

Indonesian experience in rice price stabilization

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Les éléments contenus dans cette étude n'engagent que leur(s) auteur(s) et ne reflètent en aucun cas une position officielle des institutions

Abstract

Policy content: what has been done?

Rice price stabilization has been implemented through two instruments used simultaneously (i) intervention in marketing through public storehouses managed at a local level (ii) monopoly control over international trade. It protects both consumers and producers by maintaining rice prices within a predetermined band and announcing widely floor and ceiling prices. Stable and low rice price was seen, after the period of high economic and political instability of the country until the mid-sixties, as a major objective. The rice price policy can be split in several periods as the country's context changes over time and thus the objective and main constraints faced by the agency.

Policy process: How has it been implemented?

Rice price stabilization has been implemented by a special agency created in 1968 (BULOG). Bulog manages a nation wide set of local agency and warehouses at the district level (Dologs) which permitted to store substantial quantities of rice. Dologs buy rice to lift the price in rural markets to the floor price. Bulog procures rice-paddy from farmers' cooperative as well as from private traders. Farmers were encouraged to establish village cooperatives. Agency leadership and staff training efforts have received most of the attention at the beginning. Extensive analytical studies on key parameters as the size of the margins between floor and ceiling prices, the size of buffer stocks, the price of fertilizer relative to floor and world price have been performed. A monopoly control over international trade was established, it allows to import when domestic production was short and to export when it was high while the storage level was already high.

Policy results: what were the effects?

The supply response was dramatic : rice production increased by 10.5 millions tons over the 1978-1985 period. Fertilizer use increased by 500% between 1970 and 1985, while yields increased from 2.5 T/ha in 1965 to 4.4 T/ha in 1990. A huge improvement in food security followed.

Policy lessons: what recommendations could be derived?

The Indonesian experience shows that government intervention can be highly adaptive to a changing context and contribute to a quick economic growth but that it is difficult to perform. It is important to note that the rice price stabilization policy was only one component of the Indonesian approach to modernizing its rice economy. Public investment, not only in infrastructure as roads and irrigation facilities, but also in human capital, through extension services and education, plays an important role in the success. One important characteristic of government interventions is that it confined itself to avoid markets failures and try to accompany private economic activities rather than substituting public activities for private activities. The whole commodity chain was not in the hands of parastatal companies.

The agricultural policy was part of a broader policy ensuring (i) macro-economic stability, (ii) Making markets working more efficiently (iii) Ensuring political stability and creating an atmosphere conducting private investment.

Some "technical lessons" on price stabilization can also be drawn

- The target price should follow international prices.
- The policy is far less costly when the country is relying on imports than when it has to manage surplus.
- Key parameters, including the size of the margins between floor and ceiling prices, the size of buffer stocks, the price of inputs relative to floor and world price need to be constantly updated.

The Indonesian experience in rice price stabilization has been largely described in the literature. The objective of this note is not to offer an exhaustive review of it but to answer the following questions. What has been done? How has it been implemented? What are the results? Which lessons can be drawn?

1- What has been done?

BULOG has been created in 1968, as a special government agency with an objective to protect domestic markets from sharp fluctuations of prices on world markets. Implemented first for rice, the main staple crop in Indonesia, the field of action of BULOG was extended to other crops in the 80's. Stable and low rice price was seen, after the period of high economic and political instability of the country until the mid-sixties, as a major objective.

Rice price stabilization was managed, through two instruments used simultaneously (i) intervention in marketing through public storehouses managed at a local level (ii) monopoly control over international trade. It protects both consumers and producers by maintaining rice prices within a predetermined band and announcing widely floor and ceiling prices. Stable and low rice price was seen, after the period of high economic and political instability of the country until the mid-sixties, as a major objective. The rice price policy can be split in several periods as the country's context changes over time and thus the objective and main constraints faced by the agency.

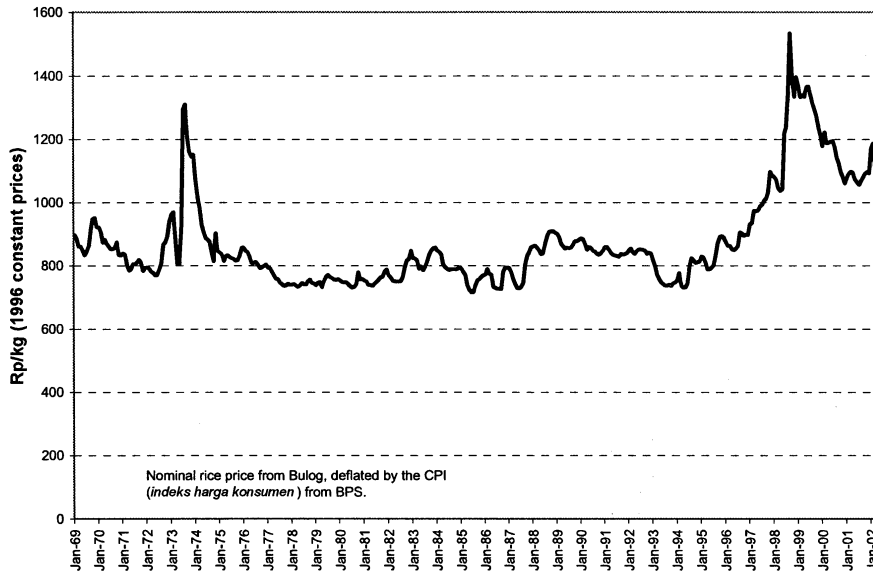
1969-1974: difficult beginnings

From the 50's and because of high inflation rates, Bulog had also the task to provide civil servants and military (the "budget groups") with rice rations which partly replace cash payment¹. At the beginning, this mission took precedence over the stabilization objective. As a consequence regional procurement officers often operate according to quantitative rather than price targets, in order to supply enough rice for the budget group. Collusion between officials from Bulogs and traders to buy at the lowest price are reported (Timmer 1989b). The second priority was to defend the urban ceiling price, because it is politically very sensitive (figure 1). Because it was cheaper and easier it was generally done from imports rather than from domestic production. Consequently the floor price defense was at the bottom of the list of objective. Local prices fall below the announced floor prices in numerous instances. Bulog faces also difficulties because it does not access to sufficient financial and human resources. A lot of effort permits it to significantly increase its logistical capacity and managerial procedures. At that time Bulog costs represented about 30 millions \$ per year² (Timmer 1997)

¹ This payment in kind aims at protecting the salaries when high inflation rates apply.

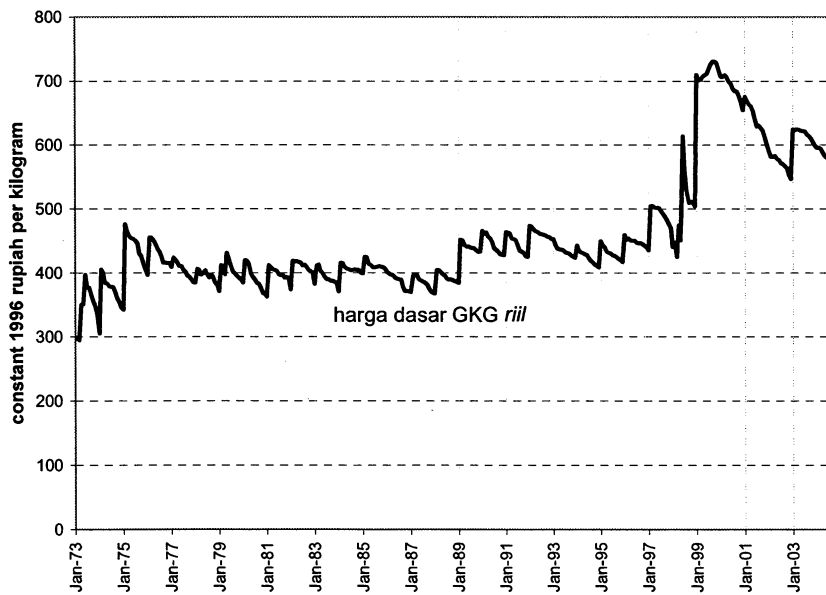
² In 1991 US \$

Figure 1. The real price of rice, January 1969 to May 2002



Source: The nominal price of rice is reported by Bulog (medium quality rice). The CPI data are from BPS. Figure from Peter Rosner.

Figure 2: The real floor price (floor price adjusted for inflation), 1973-2004 (dry paddy)



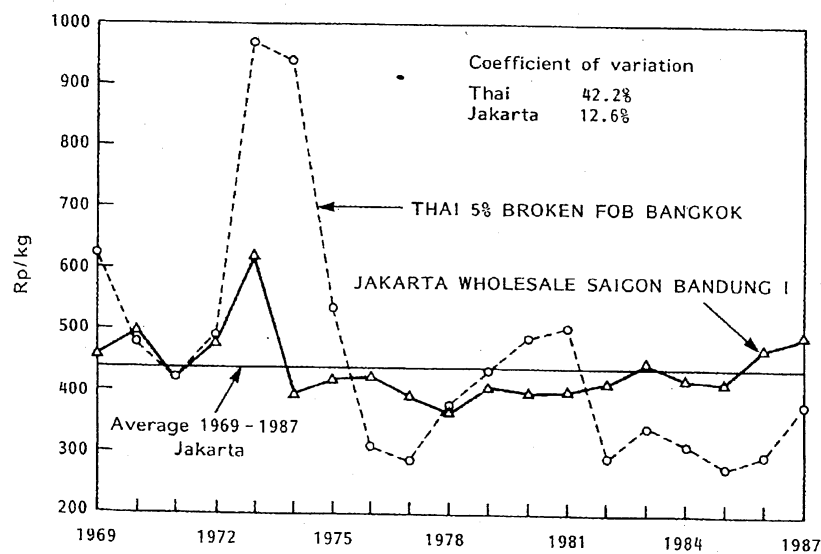
Source: Timmer(2004)p.4

1975-1984 highly growing rice production in a stabilized markets environment

The world food crisis of 1973-1974 and the difficulty to find enough rice on external markets produce a shock to the Indonesian government. Then big efforts were put on rice production boosting. Various governmental programs³ were implemented to promote the adoption of high-yielding rice varieties, an increase in the use of fertilizers and an expansion of the irrigated area. The government distributed improved crop varieties and provided fertilizers and pesticides at a highly subsidized price, and also provided extension services. At the same time BULOG provided producers with a favorable environment by stabilizing rice prices (figure 2). However, BULOG procurement never exceeded 12% of the total production and 15% of the consumption (in normal year BULOG procures and distributes less than 10%) consequently the efficiency of the private marketing structure was always crucial for Indonesia. In order to maintain low urban prices and not to discourage rice production, BULOG enforced a narrower margin between floor and ceiling prices which did sometimes not cover the storage cost. Costs are rising quickly from around 40 millions \$⁴ per year over the 1974-1979 period to 80 millions over the 1979-1984 period (Timmer 1997)

At that time Bulog benefits from better access to financial reserve, partly because of the increase of oil price, but also because of better integration in macro-economic objective, improved logistical capacity and managerial procedures. Bulog managed to maintain prices in the desired band and rice prices were maintained around the level of international prices (see figure 1)

Figure 3. Domestic and International rice prices (at 1987 constant prices)



Sources Ellis F. 1988, Integrated planning Unit, Bulog, Jakarta. reprint from Timmer 1989a

Indonesia, which was in the second half of the 70's routinely the world largest importer with often 1/5 of the rice supplied internationally, reached self sufficiency in the mid eighties. It was a dramatic change for the stabilization agency to cope with a self sufficient nation instead of a routinely importing one. Added to the rising cost problem, that leads to changes in Bulog objectives.

³ BIMAS, INMAS, INSUS and SUPRA-INSUS . The INMAS program was designed to increase production through the use of improved seeds fertilizers, pesticides, water management, improved cultural practices. The BIMAS program, in addition to the INMAS program, provides farmers with credit to use modern inputs and cultivation practices. The INSUS scheme, as an improvement of BIMAS scheme, encourages the development of institutions in rural area

⁴ In 1991 US \$

1985-1996 self sufficiency in trends : trying to manage the costs of surplus

In the eighties, the policy changed. The need for reform was driven by the high costs related to Bulog intervention. It had to maintain large stocks, to subsidize exports when surpluses accumulated and subsidize imports when domestic production was short. The switch in primary source of supply, from imports to domestic rice required a strong adaptation from Bulog. Far more logistical capacity was required, as well as local warehouses, mills and transportation facilities.

In 1985 substantial surplus emerges while Bulog's warehouses were still full. Rice price fell 20-30% under the floor price. Analysts conclude that without substantial changes Bulog will be bankrupt before the end of the decade. Then the price policy was reconsidered. The fertilizer and the floor prices were considered as short term tools to manage production trends. Fertilizer subsidies were removed. The production growth slowed down and by late 1987 Bulog was unable to inject enough rice to maintain price stability.(Timmer 1989b)

The ceiling prices announcement was lifted. Retail prices in the outer islands began to be significantly higher than in Java. Higher margins constituted new incentives for private traders, thus reducing the financial and logistical burden for BULOG.

The concept of self sufficiency in trends was adopted at the beginning of the nineties to allow maintaining costs in reasonable level in giving flexibility to the system. Despite a lower level of stocks, coefficient of variation of retail price of rice in Jakarta and Surabaya have been lower during the 89-94 period than during 84-89, 10 instead of 20%. But despite these measures the cost reached 90 millions de \$ per year in 1993-1994 and exceeded 200 millions when exports subsidies are included (Timmer 1997).

Over all this period rice prices were maintained around the level of international prices to minimize the adverse effect of distortions.

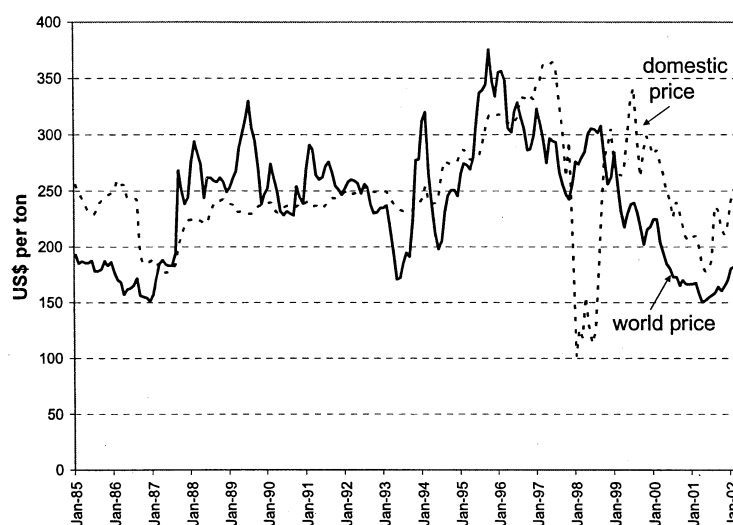
The benefits of this policy were diminishing as rice become smaller in consumers' budget and as a share of total value added of the economy and a wind of deregulation was blowing over the world. Just before the financial crisis the rice policy objective and modalities were again under questions.

After 1997

The financial crisis, in 1997-1999 was deeper and longer lasting in Indonesia than in other countries affected in the region. Economic growth was drastically curtailed. It turns into a social and political crisis, extremely difficult to manage in the context of the Suharto era characterized by lack of political freedom and violence against political opponents. Because of the El Nino phenomenon the domestic supply was particularly low and large imports were necessary. The sharp drop in the rupiah value push rice prices up while the financial difficulty of the government prevent it to be able to maintain the ceiling price. The financial crisis turns into a food crisis. Social unrest added to the difficulty, increasing risk of trade. Domestic prices rose above import parity fueled by panic buying and speculative hoarding. Then they remain high (figure 4)

After the country recovery, rice prices stay around 30% above the world price and then above the real level of the period of rice price stability from the mid-1970's to the mid 1995's. As underlined by Timmer(2004) past success not only do not come from high (but stable) prices but also a new technology was available to allow labor productivity growth. The context has changed. High rice prices hurt the poorest, biased farmers toward rice cultivation and compromise the general growth of the country because of the impacts it has on wages and growth.

Figure 4. World rice prices and domestic rice prices, 1985 to 2002



Source reprint from Timmer 2004 p. 7⁵

2- How has it been implemented?

What was the operating model of this policy

From an historical perspective Bulog was not created de novo. A logistic agency (VMF) had been created during the Dutch era it had intervened massively in rice marketing and price formation during the depression in the 1930's. After independence It was renamed by the new government BAMA (the Foundation for food) and then JUBM(the Foundation for food affairs). The task was the same : stabilize rice prices (Timmer 1989b).

Bulog manages a large set of Dologs, local agency at the district level. A nation wide set of warehouses permitted to store substantial quantities of rice and Dologs buy rice to lift the price in rural markets to the floor price. Bulog trades at the whole sale level "buying and selling at a highly competitive and well integrated private marketing system"⁶. It procures rice-paddy from farmers' cooperative as well as from private traders and farmers were encouraged to establish village cooperatives (Koperasi Unit Desa, KUD).

In the earlier year the ceiling price was explicit and announced publicly but to provide local Dologs officials more flexibility it becomes later informal. (Timmer 2004)

Agency leadership and staff training efforts have received most of the attention at the beginning. Extensive analytical studies on key parameters as the size of the margins between floor and ceiling prices, the size of buffer stocks needed, the price of fertilizer relative to floor and world price have been performed all around the "stabilization period". Integration into macro-economic policy making and access to financial resources play also key roles. Bulog has access to an unlimited credit line, at a highly subsidized level at the beginning and at commercial rates with a guarantee from the Bank Indonesia later.

⁵ World price: Thai 15%broken rice, FOB Bangkok. Domestic price: medium quality, Bulog. The domestic price is adjust to the world price using a wholesale-retail markup of 10%, a \$20 per ton for movement from Bangkok to Jakarta and the average monthly exchange rate for the rupiah.

⁶ Oxford Policy Management, Policy Briefing Note 2

A monopoly control over international trade was established, it allows to import when domestic production was short and to export when it was high while the storage level was already high.

The final decision about the key parameters was a result of a negotiation and agreement among the various ministries involved in promoting agricultural production and commercialization or in the provision of supply of inputs and food. Islam and Thomas (1996) noted that in practice only marginal adjustments in prices occurred from one year to the next.

How were floor and ceiling prices determined?

The mechanism aims at

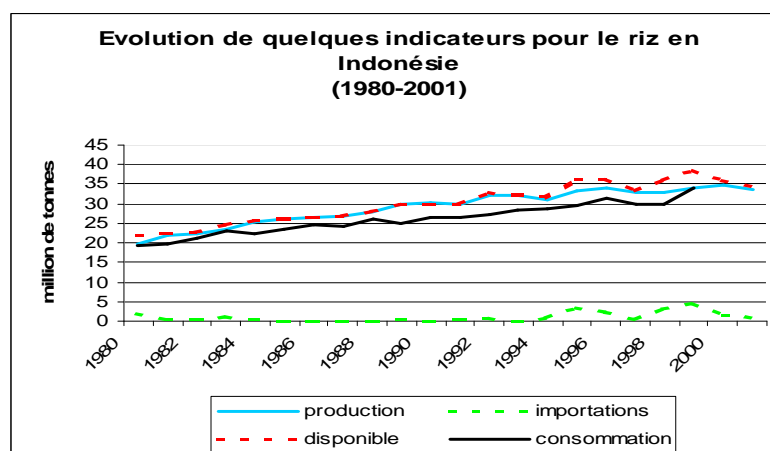
- (i) Maintaining domestic rice price around the international price level. Here is certainly a major concern for the feasibility of the policy, largely determining costs and right decisions. If it is very easy to determine world price trend after the period is crossed, it is really difficult to do it on a year to year basis at the time prices are determined;
- (ii) Using the rice-fertilizer price ratio to monitor the production trend according to the stock level in the agency, international prices and consumption trends;
- (iii) Allowing a band as wide as possible in order not to discourage private trade. The margins were primarily determined with reference to the storage and distribution costs incurred by the private sector. The band were progressively widen differences in percentage between the floor and the ceiling price range from 11 to 23%⁷ during the 1979-1982 period to 30 to 56% during the 1984-1989 period (Islam and Thomas 1996).

3- What are the results?

The supply response was dramatic. Rice production, which grew by 3.5 million tons over the eight years prior to 1977, increased by 10.5 millions tons over the following eight years. Yields of rice increase from 2.5 T/ha in 1965 to 3.7 T/ha in 1973, and 4.4 T/ha in 1990. The best performance is during 1980-1984 in Java (4.4% increase per year).

Between 1970 and 1985, fertilizer use increased by 500%, in 1984-85 the fertilizer subsidies reached US\$ 680 millions, 60% of the entire budget for agriculture. (Dorleans, 1992).

Figure 5 - Production, consumption and imports of rice in Indonesia



Sources CBS

⁷ For the lowest and the highest prices during the period

A huge improvement in food security followed: the percentage of people malnourished drop from 24% in 1979-1981 (FAO, SOFI 2007) to 13% in 95-97 (FAO, SOFI 2009).

4- Main lessons

The Indonesian experience is rich of lessons. In short, it shows that government intervention can be highly adaptive to a changing context and contribute to a quick economic growth but that it is difficult to perform.

It is important to note that the rice price stabilization policy was only one component of the Indonesian approach to modernizing its rice economy. The two other components were (i) invest in rural infrastructure to build the foundation for a dynamic rural economy. Public investments include irrigation systems, roads, schools, market places, communication systems, electrification and public health facilities (ii) develop and disseminate a technical package including high-yielding varieties, fertilizer, pesticides and technical advice

One important characteristic of government interventions is that it confined itself to avoid markets failures and try to accompany private economic activities rather than substituting public activities for private activities. The whole commodity chain was not in the hands of parastatal companies: private operators were collecting and storing grains. In that way, the public intervention on agricultural markets generally concerned only a small volume of the production marketed.

Public investment, not only in infrastructure as roads and irrigation facilities, but also in human capital, through extension services and education, plays an important role in the success.

Macro-economic factors have also to be considered. The agricultural policy was part of a broader policy ensuring (i) macro-economic stability, which is an essential condition for economic development. (ii) Making markets working more efficiently or creating markets when they do not exist. Capital markets were particularly weak and government creates institutions to promote savings and encourage investment in specific sectors (ii) Ensuring political stability and creating an atmosphere conducive private investment, domestic or foreign in particular with the provision of public goods (roads, ports, electric power etc...). The high saving rates plays also an important role; it is partly explained by the rapid economic growth. However the development occurs because this investment was efficiently used and the technological gap was quickly reduced (Stiglitz 1996).

Some technical lessons on price stabilization can also be drawn

- The target price should follow international prices.
- The policy is far less costly when the country is relying on imports than when it has to manage surplus.
- Key parameters need to be constantly updated and need intensive context specific studies include the size of the margins between floor and ceiling prices, the size of buffer stocks needed, the price of inputs relative to floor and world price.

References

- Dorléans, B.(1992), **L'Indonésie: les incertitudes du décollage économique**, La Documentation Française, Paris
- Islam N. et Thomas S.(1996). Foodgrain price stabilization in developing countries. Issues and experience in Asia. IFPRI Food Policy Review, 3.
- STIGLITZ JE (1996). Some lessons from the East Asian Miracle, **World Bank research observer**, vol. 11, n° 2.
- Timmer C.P. (1989a) The rationale for government intervention, Food Policy, vol14(1) : 17-27
- Timmer C.P. (1989b), Indonesia's Experience with Rice Market Interventions, **Indonesian Food Journal**: 12-26
- Timmer C.P. (1997), Building Efficiency in Agricultural Marketing : The long run role of BULOG in the Indonesian Food Economy, **Journal of International development**, vol.9 (1): 133-145
- Timmer C.P. (2004), Food security in Indonesia: current challenges and the long-run outlook, Center for Global Development, WP 48