

U.N. Food and Agriculture Organisation

Commodity Stocks and Supply Management

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1 Supply management and price stabilisation

Before the international financial crisis, when the real prices of cereals and other commodities had been steadily declining for 25 years, there was a revival of interest in the question of managing supplies to stabilise prices. This had been unfashionable since the 1980s. But attention quickly moved on to other aspects of price formation - although the last seven years have witnessed some of the greatest price volatility ever. Now that the commodities boom is over, the question of price stabilisation seems to be re-emerging.

The best-known way of managing supplies to alter a product's price is by manipulating stocks, and its use by governments on agricultural markets dates back to the 1930s. What is less widely considered is the practice's commercial origin as a tool in the hands of powerful players in the market.

In many places local food storage needs to increase for other reasons too - for example, to provide emergency reserves, smooth out smallholders' incomes through the year and help them survive the hungry season before harvest. It might be worth encouraging for its influence on prices too.

Supply management (SM) can take numerous forms: it can be national or international; state-controlled, farmer-controlled or corporate; and can operate not only through stocks but also quotas, import tariffs and other mechanisms. However, SM is open to various definitions. The fullest definition includes any mechanism that aims to control or manipulate the quantities supplied on a market, whether operated by commercial, public or other bodies. It suffices that they have the required degree of influence over the market. The purpose is to control the supply of a commodity relative to demand, in order to influence its price.

The agents in control of SM can be any of these:

- companies (either individually or with overt or tacit collusion);
- farmers' organisations;
- government ministries or agencies, which in turn can be:
 - those of a single country (e.g. the U.S.);
 - a group of similar countries (e.g. the European Union or OPEC); or
 - in an international market, the governments of both importing and exporting nations, acting by agreement.

This paper will appraise the utility of SM according to evidence from its use, in order to understand whether it might again be mobilised to counter food price volatility, especially in developing countries.¹ The paper offers a framework for future analysis. This comes at a time when the problem of livelihoods from agriculture has reached a critical juncture worldwide. In many countries agriculture is no longer seen as a worthwhile way of life by young rural people, and farming populations are growing steadily older. This author knows no systematic research on this, but in country after country - China, France, Kenya, Nigeria, South Korea, the U.K., to name but a few - one hears of an ageing agricultural population and a failure of young people to stay on farms.

In the next section we undertake a brief survey of SM methods, illustrated by examples from domestic and international markets of both agricultural and mineral

¹ This paper draws extensively on Lines (2007). The author is grateful to the International Institute for Sustainable Development for the invitation and its support for that piece of research.

commodities, and the following one examines which agents drove the process in different cases. Then we consider which of numerous examples have worked, which have not and why. The fifth and final section discusses the technical and political requirements for SM to succeed. It concludes with some simple recommendations regarding food markets in developing countries. The paper leaves out any consideration of the status of supply management under WTO rules or other areas of international law.

2 Methods of supply management

At various times a wide range of methods has been used, either alone or in combination, to manage commodity supplies. They are described here.

2.1 Control of production

A. Direct control - quotas

The Canadian dairy market uses production quotas, operated by a combination of government authorities and farmers' organisations. A government body (the Canadian Dairy Commission) monitors monthly changes in national demand and supply. It is in charge of two of the three pillars of SM: support prices and a 'market sharing quota', which is established for each federal province and divided among its producers.² The farmers' representative body, Dairy Farmers of Canada, negotiates prices with processing firms.

A different system controlled the international oil market before OPEC (the Organisation of Petroleum Exporting Countries) was created in 1960. Seven companies formed a worldwide cartel and shared many contracts to run production operations, enabling them to plan output jointly. This entailed long-term planning and management of supplies. However, it began to break down by the late 1950s as independent oil companies appeared on the scene.³

Since 1983 OPEC itself has used national production quotas, periodically renegotiated between its members. OPEC combines this with target prices, which the quotas are meant to support.⁴ Adjusting output is quite easy in an industry in which the flow from a well can be regulated from day to day.

B. Indirect control

Production can be controlled by indirect means. One is to require farmers to 'set aside,' or leave idle, a proportion of the land devoted to a crop. This was part of U.S. agricultural policy before 1996, and in 1993 it was introduced in the European Union (EU). However, in the first ten years of set-aside EU wheat yields increased by around 10 per cent.⁵ Farmers were also permitted to increase the area nominated for wheat production, so that by 2002 the area *actually sown* to wheat was 18.1m HA, compared with 17.3m in 1992, the last year before set-aside. In 2000 the EU's wheat harvest reached a new record high of 105.4m tonnes.⁶

2.2 International quotas

Supply has been regulated by physical quotas on some international markets. In commercial terms, these bear some comparison with market-sharing arrangements between corporations. An early example was the International Tea Agreement (1933-55), under which the colonial governments of what are now India, Sri Lanka and Indonesia granted export quotas to tea plantations with a view to reducing

² www.cdc-ccl.gc.ca/CDC/index-eng.php (visited in January 2014). The third pillar is import controls.

³ *US Encyclopaedia of Energy - A History of Opec* (undated), pp. 3-4.

⁴ *Ibid.*, p. 20.

⁵ The French and U.K. average wheat yields over the four years 1999-2002 were 7.1 and 7.8 tonnes per hectare respectively, compared with 6.5t/HA and 7.0t/HA over the three years 1990-92.

Source: UN Food & Agriculture Organization, found in 2003 at <http://apps.fao.org/page/collections?subset=agriculture>.

⁶ *Ibid.*

oversupply and supporting world prices. In the first year, the planters had to reduce exports by at least 15 per cent from the maximum attained between 1929 and 1932. Prices began to recover immediately and they rose by 50 per cent between 1932 and 1937.⁷

A similar system was used from 1964 to 1989 in the International Coffee Agreement (ICA). A buffer stock would have been impractical for such a perishable product, while production quotas would have been difficult, given the long interval between planting a tree and gathering its first crop.

2.3 Use of stocks

This can be undertaken by either private and commercial or public agencies.

A. Private

Modern agricultural markets tend to be dominated by companies at the processing and retailing stages, which manipulate stocks under a system of supply *chain* management. A supermarket or other purchasing firm will buy only as much as it knows it can sell at a desired price level, and manage its stocks accordingly; this ensures that, when there is excess supply, the excess stocks are held further back along the supply chain. Any downward price pressure is felt by farmers and the producer end of the chain.

On mineral markets, corporations enjoying monopoly or oligopoly positions have often controlled prices by adjusting stocks. In the diamond market, this was done to keep world prices high by the Central Selling Organisation (CSO), run by the largest producing company, De Beers of South Africa. The six companies that controlled the aluminium market had a similar system until 1984. They countered price fluctuations and cyclical trends by holding and releasing stocks, matching production carefully with demand, and exchanging metal between producers in order to smooth over particular supply difficulties.⁸

Naturally, stock control can only succeed where companies have a requisite degree of market power. The collapse of the aluminium arrangement in the 1980s coincided with a decline in the four leading companies' combined market share below a critical threshold of 40 per cent.⁹ Stock control can also be expensive.

B. Public

Commodity supply management by public authorities began in response to the 1930s Depression. A long-lasting example was the International Tin Agreement (ITA), which used a buffer stock of the metal. Every five years, an anticipated price range for tin was agreed between producer and consumer countries. If the market price went near or below the bottom of that range, the buffer stock manager bought tin to support it; if it approached or exceeded the top of the range, he had to sell. This was akin to Keynesian fiscal policy, in which a budget deficit puts money into the economy at the bottom of the business cycle and a budget surplus takes money out during a boom. Other examples appear through the course of this paper.

⁷ Gupta, B. (2004).

⁸ See Lines (1990), p. 250.

⁹ *Ibid.*, p. 248.

2.4 Minimum purchase price

In its original form from the 1960s to the 1980s, the European Economic Community's Common Agricultural Policy (CAP) aimed to support farmers' incomes and ensure that the EEC produced enough food to feed itself. It sought therefore to *stimulate* agricultural supply rather than limit it. This was also a form of SM. For each product supported by the CAP, a minimum price was determined while tariffs ensured that no imports could undercut that price. If farmers could not sell their output there was a guarantee to purchase it (or 'intervene') at the declared price and place the produce in store. These stores were known as 'intervention stocks.' This supported farmers' incomes and enabled them to invest, use more inputs and produce more.

The U.K. government set up domestic agricultural marketing boards in the 1930s and 1940s, with the aim of increasing supplies and stabilising farm prices but also to keep retail prices low. The boards bought the produce on numerous markets (e.g. eggs, milk, potatoes) at fixed prices which were negotiated with farmers' representatives every year. Retail prices were kept competitive with the world market; where domestic costs were above that, the government paid farmers the difference in so-called 'deficiency payments.'

These systems must be distinguished from minimum prices under paternalistic fair-trade schemes, which do not have any ambition of influencing total quantities supplied.

2.5 Border measures

In the EU, tariffs safeguard the prices promised to domestic farmers, as a stimulus to produce more. Limits on import volumes have a more direct effect on supply. Measures of this sort can be essential to make supply management work; in the EU's wheat set-aside policy, the accompanying rules were not drawn tightly enough.

However, developing countries have been encouraged for many years to *reduce* tariffs, purportedly in order to stimulate farmers' efficiency through competition. This has often made it difficult for domestic farmers to retain their markets, and imports have taken a greater share.

3 The drivers of supply management

An alternative way to categorise SM systems is by looking at the driver of the process. Is it a public body, a commercial body or part of civil society? Is it at the producer or consumer end of the supply chain, or by agreement between both? These criteria lead to the following classification, with examples.

3.1 Commercial - producer-driven

This is rare in agriculture and the examples given are on mineral markets.

Under monopoly control. Example: diamonds. The De Beers company operated a Central Selling Organisation to market most producers' diamonds, which continued long after De Beers lost monopoly control. Other producers recognised that by restricting overall supply it could achieve higher prices for them too.

Under oligopoly. Examples: the aluminium and nickel markets until the 1980s. In aluminium, the biggest producer (Alcan of Canada) declared its sales price and the other five dominant producers followed. By adjusting their stocks of finished metal, they kept prices stable. The system broke down for two reasons. During the early 1980s recession, demand fell more sharply than at any time since the 1930s, while in 1978 the London Metal Exchange had launched an aluminium contract through which consumers could purchase the metal at lower prices, reflecting those market conditions. In 1984, Alcan abandoned its declared price and the system of commercial supply control came to an end. Stable aluminium prices disappeared with it.

3.2 Commercial - buyer-driven

After coffee export quotas were abandoned in 1989, coffee-roaster companies consolidated rapidly into a small number of global corporations. But production was fragmented among an estimated 25 million farmers,¹⁰ giving the roasters great power over the supply chain. They were able to keep their own prices to retailers reasonably stable and enjoyed large profits. The roasters could pick and choose between suppliers, ensuring that their end of the chain was not oversupplied. This forced the problem of high stocks and low prices further back along the chain. On many other agricultural markets, supermarkets work similarly.

3.3 Public or cooperative - national, producer-driven

Canadian chicken supplies are regulated by a board called Chicken Farmers of Canada (CFC), which liaises between provincial marketing boards. The latter consult with processors every eight weeks to assess demand, and farmers buy permits to produce up to this amount. The CFC penalises any province that overproduces. Eleven of CFC's 15 directors are farmers; the others represent other parts of the chain.¹¹ The former U.K. marketing boards were comparable; the Milk Marketing Board (MMB) 'consisted mainly of members elected by registered producers in each region.'¹²

¹⁰ Oxfam (2002), p. 6.

¹¹ Levy (2000).

¹² National Archives, <http://discovery.nationalarchives.gov.uk/SearchUI/details?Uri=C179> (visited in January 2014).

Developing countries' national marketing boards also mediate between producers and world markets. Holding monopoly rights, they oversee a commodity's purchasing and often its processing too, and hold it in store for export. In turn they offer farmers guaranteed prices. The *caisses de stabilisation* in French-speaking countries are similar, but license out more operations to traders.¹³ They are not producer-driven when run exclusively by the state, but some boards are controlled by farmers' cooperatives. An example is the Federación Nacional de Cafeteros de Colombia (Fedecafé), which markets approximately 30 per cent of Colombia's coffee exports.

3.4 Public - international, producer-driven

Under OPEC, producer countries manipulate output with the aim of attaining prices they desire (in association with the oil corporations).

The original CAP was run by government bodies and driven by political support for farmers. It could therefore be said to be producer-driven, if indirectly. However, it is widely argued that under recent reforms the CAP (like U.S. farm bills since 1996) was driven more by food-processing and retailing companies' interests, since it assures them of *low* prices for their inputs. The farmers continue to receive subsidies, but only to compensate them for lower prices.

3.5 Public - international, paternalistic

There was an element of supply management in the cane sugar import quotas which used to exist on European markets, first in the U.K. and then, from the 1970s, under the EU's Sugar Protocol. The quotas were offered at the discretion of the EU and are being phased out now. The arrangement demonstrated the dangers of inflexibility, since the main beneficiaries remained almost the same group of small countries as benefited in the Commonwealth's system in the 1950s and 1960s. The biggest quota was held by Mauritius. But the market evolved very greatly, and they became neither the poorest nor the biggest cane sugar-exporting countries. However, the fact that they were no longer the poorest indicates developmental success in guaranteeing their main export at above-market prices.

3.6 Public - international, under producer-consumer agreement

When people refer to supply management in relation to development, they usually have in mind the International Commodity Agreements (ICAs) which existed at various times between the 1930s and 1990s. They were drawn up between the main producing and consuming countries of a commodity. Not all involved developing countries (for example, the International Wheat Agreement or IWA), but they are most closely associated with tropical exports such as cocoa, coffee, rubber and tea, as well as tin.

¹³ Parimal (2006), p. 25.

4 Supply management in practice

4.1 How SM developed

How has supply management worked in practice and how did it evolve? The history can be divided into four phases.

1. **The first systems** were run by commercial monopolies and cartels. They were also the longest lasting, so they may have lessons for other agents. The first public systems came in response to the agricultural crisis of the 1930s. The first British marketing board was introduced for milk in 1933, and the Tea Agreement started in the same year. Under the New Deal, President Roosevelt decided to support U.S. agricultural prices by cutting out excess supplies; the resulting systems lasted in one form or another until the 1990s. An attempt was made to internationalise this in the IWA in 1934. Negotiated between exporting and importing countries, it served as a model for ICAs in later years. However, it was not very successful. A successor, starting in 1949, was more so and its aim was almost the opposite: to ensure adequate *supplies*, reflecting post-war shortages.¹⁴ The Brazilian government had meanwhile supported international coffee prices by burning excess supplies.
2. **International Commodity Agreements** were sponsored by the United Nations from the 1950s on. The Kennedy Administration supported the creation of a Coffee Agreement as it feared that chronic oversupplies could stimulate a spread of revolution from Cuba to coffee-exporting countries nearby. In 1975 the UN General Assembly approved a plan to negotiate an Integrated Programme for Commodities, which would oversee ten such agreements, financed by a Common Fund. However, the developed countries refused to grant the Fund sufficient finance and few new agreements were established.
3. **The arrangements buckled** under the pressure of another economic downturn in the 1980s. The size and cost of intervention stocks discredited the CAP, while the ITA's collapse in 1985 severely damaged the ICAs' prestige. The United States became reluctant to support them and its refusal to renew coffee export quotas in 1989 symbolised the end of their era. Difficulties were encountered in administering such complex schemes and some leading producer countries such as Brazil also became reluctant to support them.
4. In recent decades **the balance of power** has shifted from the producer end of agricultural supply chains to processing and retailing. Buyer power elicited new forms of commercial supply chain management. Meanwhile, both the U.S. and the EU abandoned public SM by decoupling farm subsidies from production and selling off the stocks. This led to structurally low prices, which benefited buyers.

¹⁴ This history is summarised by the International Grains Council at www.igc.org.uk/en/aboutus/default.aspx.

4.2 What has worked? What has not worked?

Where and when has SM worked and where and when has it not?

Worked:

- SM has had the most prolonged success where it took the simplest forms and its controlling agents had the greatest market power. Commercial forms of SM necessarily rely on market power, and those with enduring success were in monopoly or oligopoly situations. Modern supply chain management also derives its success from **concentrations of commercial power**.
- Among public forms of SM, there have been some notable successes on domestic markets. The U.K.'s **Milk Marketing Board** was set up to take marketing right out of commercial hands as dairies in the 1920s had squeezed prices paid to farmers. It also provided technical advice and a national cold chain and succeeded for 60 years. Since its abolition in 1994, farmgate prices have again been squeezed by supermarkets and the number of dairy farmers has halved.
- **U.K. deficiency payments** boosted domestic supplies with predictable prices for farmers while keeping retail prices low. Within five years of their introduction in 1947, domestic agricultural production increased by 20 per cent (to a level that was some 50 per cent higher than in the 1930s). The policy was abandoned not because of any failure but as a requirement on joining the EEC in 1973. The U.K.'s rate of food self-sufficiency rose steadily until CAP reforms began in the mid-1980s, but has now fallen back to the level of 50 years or more ago.¹⁵
- According to its advocates, the **Canadian system** keeps farm incomes up, enables family-run farms to keep going and keeps retail prices stable. Farmer critics argue that it inhibits direct sales as well as non-standard products such as organic and even whole milk, and makes it difficult for young farmers to enter the profession. They criticise the fact that milk quotas were distributed free but can now be sold in British Columbia for CDN\$42,500 (US\$38,300) per quota cow.¹⁶ However, even they recognise the value of SM and call for flexibility rather than abolition.¹⁷
- The successful programmes have been the ones most directly influenced by farmers. The active involvement of farmers' organisations in ECOWAS' new emergency reserve system in West Africa is an encouraging sign.¹⁸

Worked in some ways, not in others:

- **State marketing boards in developing countries** have difficulty in determining the levels at which to support prices. Many have failed to adjust prices sufficiently to reflect inflation, exchange rate changes and world price trends. When inflation was high and exchange rates overvalued, the real value of many support prices was eroded since they followed base prices in foreign currencies.

¹⁵ Details can be found in DEFRA (2013), p. 99, Food Chain Analysis Group (2006), pp. 13, 16, 34 and 85-87, and at <http://statistics.defra.gov.uk/esg/quick/agri.asp> for more recent years. Unfortunately, comparable self-sufficiency data do not exist for the whole period due to a change in the method of calculation in 1998.

¹⁶ Canadian Dairy Information Centre, www.dairyinfo.gc.ca/pdf/quota14_e.pdf (January 2014).

¹⁷ Personal communications from Maxime Laplante, President of Union Paysanne, Quebec (2007).

¹⁸ See Lines (2011), pp. 10-16.

This may have been the result of inefficiency and inertia as much as malevolence, but the effect can be the same.

Many boards were dismantled in the 1990s under structural adjustment.¹⁹ This was generally in the poorest countries: the most dependent on commodity exports and most vulnerable to vagaries of the markets. The World Bank led this policy, arguing that the difference between the purchase and sale prices of an export crop amounted to taxation of the farmers.²⁰ (By analogy, in a commercial system a trader's margin must also be considered a tax.) Numerous cases of corruption were also alleged.

Experience since the abolition of marketing boards has been mixed, but the domestic terms of trade seem to have turned more against farmers in countries that abolished them, while the shift from public to private marketing did not increase the proportion of export prices passed on to farmers.²¹ In the case of cocoa, producer prices were more volatile in Cameroon, Côte d'Ivoire and Nigeria (which dismantled cocoa marketing boards) than in Ghana (which did not); this suggests that, in this case at least, some stabilisation of prices was achieved.²²

Marketing boards have assisted rural development through ancillary services such as agricultural extension, inputs and credit.²³ Some have served still wider purposes. The Kenya Tea Development Authority pioneered smallholders' production of tea and led that country to become the largest tea exporter. It has often been argued that it would have been wiser to reform marketing boards than to abolish them.

- **The CAP** succeeded in supporting farmers' incomes and stimulating domestic supplies for over 20 years. However, intervention stocks became expensive to support, and hard to dispose of. This forced a series of changes which have not finished yet.
- On international markets, the **Coffee, Tea and Tin Agreements** were all successful for well over 20 years. Only the Tin Agreement demonstrably failed in a technical sense, due to an inability to defend the floor price in an exceptionally weak market. In coffee there were two main problems. One lay in the admission of new members: at what point should they be accepted and how much quota would existing members allow them, at the cost of diluting their own market shares? A counterpart was a 'free-rider' problem of trade occurring outside the agreement. There were exports by non-member countries; imports by non-members, which might be re-exported to consumer member countries; and illicit, above-quota exports by producer members.
- Both **the ITA and the aluminium cartel** achieved their price goals over long periods. The ITA was admired as it kept tin prices not merely stable, but on a rising trend. Both failed eventually due to an inability to respond to a sudden, sharp decline in demand. In aluminium, the oligopoly was weakening already. By the 1980s, the six leading companies' oligopoly position was lost.²⁴ But while the aluminium market grew rapidly, the tin market was sluggish. While the ITA's failure in 1985 was financial, there were political factors in the

¹⁹ UNCTAD (2003), pp. 38-39.

²⁰ See World Bank (1986), Chapter 4: 'Agricultural policies in developing countries: Exchange rates, prices, and taxation', pp. 61-84.

²¹ UNCTAD (2003), p. 39.

²² *Ibid.*, citing I. ul Haque, *Commodities under Neoliberalism: The case of cocoa* (2003: Group of Twenty-Four).

²³ UNCTAD (2003), pp. 38-39.

²⁴ See Lines (1990).

background. The ITA could be justified best by its success in enabling high-cost tin mining to continue in Bolivia, South America's poorest country. However, it also depended on the support of the U.K. (where the main trade was situated), which wished to maintain high-cost tin mines in one of its poorest regions. By the 1980s that was less important to the British government.

- Since the 1970s the **OPEC** member countries have maintained a strong position on the oil market, despite the expansion of other sources of supply. A less supple framework might have broken, but it survived and enabled those countries to benefit from the price boom of recent years. However, this was at the expense of price stability.²⁵

Did not work:

- Four years after the ICA's export quotas were abandoned, 14 coffee-producing countries, representing 70 per cent of production, established the **Association of Coffee Producing Countries** (APPC in Spanish) with the aim of holding prices up by limiting supply. The attempt failed and the Association was disbanded in 2002. It was defeated by two events. The consolidation of coffee-roasting in four global groups decisively shifted power along the supply chain. Meanwhile, Vietnam appeared as a major producing country, its output exceeded only by Brazil's. Vietnam did not join the APPC and its coffee exports coincided with a downturn in the market.
- The **International Cocoa Agreement** (ICCA) was established in 1973 with the aim of using both export quotas and a buffer stock. However, the buffer stock programme was not implemented until 1982, and before that the quotas were discontinued. Member countries funded the buffer stock with levies on imports and exports. The programme was suspended as they started to have problems paying these levies. The buffer stock was liquidated under the 1993 agreement. Like the ICA, the ICCA still exists but without any attempt at supply management.

4.3 Why was supply management cut back?

There is a view that public SM failed to do the job it was designed for and had to be abandoned. That is too simple. In order to work, SM has to have both a technically workable mechanism and the political ability to impose that mechanism on the market. Often these requirements are confused, and a loss of political support is explained as though a project has failed technically. Where technical faults were the cause, they were not necessarily insuperable; and such failures can demonstrate what to avoid in other schemes.

These were the political and technical reasons for cutting supply management back:

- The return of free-market thinking, which was applied to the CAP, U.S. farm bills and the ICAs.
- Political problems within agreements, for example over the size of coffee quotas.

²⁵ Among 46 commodities analysed by UNCTAD, only pepper and palm kernel oil prices were more unstable than crude petroleum (oil) prices between 1977 and 2001. The oil price has scarcely become more stable over the five years since then. See Lines (2004), Table 4, pp. 34-35.

- Incompatible interests, for example between France as a food-exporting country and the U.K. as a food importer within the CAP.
- Financial constraints in stock-based systems such as the CAP and the ITA. Weaknesses in administration (partly related to lack of resources) can also affect the ability to enforce controls.
- A failure to react flexibly to technical challenges and market changes, such as those faced by the ICA, the ITA and the Alcan reference price.
- Difficulties in enforcement of some international agreements, including the prevention of free-riding and imposition of quotas.
- Competition from other commodities.

5 What is required for supply management to succeed?

SM is partly a technical process, using certain tools to control the amounts supplied on a market, and partly an instrument of market power. In order to succeed, both technical and political requirements need to be satisfied. They are discussed now.

5.1 Technical requirements

1. **A coherent market.** The tin and coffee agreements worked over long periods in part because these markets have been global since the 19th century, with simple, well-publicised price bases. Price targets were therefore easily defined and could be attached to existing marketing arrangements. Moreover, most coffee and tin was produced in developing countries and exported to developed countries, so total trade was not far in volume from production. Many domestic agricultural markets are just as coherent, but some are discontinuous and lack price transparency.
2. **A competent and honest administration.** The policing of Canada's schemes is strongly influenced by farmers. The ICAs had global headquarters in major trading centres, which were able to attract staff with the skills and integrity required. However, even the CAP has not avoided corruption.
3. **Adequate measures in support.** On a domestic market imports need to be controlled. Many say that failure here made the EU's milk quotas less successful than Canada's. The EU's wheat set-asides failed to keep supplies down because they were poorly designed and rising yields seem not to have been considered.
4. **Tactical flexibility.** The ICAs were hampered by the need to negotiate inflexible price bands for five-year periods, even though the very problem they addressed was the unpredictability of world prices. OPEC does not have hard and fast rules for its prices, nor does the organisation itself buy and sell on the market; its price targets and quotas can be changed flexibly in the light of conditions. This is also how business prices and production are determined. The Canadian SM systems are similarly flexible. As far as possible, SM should be based on judgments of the market, not fixed rules. This requires political confidence in those who will make those judgments.
5. **Compatible policies for competing products and producers.** The ITA increased tin prices over a long period, to the benefit of producing countries. However, consumers switched from tin to substitute materials such as aluminium and plastics. A slightly different fate befell an attempt to control the vanilla market by Madagascar, the Comoros and Réunion Island in 1962. The cartel worked for about ten years; but in the end it priced the spice too high, allowing Indonesia to enter the market and reduce their hold over it.²⁶

5.2 Political requirements

1. The ability to exert **power over the supply chain.** Corporations and cartels with high market shares have this. States do too if they choose to exert it – including countervailing power against both oligopolies and buyer power.
2. **Farmers' influence.** In the developed world, this has been important in the success of Canadian SM and the U.K.'s deficiency payments and marketing

²⁶ Cadot and others (2006), p. 3.

boards. Among developing countries, Colombia's Fedecafé is farmer-controlled and helped that small country to remain the third largest producer of coffee with a sustained reputation for high quality throughout a long civil war. Experience in the Botswana Meat Commission also supports a view that the closer farmers are to controlling such organisations, the more successful they are likely to be.²⁷

3. **Underlying solidarity** among those who control the process. This clearly exists in corporate cartels. However, it seems unlikely that consumer countries will join any new agreements like the former ICAs. Much time could be wasted in attempting to recreate that model. But producer-consumer agreements are the exception rather than the rule in supply management. If exporting countries want supplies to be managed again, they would be well advised to rely on their own forces like the oil producers.
4. **On international markets, it helps to have a 'swing' producer** that will vary its production in the interests of the market as a whole. Saudi Arabia has played this role in OPEC, and Brazil at times in the coffee market. Kenya's reluctance to do this is a barrier to cooperation on the tea market, and Ecuador for long proved similarly reluctant as the largest banana exporter.
5. Find ways to **exploit the wider politics of the market**. OPEC could not have survived for over 50 years if it had not enlisted the cooperation, or at least acquiescence, of the oil companies.²⁸

5.3 Is supply management feasible today?

The techniques of SM are mostly well-known. They can work on some markets and in some situations, but not necessarily on others. We have seen that successful SM, whether led by public or commercial agencies, has taken various forms. The method chosen should be that which is best suited to the situation faced. SM will not work on every market; but where it does not work, that should not be taken to rule out SM in general. The better suited the methods and drivers chosen are to the market concerned, the more likely they are to succeed.

Most of the cases discussed above involve developed countries in whole or in part. Further considerations apply to any use of supply management on food markets in developing countries. The evidence in this paper leads to these conclusions:

- SM is most likely to succeed on continuous, coherent markets with transparent prices - not where they are fragmented between regions within a country or across frontiers;
- The greater the number of staple foods involved, the more complicated and difficult it will be;
- For the greatest chance of success, agricultural SM requires competent and honest administration, and the strongest possible accountability to farmers;
- SM should be closely integrated with related policies such as local storage and emergency food reserves;
- Stock-based systems can be expensive to acquire and maintain, and so considerable thought is required to ensure financial provision for them.

²⁷ Acemoglu, Johnson and Robinson (2001), pp. 18-19 and 22; citing C. Harvey and S. Lewis Jr., *Policy Choice and Development Performance in Botswana* (London: Macmillan, 1980).

²⁸ See *US Encyclopaedia of Energy - A History of OPEC* (undated), pp. 10 and 19-20.

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