
Domestic price support (GMP; MYR/tonne of paddy)	496	550	550	650	659	750	
Input subsidies (MYR/tonne of paddy)	29	54	115	109	120	110	
Price subsidies (PPSS) (MYR/tonne of paddy)	248	248	248	248	248	248	
Producer transfer (MYR/tonne of paddy)	773	852	913	1,007	1,027	1,108	
Producer transfer/tax per tonne (%)	186	207	140	152	91	114	
Consumer transfer/tax							
Border price (MYR/tonne of rice)	800	1,014	1,167	1,224	1,248	2,071	
Consumer price (MYR/tonne of rice)	1,325	2,059	2,000	2,000	2,000	2,600	
Consumer transfer (MYR/tonne of rice)	-525	-1,045	-833	-776	-752	-529	
Consumer transfer/tax equivalent per tonne (%)	-66	-103	-71	-63	-60	-26	

Source: Border prices from www.imf.org, local paddy and rice prices are from BERNAS (2018) and MoA (2016)

	2009	2010	2011	2012	2013	2014	2015	2016
	905	870	1,026	982	809	787	879	946
	1,127	1,132	1,117	1,117	1,117	1,183	1,200	1,200
	750	750	750	750	750	1,200	1,200	1,200
	602	560	346	625	661	605	606	492
	248	248	248	248	248	248	248	350
	1,600	1,558	1,344	1,623	1,659	2,053	2,054	2,042
	177	179	131	165	205	261	234	216
	2,005	1,595	1,798	1,799	1,704	1,491	1,631	1,608
	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600
	-595	-1,005	-802	-801	-896	-1,109	-969	-992
	-30	-63	-45	-44	-53	-74	-59	-62

Appendix Table 5.
Crude estimates of the producer and consumer transfer, 1995-2016 (RM)

Year	Border price of paddy (MYR)/tonne fob	Farm price (MYR/tonne)	Production of paddy ('000 tonnes)	Producer transfer (MYR '000)	Price subsidy (MYR/tonne of paddy)
1995	416	534	2,127	251,622	429
1996	515	536	2,228	45,691	362
1997	598	542	2,120	-117,625	404
1998	546	603	1,944	110,674	429
1999	488	653	2,037	335,540	429
2000	412	615	2,141	434,651	406
2001	413	592	2,095	375,563	406
2002	447	588	2,197	309,432	419
2003	510	588	2,257	175,497	419
2004	626	621	2,291	-11,118	444
2005	652	641	2,314	-24,915	444
2006	661	684	2,188	50,670	471
2007	1,123	717	2,376	-965,526	471
2008	969	847	2,353	-286,940	440
2009	905	1,127	2,511	556,742	448
2010	870	1,132	2,465	645,399	448
2011	1,026	1,117	2,579	234,259	480
2012	982	1,117	2,599	349,601	480
2013	809	1,117	2,604	800,733	480
2014	787	1,183	2,845	1,126,288	480
2015	879	1,200	2,741	880,752	480
2016	946	1,200	2,571	653,710	480

	Total producer transfer (MYR '000)	Border price of rice (MYR/tonne, CIF)	Retail price (MYR/tonne)	Consumption ('000 tonnes)	Consumer transfer on production (MYR '000)
	252,051	800	1,325	1,798	-943,884
	46,052	927	1,448	2,016	-1,049,848
	-117,221	1,507	1,453	2,014	108,947
	111,103	1,219	1,599	1,913	-725,345
	335,969	1,084	1,674	1,926	-1,137,170
	435,057	1,014	2,059	1,978	-2,067,757
	375,969	780	1,700	1,880	-1,729,681
	309,851	845	1,757	1,925	-1,754,638
	175,917	828	1,817	1,853	-1,832,621
	-10,674	1,026	1,567	2,128	-1,151,331
	-24,471	1,167	2,000	1,902	-1,583,670
	51,141	1,224	2,000	2,128	-1,650,603
	-965,055	1,248	2,000	2,297	-1,727,973
	-286,500	2,071	2,600	2,213	-1,169,698
	557,190	2,005	2,600	2,255	-1,341,897
	645,847	1,595	2,600	2,234	-2,244,031
	234,739	1,798	2,600	2,692	-2,157,810
	350,081	1,799	2,600	2,680	-2,145,655
	801,213	1,704	2,600	2,561	-2,294,377
	1,126,768	1,491	2,600	2,719	-3,016,648
	881,232	1,631	2,600	2,808	-2,720,037
	654,190	1,608	2,600	2,588	-2,567,163

Appendix Table 6.
Crude estimate of the total consumer transfer and BERNAS's gain on import, 1995-2016 (RM)

Year	Imports ('000 tonnes)	Consumer transfer on import (MYR)	Total consumer transfer (MYR)	Price of paddy ex-mill (Bernas(MYR/tonne))	Bernas gains on import (MYR mn)
1995	563	-295,554	-1,239,439	534	236
1996	638	-332,243	-1,382,091	536	266
1997	630	34,080	143,027	542	-27
1998	617	-233,946	-959,291	603	187
1999	596	-351,897	-1,489,066	653	282
2000	633	-661,724	-2,729,482	615	529
2001	480	-441,621	-2,171,302	592	353
2002	500	-455,750	-2,210,388	588	365
2003	700	-692,302	-2,524,923	588	554
2004	751	-406,320	-1,557,652	621	325
2005	886	-737,714	-2,321,383	641	590
2006	799	-619,752	-2,270,355	684	496
2007	1039	-781,612	-2,509,585	717	625
2008	1086	-574,143	-1,743,841	847	459
2009	907	-539,794	-1,881,691	1,127	432
2010	1076	-1,081,013	-3,325,044	1,132	865
2011	1006	-806,373	-2,964,183	1,117	645
2012	885	-708,546	-2,854,201	1,117	567
2013	989	-886,036	-3,180,413	1,117	709
2014	1051	-1,166,053	-4,182,701	1,183	935
2015	823	-797,355	-3,517,392	1,200	638
2016	900	-892,799	-3,459,961	1,200	714

Source: Import figure from BERNAS (2019), Border price of paddy from www.irri.org, price of paddy ex-mill from Department of Agriculture (MoA): Paddy Statistics (various years).

Appendix Table 7.
Location and quantity of stockpile by region, 2019

Area	Stockpile	Trading	Quantity of stockpile (tonne)
Peninsular Malaysia			69,500
Northern region	7	0	25,500
Central region	3	3	27,000
Eastern region		1	
Southern region	5	1	17,000
Sabah	11	4	49,500
K.Kinabalu			23,000
Sandakan			10,500
Tawau			11,500
Lahad Datu			4,500
Sarawak	6	0	31,000
Kuching			16,500
Sibu			5,500
Bintulu			9,000
Malaysia	32	9	150,000

Source: Source: BERNAS (2019).

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