

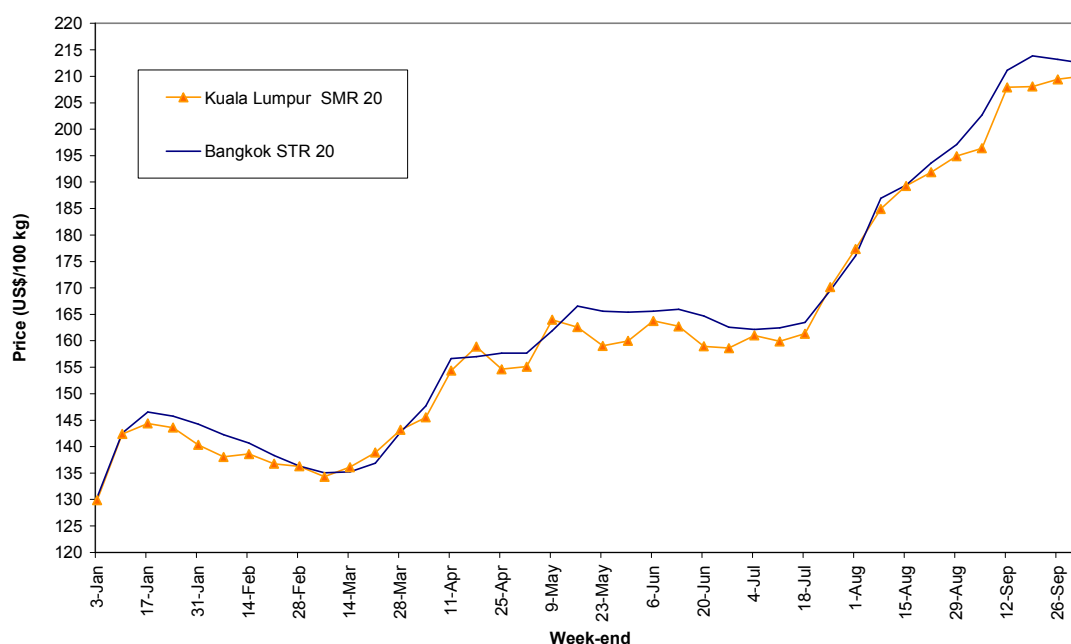
Review of Natural Rubber Market

January to September 2009

1. Trends in Prices

Trends in weekly average prices of TSR 20, the most popular traded form of NR, in Bangkok and Kuala Lumpur markets during the first three quarters of 2009 are shown in Figure 1. Prices in both the markets rose from 1.30 US dollar per kg in the first week of the year, but started falling since mid-January with the trend continuing up to mid-March. Thereafter, the two markets registered a sharp recovery reaching around 1.65 US dollar per kg by mid-May and hovering around 1.60 US dollar per kg from there onwards till mid-July. The period from mid-July onwards witnessed a sharp uptrend in the two markets, taking the prices to around 2.10 US dollar per in the last week of September.

Figure 1: Trends in Weekly Average Prices of TSR during 2009 (January - September)
(US\$/100 kg)

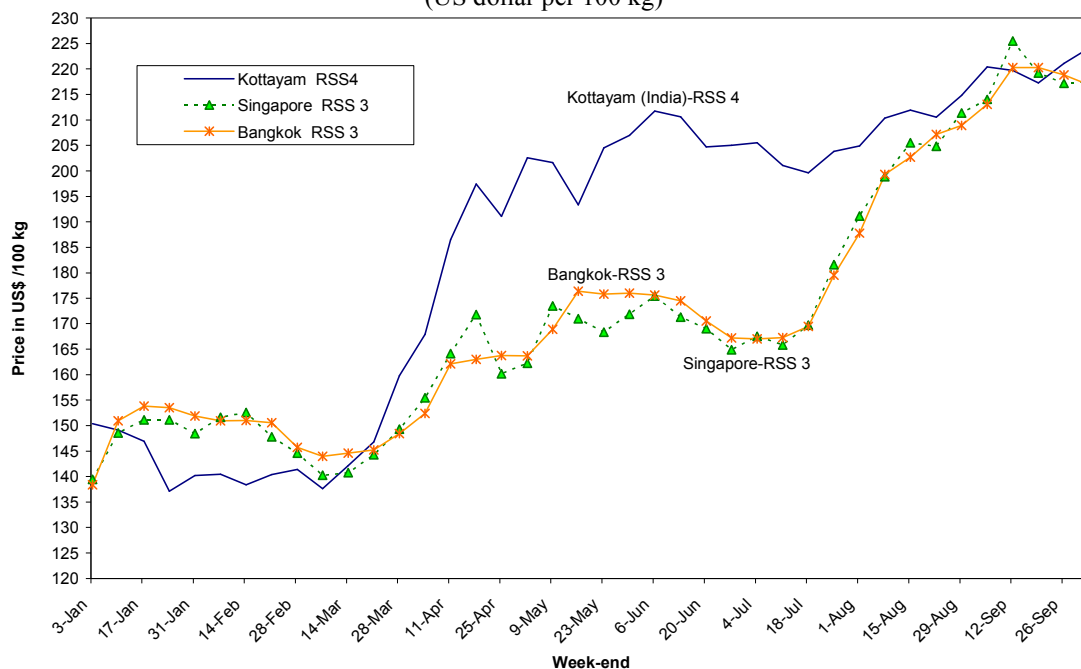


Prices of RSS 3 in Singapore and Bangkok exhibited a rising trend at the beginning of the year before taking a downtrend starting from the second half of January continuing until mid-March. During the period from mid-March to mid-May, prices rose from around 1.45 US dollar per kg to around 1.75 US dollar per kg. There had not been any considerable fluctuations thereafter until mid-July. Prices surged from mid-July with continued momentum to cross 2.20 US dollar per kg in the last week of September.

In Kottayam (India), the price RSS 4, the most popular grade in the country, stayed considerably above the prices of RSS 3 in Singapore and Bangkok from the first week of April until mid-

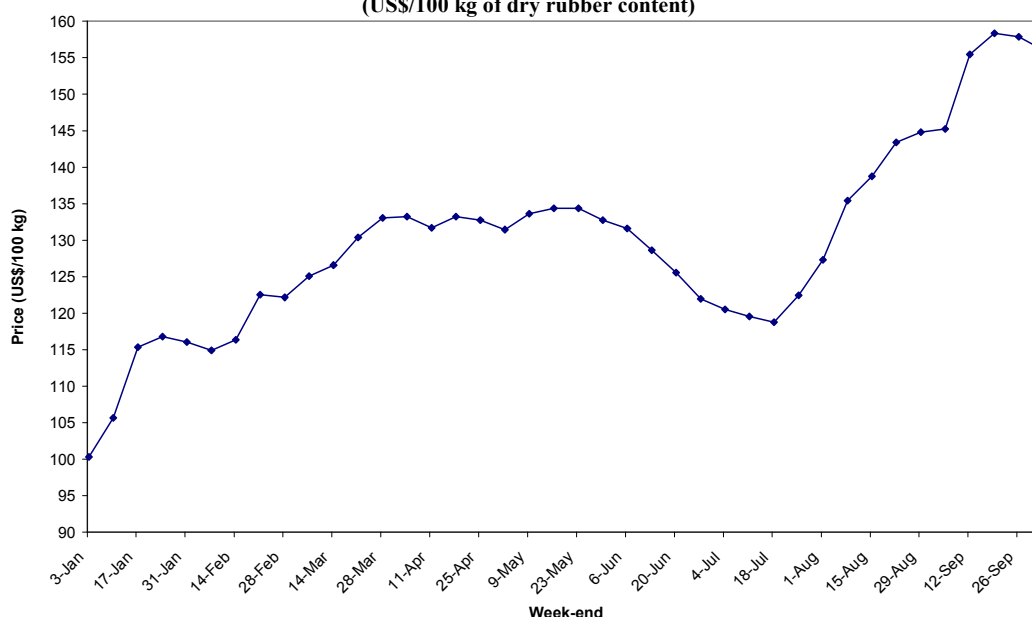
August. Thereafter, the Kottayam market started taking almost the similar paths of Singapore and Bangkok markets (Figure 2).

Figure 2: Trends in Weekly Average Prices of RSS during 2009 (January-September)
(US dollar per 100 kg)



Price of latex in Kuala Lumpur sharply rose from 1.0 US dollar per kg of dry rubber content (DRC) in the first week of January to touch 1.34 US dollar per kg in the week ended May 16. The market took a downtrend since the end of May to hit around 1.20 US dollar per kg in mid-July. Prices sharply rose thereafter reaching close to 1.60 US dollar per kg in the last week of September (Figure 3).

Figure 3: Price of Latex 60% in Kuala Lumpur during 2009 January-September (US\$/100 kg of dry rubber content)



2. Stability in Natural Rubber Prices

Table 1 gives the minimum, maximum and average prices of TSR 20, RSS and Latex in prominent markets during the first three quarters of 2009.

Table 1: Minimum, Maximum and Average Prices During 2009 (January – September)
(US dollar per 100 kg of dry weight)

	Minimum of weekly averages	Maximum of weekly averages	Average of weekly averages
TSR			
Bangkok STR 20	130 ⁽¹⁾	214 ⁽⁴⁾	164
Kuala Lumpur SMR 20	130 ⁽¹⁾	210 ⁽⁵⁾	162
RSS			
Singapore RSS 3	139 ⁽¹⁾	225 ⁽³⁾	172
Bangkok RSS 3	138 ⁽¹⁾	220 ⁽³⁾	172
Kottayam (India) RSS 4	137 ⁽²⁾	224 ⁽⁵⁾	186
Latex			
Kuala Lumpur	100 ⁽¹⁾	158 ⁽⁴⁾	130

⁽¹⁾ Week ended 3 January, ⁽²⁾ Week ended 24 January, ⁽³⁾ Week ended 12 September, ⁽⁴⁾ Week ended 19 September, ⁽⁵⁾ Week ended 3 October.

Variations in a series can arise from long term trends, short term fluctuations (instability) or both together. Uncertainty in a market generally originates from short-term fluctuations rather than

long term trends. Therefore, a meaningful measure of instability is one representing short-term fluctuations alone. A limitation in measuring instability (i.e. market uncertainty) by using coefficient of variation (CV) is that it gives the total variation arising from both long-term trends and short-term fluctuations. Economists prefer measuring instability by using the Instability Index (I_x) which gives a measure of variability arising from short term fluctuations after eliminating effect of long term fluctuations. Table 2 gives CVs and calculated Instability Indices of average weekly prices of major traded forms of NR¹.

**Table 2: Price Instability in 2009 (January – September)
vis-à-vis 2008 (January-September)**

	2008 (January- September)		2009 (January – September)	
	Total variability (CV)	Instability Index (I_x)	Total variability (CV)	Instability Index (I_x)
TSR				
Bangkok STR 20	7.7	4.6	14.7	4.0
Kuala Lumpur SMR 20	7.9	4.9	14.4	3.7
RSS				
Singapore RSS 3	7.2	4.2	14.7	4.4
Bangkok RSS 3	7.1	4.0	14.2	4.2
Kottayam (India) RSS 4	10.6	5.1	16.7	6.2
Latex				
Kuala Lumpur	7.2	4.3	10.2	6.5

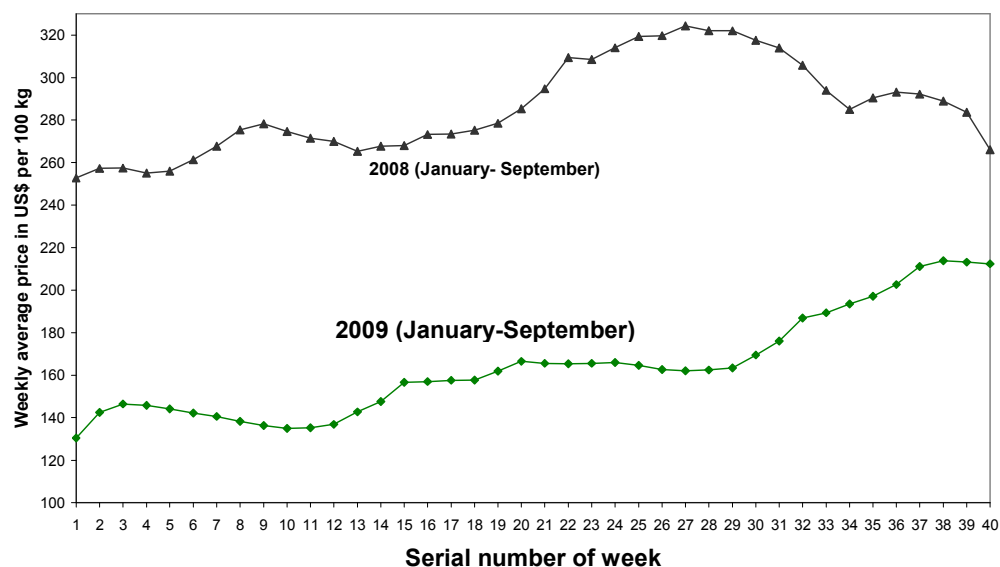
If examined in terms of CV, variability has been much higher in 2009 as compared to 2008 in all markets. However, estimated values of I_x reveal that price instability did not rise significantly in 2009 as compared to 2008 except for Latex in Kuala Lumpur and RSS 4 in Kottayam. Significantly high values of CV without any significant rise in I_x , indicate that the variations in 2009 have been largely caused due to trend rather than short-term fluctuations.

3. Comparison of NR Prices between 2009 (January – September) and 2008 (January – September)

Figures 4 to 9 compare the trends in prices between 2009 (January – September) and 2008 (January – September).

¹ $I_x = CV\sqrt{(1-R^2)}$, where R^2 is the explanatory power of the best fitting trend curve. If long-term trend is insignificant for a series, R^2 would be zero and I_x would be equal to CV.

**Figure 4: Prices of TSR 20 in Bangkok
during 2009 (January - September) vis-à-vis 2008 (January-September)**



**Figure 5: Prices of TSR 20 in Kuala Lumpur
during 2009 (January-September) vis-à-vis 2008 (January - September)**

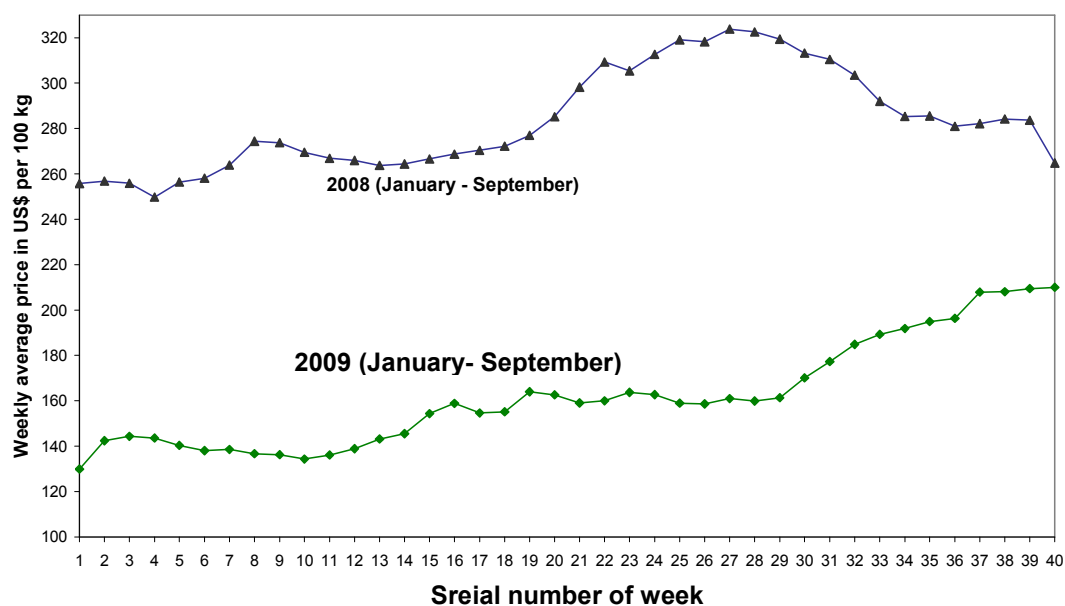


Figure 6: Prices of RSS3 in Singapore
during 2009 (January - September) vis-à-vis 2008 (January - September)

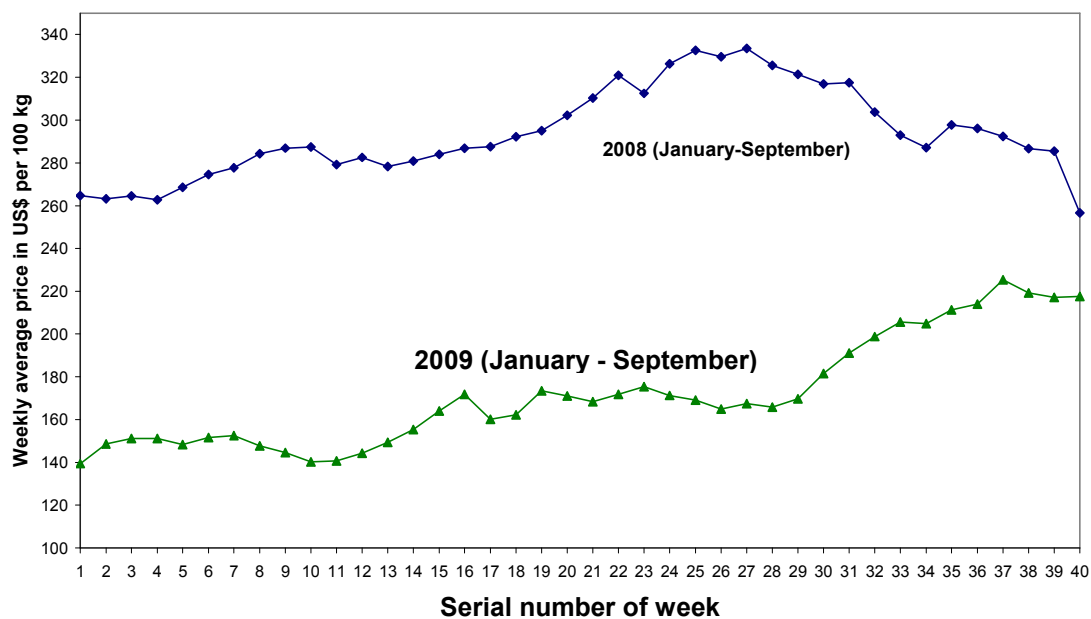
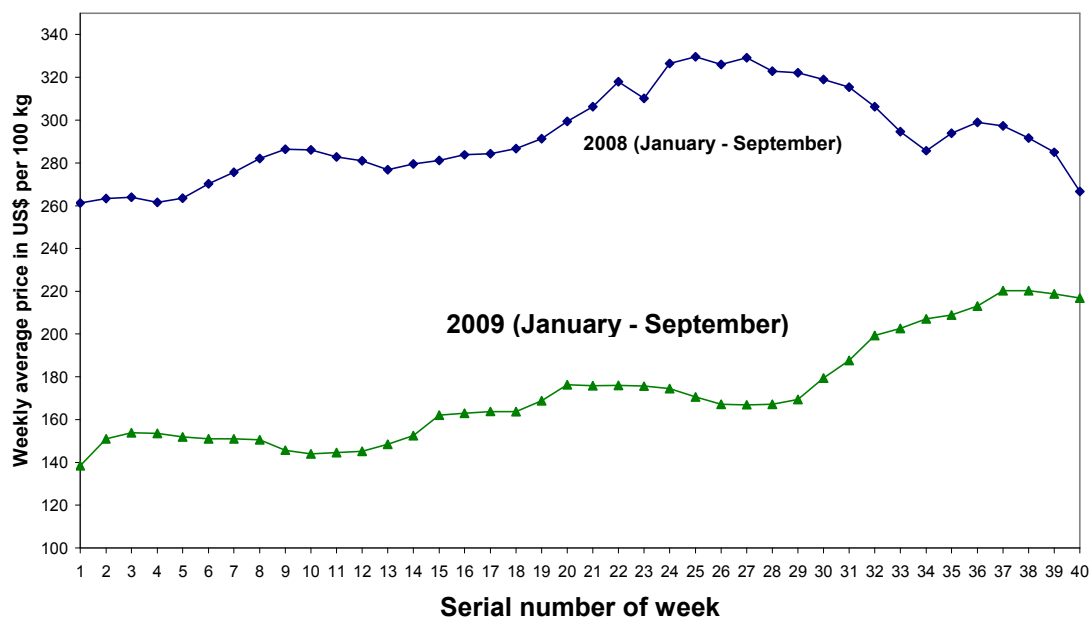
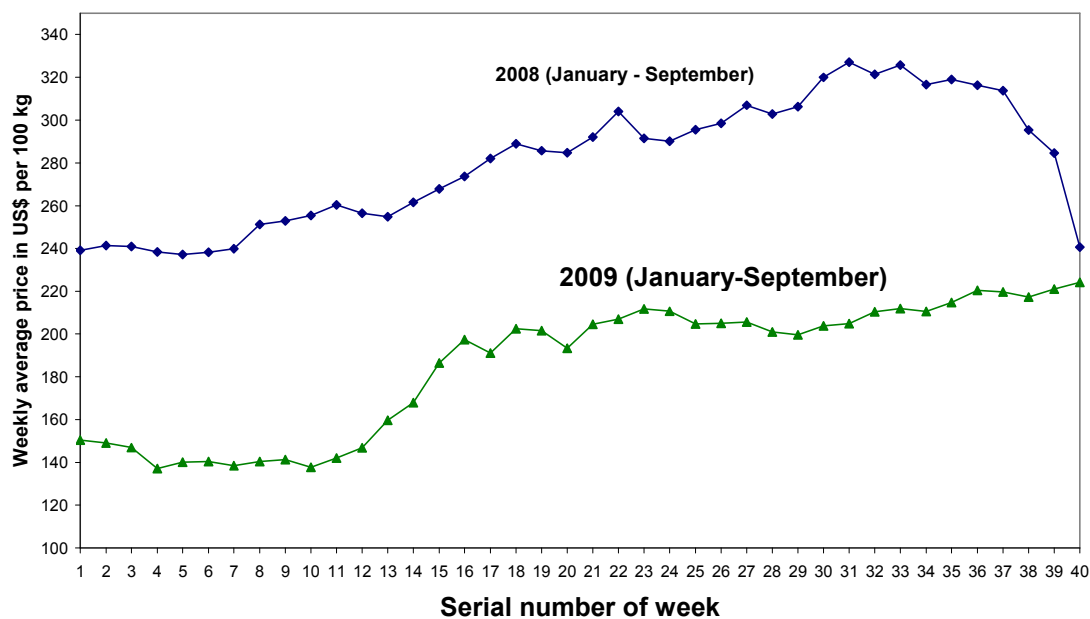


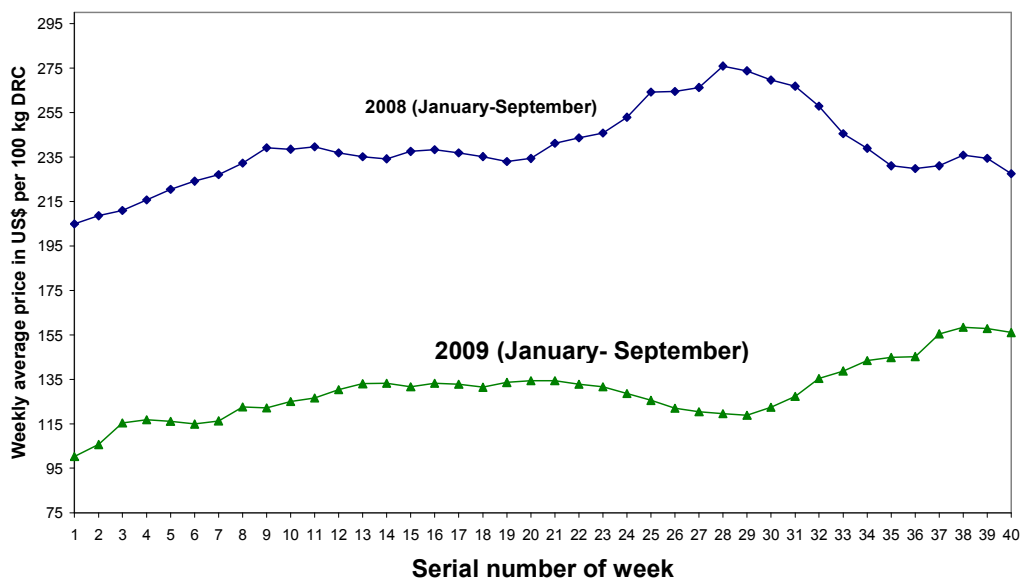
Figure 7: Prices of RSS3 in Bangkok
during 2009 (January-September) vis-à-vis 2008 (January-September)



**Figure 8: Prices of RSS4 in Kottayam
during 2009 (January-September) vis-à-vis 2008 (January -September)**



**Figure 9: Prices of Latex 60% in Kuala Lumpur
during 2009 (January - September) vis-à-vis 2008 (January - September)**



The following three observations could be drawn from Figures 4 to 9:

- (i) Prices during 2009 (January – September) in all the markets ruled considerably below the corresponding rates in 2008 (January – September).

- (ii) The pattern of price movements in 2009 and 2008 had been similar during the first two quarters. During the third quarter, prices took a rising path in 2009 whereas in 2008 they had been on the decline.
- (iii) The gap between prices in 2009 and 2008 has narrowed down towards the end the third quarters.

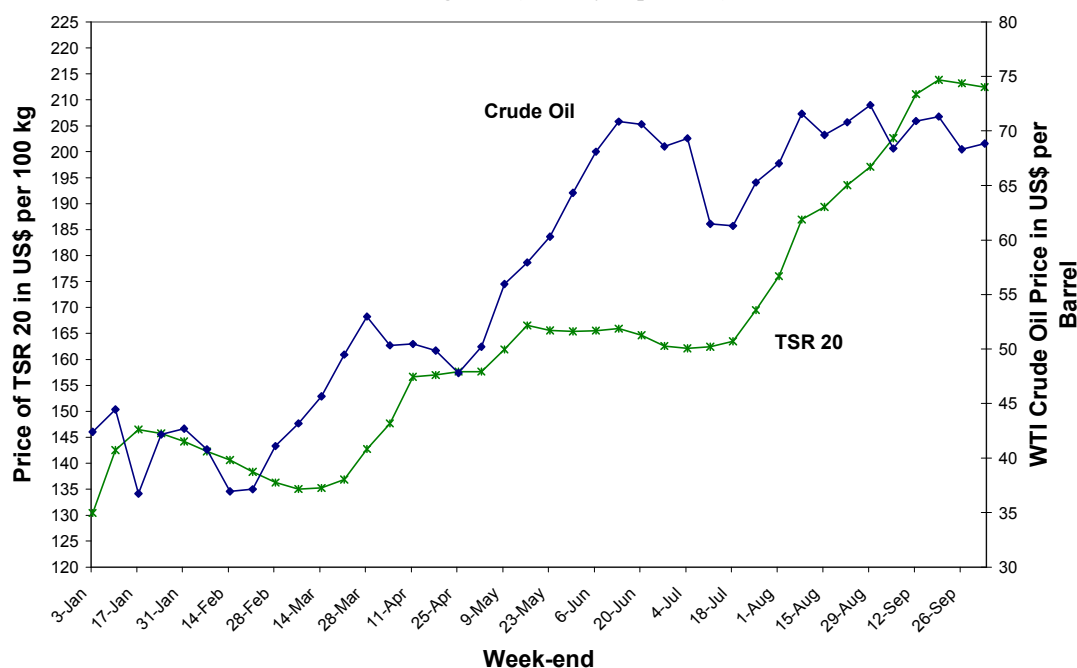
4. Factors Influenced NR Prices in 2009 H1

Trends in crude petroleum oil price, supply-demand position of NR, currency values in NR exporting countries and Japanese yen are the various factors generally considered as influencing NR prices. The following sub-sections provide a brief analysis of the influence of each factor.

(i) Trends in Crude Petroleum Oil Price

Price of crude petroleum oil influences NR market through synthetic rubber. The period from January to June 2009 had seen considerable fluctuations in oil price. Weekly average WTI (West Texas Intermediate) FOB spot prices of crude petroleum oil, which ruled in the range of 36-40 US dollar per barrel from mid-January to mid-February, rose sharply from the last week of February onwards to cross 70 US dollar in mid-June. Although, the prices fell thereafter, hitting 62 US dollar per barrel in mid-July, they recovered to touch 72 US dollar per barrel in the first week of August and hovered around this rate until the end of September. Figure 10 shows the trends in weekly average prices of crude petroleum oil (WTI spot FOB) and TSR 20 in (Bangkok) during the January to September 2009.

Figure 10: Prices of WTI Crude Petroleum Oil vis-à-vis Bangkok TSR 20
During 2009 (January-September)



The graph provides evidence of a strong influence of oil price on NR price although the two series diverged at few points. A moderate influence of oil price on NR market during the period

under review is also supported by a statistically significant estimated value of the coefficient of correlation ($R^2 = 0.69$). Statistical analysis further revealed that each percentage change in crude petroleum oil price induced 0.52% change in NR price in the same direction².

(ii) Supply-Demand Position of NR

Table 3 summarises the trends in annual production of NR from 2007 to 2009 in Thailand, Indonesia, Malaysia, India, Vietnam, China and Sri Lanka. These seven countries accounted for 93% of the global production of NR in 2008.

Table 3: Production of NR

	Production (Thousand tonnes)			Annual Rate of Growth (%)		
	2007	2008	2009 ⁽²⁾	2007	2008	2009 ⁽²⁾
Thailand	3056	3090	2919	-2.6	1.1	-5.5
Indonesia	2755	2751	2645	4.5	-0.1	-3.9
Malaysia	1200	1072	865	-6.5	-10.7	-19.3
India	811	881	816	-4.9	8.6	-7.4
Vietnam	602	663	650	8.3	10.2	-1.9
China	588	548	646	9.3	-6.8	17.9
Sri Lanka	118	129	129	7.7	9.9	0.0
Total⁽¹⁾	9130	9134	8670	0.2	0.0	-5.1

⁽¹⁾ Total of the above seven countries.

⁽²⁾ Refers to the 12 months to 30 September 2009 for all countries except Indonesia and Thailand. The reference period is 12 months to 31 July 2009 for Indonesia and 12 months to 31 August 2009 for Thailand.

Source: Data reported to the ANRPC Secretariat by respective governments.

Total production in the seven countries contracted 5.1% in 2009, as per data available up to September 2009. This is the biggest fall in global supply of NR after 1952.

Sources of the output fall in 2009 could be diagnosed by examining the changes in tapped area and average annual yield. Table 4 gives the trends in tapped area in each country and the aggregate average yield for all the seven countries together.

² The estimated functional relationship between the two series is:

$$\ln(\text{Price}_{\text{rubber}}) = 0.520269 \ln(\text{Price}_{\text{crude oil}}) + 3.000229;$$

($R^2 = 0.69$; F-Statistic= 83.84, Period: 40 weeks from 3 January to 3 October 2009).

In the above estimated regression equation, the coefficient 0.520269 measures elasticity. The estimated coefficient implies that each percentage change in crude petroleum oil price induces 0.52% change in NR price, in the same direction.

Table 4: Tapped Area
(Thousand hectare)

	2007	2008	2009
Thailand	1774	1819	1840
Indonesia	2776	2769	2693
Malaysia	1146	760	740
India	459	463	466
Vietnam	373	399	382
China	503	520	545
Sri Lanka	94	94	93
Total tapped area	7125	6824	6759
Average Yield⁽¹⁾ (kg/ha)	1281	1339	1283

⁽¹⁾ Aggregate yield for all the 7 countries together, computed on the basis of total production and total tapped area in the 7 countries.

Source: Reported to the ANRPC Secretariat by respective governments.

The table reveals that tapped area shrank in 2008 and 2009 and average yield fell in 2009. Total tapped area in the seven producing countries shrank by 366,000 ha from 2007 to 2009. Average yield, aggregated for the seven producing countries, although improved from 1281 kg/ha in 2007 to 1339 kg/ha in 2008, fell to 1283 kg/ha in 2009. A closer picture could be obtained by examining each country separately.

Thailand registered 5.5% fall in production in the 12 months ended 31 August 2009 from 2008 full year (Table 3). Rubber trees in 64,000 hectare in the country were estimated to be replanted in 2009. However, tapped area expanded in 2009 by 21,000 ha as the area planted before 6 years attained tappable maturity. The average yield, measured in terms of production per hectare of tapped area progressively came down from 1723 kg/ha in 2007 to 1698 kg/ha in 2008 and further to 1586 kg/ha[©] in 2009 due to a host of factors including adverse weather disrupting tapping during the first quarter, prolonged wintering in the second quarter, relatively lower price and the export reduction commitment under the IRC's Agreed Export Tonnage Scheme (AETS).

In Indonesia, NR output contracted 3.9% in the 12 months ended 31 July 2009 from 2008 (January to December) as tappable area shrank 76,000 hectare during the year. Average yield came down in 2009 to 982 kg/ha[©] from 994 kg/ha in the previous year due to unfavourable weather, the policy of the Government promoting low frequency tapping and the export reduction commitment under the AETS.

Production in Malaysia is estimated to have dropped 19.3% in the 12 months ended 30 September 2009 from 2008 full year as the tappable area came down by 20,000 ha in 2009 further to 386,000 ha reduced in 2008. Average yield fell in 2009 to an estimated 1169 kg/ha[©] from 1430 kg/ha in the previous year due to rain-induced tapping disruptions in the first quarter,

[©] Computed by using the production data for the 12 months to 30 September 2009 in the case of China, India, Malaysia, Sri Lanka and Vietnam; 12 months to 31 July 2009 in the case of Indonesia and 12 months to 31 August 2009 in the case of Thailand.

an extended wintering in the country's key rubber producing regions in the second quarters and a relatively low rubber prices.

NR output in India dropped 7.4% in the 12 months to 30 September 2009 from 2008 full year caused by an unusually severe drought during February-May 2009 in the State of Kerala, unfavourable age profile of existing yielding trees and relatively lower NR prices. The State of Kerala accounts for more than 90% of the country's NR output. A large extent of the existing yielding trees which were planted in 1980s, have entered into the declining phase of the yield profile. The output fall this year, to a certain extent, is also due to comparison with a year of abnormally high production. In 2008, monsoon was unusually weak during June-July period, which helped in having more number of tapping days. Although the tapped area expanded 3,000 ha in 2009, average yield is estimated to have come down during the year to 1751 kg/ha[©] from 1903 kg/ha in 2008 full year.

In Vietnam, the production is estimated to have fallen 1.9% during the 12 months to 30 September 2009 from 2008 full year. This was due to an ongoing replanting programme which reduced the tappable area by 17,000 hectare. The average yield marginally improved from 1661 kg/ha in 2008 to 1700 kg/ha[©] in 2009.

In sharp contrast to other producing countries, China witnessed an estimated 17.9% rise in NR output during the 12 months ended 30 September 2009. To an extent, the high rate of growth shadows the previous year's drastic fall. Production of NR in China had fallen 6.8% in 2008 due to adverse weather. Thanks to a favourable weather this year, the average yield improved to 1185 kg/ha[©] from 1053 kg/ha in the previous year. This year's higher output has also been contributed by a 25,000 ha expansion in tappable area.

Estimated production of natural rubber in Sri Lanka during the 12 months to 30 September 2009 does not show any change when compared to 2008 full year. Whereas tapped area shrank by 1,000 ha, average yield marginally improved in 2009 to 1387 kg/ha[©] from 1382 kg/ha in 2008.

The main activity domain of the ANRPC is the supply side of NR. The Association usually makes assessment on global consumption and stock position of NR on the basis of data available from secondary sources. Global consumption of NR fell by 5.9% in the 12 months ended 30 June 2009 (Table 5). A 4.3% fall in global supply during the same period (Table 3) should have helped in offsetting its adverse effect on the market.

Stock expressed in term of number of months' average consumption is a standardised indicator for ascertaining the stock position at any point of time. Values of the indicator for 2007 to 2009, computed on the basis of consumption and stock data reported by the International Rubber Study Group (IRSG) are given in Table 5.

[©] Computed by using the production data for the 12 months to 30 September 2009 in the case of China, India, Malaysia, Sri Lanka and Vietnam; 12 months to 31 July 2009 in the case of Indonesia and 12 months to 31 August 2009 in the case of Thailand.

Table 5: Stock of NR

	2007	2008	2009
Global consumption (Thousand tonnes) ⁽²⁾	10,230	10,088	9,488 ⁽¹⁾
Global stock at end of June (Thousand tonnes) ⁽²⁾	1,155	709	759
Stock in terms of number of months' average consumption	1.35	0.84	0.96

⁽¹⁾ Refers to 12 months to June 30, 2009

⁽²⁾ Revised data from the IRSG, incorporating NR content of relevant compound rubber imported in China.

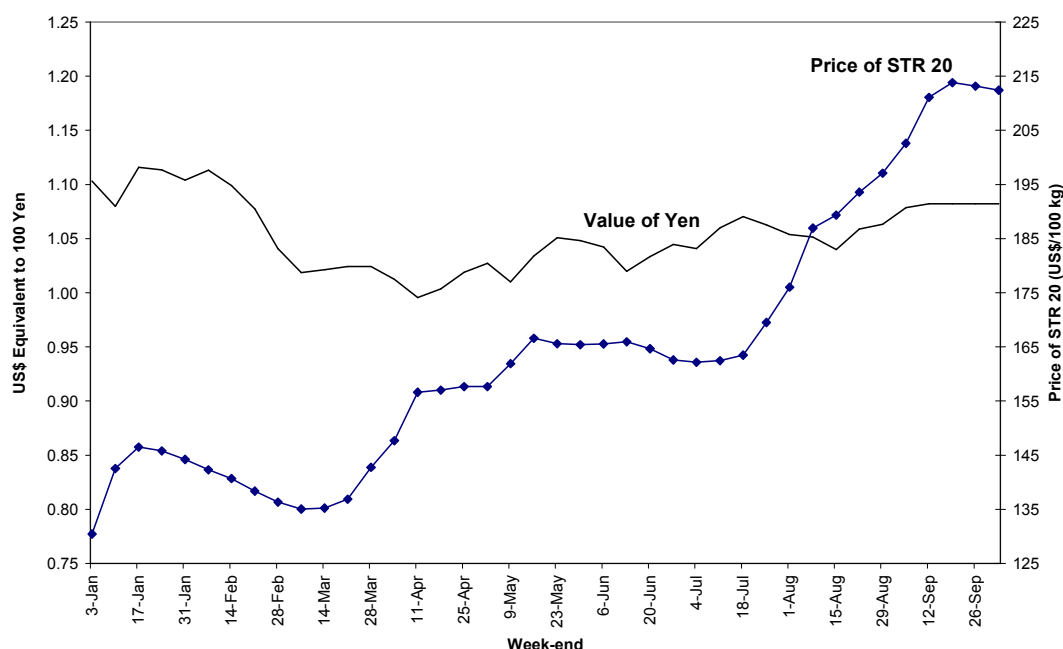
The stock in June 2007 was equivalent to the quantity required for meeting the global consumption for 1.35 months. This came down to 0.84 months in June 2008 before marginally improving to 0.96 in June 2009. The stock figures, available up to June 2009, support the view that market fundamental did not undergo any significant change in 2009 as compared to the previous year.

(iii) Trends in Value of Japanese Yen

Japanese yen and NR prices are expected to move in divergent paths. When the yen devaluates, speculators invest it in commodities, helping upward movement of TOCOM rubber futures and *vice versa*.

Trends in movement of the yen vis-à-vis the prices of TSR 20 in Bangkok market during January to September 2009 are shown in Figure 11.

Figure 11: Value of Yen vis-a-vis Price of STR 20 during 2009 (January -September)



The yen depreciated against the dollar from the first week of February till mid-April. It did not undergo any considerable change from thereafter until end of September. From the figure it is

evident that yen's movements had no conspicuous role in influencing NR prices during January to September 2009. Other dominant factors should have eclipsed any possible influence of the yen on natural rubber prices.

(iv) Trends in Currency Values of NR Exporting Countries

Natural rubber is internationally is traded mainly in US dollar. An appreciation in currencies of NR exporting countries against the dollar helps NR prices to rise in US dollar terms.

Trends in currency values of the three major NR exporting countries against the US dollar are shown in Figures 12-14 vis-à-vis NR prices.

Figure 12: Value of Baht vis-a-vis Price of STR 20 during 2009 (January-September)

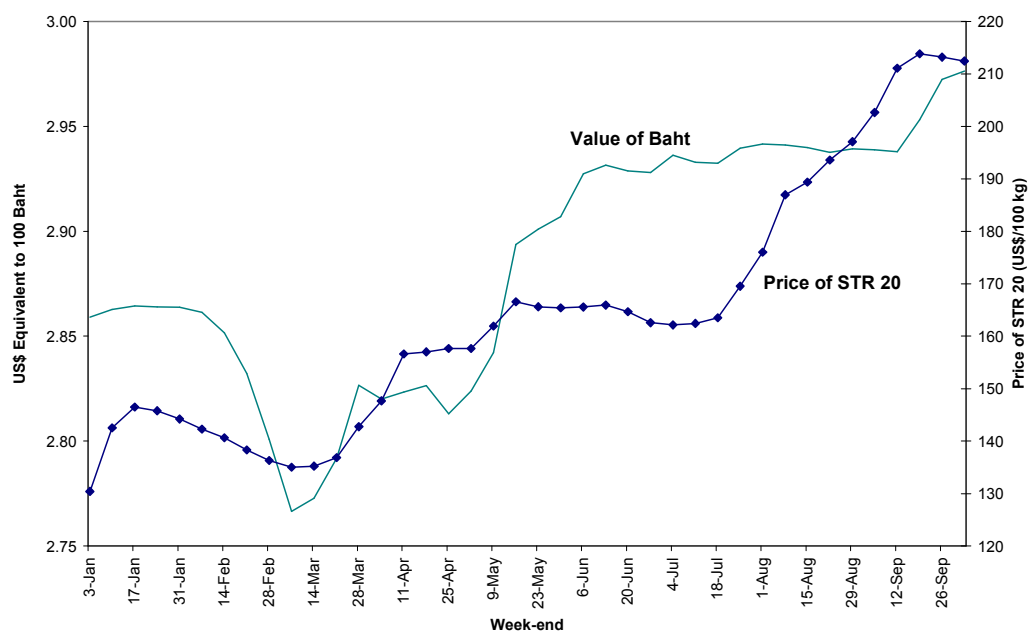


Figure 13 : Value of Indonesian Rupiah during 2009 (January-September)

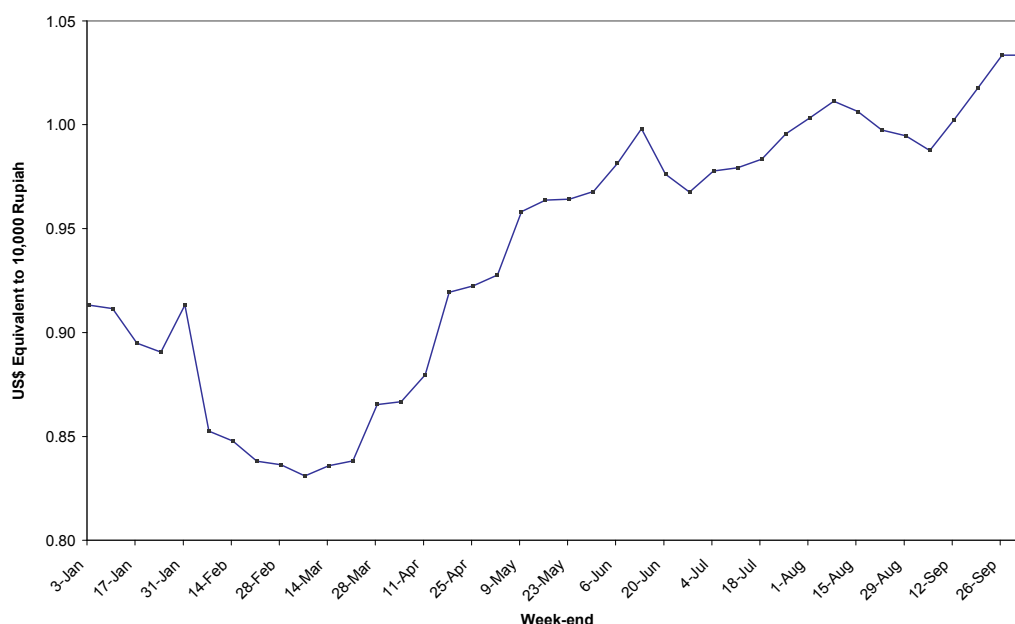
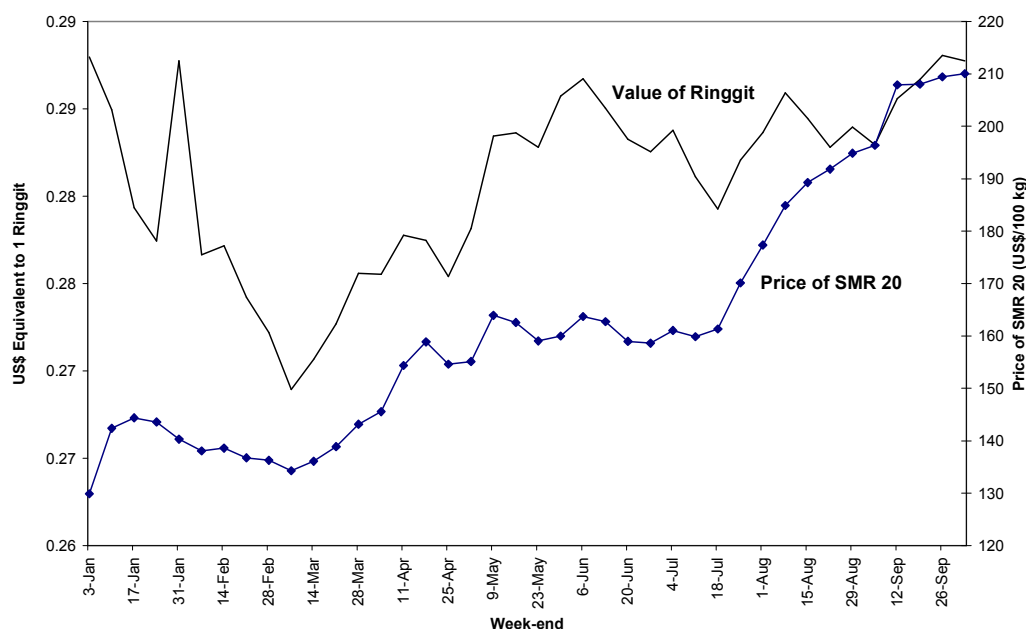


Figure 14 : Value of Malaysian Ringgit vis-a-vis Price of SMR 20 during 2009 (January-September)



Figures 12-14 show that Thai Baht, Indonesian Rupiah and Malaysian Ringgit depreciated against the dollar from mid-January to mid-March, with a few exceptions, and NR prices tracked almost similar trends. NR prices rose sharply starting from around mid-March until mid-May, closely tracking appreciation of the three currencies. During mid-May to mid-July when currencies exhibited less fluctuation, NR prices more or less stabilised. The sharp rise in NR prices from mid-July until end of September was almost in tandem with appreciations in

Indonesian Rupiah and Malaysian Ringgit, although the same could not be explained in the case of Thai Baht with reasonable level of justification. Notwithstanding the exception seen in the case of Thai Baht for a short period, it is concluded that the currencies of the three major NR exporting countries had a strong influence in determining the trends in NR prices during January to September 2009.

