

Non-traditional Market Outlet for Smallholders' Rubber and Their Farm-gate Price

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Government marketing agencies and other non-traditional market channels for smallholders' rubber are intended to provide smallholders with a wider market outlet thereby increasing the possibility of higher farm-gate prices for their rubber. This study compares farm-gate prices offered to smallholders by the various market channels and examines the effect non-traditional market channels have on the pricing policy of licensed rubber dealers. The areas selected for this study cover parts of Kelantan, Trengganu, Pahang and Kedah and they represent areas where licensed rubber dealers are faced with competition from non-traditional market channels.

In recent years, the market outlet for smallholder rubber at the farm-gate level, in general, has widened. In the traditional market channel, the number of licensees has increased¹. In 1969, the government set up the Malaysian Rubber Development Corporation (MARDEC) to buy, process and market smallholders' rubber and at present it has fifteen factories². In 1972, the Rubber Industry Smallholders Development Authority (RISDA) was set up to modernise the smallholders. RISDA's programmes in this capacity have included helping smallholders to produce good quality rubber sheets through group processing centres (PPPK's) and supervising bulk sales to higher level dealers³. Non-government institutions such as smallholders' marketing associations are also instrumental in widening the outlet for smallholders' rubber at the farm-gate level⁴. The developments have been claimed to have led to greater competition and better farm-gate prices for smallholders. This paper attempts to verify empirically to what extent small-

holders have benefited, in terms of farm-gate rubber prices, as a result of these changes.

METHOD

This study compares farm-gate prices of non-traditional market channels with those of first-level rubber dealers and examines the effect the non-traditional channels' purchasing activity has on the pricing practices of first-level dealers. For the first objective, the daily and/or weekly farm-gate prices of the various market channels are compared with those of dealers and statistically tested for significant difference. If their farm-gate prices are indeed higher than those of nearby dealers, then smallholders are said to have benefited directly by selling rubber to them. In the second objective, the influence of non-traditional channels' activity on dealers pricing policy is examined using simple regression analyses. Studies of dealers facing no non-traditional market competitors showed

that the most important determinant of dealers' purchase price is the f.o.b. Kuala Lumpur price^{5,6}. Conceptually, if dealers faced with non-traditional market competitors respond more to changes in the price of their competitors than they do to Kuala Lumpur f.o.b. price changes, they are adopting price competition, which indirectly benefits the smallholders in general.

Study Areas and Data Collection

This study is limited to seven areas. They are Pasir Mas and Ulu Kelantan in Kelantan, Besut and Ulu Terengganu in Terengganu, Sik/Baling and Kubang Pasu in Kedah and Temerloh in Pahang. Table 1 shows the study areas together with the respondents visited.

Ideally, an area where all the market channels are operating should be selected. A preliminary visit indicated that in any locality, and for practical purposes, at the most only two market outlets are open to a smallholder, one of which being the traditional outlet, i.e. first-level dealers. In Pasir Mas, Ulu Kelantan, Besut

and Ulu Terengganu, the study is limited to examining the benefit to smallholders from selling through RISDA's supervised PPPK instead of selling individually to dealers. In Temerloh and Sik/Baling, the study compares the benefits from selling to MARDEC and dealers and in Kubang Pasu to the Persatuan Pemasaran Pekebun Kecil Kedah (Persatuan) and dealers.

The Temerloh study uses 1979 daily and monthly farm-gate prices of Mentakab MARDEC Factory and seventeen dealers. These dealers were randomly selected from among those close to MARDEC's purchasing stations (wakils). In the Sik/Baling area the same approach was taken in obtaining data from Jeniang MARDEC Factory and ten dealers. In Kubang Pasu, since the Persatuan marketed members' rubber once a week, the prices of ten dealers used were those corresponding to the dates of its sale in 1979. A different approach of data collection was adopted for Pasir Mas, Ulu Kelantan, Besut and Ulu Terengganu. A cross-section of price data of 166 smallholders, both PPPK and

TABLE 1. STUDY AREAS AND RESPONDENTS VISITED

Area	Respondents			
	Dealers	MARDEC	Persatuan	Smallholders ^a
Pasir Mas	6	—	—	33
Ulu Kelantan	13	—	—	72
Besut	4	—	—	33
U. Terengganu	7	—	—	28
Sik/Baling	10	1	—	—
Kubang Pasu	10	—	1	—
Temerloh	17	1	—	—
Total	67	2	1	166

^aBoth PPPK and Non-PPPK smallholders

non-PPPK smallholders, were obtained through personal interviews in April and May 1980. The price data were then cross-checked with those of dealers who normally bought their rubber to ascertain that the data obtained were reliable. No time-series data were obtained from smallholders because of the non-existence of records; even those obtained from PPPK committees' books were insufficient. A different method of analysis was, therefore adopted in this case. Finally, the study was limited to unsmoked rubber sheets (USS) and latex as these were the most common form of rubber handled by dealers, Persatuan, MARDEC and smallholders in general at the time of data collection.

ANALYSIS AND DISCUSSION OF RESULTS

Analysis and discussion of results are made separately for each market area.

Temerloh MARDEC Operating Area

This paper compares the prices smallholders get by selling their rubber to a non-traditional outlet and to rubber dealers. The fact that smallholders sell latex to MARDEC and USS to dealers does not entail conceptual problem. This paper's emphasis is on whether it is beneficial, price-wise, for smallholders in the area to sell latex to MARDEC instead of processing their rubber into USS and selling to dealers. Any other interpretation of the results will require different analytical approach and data base.

MARDEC's price data used in this study were those actually paid to smallholders per kilo of dry rubber content (d.r.c.). It is noted that these prices were those of RSS1 net of all cesses, duty, processing and marketing costs. Dealers' prices used in the analysis were therefore 'latex-equivalent' obtained by subtracting

the processing cost of USS from their buying prices. The cost figure was an estimate for the area, which amounted to 5.0 sen a kilo.

The means of MARDEC and dealers' latex equivalent prices, the mean of the difference in their prices and the outcome of statistical tests were sufficiently similar for both the daily and monthly prices, implying that no information was unnecessarily lost when averaging daily to monthly prices. Subsequently, monthly data are used in the discussion for ease of presentation and exposition.

From Table 2, it can be seen that MARDEC's buying prices are persistently higher than those of dealers. The difference ranges from 21.1 sen to 30.4 sen a kilo, with a mean of 25.4 sen a kilo and standard deviation of 3.0. The price differential is significant at the 5.0% level, indicating that smallholders in the Temerloh MARDEC operating area did obtain higher farm-gate value for their rubber by selling to MARDEC.

Examination of smallholders' USS handled by dealers indicated that about 25% and 75% of them were USS 3 and USS 4, respectively. Had the USS been of better grades, and plausibly assuming that the dealers would give higher prices for better rubber, the difference between MARDEC's prices and dealers' latex equivalent would have been smaller than shown in Table 2. Given that smallholders in the area do not produce USS of better quality than what they are currently producing, it will be beneficial for them to sell latex to MARDEC instead. At the 95% confidence level, they can get anywhere between 19.5 sen and 31.3 sen a kilo over what they can get from dealers.

To study the effect of MARDEC's purchasing activity on dealers' buying prices, dealers' daily prices were regressed on the Kuala Lumpur f.o.b. prices and then on MARDEC's daily prices. The

TABLE 2. MARDEC'S AND DEALERS' MONTHLY PRICES
AND PRICE DIFFERENTIAL – TEMERLOH (1979)

Month	Price (sen/kg)		Price differential (MARDEC – Dealers)
	MARDEC	Dealers ^b	
Jan.	145.5	124.4	21.1
Feb.	150.7	127.8	22.9
Mar.	153.9	131.6	22.3
Apr.	165.9	137.9	28.0
May	168.9	142.9	26.0
Jun.	170.2	139.8	30.4
Jul.	155.4	133.4	22.0
Aug.	159.6	132.6	27.0
Sep.	157.1	134.1	23.0
Oct.	166.9	140.2	26.7
Nov.	177.5	149.2	28.3
Dec.	182.9	155.9	27.0
All months	162.9	137.5	25.4 ^a
S.D.	11.12	8.89	3.0

^aStatistically significant at the 5% level^bLatex equivalent

estimated regression equations are as follows:

$$\text{PDMA} = -4.9 + 0.819 \text{ FOB} \quad (0.02697)$$

$$R^2 = 0.8046; \quad n = 226$$

$$\text{PDMA} = 16.8 + 0.705 \text{ PMARD} \quad (0.0189)$$

$$R^2 = 0.8603; \quad n = 226$$

where PDMA is the weighted daily price of the seventeen dealers;

FOB is the combined daily f.o.b. prices of RSS 3 and RSS 4 weighted at 25% and 75%, respectively;

PMARD is MARDEC's daily price; figures in brackets are standard errors of coefficients.

Both equations are significant at the 0.01% level. The coefficient of FOB being

larger than that of PMARD indicates that changes in the Kuala Lumpur f.o.b. prices change dealers' prices proportionally more than that caused by changes in MARDEC's prices. This implies that dealers respond more to changes in central market prices than they do to changes in local MARDEC's prices. Since MARDEC's prices were persistently higher than those of dealers and that dealers did not respond to MARDEC's prices in the manner befitting competition, it is plausible to contend that smallholders in the study area did not use price as the main criterion in their decision to sell latex to MARDEC or USS to dealers.

Sik/Baling MARDEC Operating Area

In Sik/Baling MARDEC's monthly prices were also persistently higher than

those of dealers (*Table 3*). The differential which is significant at the 5% level of t-test, ranges from 20.8 sen a kilo with a mean of 24.1 sen a kilo and a standard deviation of 2.38. As in the case of Temerloh, dealers' latex equivalent of USS was compared to MARDEC's latex price. The rubber handled by the dealers were on the average 40% USS 3 and 50% USS 4. Theoretically, a more fair method would be to convert dealers' rubber into RSS 1 latex equivalent before making the comparison. This is not possible, however, since it is not known exactly how much higher dealers would have given for USS 1 over USS 2 and USS 3. In any case, given that smallholders in the area studied do not produce rubber of higher grades than they are producing

now, they can get higher prices by selling latex to MARDEC instead of selling USS to dealers. At 95% confidence level, the differential will be anywhere between 19.4 sen and 28.8 sen a kilo.

Regression of dealers' daily prices on Kuala Lumpur f.o.b. prices and on MARDEC's daily prices gave the following results:

$$\begin{aligned} \text{DPRC} &= -4.49 + 0.8413 \text{ FOB} \\ &\quad (0.02632) \\ R^2 &= 0.8303; \quad n = 358 \\ \text{DPRC} &= 23.6 + 0.7502 \text{ PMARD} \\ &\quad (0.02715) \\ R^2 &= 0.8168; \quad n = 358 \end{aligned}$$

where DPRC is the weighted daily price of the ten dealers;

TABLE 3. MARDEC'S AND DEALERS' MONTHLY PRICES
AND PRICE DIFFERENTIAL - SIK/BALING (1979)

Month	Price (sen/kg)		Price differential (MARDEC - Dealers)
	MARDEC	Dealers ^b	
Jan.	148.6	127.5	21.1
Feb.	153.7	132.9	20.8
Mar.	157.0	134.6	22.4
Apr.	171.9	143.5	28.4
May	172.1	146.2	25.9
Jun.	173.9	147.7	26.2
Jul.	163.6	140.6	23.0
Aug.	164.4	141.0	23.4
Sep.	161.9	139.6	22.3
Oct.	167.9	144.1	23.8
Nov.	179.4	152.4	27.0
Dec.	183.4	158.7	24.7
All months	166.5	142.4	24.1 ^a
S.D.	10.34	8.52	2.38

^aStatistically significant at 5% level

^bLatex equivalent

FOBD is the combined daily f.o.b. prices of RSS 3 and RSS 4 weighted at 40% and 60% respectively;

PMARD is MARDEC's daily price; figures in brackets are standard errors of the coefficients.

Both equations are significant at the 0.01% level. The coefficient of FOBND is larger than that of PMARD. This means that changes in the daily Kuala Lumpur f.o.b. prices change dealers' prices more than that caused by MARDEC's prices, that is, dealers respond more to changes in the central market prices than they do to changes in the local MARDEC prices. It is plausible to contend that smallholders in Sik/Baling consider non-price factors in their decision to sell USS to dealers or latex to the MARDEC Factory at Jeniang.

Kubang Pasu Area

Weekly data were used both for statistical test and for regression analysis. Daily data were not suitable because Persatuan markets its rubber once a week. Table 4 indicates that its weekly prices are marginally different from those of dealers, but are statistically significant at the 5% level of t-test. The differential ranges from -5.7 sen to 15.7 sen a kilo with a mean of 8.1 sen a kilo.

It is noted that Persatuan sold the rubber to higher level dealers, mostly from Jitra and Alur Setar. The marketing margin of the ten dealers studied was found to be 3.2 sen a kilo, on the average. If the smallholders were to sell to the same higher level dealers as did the Persatuan, it is plausible to assume that they could get 3.2 sen more a kilo, this being the marketing margin of the first-level dealers. The difference between Persatuan's price and non-Persatuan smallholders' price is 4.9 sen if both are selling

to the higher level dealers. Part of this difference is due to Persatuan's rubber being of better grade than those handled by first-level dealers (Table 5). Other factors include, possibly, the bargaining power of bulk sale. The evidence indicates that the benefit of selling rubber through the Persatuan Pemasaran Pekebun Kecil Kedah is marginal in the Kubang Pasu area.

The influence of f.o.b. and Persatuan's prices on dealers' prices is examined through the following estimated regression equations:

$$\text{DPRC} = 1.6 + 0.82 \text{ FOBND} \quad (0.046)$$

$$R^2 = 0.89; \quad n = 49$$

$$\text{DPRC} = 12.4 + 0.79 \text{ PPRC} \quad (0.06146)$$

$$R^2 = 0.76; \quad n = 49$$

where DPRC is dealers' weighted average price on the date of Persatuan's sale;

FOBND is combined f.o.b. prices of RSS 2, RSS 3, RSS 4 and RSS 5 on the day of Persatuan's sale weighted at 11%, 41%, 36% and 12%, respectively;

PPRC is Persatuan's weekly price; figures in brackets are standard errors of the coefficients.

Both equations are significant at 0.1% level. The coefficient of FOBND being larger than that of PPRC implies that dealers' prices are influenced more by f.o.b. price changes than they are by Persatuan's price changes.

Group Processing Centre and Non-Group Processing Centre Prices

Prices received by PPPK smallholders in Pasir Mas, Ulu Kelantan, Besut and Ulu Terengganu were compared to those obtained by non-PPPK smallholders in the proximity in April and May 1980. Since

TABLE 4. WEEKLY^a PRICES OF PERSATUAN, DEALERS AND PRICE DIFFERENTIAL
– KUBANG PASU (1979)

Month	Price (sen/kg)		Differential (Persatuan – Dealers)
	Persatuan	Dealers	
Jan.	144.5	138.1	6.4
	146.2	135.0	11.2
	141.1	136.1	5.0
	144.1	136.9	7.2
Feb.	148.8	141.4	7.4
	153.2	144.1	9.1
	152.6	141.4	11.2
	156.2	145.7	10.5
Mar.	150.1	135.9	14.2
	153.3	144.5	8.8
	153.8	145.7	8.1
	160.1	146.1	14.0
Apr.	163.2	154.1	9.1
	163.6	152.5	11.1
	167.1	157.4	9.7
	168.6	156.4	12.2
May	159.5	151.8	7.7
	159.7	151.2	8.5
	162.7	155.2	7.5
	166.9	159.9	7.0
	169.9	161.4	8.5
Jun.	166.2	162.1	4.1
	167.4	160.9	6.5
	155.1	150.0	5.1
	161.3	160.1	1.2
Jul.	148.2	146.1	2.1
	157.1	152.1	5.0
	153.2	147.9	5.3
	162.6	151.8	10.8
	158.7	153.7	5.0
Aug.	159.8	151.4	8.4
	155.0	152.1	2.9
	151.3	147.2	4.1
Sep.	146.6	152.3	-5.7
	152.2	152.7	-0.5
	160.5	153.7	6.8
	160.5	150.5	10.0
Oct.	160.3	163.7	-3.4
	157.9	154.1	3.8
	160.9	151.7	9.2
	159.4	159.7	-0.3
	158.8	156.7	2.1
Nov.	174.5	159.6	14.9
	177.0	166.5	10.5
	179.6	163.9	15.7
	181.8	166.2	15.6
Dec.	175.9	166.0	9.9
	175.9	168.1	7.8
	174.5	169.7	4.8
All weeks	159.9	152.8	8.1 ^b
S.D.	9.69	8.90	4.57

^aWeekly price of dealers refers to dealers' average price on the day of Persatuan's sale.

^bStatistically significant at the 5% level

TABLE 5. COMPOSITION OF PERSATUAN AND DEALERS' RUBBER - KUBANG PASU (1979)

Grade	Composition (%)	
	Persatuan	First-level dealers
USS 2	35.0	11.0
USS 3	43.0	41.0
USS 4	18.0	36.0
USS 5	4.0	12.0
All grades	100.0	100.0

the data were only for two months, the respondents' prices were weighted according to their volume of rubber to increase the accuracy of the price data. As can be seen from *Table 6* the average price for PPPK rubber in April was 17.1 sen a kilo higher than that of non-PPPK rubber. In May, the price differential was 12.6 sen a kilo in favour of PPPK rubber. The weighted mean price differential for the two months was 15.4 sen a kilo, which was comparable to 16.0 sen a kilo obtained in an earlier study of PPPK rubber⁷.

That the differential in April was 4.5 sen a kilo higher than that in May was

TABLE 6. AVERAGE MONTHLY PRICES OF PPPK AND NON-PPPK SMALLHOLDERS - PASIR MAS, ULU KELANTAN, BESUT AND ULU TEREANGGANU (1980)

Month	Prices (sen/kg)		Price differential (PPPK - Non-PPPK)
	PPPK	Non-PPPK	
April	180.3	163.2	17.1
May	171.6	159.0	12.6
All months	177.1	161.7 ^a	15.4 ^a

^aThese figures are weighted means and are not necessarily equal to figures obtained by simple averaging of the monthly value.

not necessarily due to chance variation. It can be explained in terms of the quality of rubber. *Table 7* shows that in April the composition of PPPK rubber was 76% USS 2 and USS 3 and 24% USS 4. For non-PPPK rubber the composition for the month was 27% USS 4 and 73% USS 5. In May, the composition of PPPK rubber was 83% USS 2 and USS 3 and 17% USS 4, whereas that of non-PPPK was 53% USS 4 and only 47% USS 5. Thus, proportionally, more of non-PPPK rubber were of higher grades in May than in April as compared to PPPK rubber. This accounts for the smaller price differential between PPPK and non-PPPK rubber in May compared to that in April. Had the grades been more equal between PPPK and non-PPPK rubber, the price differential would have been smaller than 15.4 sen a kilo. This, would then be the actual price differential attributable to the bargaining power of bulk sale as well as the benefit of selling to higher level dealers.

SUMMARY AND CONCLUSION

This study attempts to verify if non-traditional market outlets for smallholders' rubber at the farm-gate level give higher prices to smallholders directly affected when compared to those offered by first-level dealers. It was found that MARDEC offered higher prices than those offered by dealers in Sik/Baling and Temerloh. In Kubang Pasu, members of the Persatuan Pemasaran Pekebun Kecil Kedah obtained prices which, after eliminating the effect of grades, were only marginally higher than those obtained by non-members selling to dealers. In Pasir Mas, Ulu Kelantan, Besut and Ulu Terengganu, members of PPPK obtained prices which were higher than those obtained by non-members selling individually to dealers.

Dealers' farm-gate prices were influenced more by f.o.b. price changes than by

TABLE 7. COMPOSITION OF PPPK AND NON-PPPK RUBBER IN PASIR MAS, ULU KELANTAN, BESUT AND ULU TERENGGANU (1980)

Grade	April (%)		May (%)	
	PPPK	Non-PPPK	PPPK	Non-PPPK
USS 2 and USS 3	76.0	—	83.0	—
USS 4	24.0	27.0	17.0	53.0
USS 5	—	73.0	—	47.0

changes in the purchase prices of non-traditional market outlets. This implies that the dealers did not resort to price competition in order to obtain smallholders' supply when faced with competition from non-traditional markets.

Though the outlet for smallholders' rubber at the farm-gate level in general has widened, the market facing an individual smallholder, for practical purposes, was still limited and first-level dealers still constitute an important market outlet. In areas where MARDEC is operating it appears beneficial, as in the case of Sik/Baling and Temerloh, to sell latex to MARDEC unless, perhaps, the smallholders are capable of improving the quality of the USS they are currently producing. In the four districts of Kelantan and Terengganu, smallholders should be encouraged to process rubber in RISDA's supervised PPPK and sell the rubber in bulk through tenders. In the case of Kubang Pasu, it is less clear whether smallholders should or should not sell rubber through the Persatuan Pemasaran Pekebun Kecil Kedah in order to obtain higher prices for their rubber.

Finally, the findings of this study suggest that in order to improve the value of smallholders rubber at the farm-gate level, at least two aspects of marketing efficiency must be improved: technical and pricing efficiency. Technical efficiency refers to that with which the function of processing, grading and

product presentation are performed within the market system. The fewer the pricing points are within one market channel, the greater would be the pricing efficiency. The benefit from improved market efficiency could be shifted to smallholders in the form of better farm-gate prices.

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