Sense and Nonsense of Rice Price Controls in Sri Lanka
OG Dayaratna-Banda, JMA Jayawickrama, MB Ranathilaka

Introduction
Singapore rarely produces any food, though food security is higher than the world’s second largest rice (food) producer, India. This is despite the fact that Singapore imports almost all food requirements. Japan has been able to reduce pressure on rice consumption and successfully increased food security over the years, through carefully executed public policies. It has also been argued that domestic production of all food requirements of a country is not a prerequisite for improved food security (Sandaratne 2008). Sri Lanka produces relatively a larger share of food requirements including on per capita basis. Successive governments in Sri Lanka have made various efforts to increase rice production through large public spending projects resulting in increased paddy production considerably over the years. Governments also adopted several anti-market interventions during the post independence period aiming at increasing food production and making Sri Lanka a food secured nation. Government interventions in the rice market have continued despite the existence of a functioning market economy in the post 1977 period.

However, prices of rice have unusually risen since January 2008 and government responded to it by imposing price ceilings in April. We noticed that this episode of rising rice prices and subsequent controls introduced by government have not been subject to a critical analysis. Without a proper policy analysis of the causes of episode and socially and economically desirable policy responses, government has introduced price ceilings. One may wonder whether market prices of rice would have been considerably lower than the ceiling prices, had there not been price controls. Interventionists have been very busy in forcing government to impose price controls. The rationale of price ceilings given by policy-makers appears to be confusing and misleading. Therefore, this discussion paper analyses some of the issues related to recent rise of rice prices and consequent policy responses. We investigate whether recent rise of rice prices was a permanent or temporary phenomenon, why were rice prices

1Department of Economics & Statistics, University of Peradeniya, Sri Lanka. The authors would like to gratefully acknowledge anonymous referees for providing comments and suggestions.

© Department of Economics & Statistics
University of Peradeniya
Sri Lanka
unusually high since January 2008, was rice episode is market driven or policy driven, what are the economic consequences of rice price control, and are there alternative policy responses that government might have contemplated.

To address these questions, the paper attempts to analyze causes and consequences of rice market interventions. We discuss the sources of current rice crisis specifically looking at some policies of government. We also examine the policy responses of government and their effectiveness. Economic consequences of rice price controls will be looked at. We, then, go on to provide some policy recommendations that would help resolve rice crisis in particular and a possible food crisis in general.

**Recent Trends in Rice Prices**

It is important to examine recent trends in rice market. Movements in monthly prices of Samba, Red Raw, and Par Boiled are examined for period from January 2005 to April 2008. Data was obtained from Monthly Bulletin of the Central Bank of Sri Lanka for the period from January 2005 to February 2008 (Central Bank of Sri Lanka 2008). Weekly data are averaged to obtain monthly figures for March and April in 2008. Average price of rice for first three weeks was taken for April in 2008 as government imposed ceiling prices for rice at the beginning of fourth week of April 2008.

As illustrated in Figure 1, rice prices in Sri Lanka rose rapidly in January 2008, compared to prices of previous years. Price of Samba rose by 78 per cent from Rs 46 per kg in December 2007 to Rs 82 per kg in January 2008. At the beginning of 2007, the price of Samba rice was Rs 44 per kg. The price of Kekulu rice also rose by 67.5% to Rs 67 in January 2008 from Rs 40 per kg in December 2007. In January 2007, the price of Kekulu rice was Rs 36 per kg. Similarly, price of Nadu rice also rose by 67% in January 2008 from about Rs 40 in December 2007 to Rs 67 in January 2008. At the beginning of 2007, the price of Nadu rice was about Rs 35 per kg.

The graph shows that time paths of rice prices have been severely disturbed in January 2008. This rapid rise of rice prices signaled a serious crisis in both rice and paddy markets. Sri Lanka has never experienced this kind of rapid rise of rice prices over last few decades. This therefore warrants a careful study.

Movement of rice prices followed an interesting pattern over the years before it was hit by a shock at the beginning of the year 2008. This can be shown in trend and seasonal movements in rice prices. Observed cyclical pattern of movement in rice prices implies
that seasonal variations in rice prices dominate their time paths. We decomposed trend (unit root component), seasonal variation and irregular components of rice prices. In the decomposition of components, we assumed that the internal characteristics and dynamics of rice prices tend to govern their future time paths. Univariate decomposition method is employed using the facilities available in STAMP statistical software (see Koopman et al. 2000). Since rice prices do not encounter a serious deviation from their normal path until 2008, the sample period is set from January 2005 to December 2007. There are 36 sample observations in the estimation.

Figure 1: Movements of Retail Prices of Rice (1kg)

As irregular component is constant or trivial, we ignore it from the analysis. Derived trend and seasonal variations of prices of above three kinds of rice are plotted in Figure 2. The actual series and trend component are plotted in left panel and seasonal variation is given in right panel. Though producers, consumers, policy-makers, and middlemen might have been unaware of the patterns shown in Figure 2, they in fact went through these rice price patterns. An interesting story is actually illustrated in panel (b) of Figure 2 which gives the seasonal variation. Price of each kind of rice follows its own seasonal variation, which are almost the same every year. Seasonal variations in rice prices are so strong and thus determine the actual time path. Before the shock occurred in January 2008, seasonal variation was such that rice prices started to rise in the month of September in each year and reached a maximum in January and then registered a declining trend. Prices of rice start to rise with the end of the Yala harvesting season. Since there is a long gap till the
next harvesting season, prices rise because of supply shortages. Then
the declining trend comes somewhere in February and continues in
two phases. In the first phase, the trend starts in February with the
beginning of the Maha harvesting season. The declining trend
continues at a rapid rate till March and at a lower rate till May. The
second phase of rice price decline occurs in the months of July and
August with the Yala harvest. Since production in Yala is relatively low,
price decline is small and last a brief period. With the knowledge of
supply shortages in the future, rice prices start to pick up thereafter.
What this implies is that proper import policy should have been there
to import rice in order to smooth rice demand by making available
rice during this period.

Based on univariate models on monthly statistics of rice prices
from 2005 to 2007, we predict rice prices for the year 2008 which
could be the time path of rice prices in the absence of ceiling prices.
We estimate forecast models of prices of Samba, Kekulu and Nadu
by setting constants and slope coefficients of the variables to be
stochastic. This is reasonable given the non-stationary nature of rice
prices. As error bands explode with a long-forecasting period
normally, we limit our predictions to 8 months in the year 2008 starting
from January. Figure 3 illustrates the predicted values for each type of
rice. If the conditions in the rice market until December 2007 had
prevailed, rice prices could have been in a downward trend since
February 2008. The trend prices (per kg) of Samba, Kekulu and Nadu
would have been less than Rs 40 and Rs 30 rupees by May 2008. Even
if the worst case scenario occurs (upper bound of the forecast),
prices (per kg) of rice would not have exceeded Rs 45, Rs 40 and Rs
40 respectively.

This shows that an unanticipated upward shift in rice prices has
occurred in January 2008. The normal seasonal pattern of rice prices
has been severely disturbed by this shift. In particular, rice prices did
not fall as usual due to the Maha season harvest and instead
increased further in April. This would be a one reason why some blame flood for increased rice prices. But we show below that the
increasing trend of rice prices first surfaced in mid-2007 and
culminated in January 2008. It is therefore necessary to analyze the
possible causes of the trend shift in rice prices in January 2008.
Government policy responses should have been based on the
insights of such a policy analysis.
Figure 2: Trends and Seasonal Variations in Rice Prices, Jan. 2005-Dec. 2007

![Graph showing trends and seasonal variations in rice prices for three different types of rice: Samba, Kekulu, and Nadu.](image)

Source: Authors calculations.

Figure 3: Actual and Forecast Rice Prices (Forecasts are based on the estimated parameters for the period Jan. 2005 – Dec. 2007

![Graph showing actual and forecast rice prices for three different types of rice: Samba, Kekulu, and Nadu.](image)

Source: Authors calculations.

**Roots of the Rice Crisis**

Identifying the fundamental sources of the recent rise of rice prices is essential to evaluate appropriateness, effectiveness and consequences of rice price controls. We attempt to use statistical and econometric tools to identify possible causes of recent rise of rice prices.

**Reverse Causality from Rise Prices to Paddy Prices**
There could potentially be many reasons behind the recent rise of rice prices. Given the technical relationship, one may argue that rice prices are high because of high paddy prices. Figure 4 gives the trend (4(a)) and the seasonal variations (4(b)) in the paddy price.

As in rice price movements, paddy price also follows a very strong seasonal variation. At the end of August in each year where production of the Yala season is exhausted paddy price (per kg) starts to rise. Paddy prices go up rapidly till January next year and start to fall subsequently. The fall of paddy prices occurred in two phases: one due to the Maha harvest (February to May) and another due to Yala harvest (July and August). Because of small production, the fall in paddy prices is less extensive in Yala season than in the Maha season. Until year 2007, this seasonal variation dominates the trend component and determines the time path of paddy prices. However, due to a marked rise in the trend component of paddy prices seasonal variation may not be clearly observed in the actual paddy prices especially in the second half of 2007. The trend component of paddy price increases rapidly and never reverts to its previous time path. Importantly, this huge rise in the trend destroys the importance of seasonal variations in the paddy price behaviour making policy formulation problematic.

Since we do not have actual data for the first quarter in 2008 we forecast paddy prices for the first 8 months in 2008 based on estimates for the period from January 2005 to December 2007. It is obvious from Figure 4 that the trend component of paddy prices changed rapidly, especially in the last three quarters of 2007. Forecasting model includes trend, seasonal component and an
irregular component. However, the irregular component turned out to be insignificant in the estimated model. Figure 5 illustrates the predicted values of paddy prices. It shows that due to the Maha harvest paddy price would be slightly lower in the months of February and March compared to its January figure. Following more or less the same pattern observed in 2007, paddy prices are increasing thereafter. According to our forecasts, paddy prices would be about Rs 29 per kg in April 2008. This forecast value is quite similar to actual price reported (Rs 30 per kg) for the last week of April by Agrarian Research and Training Institute (Hector Kobbejaduwa Agrarian Research and Training Institute 2005-2007). These forecasts indicate that paddy price would also follow an increasing trend in coming months as well. Given the paddy-rice production technical parameters, the rise in paddy price has a significant positive impact on rice prices (It is known that 1.5 paddy kgs are necessary to produce one kg of rice). If the technical parameters are constant, an increase in paddy prices would have a proportional impact on rice prices.

Figure 5: Paddy price forecasts

Government and various quarters repeatedly state that the increasing trends in paddy price and rice prices are because of undisclosed stocks, floods and international food crises. However, the rapid rise in paddy price started soon after the Maha harvest in 2007 (see Figure 4(a)) and never reverted to the declining trend even in the face of the Yala harvest. Floods appeared in the early 2008 and global food shortage surfaced only since few weeks ago. There would have been a marginal impact of flood on recent rise of rice prices.
It is common sense that high paddy prices result in high rice prices. However, the reverse order causality can also be possible, but surprising. In that case paddy and rice markets are not mutually independent but endogenous. While high paddy prices result in high rice prices due to technical reasons, high rice prices would stimulate paddy prices. The argument may go as follows: If rice price is high for some reason, farmers, rice producers and middlemen would expect it to be persistent at least in the short run. Profit motives would lead farmers/middlemen to bargain for a high price for their paddy. On the other hand given the import constraints, rice producers would be willing to pay a little higher price for paddy as they expect a future increase in rice prices.

Figure 6: Relationship between Rice Prices and Paddy Prices

Note:
In panel (a) average domestic rice price is given in the vertical axis and average paddy price is given in the horizontal axis. In Panel (b) average domestic rice price is given in the vertical axis and one period lagged paddy price is given in the horizontal axis. In Panel (c) paddy price is given in the vertical axis and one period lagged average rice price is given in the horizontal axis.
Source: Authors calculations.

Table 1: Granger Causality Test (Sample 2005:01 – 2007:12, Observations 31, Lags 1)

<table>
<thead>
<tr>
<th>Null hypothesis</th>
<th>F-test statistics</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy price does not cause rice price</td>
<td>8.769</td>
<td>0.006</td>
</tr>
<tr>
<td>Rice price does not cause paddy price</td>
<td>3.304</td>
<td>0.076</td>
</tr>
</tbody>
</table>

Source: Authors calculations.
Paddy prices and rice prices tend to be positively collinear. The scatter plot would suffice to illustrate the positive collinearity of these two variables (see Figure 6(a)). However, scatter plot of the contemporaneous correlation does not give information on the direction of causation. In order to examine whether high paddy prices result in high rice prices, we modify the scatter plot by plotting current rice price against one period lagged paddy price. The idea is that how lagged paddy price (which is given now and so no endogeneity problem) collinear with current period rice price. As illustrated in Figure 6(b) current rice prices and lagged paddy prices are highly collinear, thus supporting the causation from paddy price to rice price. In order to examine our second proposition whether high rice prices would stimulate paddy prices, we use the scatter plot of current paddy price and the one period lagged rice price. As illustrated in Figure 6(c) there is a strong collinearity between current paddy prices and lagged rice prices supporting causation from rice price to paddy price.

Though the two-way causation between paddy price and rice price is evident in Figure 6(c), we perform the Granger causality test as well. Results are given in Table 1. Accordingly when one lag is used in the estimation the Granger causality test assures a bi-directional causality between paddy and rice prices. As obvious from the technical relationship, paddy prices are a strong cause for rice prices. The null hypothesis of no causation from paddy price to rice price is rejected at 1% level of significance. But causation from rice prices to paddy prices is surprising. Granger causality test also assures the causation from rice price to paddy price rejecting a null hypothesis of no causation from rice price to paddy price. Thus, it assures that paddy prices depend on rice price as well. The Granger causality test also supports our graphical analysis given in Figure 6(c).

Therefore, paddy and rice market are not mutually exclusive but they are interdependent. High paddy prices results in high rice prices. At the same time high rice prices ended up with further increase in paddy prices. As a result, we can argue that paddy prices and rice prices are mutually reinforcing and thus, any shock to one price would increase both prices in many rounds. Once the prices move away from the equilibrium, they tend to move further a way. But this is not a market determined phenomenon. Government intervene in both rice and paddy markets. These interventions actually have driven prices of both paddy and rice up.
Was there a rice shortage? If so what was the source?

Theoretically, the market price of a good can be increased due to supply shortages. In this section we examine whether the rapid increase in rice price from the middle part of the last year was due to a domestic production shortage. One reason that government highlights for high rice prices is the loss of production because of floods experienced during the last Maha harvesting season. However, we show that soaring of prices in January 2008 was not a sudden one but has trending pattern since mid of the last year. There are reports saying that the loss of paddy production due to recent floods is only about 4 percent of the total production. Moreover Central Bank of Sri Lanka predicted that the paddy output is likely to decline by about 3.9 percent in the year 2008 due to various reasons (Central Bank of Sri Lanka 2007). By looking at total annual production figures (see Table 2), one may realize that paddy output in 2007 reduced only by 6.4 percent compared to the total output in 2006. Per capita paddy production declined by 7 percent in 2007 compared to its previous year’s figure. However, this drop in paddy production could not be a serious cause for recent high prices of rice. Over the last 8 years from 2000, the paddy production in Sri Lanka has experienced severe fluctuations: large recessions in some years and large booms in some other years. However, in those rice production recession years there was no rice price crisis such as a one Sri Lanka is experiencing at present. In the face of fluctuations in rice production people might have changed their consumption to imported rice or wheat flour.

With the availability of imported rice or other substitutes, fall of production in some previous years did not cause huge price hikes. During the recorded production booming periods, market might have adjusted with less imported rice and less wheat consumption.

Total rice production can be traced multiplying total paddy production by $3/2$ which is the technical transformation parameter from paddy to rice. Total rice availability in the economy is equal to domestic rice production plus imported rice. Table 3 gives total and per capita rice availability in Sri Lanka. The average per capita rice availability has been about 106 kg per person over the period 2000-2008. Per capita rice consumption in Sri Lanka has been computed based on survey data of Department of Census and Statistics (Department of Census and Statistics 2005). The average per capita rice consumption is about 102 kg over the last eight years. Domestic production plus imported rice sufficed to meet the total rice demand in the country prior to January 2008. Information in Figure 7 also shows that there has been no shortage of rice in Sri Lanka.
One might argue that paddy production has severely been affected by intensifying of war since 2006. Production of paddy might have reduced significantly in the Killinochchi, Vauniya and Ampara districts. These districts significantly contribute to paddy production in Sri Lanka. As data is not readily available, it is, however, difficult to
observe the actual impact of the intensified war on paddy production.

Rice and Middlemen

Data given in Table 3 also indicates that almost all of the rice availability is consumed annually. This implies that there have been no large annual undisclosed stocks of rice. Though expectations in the rice market and paddy market may have contributed for high prices to some extent because of holding of undisclosed paddy or rice stocks, the effect could not last long as it is infeasible to have rice or paddy stocks for a long time because of increasing cost of storing in terms of waste and loss of weight. In addition, hoarders normally sell their stocks when the prices rise above average.

Table 3: Annual Rice Demand in Sri Lanka

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic rice production (000 mt)</th>
<th>Imported rice (000 mt)</th>
<th>Total availability of rice (000 mt)</th>
<th>Rice availability per capita (kg)</th>
<th>Per capita rice consumption (kg)</th>
<th>Import as a percent of total availability of rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1912</td>
<td>15</td>
<td>1927</td>
<td>100.78</td>
<td>100.95</td>
<td>0.78</td>
</tr>
<tr>
<td>2001</td>
<td>1907</td>
<td>52</td>
<td>1957</td>
<td>104.56</td>
<td>100.71</td>
<td>2.65</td>
</tr>
<tr>
<td>2002</td>
<td>1797</td>
<td>95</td>
<td>1892</td>
<td>99.52</td>
<td>100.71</td>
<td>5.02</td>
</tr>
<tr>
<td>2003</td>
<td>2047</td>
<td>35</td>
<td>2082</td>
<td>108.16</td>
<td>100.71</td>
<td>1.68</td>
</tr>
<tr>
<td>2004</td>
<td>1752</td>
<td>222</td>
<td>1974</td>
<td>101.43</td>
<td>100.71</td>
<td>11.25</td>
</tr>
<tr>
<td>2005</td>
<td>2164</td>
<td>52</td>
<td>2216</td>
<td>112.67</td>
<td>104.19</td>
<td>2.35</td>
</tr>
<tr>
<td>2006</td>
<td>2228</td>
<td>12</td>
<td>2240</td>
<td>112.64</td>
<td>104.19</td>
<td>0.53</td>
</tr>
<tr>
<td>2007</td>
<td>2086</td>
<td>88*</td>
<td>2174</td>
<td>108.65</td>
<td>104.19</td>
<td>4.05</td>
</tr>
</tbody>
</table>

* In which 72.4 (000mt) (82% of total) was imported in November (36.5) and December (35.9).

Source: The Central Bank of Sri Lanka (Various Years)

Speculative behavior of paddy producers and rice sellers might have been operating since price controls were removed in the late 1970s. If producers (or middlemen) perceive that rice prices may increase in the future they would keep speculative stocks (so-called hoarding). This would likely to create temporary shortages. These speculative stocks have been a general phenomenon during the last three decades and there are no any specific reasons to believe that
speculators behaved differently during the last five months. Hoarding of rice because of speculations of future price increases would tend to raise prices. However, the fact of the matter is that rice prices rose very rapidly until government introduced price ceilings. If there were speculative stocks with the producers and middlemen, they should have sold those stocks when the prices were very high. It is naïve to think that producers and middlemen would have kept stocks while rice prices are soaring in the market. There is no point in keeping speculative stocks if they are not sold when prices are higher than previous normal prices. Though there seems to be some anti-competitive activities in the rice market, recent abnormal rise of rice prices cannot be attributed to artificial shortages created by middlemen. On the other hand, higher prices created by artificial shortages as a result of anticompetitive activities cannot be eliminated by imposing price ceilings. They could have been eliminated by using the competition laws, which prevent anticompetitive activities in paddy and rice markets.

It has also been argued that the rice import market in Sri Lanka exhibits market distortion arising from anticompetitive activities. A small number of traders have been importing rice for long time. There is likely to be collective behaviour in the rice import market. These anticompetitive activities of the rice import traders include creating artificial supply shortages by not importing enough rice at the right time and collusive dealings to raise prices. It is also possible that collusive dealings exist between importers and domestic rice middlemen. A lack of competition in the rice import market has resulted in temporary shortages and higher than normal price. Government appears to intervene into the market to import rice rather than promoting competition. But increasing competition in the rice import market through enforcement of competition laws would be more effective than government directly involving to import rice.

**The Impact of Rice and Wheat Import Policy**

Let us now think about an important source of fluctuations of rice prices. The data presented above shows that a rice shortage has not occurred before mid-2007 in Sri Lanka. More than 95 percent of rice demand in Sri Lanka was fulfilled by domestic production prior to mid-2007. The data also shows that rice demand has been more or less constant prior to November 2007. However, the demand for rice has been determined by the seasonal trends of rice demand and prices. There is a seasonal price rise during October to February indicating that rice must be imported during this period. The shortage
could have been eliminated by importing rice. These seasonal variations in rice prices are quite large and provide a rationale for market smoothening policy interventions. However, as given in Figure 1 this familiar trend and seasonal behavior of rice prices has been disturbed so far in the year 2008. Inclusion of rice prices for the first quarter of 2008 spoils the estimates and existing behavioral patterns of rice prices. These changes in seasonal variations in rice prices mislead policymakers to choose inefficient and outdated method to resolve the problem. It is therefore import to examine if trade barriers prevented importing rice.

Figure 8: Prices of domestic rice, imported rice and wheat

Sri Lanka failed to import sufficient amount of rice to meet the demand due mainly to higher import tariffs introduced in 2006. Sri Lanka maintained a high degree of external protection on rice. Until 2002, imports of rice by Sri Lanka have been subject to a 35 percent tariff rate which the government waived when supply shortages occurred from time to time until 2002. This policy has worked well during shortages prior to 2005. This was replaced by a lump sum tariff of Rs 7000 per ton of rice in 2002, which was increased to Rs 9000 in 2005. But with the re-emergence of protectionist policies in 2005, the government increased the rice tariff to a large Rs 20,000 per ton in 2006. This has been operating since then. Added to these are other import requirements including local handling charges and transportation costs. These higher quantitative import barriers have significantly reduced incentives to import rice. According to Rafeek
and Samaratunga (2000) the level of trade restrictions on rice imports is higher in Sri Lanka. They find that the nominal protection rate which measures import protection on output has been about 42 percent and the effective protection rate which measures protection on both output and inputs has been about 32 percent. This indicates that barriers to import rice held the domestic price of rice about 42 percent above the import price. Moreover, producers had a 32 percent of return due to barriers. Trade barriers have contributed to intensifying temporary rice shortages and raising prices. The government has failed to provide tariff waives on rice during rice shortages since 2006. Though the government reduced these protections in March 2008 hoping that importers will make rice available by importing rice, it did not work well as it takes a considerable time period (around 2-3 months) to make an import order and to process a consignment. The recent rice crisis has mainly been due to the weaknesses in the rice import policy.

Wheat has widely been substituted for rice in Sri Lanka in the past. Interestingly, there is no clear association between the price of domestic rice and price of imported rice (see Figure 8). This implies that the less amount of imported rice is inadequate to be a substitute for domestic rice. Wheat flour and bread consumption is widely popular in urban and suburban areas. Figures 8 and 9 reveal a positive association between price of domestic rice and price of wheat. This reveals that wheat is a strong substitute for domestic rice. If prices are determined by market forces, high wheat prices dry up the demand for wheat and create an additional demand pressure on rice and thus raising the price of domestic rice. Table 4 gives Sri Lanka’s wheat imports over the last 3 years. In the year 2005, about 790000 metric tons of wheat was imported to Sri Lanka. Though, rice production increased from 2,164,000 metric tons in 2005 to 2,228,000 metric tons in 2006, wheat imports were also increased to 1,239,000 metric tons in 2006. However, the wheat importation in 2007 fell sharply to 952,000 metric tons. Given the lower paddy production (relative to the paddy production in 2006), reduction of imports of wheat would have resulted in a higher demand pressure on rice. This is because reduced import of wheat drove up domestic wheat flour prices and thus lower demand for wheat. The resulting lower consumption of wheat flour might have increased the demand for rice. The demand pressure would be much extensive with the government’s propaganda campaign against wheat consumption in favor of rice consumption.
If we divide wheat importation to six months period intervals in each year, we see that wheat importation fell by 55,000 metric tons in the first six months in 2007 compared to the first six months wheat importation in 2006. However, fall in the second six months of the year 2007 was huge (231,000 metric tons) compared to the imported wheat volume in the second six months of 2006. It seems that the large reduction of wheat imports diverted a large demand pressure from wheat to rice. As the importation of rice reduced until November and December, the demand pressure affected the rice prices to go up rapidly since mid 2007. With rising rice prices farmers’ and middlemen’s expectations (short-term speculative stocks) would have lead to a higher paddy prices and therefore high rice prices.

There are trade restrictions to import wheat in Sri Lanka. Since 2006, the import duty on wheat flour imports has been 15 percent, in addition to a 10 percent import surcharge, a 3 percent of port and airport development levy (PAL) and a 1.5 percent of social responsibility levy (SRL). The government also removed wheat flour subsidy in 2007 which was a legitimate measure. The President of Sri Lanka has been reported to have stated on 15th of April 2008 that “I am exceedingly glad at the fall in consumption of wheat-flour based products. Despite the fact that we possess very fertile lands, the consumption of (imported) wheat was forced upon us, initially by the provision of wheat free of charge, and later on credit, until we were addicted to it” (Samath 2008). Severe restrictions on wheat imports without having increased rice and other food production in Sri Lanka has resulted in increasing consumption pressure on rice. Sri Lanka continues to have higher imports tariffs on wheat flour despite the
fact that India removed a 36 percent import tariff on wheat flour, and Indonesia eliminated duties on wheat and soybeans. Peru jettisoned tariffs on wheat and corn. Turkey cut import taxes on wheat to 8 percent from 130 percent and on barley to zero from 100 percent. Mongolia scrapped its value-added tax on imported wheat and flour (http://business.theage.com.au/). These countries adopted this policy to face the emerging food crisis.

Given the positive association between wheat and domestic rice prices, increases in wheat prices over the last 3 years because of restrictive import policy have contributed to high prices of domestic rice. Since March 2008, government took measures to import rice to meet increased demand. One would consider that it has been pain silly for the government to take measures to import rice by having prevented wheat consumption because both require foreign exchange. Apart from that wheat is more available globally than rice.

Table 4: Wheat Imports (.000 mt)

<table>
<thead>
<tr>
<th>Category</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total imports</td>
<td>789.75</td>
<td>1238.55</td>
<td>951.90</td>
</tr>
<tr>
<td>Monthly average imports</td>
<td>65.81</td>
<td>103.21</td>
<td>79.32</td>
</tr>
<tr>
<td>Change in total imports</td>
<td>448.80</td>
<td>-286.65</td>
<td></td>
</tr>
<tr>
<td>First Six Months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total imports</td>
<td>393.25</td>
<td>646.45</td>
<td>591.00</td>
</tr>
<tr>
<td>Monthly average imports</td>
<td>65.50</td>
<td>107.47</td>
<td>98.50</td>
</tr>
<tr>
<td>Change in imports</td>
<td>253.20</td>
<td>-55.45</td>
<td></td>
</tr>
<tr>
<td>Second Six Months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total imports</td>
<td>396.50</td>
<td>592.10</td>
<td>360.90</td>
</tr>
<tr>
<td>Monthly average imports</td>
<td>66.08</td>
<td>98.68</td>
<td>60.15</td>
</tr>
<tr>
<td>Change in imports</td>
<td>195.20</td>
<td>-231.20</td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled from CBSL Weekly and Monthly Bulletins.

The above evidence suggests that government’s restrictive import policy on wheat and rice appears to have significantly contributed to recent rise of rice prices in Sri Lanka. The restrictive import policy on rice as well as wheat affected the domestic rice prices in many ways. The limited importation of wheat, a close substitute for rice, caused additional demand pressure on rice raising prices. Enhanced expectations about future higher prices resulted in high paddy prices which drove up rice prices further. These mutually reinforcing prices in paddy and rice markets resulted in rapid
increases in rice prices. Further, the private importers as well as government failed to identify future market shortages and adjust its import policy accordingly. This kind of food shortages can be observed in advance by looking at historical consumption patterns. Evidence suggests that the government should have motivated the private sector to import rice to smooth rice consumption by making rice available through imports. This also shows the inefficiency and lack of foresight of the private sector in Sri Lanka. Throughout the year 2007 except the months of November and December, the government did not import rice adequately to contain rapidly rising paddy and rice prices. Increased importation of rice at the end of the year was simply not enough and too late. Mutually reinforcing feedbacks between paddy and rice prices has driven up rice prices by more than 70 percent in January 2008 compared to prices prevailed in December 2007.

The Impact of Global Prices on Domestic Rice Prices

It has been argued in the policy circles that rising global rice prices might have contributed to higher than normal rice prices in Sri Lanka. Global rice prices have been soaring since October 2007. The price of 100 pounds of rice increased from around U.S.$ 14 in October 2007 to around U.S.$ 20 at the end of March in 2008. Approximately these prices imply that the price per kg of rice in Sri Lanka equal to the world market price in March 2008 was around Rs 60. Based on this information, one may want to argue that rise of domestic prices of rice would have been driven by increased global price of rice.

Is there an impact of the rise of global rice prices on domestic rice prices? The amount of rice imported to Sri Lanka from year 2000 to year 2007 is reported in Table 3. In the year 2000, Sri Lanka has imported 0.8 percent of rice from abroad while 99.2 percent of rice demand has been fulfilled from domestic production. In the year 2007, Sri Lanka has imported around 4 percent of rice demand from abroad while 96 percent of rice demand was fulfilled from the domestic production. The import share of total rice consumption in Sri Lanka from 2000 to 2007 was about 3.5 percent. This indicates that Sri Lanka does not depend on foreign rice for consumption. These data indicate that the impact of rapid rise of global rice prices on domestic rice prices would have been negligible. The fluctuation of exchange rates also would not have had an impact on domestic rice prices. This argument is again supported by Figure 8(a). It shows that there is no systematic association between prices of domestic rice and imported price. Besides, since Sri Lanka is not a rice exporting
country, there is no way of diverting local production to exports in order to profit from soaring global prices.

**Average Prices and Rice Prices**

One would argue that rising and high inflation would have had an impact on rice prices. When the prices of other goods increase remarkably there is likely to be an impact on rice prices also. This is because retailers and middlemen would cite the rising general prices to take advantage in raising rice prices as the market for paddy and rice are not perfectly competitive in Sri Lanka. Though the average prices have increased by about 25 percent (inflation) during the last few months, rice prices have increased by nearly 70 percent. Though rising prices of other goods would have had an impact on rice prices, the recent rapid rise of rice prices cannot significantly be explained by that.

**What is the Rule for a Fixed Price?**

One important issue that must receive attention is whether the imposed price ceilings are justifiable. A general rule for price ceilings is to take the recent average prices and fix the prices on the average. This will enable the government to reduce negative welfare effects that would impose on either consumers or producers, though price ceilings always impose a deadweight efficiency loss to the society as a whole reducing social welfare compared to market determined prices.

Let’s compare the ceiling prices of rice with the recent average prices of rice in Sri Lanka. Table 5 reports our computations. We have used monthly data for rice to compute the average price of rice. The average price for Samba, Kekulu and Nadu from January 2005 to April 2008 were approximately 46, 37, and 36 respectively. Annual average prices for the year ending April 2008 of above rice were about Rs. 56, Rs. 47.5 and Rs. 47 respectively. The six months predicted price for these rice are Rs. 44, Rs. 38 and Rs. 33 respectively. But the legally imposed prices are Rs. 70, Rs. 65 and Rs. 65 respectively. This information shows that the imposed price ceilings are significantly higher than the market determined prices which have prevailed had there not been price ceilings.
Table 5: Average and Predicted Rice Prices Compared to Ceilings

<table>
<thead>
<tr>
<th>Type of Rice</th>
<th>Average prices, from Jan. 2005 – April 2008 (Rs per kg)</th>
<th>Average prices from May 2007 to April 2008 (Rs per kg)</th>
<th>Six-Month Forecast Prices (Rs per kg)</th>
<th>Flat Ceiling Prices (Rs per kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samba</td>
<td>45.63</td>
<td>56.18</td>
<td>43.44</td>
<td>70</td>
</tr>
<tr>
<td>Kekulu</td>
<td>36.79</td>
<td>47.48</td>
<td>37.23</td>
<td>65</td>
</tr>
<tr>
<td>Nadu (par boiled)</td>
<td>36.18</td>
<td>47.16</td>
<td>32.38</td>
<td>65</td>
</tr>
</tbody>
</table>

Source: Compiled from CBSL Weekly and Monthly Bulletins.

**Economic Consequences of Price Controls**

Price control regimes bound to create harmful economic consequences in the medium and long term. We discuss several of such negative effects of rice price control. The consensus in the literature on price controls is that it would if necessary be a transitory measure. The price control regimes tend to reduce social welfare and economic efficiency according to most of these studies. It also imposes a number of undesirable socio-economic outcomes (for a comprehensive review, see David 1997).

**Historical Experience of Price Controls**

Even though some socialists spread the myth that price controls are a socialist policy, the control prices for rice were first introduced by the colonial rulers during the Second World War in Sri Lanka (Ratnayake 2004). It was a time when import of rice became a severe problem and the domestic production had to be rationed in order to create a smooth distribution. The price control regime experienced during the 1970s was characterized by import controls, intense state intervention, and absence of market mechanism (Snodgrass 1998). The current price ceilings were introduced while there is a functioning market economy. Historical experience suggests that this policy is not going to succeed as market forces are always stronger than state controls. Various negative consequences that would emanate from these controls would compel the government to dismantle these price ceilings sooner or later. The controls would otherwise function as minimum prices imposed to help the producers.
Impact on Social Welfare

There is a considerable theoretical literature emphasizing the fact that the price control regimes tend to reduce social welfare and market mechanisms generate efficient socially desirable outcomes, provided that government has certain regulatory interventions. The stated objectives of rice price control regime are to: protect producers and consumers from middlemen. The supply and demand elasticities of rice are relatively stable in Sri Lanka meaning that both producers and consumers equally gain from the market prices of rice. If the ceiling price is lower than the historical average, consumers tend to gain while producers lose (Ellis 1992). As we have shown before, the ceiling prices of rice are higher than the recent average prices of rice meaning that consumers tend to lose rather than gain from ceiling prices. In this case, price ceilings tend to increase producer welfare marginally at the cost of long term consumer welfare provided that rice market is perfectly competitive. But since there are significant imperfections in the rice market in Sri Lanka, the ceiling prices which are higher than the normal market determined prices would in fact be beneficial to middlemen rather than the producers. There is also a deadweight efficiency lost due to ceiling prices. These theoretical results suggest that dismantling of price controls rather than imposing them tends to improve consumer welfare. It has also been shown that marginal interventions by the government in the paddy market through assisting to develop the infrastructure of the private marketing system tends to stabilize market prices compared to price ceilings. For example, Indonesia achieved this for many years by state procurement of 5 percent or less of production and by using imports to help balance the domestic market (Ellis 1992).

Enforcement Problem

How does the government enforce price ceilings? Will the traders comply fully with the rice price ceilings? It is important to note that competition between suppliers ensures that they cannot take advantage of consumers by setting prices that are out of line with their cost and ensures that rice goes to consumers who need it most. But price ceilings undermine this mechanism. A considerable amount of state funds and personnel along with a clear mechanism would be necessary to enforce rice price ceilings. There needs to be a monitoring mechanism in the country to oversee whether the traders
comply with the price ceilings. There should also be a body to entertain consumer complains and resolve them. These activities will create a severe burden on government as well as inefficiency in rice market in Sri Lanka. It is well known that one of the main reasons for the collapse of central planning regimes in the world has been the huge social costs that they imposed on the people to administer government decisions and laws. In fact in practice there is no price control. Sellers sell rice at various different prices. This can also be attributed to the problem of enforcement.

Shortage and Black Market

To understand the effects of price controls, it is necessary to understand how prices rise and fall in a free market. There is nothing esoteric about it, but it is important to be very clear about what happens. Prices rise because the amount demanded exceeds the amount supplied at existing prices. Prices fall because the amount supplied exceeds the amount demanded at existing prices. The first case is called a shortage and the second is called a surplus - but both depend on existing prices.

There is little likelihood of market forces creating shortages in the rice market. Rice shortages may actually be created by price ceilings imposed by government. The areas with less rice production will receive a limited amount of rice creating a shortage. When there is a shortage of a product, there is not necessarily any less of it, either absolutely or relative to the number of consumers. Just as there can be a shortage without any greater physical scarcity, so there can be a greater physical scarcity without any shortage. The usual function of prices in directing goods and resources to where they are most in demand no longer operates under price controls. But price control prevents buyers and sellers from making mutually advantageous transactions on terms different from those specified in the law.

Price control fiat would reduce incentives to supply of rice to areas facing a rice shortage. Price controls could deter retailers from increasing prices. Retailers in the rice non-producing areas would have less rice and consumers would face additional hardship. When rice prices kept below market levels, there would be shortages. Consumers would be forced to line up at retail shops, but rice would run out before satisfying demand.

Without the flexibility for prices to increase, supply disruptions last longer than they would otherwise. By disrupting the price mechanism, price controls make lines longer during emergencies, misallocate the available supply, and prevent those with the greatest
need for rice from getting access. Also, by making it illegal for prices to increase when supplies are tight, price ceilings make retailers reluctant to lower prices when supplies are readily available, for fear of not being able to adjust to future supply changes.

It is useful to compare the experiences of the 1970s to the present day. In the 1970s, when price controls were in effect, rice price increases were accompanied by long lines at the retail shops. But Sri Lanka has never experienced a rice shortage or rise of rice prices of this magnitude for the entire post-1977 period.

Bolder and less scrupulous buyers and sellers make mutually advantageous transactions outside the imposed price ceilings. Price controls almost invariably produce black markets, where prices are not only higher than the permitted prices by the fiat, but also higher than they would be in a free market, since the legal risks must also be compensated. While small-scale black markets may function in secrecy, large-scale black markets usually require bribes to officials to look the other way. In a fragile democracy like ours, it is futile to think that state bureaucracy and politicians would only be benevolent. There is a significant space for rent seeking activity. One cannot rule out the fact that middlemen collude with government officials and politicians to get the mutually advantageous price ceilings to both parties.

Quality Deterioration

One of the reasons for the political success of price controls is that part of their costs is concealed, so that society does not realize the futility of price controls. Even the visible shortages do not tell the whole story. Added to this is quality deterioration which has been common with many other products and services whose prices have been kept artificially low by government fiat. One of the fundamental problems of price control is defining just what it is whose price is being controlled. There are no pre-set standards for rice when fixing prices. The ceiling prices have been imposed on three names, Samba, Kekulu and Nadu. But government has set unique price levels for three different types of rice disregarding the fact that there are different types of Samba, Kekulu (Red) and Nadu. In addition, there is little incentive to maintain higher quality when everything will sell anyway during a shortage at the fixed price. The priorities which prices automatically cause individuals to consider are among the first casualties of price controls. There is no incentive in a control regime to maintain or improve the quality of rice. The final outcome would
be for the consumers to buy lower quality rice at higher than normal prices.

**Conclusions and Policy Implication**

The recent episode of rapid rise of rice prices was a temporary phenomenon rather than a permanent phenomenon. There appears to be serious negative consequences of rice price ceilings. And we show that there are alternative policy responses that government can contemplate. We have shown above that recent rapid rise of rice prices was driven by misguided import policies of government and anticompetitive activities in the rice market. So it appears that government has identified the rice problem wrongly. We also showed that ceilings are not the appropriate solution to temporary rice shortages and higher than normal prices of rice. Therefore, one could say that government has implemented a wrong solution to a wrong problem.

We identified several factors that contributed to the recent rise of rice prices. The first and the foremost is the failure to smooth rice supply to eliminate transitory rice shortages by importing rice due mainly to flawed import policy. While private sector has failed to respond to future market needs by importing rice, large increases of rice tariff in 2006 has seriously hampered rice and wheat imports. Increase of wheat tariff has also aggravated rice crisis. Protectionist propaganda of the government might also have partly contributed to this. Second, government pressure to reduce wheat flour consumption has had a substitution effect on increasing rice consumption. Though removal of the wheat flour subsidy is legitimate, higher tariff for wheat flour was a main impediment. Third, both domestic and import rice markets are characterized by anti-competitive activities. These activities created artificial shortages and raised prices of rice. Finally, flood and other related issues might have also marginally contributed to the recent rise of rice prices. Therefore, we argued that rice crisis in Sri Lanka cannot be effectively resolved by imposing price ceilings. It would only create more misery to the people. In this context, we attempt to provide some policy recommendations that would help resolve rice crisis. We assert that government should focus on short term, medium term and long term policy responses to resolve rice crisis and make Sri Lanka a food-secured nation. The central thrust of the food policy should be to reduce rice consumption considerably by stimulating alternative food consumption.
In the short term, temporary rice shortages should have been eliminated by importing rice and wheat (the closest substitute for rice) rather than imposing price ceilings. Existing trade barriers for importing rice need to be effectively reduced. A recent study by Weerahewa (2006) has found strong empirical evidence in support of this policy prescription. Using a computable general equilibrium model, Weerahewa (2006) has computed household welfare effects of liberalization of rice imports. She finds that liberalization tends to increase economic efficiency without having bad distributional outcomes. She also concludes that continuation of protectionist policies is neither necessary nor efficient in the present era though these policies have helped increase rice production.

We also found that the fertilizer subsidy has not had a significant impact on paddy production in Sri Lanka as paddy production has not increased as a result of fertilizer subsidy. One would argue that fertilizer subsidy is meaningless except the fact that the poorest farmers’ may need a one.

However, in the medium term, while taking measures to reduce pressure on rice, the government can address the issue of middlemen. According to government information, there is considerable anticompetitive activity in both the domestic rice market normally orchestrated by middlemen and in the rice import market in Sri Lanka. Anticompetitive activities in the domestic and importing rice markets cannot be eliminated by establishing a government monopoly in the name of Paddy Marketing Board or by imposing price ceilings. The ceiling prices would not be effective in resolving the problems that are said to be created by the behavior of middlemen. Rather, government should eliminate market imperfections and increase competition in the rice market by implementing competition laws. Competition laws should be enforced in domestic and import markets to eliminate anticompetitive activities. Government should also identify efficient forms of competition and promote them. Government assistance to help develop the infrastructure of the private marketing system, i.e. the creation and encouragement of widespread wholesale and retail markets and trading facilities, is likely to prove a less costly means of improving marketing systems than the rice price ceilings (or other kinds of intervention to distort competitive prices). Antitrust law based on economic principles should be created to ensure healthy competition by protecting against anticompetitive business practices both generally and during an emergency. Antitrust law prohibits sellers from explicitly colluding to impose higher prices. Retailers are
prohibited from taking exclusionary actions that would create monopoly power.

But in the long run, the demand for rice should be reduced considerably. This is required for increasing food security. Government can take various actions for this. It needs to create incentives to reduce pressure on rice consumption by promoting alternative food. One would argue that higher than normal prices for rice might contribute to reducing demand pressure on rice and increasing consumption of alternative food. So that rising prices of rise would help increase food security in the longer term. The private sector should be promoted to make alternative food available by making them more consumable and hygiene. These would require agro-processing activities. Moreover, as countries such as Japan did, diversification of the meal would also be necessary to reduce pressure on rice consumption. Countries such as Japan, Indonesia, Philippines, and Thailand have succeeded in diversifying food consumption and thereby reducing the pressure on rice consumption through carefully executed public policies (Sidik 2004). By reducing rice consumption and increasing alternative food consumption, Sri Lanka will be able to become a rice exporter rather than a net importer in the long term. This would significantly help improve the welfare of the farmers in Sri Lanka.

Rice consumption policy in Japan provides very useful insights for Sri Lanka. In 1930s, rice accounted for about 60 percent of the daily calorie needs of Japanese people (Ohkawa 1945). Since 1955, with the beginning of Japan’s rapid economic growth, this proportion remained at a higher level of 48 percent, and rice accounted for about 29 percent of the total protein supply. Per capita supply of rice was 315 grams, but this has now fallen by approximately 40 percent to 194 grams. Whereas the standard annual pre-war per capita consumption of rice was 150kg (411gm per day), this has declined sharply by nearly 50 percent. There have also been considerable and steady increases in the consumption of meat, eggs, milk, and dairy products. Modernization of Japanese dietary habits has largely reduced pressure on rice consumption and increased food security (Higuchi, 1991). Japanese people have substituted instant readymade food for rice. A clear example for the diversification of Japanese dietary habits can be found in the generalization of eating out. How rapidly this has taken place is well illustrated by the fact that the proportion of eating out in the household food budget increased from 7.0 percent in 1963 to 16.6 percent in 1988 (Higuchi, 1991). In the past, Japan has consumed too much carbohydrate, too little fats
and slightly little protein. Subsequently, there was a marked decline in the consumption of rice and other grains while increasing the intake of other food. There has been a marked decline of demand for rice over the years in Japan because of whole plethora of socioeconomic changes. This has resulted in comparative changes in food consumption structure. Grain (including rice), potato, and soybean consumption have declined while consumption of all other foods (meat, eggs, milk, fats, and oil) has increased. Japan has been very successful in reducing the demand pressure on rice by diversification of consumption, which has resulted in improved food security.

References

Central Bank of Sri Lanka, various years, Annual Report, Colombo: CBSL


