

Getting milk from Europe's cows: Problem or prospect for Africa?



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ALPAN - AFRICAN LIVESTOCK POLICY ANALYSIS NETWORK

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Why bother?

1. Sub-Saharan Africa's livestock population has been estimated at 146 million livestock units (FAO Production Yearbook, 1981), which is equivalent to 0.4 LU per head of population, and yet, on average for the years 1979-1981, sub-Saharan Africa's net imports of livestock products were equivalent to 5% of its total agricultural exports (Anteneh, 1984b). Imports of milk and dairy products, mainly from the EEC, are by far the largest single item in this trade deficit. They rose in value from \$113 million in 1970 to \$707 million in 1981, excluding food aid shipments of dairy products. The latter amount to another \$140 million (1981) if calculated in commercial terms (von Massow, 1984).

2. These figures indicate that a major change has been taking place in sub-Saharan Africa during the 1970s. Despite its potential for livestock production, the region has increasingly become more dependent on imports of livestock products. This article will provide more information on this development focusing on the countries which are particularly concerned. But first of all we should establish why increased dairy imports can pose a problem at all. Why should we be concerned about the fact that many African countries decided to buy their milk abroad? Economic theory tells us that trading in general is beneficial to a country if the country exports those goods which it produces cheaper than its international competitors, and buys in exchange those goods from abroad for which other countries have a comparative advantage in producing. Prima facie there seems to be no basic reason for being bothered about increased dairy imports. However, there are economic and political circumstances which suggest that a modification of the pure theory of comparative advantage is needed to take account of the special situation in African countries.

3. First, export earnings in most African countries are not sufficient to cover their import requirements. As a consequence, many countries face chronic shortages of foreign exchange to pay for imports despite the current availability of comparatively cheap dairy products on the world markets, resulting from the US and EEC producer support policies. Second, dairy imports, particularly those which serve as raw materials for recombination into liquid milk, are mainly distributed in the larger cities, where there are processing facilities and a sufficiently large buying power. They thus benefit the urban consumers. Dairy imports may, on the other hand, negatively affect the incomes of milk producers in urban and peri-urban as well as in more distant areas, if there is a marketing infrastructure to take their products to town. Differences between rural and urban incomes are aggravated by these effects. Such distributional aspects of increased dairy imports are often neglected. The third point is directly derived from the second one. If increased dairy imports are likely to depress the price levels for domestically produced milk, they thereby reduce the incentives to producers to expand their milk output. But milk production can be a source of growth and development in a mixed agricultural system, particularly at the smallholder level. Regular cash income from milk sales can be invested in other farm enterprises. Increased dairy imports may thus hamper domestic milk production and block the positive indirect effects on overall agricultural development. We state in conclusion that despite the general preference for a free external trade, there are reasons why African governments may be concerned about increased dairy imports. These concerns arise from foreign exchange constraints, possible distributional imbalances and the likely adverse effects on domestic milk production.

4. Now that we have established that there may be causes for concern, the next step would be to analyse for single countries to what extent these are relevant to them. This clearly

exceeds the scope of this article. But once an optimal level of dairy imports is determined for particular countries, we can address the question as to what national governments can do if they want to influence the level of dairy imports. This leads us into the area of national policies and we have to explain what we mean by this term. To borrow a definition, a policy is "a collection of governmental instruments - taxes, subsidies, quotas, regulations, state-funded R & D¹, even speeches - which are coordinated by politicians and bureaucrats towards the attempted amelioration of perceived problems". (Thomson and Rayner, 1984). Dairy policy is accordingly defined as a collection of those governmental instruments which are directed towards the dairy sector. Here we further focus especially on instruments which influence dairy imports, that is on dairy import policy. But before we go into the discussion of the policy issues involved, we need to establish two points which form the basis of that discussion. First, we need to analyse the empirical evidence of dairy imports into sub-Saharan Africa in order to establish their importance. Second, we have to try and isolate the underlying factors which have caused dairy imports to increase, as well as the likely effects they generate. This will help us identify those areas where governments can exert an immediate influence.

¹ R & D stands for research and development

Some facts and figures on dairy imports

5. Which countries are the major importers of dairy products in sub-Saharan Africa? Imports consist of commercial and food aid imports and we have to distinguish between them. We also have to relate the absolute quantities to some other indicators in order to make the figures of individual countries comparable¹. Over 50% of the total commercial dairy imports into sub-Saharan Africa are accounted for by only five countries. Nigeria is by far the largest importer in quantitative terms, with 31% of total sub-Saharan African commercial dairy imports in 1982. The next four big importers, Angola, Ivory Coast, Somalia and Senegal - together account for another 22% of the region's total. Food aid imports of dairy products are much more equally distributed than commercial imports. Only Somalia receives a relatively large share of almost 20% of the total. It thereby ranks second after Nigeria in total imports. The next big recipients of dairy food aid are Tanzania (9% of the total), Ethiopia (7%), and Angola (6%). Five countries - Gabon, Ivory Coast, Nigeria, Reunion and Swaziland do not appear to have received dairy food aid at all in 1982. There is, however, not a single country in sub-Saharan Africa which does not commercially import dairy products. After Nigeria and Somalia, Angola, Senegal, Ivory Coast, Ethiopia and Tanzania in that order make the big dairy importers.

¹ For some detailed tables readers may refer to von Massow (1984) which can be obtained free of charge from: The Librarian, ILCA, Post Box 5689, Addis Ababa, Ethiopia.

6. The breakdown by import volume alone does not tell us enough about the importance of dairy imports for individual countries. We need to relate total dairy imports to total domestic consumption (i.e. domestic production plus imports) of milk and dairy products. Imports make up 50% or more of total domestic dairy consumption in 24 out of 45 sub-Saharan African countries. These are mainly the West and central African coastal countries which, because of their geographical location and climatic situation (tse-tse infested areas), have a limited livestock potential in the foreseeable future. A different picture emerges, though, if we take total dairy imports per head of population as an indicator. There are 12 countries which import more than 20 kg of dairy products per caput (measured in kg ME = whole liquid milk equivalent; for the conversion see von Massow, 1984, App. 2). Almost all of these countries also rank highest in total dairy consumption per caput, which averages 33 kg ME (unweighted) over all countries. It is astonishing, though, that typical livestock countries like Somalia, Mauritania, Botswana and Burkina Faso are among the 12 countries which import most dairy products per head of population. There may be some reservations with regard to the reliability of population and milk production data for African countries. But the necessary corrections of the data base will not change the basic result of our calculations, that is, the fact that a large number of sub-Saharan African countries have increasingly become dependent on imports of dairy products.

7. Another interesting indicator to define the relative importance of dairy imports is the share of the value of commercial dairy imports in the expenditures on total agricultural imports. It appears that many of those countries where commercial dairy imports make up more than 10% of the value of total agricultural imports are among Africa's poorest. In fact, all countries with less than \$350 GNP per caput in 1981, except Mali, spent more than 10% of their agricultural import bill on dairy products. This is astonishing in that dairy imports cannot be considered to be imports of a basic staple food. On the other hand, most of the poor countries imported their dairy products relatively cheaply. The average value of their dairy imports in 1982 was less than \$0.25 per kg ME as against the overall average of \$0.31. It may nevertheless be that the poorer countries have resorted to importing dairy products because they have been relatively cheap on the world markets.

8. In summary, one important feature needs to be stressed: over the last decade, not a single sub-Saharan African country could maintain or even increase its level of dairy consumption per caput without increasing its dairy imports. Although different factors have caused this development in different countries, it is quite clear that the dairy sectors in African countries simply cannot meet the growing demand for milk. Kenya and Zimbabwe were the only net exporters of dairy products in the mid 1970s. Their net imports in 1980-82 were respectively 6.3 kg and 3.1 kg ME per head. There is thus not a single country in sub-Saharan Africa whose consumers do not depend on other countries' milk production. The countries differ in the extent to which they depend on commercial or on food aid dairy imports. They further differ in the importance of dairy imports relative to total dairy consumption and to total agricultural imports, and of course, individual countries in sub-Saharan Africa have different potentials for producing milk.

Some causal factors

9. If national governments want to do something about increased dairy imports they need to know what factors have caused these. Several influences are likely to have contributed to the tremendous rise in and subsequent dependence on dairy imports. First of all, there is population growth. Domestic milk production at constant net imports would have had to increase by an annual average of between 2% and 4.5% over the last decade (depending on the country) if the growing populations were to be able to maintain their milk consumption per head. Since many countries' dairy sectors could not grow at similar rates, imports had to fill the gap in order not to let consumption per caput decline. Second, there are changes in incomes. With real incomes still rising in some African countries, the consumers are spending part of this increase on additional purchases of milk and dairy products. The income elasticity of demand, i.e. the expected rise in demand induced by a rise in per caput income, suggests a 0.68% increase in the demand for milk for every 1% incremental income for African countries (FAO, 1978). Third, prices for dairy products are believed to have been suppressed in many African countries. This would lead to a stagnating or even declining production whereby, with a growing demand, imports are sucked in. But no quantitative evidence is readily available to prove this point. There is also a circular effect with regard to milk prices: rising imports will further depress domestic price levels and thus create the demand for even more imports. Fourth, a high degree of urbanisation can also contribute to rising dairy imports. People may move to urban centres but the infrastructure in most countries is not sufficient to let the milk from rural areas reach them there. However, as convincing as it sounds theoretically, the effect of urbanisation on increased dairy imports has not yet been proved in a statistically significant manner.

10. We have identified population and income growth, consumer prices and the effects of urbanisation as possible factors influencing dairy imports from the demand side. On the supply side, prices are also an important factor. Others are production technology and the marketing infrastructure, but their effects are difficult to quantify. All these factors have an indirect influence on dairy imports in that they change the levels of domestic supply and demand whereby the gap to be filled by imports is determined. There are also direct factors to influence dairy imports. These are government policies, which will be discussed later on, and the direct effects of prices on imports. The decisive term in this respect is the ratio between domestic prices for milk and those on the international markets. Increased imports of dairy products may merely reflect the fact that these can be bought abroad at a cheaper price than that at which domestic producers can supply them. This price difference is in fact the basic mechanism to stimulate external trade. The argument of comparative advantage that lies behind it is a very important one. A country's overall welfare actually declines if it wants to substitute its dairy imports by a domestic milk supply which is produced at economic costs higher than the import price. The EEC itself as supplier of most African dairy imports is the best example for this. EEC consumers and taxpayers bear a large economic and financial burden - much bigger than the EEC's producers' benefits - due to the policy of stimulating milk production at costs way above those in countries like New Zealand which are much better suited for milk production than the EEC. African consumers are among the beneficiaries of this policy which includes paying high subsidies on dairy exports and thus lowering international prices for dairy products. (For some more information on this subject see Koester and Bale, 1984).

Some possible effects

11. We expect consumers to be the main beneficiaries of the greater availability of dairy products through imports. As has been indicated above, these consumers will mainly be located in urban centres. The increase in their economic welfare can be due both to a higher level of consumption and to prices lower than in a situation without the imports. Producers, on the other hand, can be expected to be negatively affected if imports increase and prices decline. Such effects, however, depend on the marketing systems both for locally produced milk and imported dairy products. Two effects can be distinguished: prices for dairy products are depressed by imports only in the main consumption area, which is normally the capital. That is, only those milk producers are negatively affected by imports who supply this area. Depending on the marketing system for local milk these are mainly the urban and peri-urban producers rather than those in the more distant locations. The second effect stems from the distribution of imports not only in the major urban centres but also in outlying areas. Producers in these areas may then be negatively affected by a downward pressure on prices. In many African countries such internal trade links for milk and/or dairy products are virtually non-existent once one leaves the urban areas. Increased dairy imports thus seem likely only to affect producers in urban and peri-urban areas but they will hardly affect producers in the more distant rural areas. It does depend on the infrastructure, though. If we compare, for example, Nigeria and Ethiopia we will find that imported dairy products are sold almost everywhere in Nigeria, simply because the road system is well developed. That means that consumers in rural areas also benefit from dairy imports but at the same time the imports are likely to have negative effects on producers throughout the country. In Ethiopia such an effect can hardly be expected since road conditions and transport facilities are poor.

12. The effects on consumers and producers of milk are most important but again we can hardly quantify such effects at this stage. Another implication of increased dairy imports concerns the marketing system. Many countries have set up relatively large dairy marketing agencies, often with an import-export monopoly, to handle milk and dairy products. In many African countries such parastatal agencies are competing with the informal sector, i.e. petty traders who may often have a major share in the market. In any case it needs to be established whether the large and expensive marketing bodies really serve better the producers and consumers of milk - as many governments obviously believe - than petty traders or even direct producer-consumer links (see Mbogoh, 1984). But the point to be made here is that large amounts of dairy imports will shift the market pattern in favour of the large importing agencies by giving them a greater share in the market. This can particularly be the case when such agencies sell liquid milk which is reconstituted from imported ingredients and thus directly compete with locally produced fresh milk.

13. Let us summarise what has been said so far about causes and effects of increased dairy imports. We have identified several factors which can influence the development of dairy imports. Population and income growth have stimulated dairy imports; so has, in many cases, a depressed level of domestic prices. International prices and their ratio to domestic prices have contributed to the latter. The consumers in African countries, above all those in the cities, are apt to benefit from this situation. Among the producers of milk, those in the urban and peri-urban areas are the most likely to lose. Marketing patterns for milk and dairy products may have shifted in favour of large state trading agencies with imported dairy products getting an increased share in the domestic market. We have left out so far the influence of national policies on dairy imports. Before moving to this important issue, though, we need to remember

what has been said earlier about the reasons for concern about increased dairy imports. Governments can, through their policies, exert a certain influence on the level of dairy imports. But they must assess beforehand if there really are special reasons to interfere with them. The principle of comparative advantage must still be regarded as the one decisive criterion for decision with any reason for concern only amending its calculation.

What governments can do

14. Government policies can support or level out the influence of most of the factors mentioned above. That is, governments can stimulate dairy imports as well as reduce them either directly or indirectly by influencing those factors which cause the gap between domestic supply and demand to change. The governments' activities, whatever they may be, depend on what objectives governments want to achieve. For the analysis of already existing, or even past policies, one can simply look at the instruments applied - like import taxes, consumer price control or a trade monopoly - and can then try and assess their effectiveness in the light of the inherent objectives. For example, had government price control assured that consumers do not have to pay more than the envisaged price for their milk? Or do consumers have to resort to a higher-priced "black market" in order to satisfy their demand? In designing a new policy, however, a government first of all needs to clarify its objectives. We discuss below some of the most common objectives of dairy (import) policy and some of the instruments applied.

15. In most cases a major objective behind dairy import policy is to achieve a certain consumption target. In a situation of insufficient domestic supply governments need to resort to dairy imports to achieve such an objective. By means of using different instruments they can specify the consumption target to be directed at specific population groups or income classes. The general consumption target can be achieved by reducing existing import tariffs, paying import subsidies and using food aid. A general policy of exchange rate overvaluation will also stimulate imports. A government will have to design more specific instruments if it wants to reach specific target groups within the population. Such specific subsidies, food stamps or special shops are not only needed to ensure that the target group really benefits, but they can also avoid major economic losses since general instruments to benefit milk consumers will always enrich many of those who can do without such subsidies. Dairy products in particular are likely to be consumed mainly by earners of higher income.

16. Moving to the production side, there are three main objectives which are all closely related to each other. First, governments want to protect domestic milk production against external competition. Second, dairy production can be part of the broader objective of self-sufficiency in food. The third objective, to develop the domestic dairy sector, can also be interpreted as an instrument to reach the objective of self-sufficiency. These objectives are linked by way of the effects of their respective instruments. Protection can be achieved by limiting imports, either directly through quantitative restrictions like import quotas, or indirectly through measures like an import tax which increases the import price. The effects are higher domestic prices in either case, which consequently can be expected to result in increased domestic production. The same instruments can be used to reach self-sufficiency and the eventual consequence of dairy development occurs in both cases. The term self-sufficiency, however, requires some explanation. A country may simply close its borders and thus by definition become self-sufficient: domestic consumption equals domestic production. But the question is at what level of consumption per caput is this to be achieved. The (public) announcement of self-sufficiency as a government objective must therefore always be accompanied by a target figure of per caput consumption. Otherwise this objective is not operational. As a consequence, production targets should also be defined. It is by specifying such objectives that a certain rate of protection or other measures to develop domestic milk production can be justified.

17. Another objective which often appears to direct government activity implicitly or explicitly is

to generate funds for the national budget. The argument behind it is that consumers of dairy products, if they are generally the better-off ones anyway, can be taxed on their import consumption. It must be mentioned, though, that this objective is not compatible with the consumption target objective discussed above. Especially if the government pursues the objective of providing vulnerable groups with a sufficient level of dairy consumption they will have to be exempted from such import taxes and this may entail administrative problems. Let us elaborate a bit more on this subject of compatibility between consumption targets and the fund generation objective. We will base this on the current development of the international market for dairy products and on some country experience. International prices for dairy products are currently depressed and they are likely to remain so for the foreseeable future (see FAO, 1984). On the other hand, every interference with trade and prices imposes costs on the national budget, be they for administration, controlling or subsidising a retailing company or the like. At present it is most likely that free trade can achieve a relatively cheap supply of imported dairy products to consumers without costly government interference being necessary. To give an example, our preliminary results on dairy import policy in Mali suggest that the relatively complex system of import taxes, import monopoly, retail price fixing and the use of food aid for reconstitution is in the end fairly neutral in its effect on consumers' welfare. In other words, the consumers' situation would be about the same if the government were to simply sit back and allow free trade in dairy products.

18. The previous discussion of the compatibility between consumption targets and the fund generation objective leads us to a most important general feature regarding government objectives. It may not even be so obvious at first sight, but a great number of governments subscribe to conflicting objectives at one and the same time. In terms of dairy policy this may appear as follows: "The government will secure supply of milk products to all consumers at prices they can afford." And two pages later: "To reach self-sufficiency in all basic foodstuffs is the government's highest priority. Our target for milk is a domestic production of x tons per year in 1987, that is an annual increase of 2.5% on average from now on." These statements reflect conflicting objectives since they imply relatively low - for the sake of consumers - and relatively high prices to stimulate production at the same time. It is not impossible to design policies which take equal account of these two basic objectives, since in the long run they can be made compatible if a highly efficient domestic dairy sector can provide consumers with a cheap supply. But in the short run there is a conflict. And as such, any success in achieving one objective, say to benefit consumers, is likely to be at the cost of not achieving the other, i.e. provide for remunerative producer prices. We must be aware of the inherent danger of such tradeoffs between policy objectives before implementing respective instruments. Otherwise at least one of them is sure to fail.

19. What are the implications of this for the government policies in the dairy sector at the national level? It is clear from the above that it will not be possible to achieve all objectives at the same time. Second, not all policies are likely to show effects in the short run. Table 1 identifies the time dimension and areas of policy actions which can influence dairy imports and the causal factors and/or their related effects. Let us discuss some of the items in-Table 1. Population and income growth as well as urbanisation on the demand side need long-term policies to influence them, and these are general policies rather than policies specific to the dairy sector. All factors on the supply side can be influenced by dairy sector policies, but they are unlikely to be changed in the short run. The only immediate effect may be a change in the ratio between sales and home consumption of milk due to changing price ratios between milk and other products. Any real increase in production of milk, however, will need a long-term pricing policy. Changes in consumer prices and any direct interference with dairy imports - i.e. import tariffs etc. and the request for food aid - can influence their level in the short run. Other policies likely to show similar effects are mainly exchange rate fixing, foreign exchange control and the like. With regard to the marketing of milk and dairy products there are policies, such as the withdrawal of a trade monopoly, which can have immediate effect on dairy imports. But

the majority of policy actions are likely to influence the marketing system in the long run rather than in the short run. Two long-term effects of dairy policy in Table 1 deserve special attention. These are income growth and the use of food aid. They are discussed in more detail later. In conclusion it appears that a government wishing to influence dairy imports in the immediate future can either try and change consumer prices for milk on the domestic market, or interfere directly with external trade.

Table 1: Factors influencing dairy imports and the scope for government policies to affect them.

	Effects of policies are likely to come out			
	in the short run		in the long run	
Policies to influence	Dairy	Other ¹	Dairy	Other ¹
-factors on the demand side	policy	policies	policy	policies
• Population growth	-	-	-	x
• Income growth	-	-	x	x
• Domestic prices	x	x	-	-
• Urbanisation	-	-	-	x
-factors on the supply side				
• Production Technology	-	-	x	-
• Marketing	(x) ²	-	x	-
• Domestic prices	(x) ²	x	x	x
- imports directly				
• Import tariff, quota, subsidy etc.	x	x	-	-
• Use of food aid	x	-	x	-

1 "Other Policies" are both general policies such as exchange rate fixing and special policies in other sectors such as subsidy for beef production. The "short run" covers anything less than 1 year, or any period shorter than what is normally needed for investments in dairy production to show effect.

2 (x) denotes that policies influencing these two factors (marketing and domestic prices) are likely to have only limited and partial effect in the short run.

20. There is some evidence that national policies have actually influenced dairy imports into sub-Saharan Africa in the past decade. We do not have sufficient information for all countries to be able to calculate the exact effects of different national policies. But we can use a proxy to estimate the latter: i.e. isolate and calculate the effects of those factors on dairy imports which we can quantify, and assume that the residual effect unaccounted for in the actual growth figure (positive or negative) is due to the influence of government policies - the "policy factor". The term policy in this context necessarily includes all policy activities, those in the dairy sector as well as any other policy influencing dairy imports.

21. Apart from the change in commercial dairy imports which need to be known, the other relevant sets of data required to make such calculations are the changes in

- (i) population;
- (ii) income-induced demand for milk; and
- (iii) domestic production.

The changes in dairy imports which are brought about by population and income growth can be hypothetically quantified (see para. 9 above), while the change in domestic production can be actually calculated from available data. On this basis we can calculate the imports which

could be expected to take place as a consequence of the shortfall between domestic production and income - and population-induced demand, and compare these with the imports which actually took place; the difference is attributable to the "policy factor". This calculation has been done for 29 African countries with complete sets of the relevant data (see von Massow, 1984 p. 23 ff and Appendix 12). The effect of the policy factor is either negative or positive, meaning that influences other than changes in population, income and domestic production have respectively stimulated or curbed dairy imports. In more than half of the 29 countries, among which many are major importers, the effect of the policy factor is positive. Our assumption is that national policies are the main factors to have stimulated dairy imports in these countries. Thus, if governments through their policies have stimulated dairy imports in the past, they may equally be able to reduce them now that there is considerable concern about their extent.

22. As long as African countries have to continue importing dairy products to satisfy their domestic demand, two major alternatives are available to them. They can import commercially at prices which presently are favourable and/or they can request dairy food aid. Most commonly dairy food aid is obtained either as part of a special project, like the World Food Programme's "food for work" projects or as direct supplies of milk powder and butteroil for reconstitution into liquid milk. In the case of reconstituted milk it is important to decide at what price this milk is sold since the imports themselves are free of charge and only distribution and processing costs have to be covered. Commercial dairy imports must be bought at prevailing international prices but national governments can further influence the effective domestic price by way of import tariffs or subsidies. The effects of cheap commercial imports and food aid can be quite different and any analysis of these effects would have to be done on the country level. For a start, it may be very useful if some readers of this article would, through ALPAN, contribute their own experience with dairy import-related policies and thus give further examples of what are the possible effects. Decision makers in other countries may gain from these experiences and, either apply more caution to policy instruments which have already failed elsewhere or give more careful attention to those policies which appear to have been successful in other countries.

23. Sub-Saharan Africa will depend on dairy imports for some time to come, be they commercial or in the form of food aid or both. In the long run, however, the development of domestic dairy production can help achieve self-sufficiency in milk and render protection superfluous. An efficient dairy sector will provide income to producers and contribute to overall economic development. How can that be achieved and what role does policy have to play in that process? The experience - often of failure of dairy development projects has shown that a fairly complex package approach is required for success. The key instruments are input provision, marketing policy and price and import policy. Any one of these components must be considered a necessary but not a sufficient condition for dairy development. To take an example, probably the world's most successful dairy development project, the Indian "Operation Flood", strongly emphasises the importance of all the three policy components, and so does the Kenyan smallholder dairy development policy. On the other hand, the number of unsuccessful efforts to develop dairy production in Africa and elsewhere reflect the fact that one or two of these components have not been pursued with the attention required.

24. The following concepts and their policy implications must be observed: first, milk production at a level higher than the traditional production is input intensive. The major inputs to be provided mutually condition each other. Genetic improvement, feed supplementation and animal health must simultaneously be improved and national policy has to come in on each one of these at different stages. Such policies are discussed at greater length elsewhere (see Anteneh, 1984a; Leonard, 1984 and Tyler, 1984). But the decision-maker who is concerned with dairy development at the national level must be aware of these three basic inputs and related policies. Second, milk is a perishable product and is highly exposed to the quality

judgement of its consumers. This characteristic demands an efficient marketing system (see Mbogoh, 1984). A government's optimal function with regard to dairy marketing is likely to be only that of providing the economic and legislative environment for market structures to develop. On the other hand, there are economies of scale in dairy processing, which means that the economically optimal size of marketing and processing facilities may be larger than the initial possible flow of domestically produced milk supplied at the beginning of a dairy development project. The government may have to interfere with temporary subsidies for collection and processing of local milk until production and supply get off the ground. Third, the argument of comparative advantage must rule all activities in the long run. But the high initial investments necessary for milk production may call for temporary price support too. Quality controls and premiums on quality and quantity delivered can have further stimulating effects on supply. All these policies, however, must be coordinated in order to avoid contradictory incentives.

25. Let us summarise. Milk production depends on a number of inputs and on the economic and technical environment which governments can influence with their policies. The need, in many countries, to make available cheap consumer products, and remunerative producer prices at the same time, involves a conflict in policy objectives and a number of related problems. It is difficult to avoid the price depressing effects of dairy imports, be they commercial or in the form of food aid. In addition, there are problems specific to the dairy sector which are related to the character of milk and to the fact that market outlets and processing facilities must already be available for milk production to expand. The quantities channelled through these market outlets will, however, take some time to increase. Thus marketing and processing facilities are likely to be initially underutilized. A government will not solve any one of these problems by simply importing cheap dairy products commercially, and will not be able to simultaneously increase its domestic production unless it is ready to pay large subsidies to producers. There is, however, an opportunity to overcome or alleviate at least some of the problems by including the use of dairy food aid into an overall dairy development strategy. The following section briefly discusses these prospects. The very details of such a strategy, of course, have to be specified for each individual country.

Prospects of dairy food aid as an instrument for national dairy development

26. Food aid deliveries, mainly from the EEC, made up almost one quarter of the total sub-Saharan African dairy imports in 1982, and that is where the prospects lie. The value of this food aid at commercial prices is quite substantial and amounts to \$771 million. What then is the prospect of using food aid deliveries in expanding domestic dairy production? The concept is simple. Food aid deliveries obtained free (except for processing and distribution costs) are sold at commercial prices and the revenues thus generated are spent to support domestic dairy development. But why use dairy food aid, why not get direct financial aid for dairy development from the EEC? First of all, the EEC wants to get rid of its surplus stocks of dairy products. Second, and more important, the aid-in-kind overcomes one of the problems we mentioned above - that is, the initial underutilisation of capacities before domestic milk production begins to grow. Thus processing capacities and retail systems can be fully utilised until such time that the increasing local supply can replace food aid imports. Thus within the concept of dairy food aid for dairy development we now come back to the three basic instruments of dairy food aid for dairy development policy: the sales revenues of food aid are used for input provision, and if needed, for temporary price support. The processing and sale of imported raw materials supports the marketing structures and makes possible the use of their full capacities.

27. The optimal price level for selling reconstituted milk based on food aid deliveries will differ from country to country, but it is possible to suggest a common approach to such price determination. If we take the respective shares of skim milk powder (roughly 0.10 kg) and butteroil (0.035 kg) in 1 litre of liquid milk and multiply them by their border prices in commercial terms, we arrive at a "border price equivalent" for liquid milk. If we add the transport costs from the border to the area of consumption and the costs of reconstituting and processing, we arrive at the economically appropriate sales price. This price also indicates if domestic producers have a comparative advantage in milk production. In theory, domestic producers have a comparative advantage if production costs, net of all subsidies and taxes, are equal to or lower than the derived sales price for commercial imports. In practice it has been observed, however, that locally produced fresh milk can claim a substantial quality premium over reconstituted milk. As a consequence, the derived sales price for reconstituted milk has to be adjusted for this consumer preference in order for it to be taken as an indicator of comparative advantage. Let us give an example. The border price equivalent for 1 litre of reconstituted liquid milk is say 0.20 units of local currency (LC) and transport and processing costs amount to 0.15 LC per litre. The appropriate sales price then is 0.35 LC per litre. At a quality premium of 50% (as observed in Bamako, Mali, for example) the country can invest in dairy development without incurring overall economic losses as long as the costs of producing milk locally do not exceed 0.52 LC per litre (0.35 LC + 50%).

Conclusion

28. The problems and prospects of dairy imports and dairy development are closely related to each other. This article has outlined the problems and has provided some background to the question of which factors may have caused the tremendous growth of dairy imports into sub-Saharan Africa over the last decade. It is maintained that national governments have had a certain influence on this development. Furthermore, their role becomes absolutely crucial if the present trend of declining self-sufficiency, or consumption levels of dairy products, is to be halted or perhaps even reversed. Government policies have to be concerned with several issues. They have to balance input provision, marketing structures and price and import levels if domestic dairy production is to be stimulated. With regard to dairy imports they have the choice between cheap commercial imports and the use of dairy food aid. Quite obviously, the easier way is to import commercially where the government can even raise some tax revenues for the national budget. But by no means will such a policy help stimulate domestic milk production. It is even more likely to suppress local supply and thereby create the demand for ever more dairy imports. The use of dairy food aid can provide the financial means to support a balanced strategy in order to overcome the gap between domestic production and demand in the long run. The actual flow of reconstituted milk may also cover the initial difference between the quantities supplied locally and the economically viable processing capacities. There is, however, the danger of governments subsidising only consumption and neglecting the development aspect. As long as there is an economic advantage in producing milk domestically, governments should aim to balance their support to consumers and producers, since the main feature of dairy food aid is that it can alleviate the inherent conflict between consumer-oriented and producer-oriented policies if it is used within a sensible set of policy instruments.

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