CHAPTER 4

INTERNATIONAL NATURAL RUBBER ORGANIZATION

4.1 Organization and Administration

The International Natural Rubber Organization or INRO is the organization established under INRA to undertake the activities spelled out in the agreement. With its headquarters based in Kuala Lumpur, INRO began its operation in 1980. The supreme authority of INRO is the International Natural Rubber Council (INRC) which meets twice a year to discuss all matters pertaining to the functions and activities of INRO. The Council is headed by the Council Chairman who is appointed from exporting and importing countries on a rotation basis. To assist the council in exercising its duties, four committees were set up under the INRC. They are the Committee on Administration, the Committee on Buffer Stock Operation, the Committee on Statistics and the Committee on Other Measures. The functions of the Committee on Administration, the Committee on Statistics and the Committee on Buffer Stock Operations are reflected in their names, i.e. to undertake administrative matters, manage all matters pertaining to the statistics of rubber and supervise the activities of the buffer stock operation (BSO) respectively. With regard to the Committee on Other Measures, it is supposed to undertake the development objectives of INRA, one area which is less well known compared to INRA's price

stabilization scheme.

Although decisions at INRC meetings are normally obtained via consensus, the agreement does provide for resolution via voting. Under the agreement, each participating member country is allocated certain amount of vote for purpose of voting if the need arise. There are altogether 2,000 votes, divided equally between exporting and importing countries. In other words, both exporting and importing countries are entitled to 1,000 votes. The 1,000 votes accorded to exporting countries will be distributed among exporting countries according to their export of natural rubber in the preceding five years. In the case of importing countries, distribution of votes is done according to their net import of rubber in the preceding three years. Table 4.1 indicates the number of votes distributed among all participating countries in 1994.

4.2 Buffer Stock Operation

Although the objectives of INRA is not confined to price stabilization, it cannot be denied that its buffer stock operation (BSO) is the focus of the agreement. The development objectives of INRA which come under the purview of the Committee on Other Measures were never seriously pursued and received far less attention compared to the BSO. Basically, BSO entails market intervention to sustain a balance between the supply of and demand for a commodity within a certain price range. According to basic economic theory, prices are the result of the interaction between the forces of supply and demand. When supply of a commodity

Table 4.1
Distribution of Votes of Members of INRO
for the Year 1994

Exporting countries		No. of Votes
Cote d'Ivoire		18
Indonesia		306
Malaysia		320
Nigeria		29
Sri Lanka		23
Thailand		304
		1000
Importing countries		
China		108
European Community		303
Belgium - Luxembourg	17	
Denmark	1	
France	64	
Germany	77	
Greece	4	
Ireland	2	
Italy	45	
Netherlands	4	
Portugal	3	
Spain	40	
United Kingdom	46	
Finland		2
Japan		247
Morocco		2
Norway		1
Russia		30
Sweden		3
Switzerland		1
U.S.A.		303
		1000

Source: International Natural Rubber Organization Annual Report 1994

exceeds demand, the price of the commodity will fall. However, when demand exceeds supply, the price of the commodity will rise. The interplay between supply and demand forces and its effect on price could be presented in graphical manner in Fig 4.1. At point A where supply and demand are in equilibrium, the price will be at P. When there is a surplus in supply which causes the supply curve to shift to S_1S_1, with demand curve remaining static, the price of the commodity will decline to P_1. However, should there be a deficit in supply which shifts the supply curve to S_2S_2, the price of the commodity will increase to P_2. The idea of a buffer stock operation is therefore to mop up the excess commodity in the market when there is a surplus in supply and release the stocks held into the market when demand exceeds supply so that a balance between supply and demand could be maintained.

The example given above is only a simple portrayal of the effect of the changes in supply and demand on prices. In most buffer stock operation schemes, the price of a commodity is rarely defended at a specific level but rather within a certain price range that consists of a floor price and a ceiling price. As long as the price of the commodity fluctuates within the price range, the buffer stock manager will not intervene in the market. In Fig. 4.2, the range between P_1 and P_2 represent the price range of a commodity. In this particular example, P_1 is the floor price and P_2 is the ceiling price. So long as prices remain within the range of P_1 and P_2, the buffer stock manager will not intervene in the market. However, once the price move beyond the price range, whether upwards or downwards, the buffer stock manager will have to intervene to bring the price back into the price range.

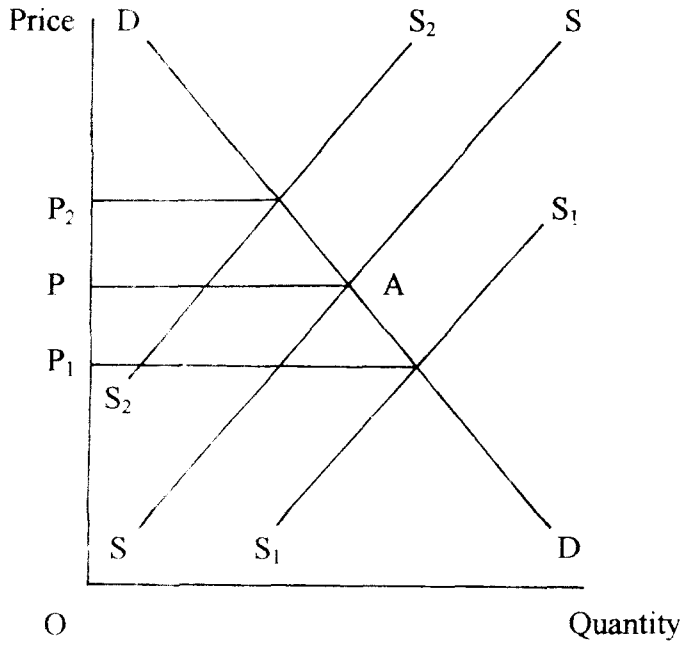

Fig. 4.1 Determination of Price Level

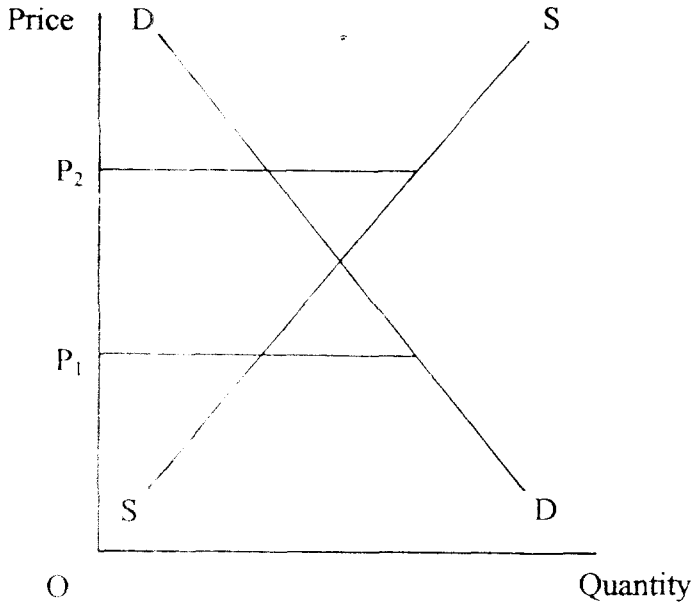

Fig.4.2 Ceiling and Floor Prices in a Price Range

4.3 Price Range

Unlike the simple example described above, the price range of INRA consists of seven pre-specified price levels, indicating the different degrees of intervention to be executed by the BSM. These price levels are calculated based on an average of Malaysian/Singapore cents and a composite average prices of RSS 1, RSS 3 and TSR 20. These seven levels of prices in the price range are as follows:-

(i) the upper indicative price which resembles the "ceiling price" of the price range;

(ii) the upper trigger action price or commonly known as the "must sell" level;

(iii) the upper intervention price or the "may sell" level;

(iv) the reference price, based on which the price range is adjusted according to market trend;

(v) the lower intervention price or "may buy" level;

(vi) the lower trigger action price or "must buy" level; and

(vii) the lower indicative price which is the "floor price" of the price range.

When INRA first came into effect, the reference price, the upper indicative price and the lower indicative price were fixed at 210 cents/kg[5], 270 cents/kg and 150 cents/kg respectively. The upper intervention price and the lower intervention price were calculated based on the formula of ±15 percent of the reference price whereas the upper trigger action price and the lower action price were calculated based on the formula of ±20 percent of the reference price. The seven levels of prices in the price range are as indicated in Fig. 4.3.

The reference price and price range of INRA are not fixed but subject to revision from time to time. According to the agreement, the revision of reference price is made based on two principles i.e. time trigger and quantity trigger. The agreement stipulates that the reference price is subject to review every eighteen months when the agreement came into operation. If the average of the Daily Market Indicator Price (DMIP) breached the upper intervention price over the six-months period prior to the review, the reference price is automatically revised upwards by 5 percent. On the contrary, if the DMIP went below the lower intervention price over the six-month period before the review, the reference price will be adjusted downwards by 5 percent. When INRA II was concluded in 1988, the revision of reference price was shortened to fifteen months. Apart from the movement of the DMIP, another criteria which entails the revision of reference price is when buffer stock sales amounting to 300,000 tonnes takes place. Under such circumstances, the reference price will be revised by 3 percent either upwards or downwards depending on the sales or purchases of the buffer stock. And since the intervention price

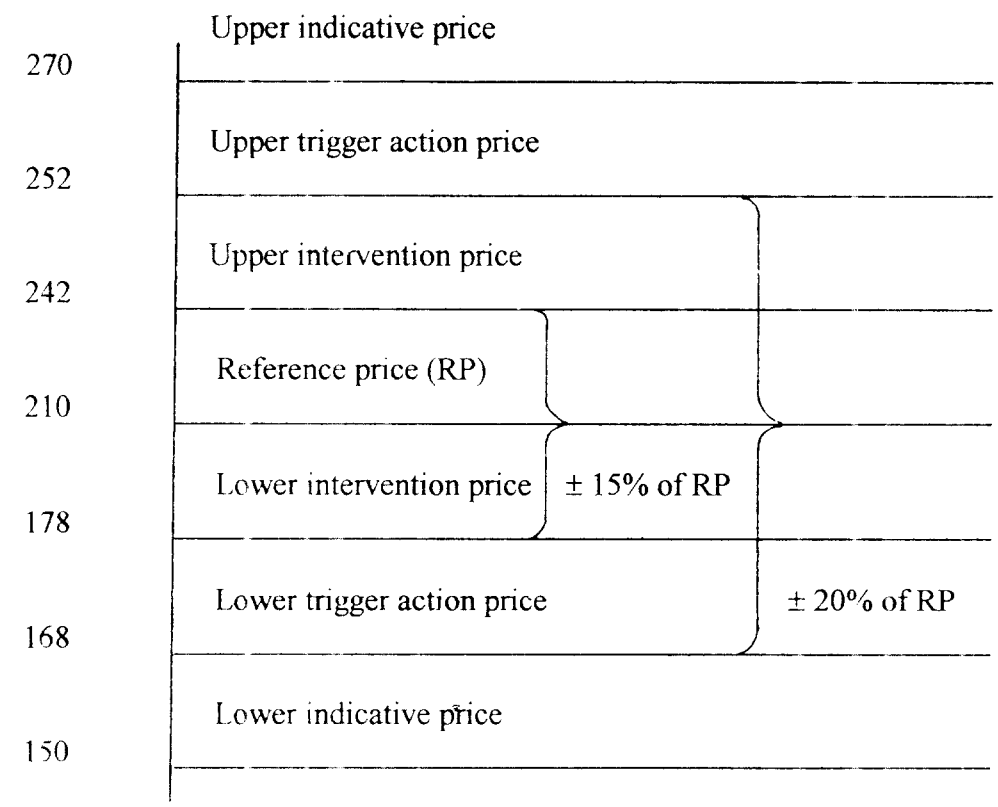

Fig. 4.3 INRA's Price Range (Malaysian/Singapore cents/kg)

Note: The price range above is the initial price range of INRA I 1979.

Source: International Natural Rubber Organization

Table 4.2
Price Range for Buffer Stock Operation,
INRA I and II
(Malaysian/Singapore cents/kg)

	Oct 1980	May 1982	Aug 1985	April 1989	July 1990	Feb 1993	Aug 1995
Upper indicative price	270	270	270	270	270	270	270
Upper trigger action price	252	249	242	262	249	236	248
Upper intervention price	242	239	232	251	238	226	238
Reference price	210	207.90	201.70	218.10	207.20	196.84	206.68
Lower intervention price	179	177	171	185	176	167	176
Lower trigger action price	168	166	161	174	166	157	165
Lower indicative price	150	150	150	150	150	150	150

Note: The price is based on a composite of 3 grades viz. RSS 1, RSS 3 and TSR 20.

Source: International Natural Rubber Organization

levels and trigger action price levels are calculated based on the reference price, a revision of the reference price naturally leads to changes in the intervention and trigger action price levels. Over the years, the reference price has been adjusted a number of times. Table 4.2 shows the revision of reference prices under INRA I and INRA II since 1980 until 1995.

The revision of the upper and lower indicative prices i.e. the "ceiling and floor prices" of the price range are subject to different conditions. The lower and upper indicative prices will be reviewed thirty months after the coming into effect of the agreement. As in the case of the revision of reference price, the revision of the upper and lower indicative prices must be done in tandem with market trends. In addition, the supply, consumption, stocks and the cost of production of natural rubber will also be taken into account when reviewing the indicative prices. The idea of incorporating the element of price range revision is to introduce the concept of "market trend" in INRO's buffer stock operation. As noted earlier, INRA is an agreement established to deal with a transient imbalance in the supply of and demand for natural rubber. The price movement of natural rubber is still dictated by the fundamentals in the long-run. By allowing the price range to move in tandem with market trends and making such revision automatic and mandatory, the chances of INRO's BSO supporting natural rubber price at unrealistic levels could be avoided. In this respect, the BSO of INRA is different from that of the tin agreement. Although the tin agreement also provides for revision of price range following changes in the tin market, the revision of the price range is not automatic and mandatory, but rather is left to the discretion of

participating countries. However, when situation in the market warranted a revision of the price range, opinions among ITA member countries differed and the price range was allowed to remain unchanged. Even in the case of INRA where revision of reference price is supposed to be automatic, the reluctance of some member countries to see a downward revision in reference price could still be seen. In 1993 for instance, when the issue of reference price revision was brought up at the Council meeting following persistent decline in rubber prices, there was strong resistance on the part of producing countries to allow the Council to revise the reference price downwards, citing reason that the fall in the DMIP was only minimal. The issue was eventually settled with the revision of the reference price since the agreement stipulates that the revision is automatic.

4.4 Daily Market Indicator Price

The Daily Market Indicator Price (DMIP) is an indicator that reflects the pattern of price movement and is the price by which INRO's Buffer Stock Manager (BSM) will be guided in his operations. The DMIP is a composite, weighted average of the "daily official current-month prices" for RSS 1, RSS 3 and TSR 20 on the Kuala Lumpur, London, New York and Singapore markets. RSS 3 and TSR 20 were chosen as they constitute the bulk of natural rubber traded in the international market. In the case of RSS 1, it is an important price indicator although it accounts for a small percentage of the total rubber traded. According to a summary by Lim (1986), the DMIP for a given day is calculated according to the procedure as follows:

(i) convert quotation for the three grades RSS 1, RSS 3 and TSR 20 in all markets, except Kuala Lumpur, into f.o.b. Malaysian port in Malaysian currency;

(ii) convert the same quotations in all markets, except Singapore, into f.o.b. Singapore port in Singapore currency;

(iii) average the converted values in Malaysian and Singapore cents for each of the three grades; and

(iv) average the three values so derived.

The DMIP calculated according to the procedure above is used by the BSM to effect the buffer stock operation of INRO. When the average DMIP over the last five market days fluctuates between the upper and lower intervention prices, there will be no action from the BSM. However, when the five-day average DMIP is at or below the lower trigger action price or the "must buy" level, the BSM must offer to purchase rubber in the market to mop up the excess rubber to support prices above the "must buy" level. Similarly, when the five-day average DMIP is at or above the upper trigger action price or the "must sell" level, the BSM must offer the buffer stock held by INRO for sales to bring down prices to below the "must sell" level. If, the five-day average of rubber breached the upper intervention prices, i.e. the "may sell" level, the BSM may offer its rubber for sale in the market. On the contrary, when the five-

day average DMIP is below the lower intervention price, the BSM may then purchase rubber in the market to support prices. It should be noted that when the price of rubber breached the "may sell" or "may buy" levels, the BSM is given some discretionary power to decide whether or not to enter the market. Under such circumstances, the BSM has to rely on his expertise to judge if the condition in the market warrants his action to either buy or sell the rubber. The idea of giving the BSM some discretionary power is to instill the element of unpredictability in INRO's BSO in the market. It has been argued that if INRO's BSO becomes predictable, counteraction by traders could invalidate or offset the action of the BSM in the market and render the BSO ineffective, an argument quite in line with the theory of rational expectation. The DMIP of INRO between October 1980 and November 1995 is shown in Fig. 4.4.

4.5 The Size of Buffer Stock

The size of buffer stock is an important element in determining its effectiveness. If the size of the buffer stock is too small, it may not be able to effectively absorb the excess rubber in the market when price decline. However, if it is too big, it may cast an overhang effect on the market and further exacerbate the bearish sentiment in the market. INRA provides for a normal stock of 400,000 tonnes and a contingency stock of 150,000 tonnes. The normal stock may be utilized to defend the trigger action prices and intervention prices while the contingency stock can only be used to defend the "floor" and "ceiling" prices. The two buffer stocks of 550,000 tonnes combined account for about 10 percent of the current world

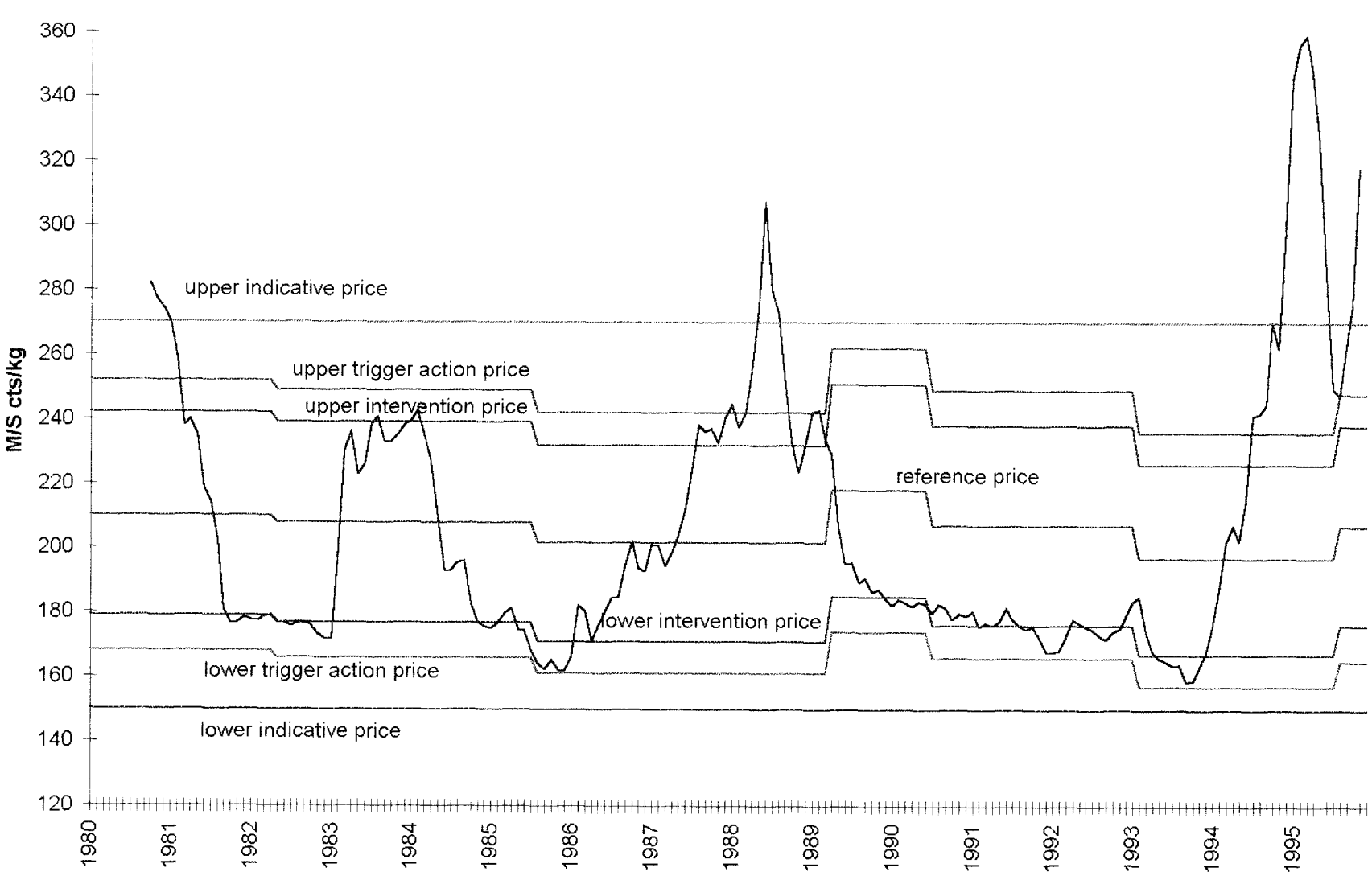

Fig. 4.4 INRO's DMIP, October 1980- November 1995

Source: International Natural Rubber Organization

production of rubber. In his Ph.D thesis, Thomas (1982) computed a series of buffer stock sizes to indicate that about 400,000 tonnes of buffer stock is required to defend the floor price at 150 cents/kg given a reference price of 185 cents/kg. His computation was made based on the assumption that the supply and demand elasticities of natural rubber are 0.3 and -0.3 respectively. Thomas (1982) however noted that the estimates of elasticities vary from one study to another and demand elasticity has a range of -0.2 to -0.5 while supply elasticity has a range of 0.2 to 0.45. The results of Thomas's computation are reproduced in Appendix IV. Appendix IV indicates that given supply and demand elasticities at 0.45 and -0.5 respectively, the maximum buffer stock required to defend the floor price is 631,299 tonnes. However, if the supply and demand elasticities are only 0.2 and -0.2 respectively, then the buffer stock required to defend the floor price is 265,880 tonnes.

The 400,000 tonnes normal stock is financed by direct contribution from member countries whereas the 150,000 tonnes may be financed through borrowing by the Council. However, it was noted that INRO had never financed its buffer stock via borrowing and the buffer stock held by INRO had never exceeded the maximum 400,000 tonnes normal stock level.