Doctoral Program in Agricultural Economics and Related Sciences

JUSTUS-LIEBIG-UNIVERSITAT GIESSEN

# Rice Market under Halfway-Liberalized Economy in Myanmar: Structure, Conduct and Performance Approach

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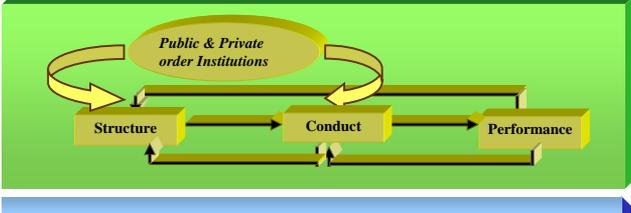
## Introduction:

- Rice plays an important role in Myanmar's economy as an staple food and high amount of foreign exchange earning comes through export.
- The agricultural economy of Myanmar has been under transition from a planned to a market system since late 1980s. Two liberalizations of rice marketing had been done in 1987 and 2003.
- The first liberalization implemented by allowing free domestic marketing and private export of some agricultural products except rice. Rice procurement and rationing systems were abolished under the second liberalization.
- However, the marketing of rice, which is the main point for the agricultural reform, remained under the state control and rice export was a government monopoly.
- Therefore, the rice marketing system works within the boundaries and limitations of a halfway-liberalized economy which triggers questions about the structure, conduct and performance of rice marketing system in Myanmar.

## Objectives:

- (1) To assess the structure of the Myanmar rice marketing system;
- (2) To estimate the marketing costs and margins along the various marketing channels by observing the behavior and functions of market intermediaries as their conduct;
- (3) To appraise the performance of the domestic rice market by evaluating the spatial market integration.

**Public & Private order Institutions**

Structure → Conduct → Performance

**General Structure Conduct and Performance Approach : Adapted from P. Ferguson, 1988**

## Problem Statements:

- Myanmar people is living at very low-income level using the 79 % of household expenditure only for food items. Besides, Myanmar farmers were taxed because of the ban on private-sector exports of paddy and rice. The international price of rice was higher than domestic prices; the government monopoly mean that the price received by paddy farmers was about a third lower than if they could export freely.
- Proportion of total export earning and agricultural export earning of rice were clearly decreasing trend during 1985 to 2004. This is the important point for Myanmar economy, which relied on foreign exchange earning from agricultural export.
- Government intervention in rice market had led to parallel markets. There were different prices in the official and parallel markets which affected on economic development, attempted to fixed prices consequently lead to dual pricing, these two markets could not lead to an efficient allocation of resources, economic output and efficient marketing system.
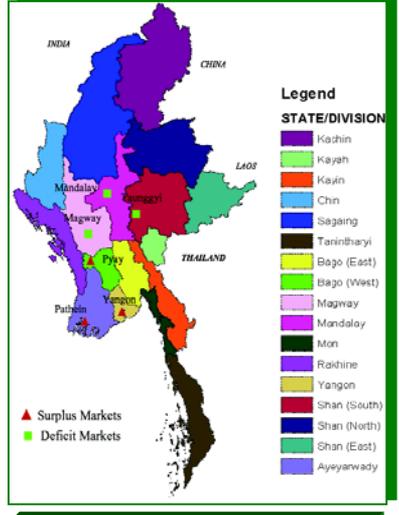
### Primary data
- Survey Method: Stratified Random sampling
- Sampling units: farmers, millers, brokers, wholesalers, retailers

### Time series data
- Rice Varieties: Pawson, Ngasein, Manawthukha, Immayebaw, Thai rice
- Other data series: CPI & Exchange rate
- Time duration: Jan. 2001-Dec. 2004(Weekly and Monthly data)

### Study Markets for Both data:
- Yangon, Pathein, Pyay, Mandalay, Magway and Taunggyi



**Legend STATE/DIVISION**
Kashin, Kayah, Kayin, Chin, Sagaing, Tanintharyi, Bago (East), Bago (West), Magway, Mandalay, Mon, Rakhine, Yangon, Shan (South), Shan (North), Shan (East), Ayeyarwady

▲ Surplus Markets
■ Deficit Markets

**Study Markets**

### Marketing Margin (concurrent method)
Marketing Margin = Price at market level (L) − Price its preceding level (L − 1) at time t

### Total Gross Marketing Margin (TGMM)
TGMM = (Consumer price − Farmer's Price /Consumer Price) *100

### Producer's Gross Marketing Margin (PGMM)
PGMM = (Consumer Price − Marketing Gross Margin / Consumer Price) *100

### Long-run Performance of Rice Market: Market Integration
### Stationary Test: Augmented Dickey–Fuller (ADF) method

$$\Delta P_t = \alpha + \beta P_{t-1} + \gamma t + \sum_{k=2}^{n} \delta \Delta P_{t-k} + \xi_t$$

### The two-step, residual-based co integration test
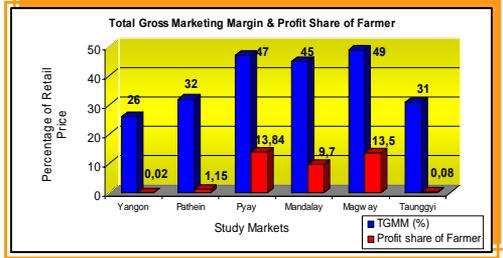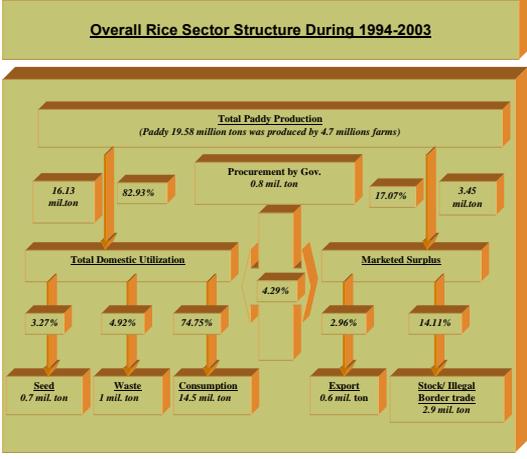
$$(i)\ P_{it} = \varphi + \omega P_{jt} + \eta_t + e_t$$

$$(ii)\ \Delta e_t = \lambda e_{t-1} + \sum_{k=2}^{n} \theta k\ \Delta e_{t-k} + \mu_t$$

### Stationary Test: Augmented Dickey–Fuller (ADF) method

$$\Delta P_t = P_t - P_{t-1}$$
$$\Delta P_{k-t} = P_{k-t} - P_{k-t-1}$$
$$K = 2,3,...,n$$
$$P_t = \text{price at time t}$$
$$\alpha, \beta, \gamma, \delta = \text{parameters}$$
$$\xi_t = \text{error term}$$

### The two-step, residual-based co integration test

$$P_{it} = \text{price in market i at time t}$$
$$P_{jt} = \text{price in market j at time t}$$
$$\varphi = \text{constant}$$
$$\lambda, \omega, \eta, \theta = \text{estimated parameters}$$
$$e_t = \text{residual, error term}$$
$$\mu_t = \text{error term}$$

## Overall Rice Sector Structure During 1994-2003

**Total Paddy Production**
(Paddy 19.58 million tons was produced by 4.7 millions farms)

Total Paddy Production — 16.13 mil.ton — 82.93% — Procurement by Gov. 0.8 mil.ton — 17.07% — 3.45 mil.ton

Total Domestic Utilization — 4.29% — Marketed Surplus

| Total Domestic Utilization | | | Marketed Surplus | |
|---|---|---|---|---|
| 3.27% | 4.92% | 74.75% | 2.96% | 14.11% |
| Seed 0.7 mil. ton | Waste 1 mil. ton | Consumption 14.5 mil. ton | Export 0.6 mil. ton | Stock/ Illegal Border trade 2.9 mil. ton |

**Total Gross Marketing Margin & Profit Share of Farmer**



| | Yangon | Pathein | Pyay | Mandalay | Magway | Taunggyi |
|---|---|---|---|---|---|---|
| TGMM (%) | 26 | 32 | 47 | 45 | 49 | 31 |
| Profit share of Farmer | 0,02 | 1,15 | 13,84 | 9,7 | 13,5 | 0,08 |

**Table 7.16: Composition of TGMM & PGMM (%)**

| Composition of TGMM | Surplus Regions | | | Deficit Regions | | |
|---|---|---|---|---|---|---|
| | Yangon | Pathein | Pyay | Mdy | Mgy | Tgy |
| Total marketing cost of PC | 2.59 | 2.37 | 3.62 | 2.55 | 2.49 | 2.37 |
| Average profit of PC | 2.60 | 2.98 | 3.65 | 3.89 | 2.59 | 2.85 |
| *Average margin of PC* | *5.20* | *5.35* | *6.27* | *6.43* | *5.08* | *5.22* |
| Total variable cost of miller | 3.25 | 1.71 | 3.39 | 4.18 | 5.24 | 4.89 |
| Average profit of miller | 6.27 | 6.92 | 5.39 | 3.31 | 3.04 | 2.23 |
| *Average margin of miller* | *9.51* | *8.63* | *8.79* | *7.49* | *8.28* | *7.12* |
| TVC of wholesaler | 1.09 | 0.73 | 1.02 | 1.68 | 1.61 | 1.50 |
| Average profit of wholesaler | 1.00 | 1.07 | 1.25 | 1.32 | 1.72 | 1.51 |
| *Average margin of wholesaler* | *2.10* | *1.80* | *2.27* | *2.99* | *3.33* | *3.01* |
| Total variable cost of Retailer | 2.81 | 4.16 | 4.41 | 4.32 | 5.05 | 4.58 |
| Average profit of Retailer | 6.43 | 11.05 | 11.09 | 13.89 | 13.82 | 11.52 |
| *Average margin of Retailer* | *9.24* | *15.22* | *15.50* | *18.20* | *18.87* | *10.15* |
| **Total Gross Marketing Margin** | **26.06** | **32.14** | **46.68** | **44.83** | **49.02** | **31.58** |
| ***Producer's Gross Marketing Margin*** | *73.94* | *67.86* | *53.32* | *55.17* | *50.98* | *68.42* |

## Cointegration between Yangon and Mandalay Price Series

| Statistic | Nominal value | | Real value | |
|---|---|---|---|---|
| | Y-P _ Md-P | Md-P _ Y-P | Y-P _ Md-P | Md-P _Y-P |
| Cointegration vector | -0.4001 | -0.7012 | -0.1974 | 0.7412 |
| Trend | 0.1191 | 0.1448 | 0.0297 | 0.1129 |
| Coefficient of residual | -1.4516 | -1.2841 | -1.2736 | -1.2229 |
| Standard error | 0.2635 | 0.2633 | 0.2481 | 0.4784 |
| ADF t-statistic | -5.5076*** | -4.8763*** | -5.1333*** | -2.5569ⁿˢ |
| R² | 0.74 | 0.6554 | 0.6177 | 0.2789 |
| Durbin-Watson Stat. | 1.9798 | 1.9876 | 1.9327 | 1.5419 |

Note: First price series is dependent variable, Total observations: 48 months, no of lag: 3, Mackinnon Critical value: -4.6972 (1%),-4.0028 (5%) &-3.6617 (10%)

## Cointegration between Yangon and Thai Price Series

| Statistic | Nominal value | | Real value | |
|---|---|---|---|---|
| | Y-P _ Thai | Thai _ Y-P | Y-P _ Thai | Thai _Y-P |
| Cointegration vector | -0.0198 | -0.0128 | 0.0031 | 0.0032 |
| Trend | 0.2468 | -0.0347 | 0.6099 | -0.0023 |
| Coefficient of residual | -1.2659 | -1.0858 | -1.4763 | -0.7888 |
| Standard error | 0.3350 | 0.3819 | 0.4431 | 0.3387 |
| ADF t-statistic | -3.7780* | -2.8427ⁿˢ | -3.3318ⁿˢ | -2.3285ⁿˢ |
| R² | 0.5650 | 0.5435 | 0.5832 | 0.5778 |
| Durbin-Watson Stat. | 1.9650 | 1.8654 | 1.9999 | 1.9289 |

Note: First price series is dependent variable, Total observations: 48 months, no of lag: 3, Mackinnon Critical value: -4.6972 (1%),-4.0028 (5%) &-3.6617 (10%)

### STRUCTURE

Myanmar farmer's condition seems to be in the competitive structure and depend on the points such as firms are small and price taker, and produce homogenous product. However, farmers could not easily enter into and exit out the paddy production business because of existing land policy.

Government prescribes farming choices to farmers and limits the security of their land tenure were the important reasons why farmers were not in the real competitive marketing system in Myanmar since there had been no attempt to reestablish government control over agricultural marketing.

The ban of rice export, lack of confidence to the private traders and restricted marketing in border trade have created the less competitive structure and non-transparent rice market in Myanmar.

### CONDUCT

The highest profit share obtained by Pyay farmer followed by Magway and Pathein. The lowest profit, because of high unit cost, was observed in Yangon, followed by Taunggyi farmers.

Also in other price shares of miller, wholesaler and retailer were higher in Yangon than other markets. At the same time, the lowest price share in all price layers were observed in Magway market. The profit share of all participants, farmers obtain the less profit share in Yangon and Taunggyi.

If profit of market participants along the channel were compared, the lowest profit percentage was obtained by wholesalers. The highest profit was got by retailers in all sample markets.

### PERFORMANCE

The result of the integration indicates that Yangon and Mandalay Pawsan markets were integrated in nominal value of rice prices while testing the dependent variable in turn. However, in real value of price series, markets were integrated significant at 1% level only in the case of Yangon market was dependent variable.

Testing the cointegration between Myanmar rice and Thai rice Yangon-Pawsan price was integrated with Thai rice price in nominal value particularly, the ADF t statistic value was less than the critical value at 10 % significant level while Yangon market price depended on the Thai rice price. Myanmar rice price movement did not cointegrate to Thai rice price in the deflated value during study period. There was market segmentation between two markets in real value.

Farmers in Myanmar have not much opportunity to response to meaningful incentives of market price signal which would allow them to improve their production and income. For getting this opportunity, the state should relax the rigidity of the land policy and cropping choice for the paddy farmers.

The government should pay attention to build up the information system of price and to create more transparent traded volume of rice market in Myanmar. Transparent markets can ensure traders to have complete and timely knowledge of quality, quantity and price information of commodities. Therefore, private or public organizations should effort to record the volume of trade flow in each administrative regions and transportation cost of the spatial trade for every region regularly for the long time trend.

Public or private institution would promote competitive structure with the standard marketing laws and regulations such as the quality control or grading system, standard measurement system and so on. Besides, there is a need to provide market information which is sufficiently accurate and sensitive to the need of market participants to make the entire market system work better.

The potential offered by market reform during the present government period, conducts and behaviours of market participants were generally in competitive composition. However, if the state provides more formal credit to practically cover the cost of production as well as marketing functions, paddy production and marketing activities of the farmer level will be much efficient for long-standing prospect of farmer profit share of consumer price.

In the country, it was very essentially required that much more mutual trust between state and private sector. The government should have confidence in the marketing function of the private sector, if the country is wanted to build up the market oriented economy.

Moreover, state authority would not hamper the marketing functions of private rice traders to avoid the unnecessary marketing costs along the marketing channel and spatial arbitrage as their declared free domestic rice market system. The policy should be to focus on facilitating the open market trading through the creation of certainly regarding the governmental role (e. g. policy consistency) in the rice marketing.

The development of infrastructure by the state plays a significant role in the conducts of market participants which led to the lower marketing costs and margins to be more efficient marketing system.

Having the proceed market performance, the government should give attention to manage the inflationary pressure instead of direct involvement in the rice marketing sector to control the domestic rice price stability for long run.

The result of the government monopoly in rice export has been the segmentation of domestic market and international markets. Myanmar rice market could not get the correct price signal from the international market. The state should concern seriously that price signal from the international rice market is very important for the farmers and market participants therefore, let them receive it by the released private rice export.

If the private rice export is allowed through the trade policies, the marketing system would transfer price signal from the world market to the producer, consumer, market participants and finally the government. Then, Myanmar rice market will be no longer isolated from the international market and getting the right price cointegration that may push more faster to go on the efficient market oriented economy as a whole.

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