

## The base price for raw milk

This chapter discusses the key influences on the price of raw milk delivered to the marketplace.

### The main points in this chapter

- Of all the farm costs and returns, milk price generally has the biggest bearing on farm profits.
- Milk price depends on intrinsic (on-farm) as well as extrinsic (beyond farm gate) factors.
- Milk composition and quality are within the farmer's control and formal markets generally develop milk grading schemes to send the price signals back to the farmer who can modify farm practices to improve milk returns.
- External factors include currency exchange rates, international (global) market pressures, national government policies and free competition within the local informal and formal markets.
- There are wide variations between Asian countries in their farm gate milk prices varying from 9 US c/kg in Cambodia and 37 US c/kg in Malaysia.
- The 2007 rise in global dairy products led to large increases in farmer milk returns which stimulated dairy production throughout Asia.

The price that smallholder dairy farmers receive for their raw milk generally has the biggest bearing on farmer profits of all the costs of farm inputs and returns for other dairy outputs. For example in Chapter 15, a partial budget was undertaken for a 30-cow farmer in Malaysia to assess the financial implications of increasing the size of his milking herd and contracting someone to rear his replacement heifers off-farm. A series of sensitivity analyses were carried out to predict the effects of variations in other farm costs and milk yields on his farm profits, as quantified by net benefits of these changes in farm practices. A 10% change in milk prices influenced net benefits by 10%, compared to a change of only 2% arising from a 10% variation in concentrate costs, a 10% change due to fluctuating lactation milk yields by 250 L and a 3% change in net benefits due to

16% variation in daily heifer rearing costs. Clearly milk price is the major profit driver in this scenario.

The base price for raw milk is the unit price farmers receive for milk of a pre-determined composition and quality when delivered to the marketplace. In most informal markets, milk composition and quality is rarely monitored, with milk acceptability based purely on subjective criteria such as smell and taste. Formal markets are more discerning, testing the end product before deciding on their final price.

## 7.1 Factors affecting the base price of milk

Milk price is dependent on many factors, those intrinsic (on-farm) and those extrinsic (beyond the farm gate). The intrinsic ones, those mentioned above, are influenced by the farmer's management skills in producing and harvesting the milk. However, the extrinsic ones are generally outside his control. They include currency exchange rates, international (global) market pressures, national government policies and free competition within the local informal and formal markets.

In developing countries, analysing the impact of changing milk prices requires assumptions about the domestic market potential. Assumed rates of growth in population and their relative wealth are crucial, as are 'Westernisation trends' in many markets. In determining supply responses, industry structure (number, size and market share of milk processors) and the state of infrastructure are crucial. Local versus multinational ownership in term of access to, and cost of, capital as well as the extent to which foreign direct investment can avoid market access limitations and affect quality and procurement standards, will also affect market conditions.

### 7.1.1 Internal influences

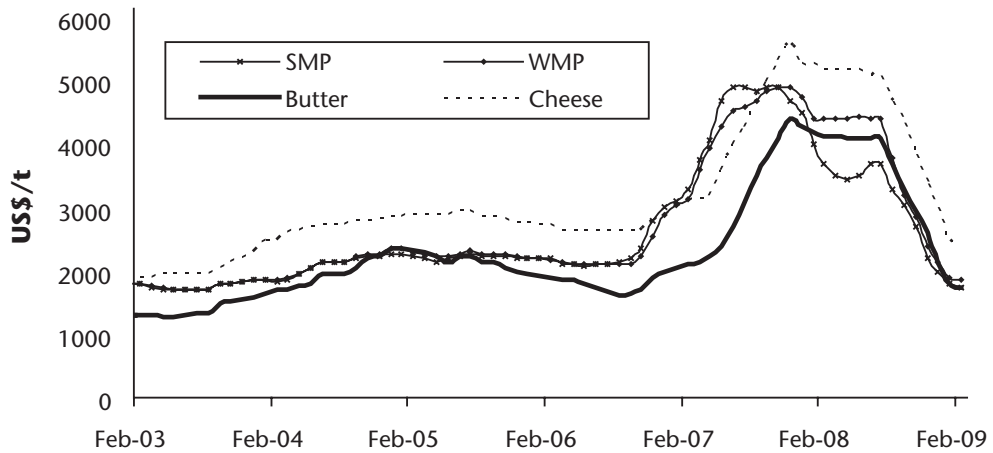
In the previous chapter, Tables 6.2 and 6.3 presented examples of recent milk grading schemes from Malaysia and Indonesia respectively.

Because of pressures from the milk processors, there are strong price signals for Total Plate Count (TPC) in that milk prices in Malaysia are effectively halved once the milk exceeds TPC levels of 1 M/ml (of colony forming units or CFU). Such price signals vary in different countries because of the accepted level of milking hygiene on smallholder farms. With regard to the highest price paid for premium quality milk as measured by TPC levels, these are 1 M/ml in Indonesia, 200 000/ml in Malaysia and only 20 000/ml in Australia (Moran *et al.* 2004).

Market pressures in different countries also influence the relative returns for milk composition. For example, for Australian dairy farmers, a kilogram of milk protein returns virtually double that of a kilogram of milk fat because milk processors (as driven by consumers) value dairy products based on milk protein more highly than those based on milk fat.

### 7.1.2 External influences

The market influences of supply and demand have led to dramatic fluctuations in international milk and dairy prices over the last few years. Figure 7.1 presents the unit



**Figure 7.1** Global milk prices for various dairy products (2003–2009). WMP is whole milk powder and SMP is skim milk powder.

price (in US\$/t) for various dairy commodities between February 2003 and February 2009. Global dairy prices virtually doubled over the 12-month period from June 2006 to June 2007, but have since fallen back to 2005 prices.

The rapidity and magnitude with which global milk prices change makes it difficult to source the most relevant up-to-date data on local milk prices. Most published data (e.g. FAOSTAT and APHCA) are two or more years old when first published. In addition, milk prices in developing countries are more difficult to determine due to the high incidence of small farms and the existence of informal markets. Herd sizes are often very small. For example, in India, the world's largest producing country, the average herd has 1.3 cows, while in Pakistan the average is 1.8 cows.

Relative to many developed countries, farm gate milk prices are quite low in Asia. For comparative purposes, milk prices are generally quoted in terms of US\$/100 kg or US cents/kg of milk standardised to 4% fat and 3.3% protein. FAO (2006) data summarise milk prices from 1996 to 2003 as follows:

- European Union farmers received 29 to 40 c/kg.
- North American farmers received 28 to 38 c/kg.
- Australian and New Zealand and South American farmers received 16 to 17 c/kg.
- Argentinean farmers received only 12 c/kg.
- In Asia, Thai farmers received 28 c/kg, while those in China and India received 20–22 c/kg and those in Pakistan received 15 c/kg.

They concluded that at 2006 international prices for dairy products, only those producers with domestic milk costs currently at or below 18 c/kg would be competitive in the absence of price support.

With regard to the cost of producing that milk, IFCN (2004) estimates this ranges throughout the world from less than 18 to more than 45 c/kg. Available data from Asia are:



**Figure 7.2** Value adding raw milk as pasteurised flavoured milk (West Java, Indonesia)

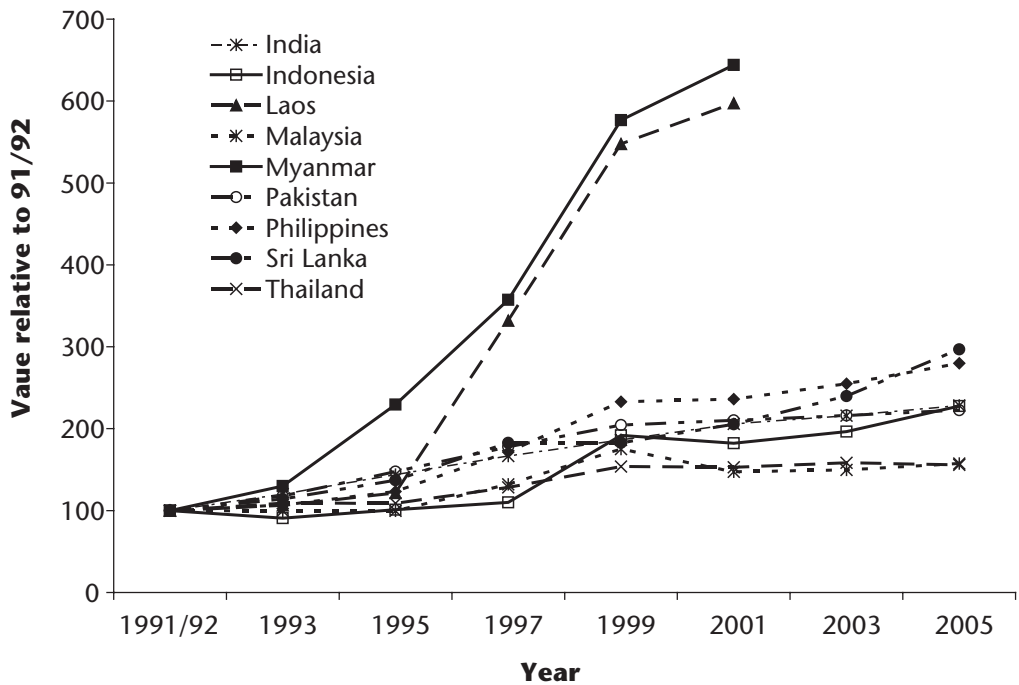
- 11 to 12 c/kg in Pakistan and Vietnam.
- 12 to 18 c/kg in India and China (small farms).
- 18 to 28 c/kg in Thailand and China (large farms).

## 7.2 Local prices for raw milk

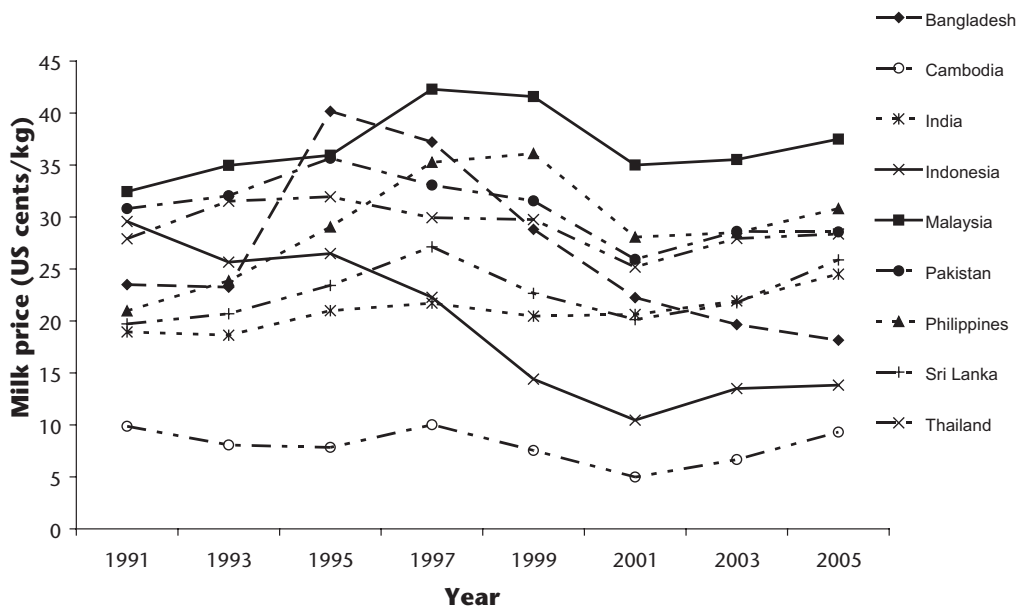
### 7.2.1 Annual variations in different countries

The following graphs present annual variations in raw milk prices for selected countries in South and East Asia from 1991 to 2005, the latest year available from APHCA. Figure 7.3 presents changes in farm gate prices expressed in local currency units, relative to the base price in 1991/92. Myanmar and Laos appear to be outliers in this data set, because milk prices markedly increased in the late 1990s, reaching 600% of the 1991/92 prices by 2001. Increases in other countries over the 14-year period were much smaller, with Malaysia and Thailand increasing by only 150% and Philippines and Sri Lanka by 290%.

Figure 7.4 presents changes in actual farm gate prices converted to US cents/kg. For reconstituted milk containing 10% milk solids, global milk powder prices of US\$2500 and US\$5000/t (or US\$2.50 and US\$5/kg powder) correspond respectively to 25 and 50 c/kg. Therefore, when considering the overlap of years in Figures 7.1 and 7.4, the global whole milk powder (WMP) prices in 2005 correspond to farm gate milk prices of 30 c/kg. When converted to US currency at the varying annual exchange rates for each country, local milk prices have not greatly varied over the last 14 years, even during the Asian financial crisis of the late 1990s. In 2005, farm gate milk prices varied from 9 c/kg



**Figure 7.3** Changes in farm gate price for raw cow's milk, in local currency units, for nine selected countries in South and East Asia, relative to the base price in 1991/92



**Figure 7.4** Changes in farm gate price for raw cow's milk, in US cents/kg, for nine selected countries in South and East Asia between 1991 and 2005

**Table 7.1** Categories of milk price in selected Asian dairy industries in 2006

	Milk price category	Milk: feed price ratio
<b>South-East Asia</b>		
Malaysia	B	–
Myanmar	B	B
Philippines	B	A
Thailand	B	B
Vietnam	C	D
Indonesia	E	A
<b>South Asia</b>		
Pakistan	E	B
Bangladesh	D	C
India	D	C
Sri Lanka	D	A

Source: Hemme (2008)

Milk price (in US c/kg), A, >40; B, 30–40; C, 25–30; D, 20–25; E, <20

Milk: feed price ratio; A, 0.5–1.0; B, 1–1.5; C 1.5–2.0, D, 2–2.5; E>2.5

in Cambodia to 37 c/kg in Malaysia, with an even spread of prices between these extremes for South and East Asian countries.

The International Farm Comparison Network (IFCN) has been closely monitoring milk prices and farm production costs over the last few years and has developed an extensive data base. Hemme (2008) summarised the most up-to-date data (2006), by designating each country's farm gate price in one of five categories, these being presented in Table 7.1. The highest farm gate returns (30–40 c/kg) were in Malaysia, Thailand, Philippines and Myanmar, with the lowest (<20 c/kg) in Pakistan and Indonesia.

To relate dairy farmer returns to production costs, Hemme (2008) compared countries on their milk:feed price ratio, using the IFCN feed price indicator for a concentrate formulation of 30% kg soy bean meal and 70% maize grain. These data are also presented in Table 7.1. Relative to feed prices, farm gate milk returns were lowest in Indonesia, Philippines and Sri Lanka and highest in Vietnam.

## 7.2.2 Current farmer returns for fresh local milk

Unless for the reasons of good economics, protectionist policies, government support programs and import quotas and tariffs, domestic milk production would need to compete with international milk prices. In the absence of any government support or import restrictions and tariffs (practices which are increasingly being considered by world trade organisations as inappropriate), the benchmark for the value of domestic milk at the factory door is the cost at which it can be produced from imported ingredients at international prices. In 2004, Sanderson (2004) considered this to be US 28–30 c/kg, but it could dip as low as US 20 c/kg when international prices were their lowest. Therefore, in a free market situation, milk processors would not wish to pay more

**Table 7.2** Fresh milk prices in Feb 2005 and in Oct 2008 in local and US currency units for selected South and East Asian countries

Country	Currency unit	2005 milk price	2008 milk price	% increase from 2005 to 2008	2005 milk price (US c/kg)	2008 milk price (US c/kg)
Malaysia	Ringgit (MR)	1.23	2.00	63	32.3	63.3
Thailand	Baht (Bt)	12.0	18.0	50	30.3	57.1
Vietnam	Dong (VND)	3200	7500	134	20.2	46.5
Indonesia	Rupiah (Rp)	1720	3000	74	18.7	32.6
Sri Lanka	Rupee (Rs)	22	27.5	25	–	25.5
Australia	Aust cents	28.0	50.0	79	21.5	40.0

than this for fresh local milk. Such conclusions have become dated in the light of increases in global dairy prices since 2007.

What did South-East Asian smallholder dairy farmers receive for their product prior to and following the 2007 global price rises? Table 7.2 compares February 2005 with October 2008 milk returns in both local currency units and US c/kg. These milk returns are base prices for fresh milk in each country, prior to the inclusion of premiums or penalties for milk composition and quality.

Despite wide variations in the increases in farmer milk prices over these three years, from 25 to 134% in Table 7.2, the relative position of countries in South-East Asia has hardly changed. Malaysian farmers still receive the highest return (in US c/kg), followed by farmers in Thailand, Vietnam, then Indonesia. Relative to those in Indonesia, Malaysian milk producers received more in 2008 (248%) than they did in 2005 (173%).

In their strategic plan for Asia's dairy industries, FAO (2008c) concluded that while prices of internationally traded milk powder are expected to subside gradually from their historic peak of near US\$5000/t in late 2007, the perceived competitiveness of larger holder dairy processors heavily reliant on increasingly higher priced imported inputs is expected to erode. Increasingly, large dairy processors in the region are gravitating towards local suppliers of fresh milk, and in many regions, this implies stronger institutional linkages with smallholder producers.

Milk prices are usually set by processors with some input from government, and after lobbying from producers. Farmers are rarely happy with the milk price and consumers complain about the high cost of dairy products, however, in each country the industry continues to develop, often with the impetus of government school milk programs. There are always some dairy farmers leaving the industry and there may be temporary downturns in milk supplies, such as during the 1997–1998 Asian economic crisis. However, in most South and East Asian countries, dairying farming is a growth industry.