Issues in Agricultural Marketing and Transport Due to Government Intervention

Henri L. Beenhakker

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ISSUES IN AGRICULTURAL MARKETING AND TRANSPORT
DUE TO GOVERNMENT INTERVENTION

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ABSTRACT

This paper analyses the effects of various economic policies on the transport and agricultural sectors. It also examines the effects of government interventions in one of these sectors on the performance of the other. In particular, the principal issues discussed concern the impact on the performance of agriculture and transport as a result of government policies with respect to the exchange rate, the foreign exchange regime, prices, subsidies, marketing systems, and ease of entry into the trucking industry.
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ABBREVIATIONS

CHL  Contract Haulage Limited (Zambia)
CPPGS  Caisse de Péréquation des Prix des Produits de Grande Consommation (Ivory Coast)
NAMBOARD  National Agricultural Marketing Board (Zambia)
NMC  National Milling Corporation (Tanzania)
RETCO  Regional Transport Corporation (Tanzania)
SAC  Stand-alone cost
TAZARA  Tanzania-Zambia Railway Authority

CURRENCIES

CFAF  Communauté Financière Africaine (African Franc)
Tsh  Tanzanian Shilling
ZK  Zambian Kwacha
N  Nigerian Naira
SUMMARY

i. The effects of government intervention in the transport or agricultural sectors are becoming more widely understood, but the effects of the macro economic framework on the two sectors and of interventions in one sector on another are less well understood. This paper highlights these less well understood effects by analyses of the marketing systems for principal agricultural products in the Ivory Coast, Tanzania, Tunisia, and Zambia and by a literature survey. Interventionist policies have given rise to distortions in a country's economy resulting in slow economic growth. Sources of distortions affecting agricultural marketing and transport covered in this text comprise overvalued exchange rates, subsidies, administrated prices, and entry and capacity controls. Parastatal organizations such as marketing boards, crop authorities and trucking companies, which are another form of government intervention, are, where appropriate, examined within these categories. Different interventions are reviewed separately in the report to highlight their specific effects, although in practice they generally work in combination and often reinforce each other in the same direction. This paper is primarily intended for decision makers and planners in ministries of finance, planning, agriculture, and transportation of developing countries.

ii. Instead of reliance on the above interventionist measures, economic theory and the available evidence indicate that marketing and transport can be made more efficient by relying on markets to determine supply, demand, and prices. The rationale for this contention is that marketing agents and road haulers operate primarily in contestable markets. The core of contestability theory is that contestable markets yield efficient production and prices that preclude excess profits in the long run. The main requirement for a market to be contestable is that entry into and exit from it is unimpeded. There is, therefore, no need for an industry to be made up of a large number of firms as is required for a market to be perfectly competitive.

iii. While contestable markets are widespread throughout agricultural marketing and transport, at least potentially, there are also markets which do not have this feature due to significant economic entry barriers. Considerable sunk costs are the most important constraint on unimpeded entry and exit. They are high for railways and processing mills characterized by economies of scale. When an industry is characterized by both sunk costs and scale economies, one producer can obtain the position of a natural monopolist, in which case there may be a need for price regulation in order to prevent too high monopoly prices. To determine the administered price, the concept of a stand-alone cost (SAC) is useful. SAC is used to compute the price a competitor in the market-place would need to charge in serving a captive operator or group of operators who benefit from sharing joint and common costs.

iv. One implication of contestability theory for marketing and transport is that government policies and interventions are most effective if directed towards enhancing competitive conditions. Such policies and interventions aim to make entry into markets easy by reducing entry
barriers and making the market more transparent, or ensuring that information about market prices are easily available. Another example of warranted government intervention is therefore the conveying of information about market prices via radio, newspapers and posters at market places. In transport, competition can be enhanced by promoting the availability of a wide range of transport options, including transport by bike or cart. If such simple transport aids are available in rural areas, the small farmers could limit their exposure to high trucking costs as they would be able to bring the produce themselves to market places where competition is strong. Another approach would be the promotion of brokerage activities. In addition to catalytic measures such as the conveying of relevant information and promotion, governments are sometimes well advised to create the appropriate legal and/or policy framework. For instance, in the Ivory Coast the establishment of brokerage activities requires a change in the legal framework to allow private individuals to partake in these activities. In other countries, the exemption of import duties for road construction equipment and/or motorised transport vehicles promote a capital intensive transport industry while a labor intensive transport industry consisting of simple transport aids and trails and tracks may be a more economical solution. Another example of creating an appropriate policy framework is the provision of credit to procure simple transport aids. In short, Government intervention is warranted if it acts as a stimulus in an environment where the private sector lacks knowledge and/or interest, and if it creates an appropriate legal or policy framework.

One widespread form of government interventionist policies has been overvalued exchange rates, which undermine exports, harm agricultural production, stimulate imports, breed protection against imports, discourage maintenance of trucking fleets, and promote rent-seeking economies. As a result they often precipitate a debt crisis. To believe that overvalued exchange rates curb inflation is a misconception and disregards the existence of black markets. Currency reform to reduce or eliminate overvaluation can be expected to affect the pattern of agricultural production substantially and, consequently, the composition and direction of transport flows or quantities transported. When major currency adjustments are being considered or implemented it follows that proposed transport investments can no longer be justified on the basis of traffic forecasts based on analysis of past and current transport flows.

Overvalued currencies often result in excess import demand, requiring foreign exchange to be rationed quantitatively. To prevent import agents from making excessive profits, foreign exchange quotas are normally accompanied by price controls. However, the low official prices on imported goods give rise to black markets and a dual pricing structure, whereby some imports are sold at the officially controlled prices and some at unofficial prices. Overvalued currencies combined with quantitative allocations of imports have multiple effects on the costs of transport and marketing since resources are allocated to less efficient truckers, transport becomes too capital intensive, unbalanced allocations are made between different types of inputs, and a shortage of trucking capacity may arise when rates do not cover the inputs purchased at unofficial prices. These misallocations tend to increase the cost of transport, in general and for agriculture in particular, or may cause transport shortages affecting
outputs and inputs. It could be argued that it would be more efficient to use import duties to ration foreign exchange rather than a system of quantitative allocations. The danger of imposing import duties is, however, that it is likely to result in an absence of neutral incentives across and within sectors. Since import duties would have to be used for all imported goods, it would be better to devalue an overvalued currency, because this would be less cumbersome and costly in terms of administration and would make exports more competitive in the world market as well as optimize the country's comparative advantages in world trade.

vii. Subsidies are another widespread form of government intervention. They often result in inefficient marketing and transport operations due to vague public accountability, poor financial management, and lack of incentives to be efficient since compensating resources are provided for loss making activities. It is not clear how subsidies intended to lower consumer prices of food crops affect the demand for transport since the subsidies are largely absorbed by the fact that: (i) producer prices will probably have been raised to increase supply to meet the higher demand for food crops; (ii) subsidies may have been channelled through inefficient marketing boards; and (iii) subsidies may have been provided through an administered pricing system, which increases marketing costs. Subsidies to road transport have stimulated the use of large vehicles as well as early replacement and have made the cost of transport of agricultural products more costly from an economic point of view. Subsidies to parastatal trucking operations have masked the inefficiency of these operations and have pushed more efficient private operators out of the market.

viii. While price regulation may be required in markets with a natural monopoly, these markets are the exception. Administrated prices in agricultural marketing of food crops and export and import crops are normally pan-territorial and pan-temporal. Pan-territorial prices have shifted the pattern of production and consumption and have led to an increased demand for transport. They have also hindered transport investments from having a development impact, because reduced vehicle operating costs from road improvements have not influenced agricultural prices. Pan-temporal prices have resulted in a peaked marketing season and have forced parastatal marketing boards to assume the sole responsibility for storage. Transport costs have been inflated due to the need for a greater total capacity to meet the highly peaked demand and resulting low load factors. Fixed transport rates have had a detrimental effect on agricultural development, as they are too rigid to account for the considerable variability in operating costs on different roads, particularly in rural areas. Most damaging have been too low rates for short-distance transports in remote areas, which have deterred private operators, causing delays in delivery and losses of fertilizers and agricultural products.

ix. Advocates of administrated prices base their argument on considerations of income distribution and the desirability of reducing uncertainties from fluctuating prices. Although a system whereby prices are established by market forces is preferable to avoid the distortions indicated above, a government may establish a parastatal marketing board as a buyer and seller of last resort with set floor and ceiling prices if it is concerned about fluctuating agricultural prices. The marketing board
essentially plays the same role as a central bank in a system of exchange rates which are fixed within given bounds. Similarly, the use of transport rate-brackets is preferable to the use of fixed, minimum or maximum transport rates, provided that brackets reflect distance covered, road conditions and nature of goods transported, which is a rather difficult task for any government to carry out.

x. Entry controls are used to screen private operators who want to enter a market while capacity controls aim at controlling the supply of each operator and thus total supply. These controls have worked to protect inefficient millers, marketing agents and transport operators, and to reduce their incentives to adopt innovative approaches. These inefficiencies lead to higher costs, both in agriculture and transport. In the transport industry, entry restrictions may be qualitative or quantitative in nature. Qualitative restrictions consisting of moral qualifications such as the absence of a criminal record, and/or financial qualifications such as adequate involvement of the carrier's own capital, are not recommended. The case for some types of professional qualifications can be argued since there may be a need for an adequate track record in road safety and for some ability to maintain books and prepare financial statements for tax purposes. Quantitative entry restrictions assign operating rights for specific routes, regions, commodity classes, etc. They prevent: (i) efficient, complementary operation on routes or in regions for which a firm's or individual's license is not valid; (ii) capacity utilization on the backhaul for commodities other than those for which the carrier is licensed; (iii) temporary excess capacity in one sub-market from being utilized in other sub-markets or shortages in some sub-markets by less than efficient use of the existing fleet; and (iv) a balanced composition of the trucking fleet.

xi. Capacity restrictions in the transport industry are either individual/firm-oriented or market-oriented. Under the former individuals or firms have to obtain a permit to procure a vehicle. Market-oriented licensing systems are designed to control the expansion of total capacity, either in the entire road transport industry or in separate markets. Although an individual/firm-oriented restriction is preferred to market-oriented and quantitative entry restrictions, its use is not recommended since government authorities are normally not in a better position to judge a firm's future prospects than the carrier itself.

xii. Finally, caution has to be exercised when major policy reforms are being evaluated or implemented to eliminate major distortions in the economy, and in agriculture and transport, in particular. Such reforms accentuate the need for paying increased attention to their implications for future marketing and transport systems and their required capacities. There is a need to take a broad view when identifying suitable solutions, since policy reforms are likely to result in less use of large-scale operations and may produce significant changes in the pattern of production and consumption as well as in transport flows and composition of the means of transport. Past and present observations of performance are, therefore, poor indicators of potential future performance. This broader view requires a close cooperation between agricultural and transport economists.
I. INTRODUCTION

1.01 Agricultural marketing policies which work as retardants to agricultural development and economic growth have received increasing attention during the past decade (ref. 6). This attention has focused on the impact of pricing policies and parastatal marketing boards on agricultural production and consumption, the balance of trade, and economic growth. Less attention has, however, been paid to the effects of macroeconomic interventions on agriculture and transport and even less on the effect of policies in the transport sector on the marketing of agricultural products. There is also a need for sharpening the focus on transport as an element of marketing agricultural products at a time when many countries are changing, or reexamining, the merits of their policies in agriculture as part of reforms and structural adjustment processes. New agricultural and other related policies may have a significant impact on transport requirements and the development of future transport capacity. Therefore, new policies to improve agricultural performance also call for identifying changes required in the transport sector to improve its performance in order to facilitate the marketing of agricultural products.

1.02 The principal reason why the effects of interventions in one sector on another, or the effects of the macroeconomic framework on the two sectors are not discussed as much is that decision makers and professionals tend to concentrate on their specific area of competence. For example, the macro-economist may concentrate on overall macroeconomic variables and much less on the detailed effects on the individual sectors. Similarly, the agricultural expert may know the extent and effects of government interventions in agriculture, but much less their effects on transport and, vice-versa, a transport economist may know the effects of government regulations in transport but less well their effects on agriculture. The text intends to document that interrelations between the macroeconomic setting and the two sectors as well as between the two sectors are quite intensive. It is, therefore, desirable to prepare policy reforms and structural adjustment processes with due regard to the effects of macroeconomic measures on specific economic sectors as well as the effects of reforms in one sector on the other. The paper highlights the interrelationship of government interventions at the macro and sector levels by an analysis of the experience in the Ivory Coast, Tanzania, Tunisia, and Zambia, and a literature survey. The issues are, however, widespread throughout Africa as well as in other parts of the world. The paper is primarily intended for decision-makers and planners in aid agencies and developing countries, particularly in ministries of finance, planning, agriculture and transport.

1.03 The relationship between agriculture and transport stems from the fact that a major part of the demand for transport derives from the demand for agricultural products and that agriculture in many developing countries is the mainstay of the economy. In African countries, agriculture generates about 35 percent of the gross domestic product and employs about 70 percent of the labor force (ref. 63). Furthermore, transport costs make up a substantial part of marketing costs and marketing costs make up a substantial proportion of final consumer prices. Marketing margins --
excluding processing and milling — vary between 25 and 60 percent of the final prices for agricultural products in several developing countries. About half of the marketing margin is accounted for by transport costs, which means that about 10 to 30 percent of the final price of agricultural products reflects the cost of transport (ref. 1, 17, 18, 19, 33, 55). The importance of the relationship between the two sectors is also brought out by the fact that, in general, up to about half of the traffic in ports, on railways and on roads in developing countries in Africa is generated by the agricultural sector.

1.04 Marketing comprises a number of activities to bring a product from the producer to the final consumer, i.e., (i) provision of information; (ii) establishing prices; (iii) selling and buying; (iv) processing; (v) grading; (vi) storing and, (vii) transport. The transport of agricultural products normally covers loading and unloading and the movement of crops from farms to collection centers, where the produce may be bought by a wholesaler, and subsequent movements to ports for export, processing plants in villages and cities, retailers, or final consumers.

1.05 Many policies affecting the marketing of agricultural products can be described as interventionist, i.e., they aim at directly affecting economic variables, such as prices, production and consumption. Many of these policies, both in agriculture and in transport, date back to the time of the Great Depression in the early 30s and the Second World War when, for example, agricultural marketing boards and road transport regulations were introduced by the colonial powers. Subsequent to independence, in the 60s, many of the new nations took over these policies and extended them according to a development philosophy emphasizing the role of government and planning rather than a marketing system with free prices and incentives as vehicles for economic growth (ref. 11, 42, 52).

1.06 From an economic efficiency point of view, interventionist policies have proved to result in major deficiencies, given rise to distortions in the economy resulting in slow economic growth. Sources of distortions affecting agricultural marketing and transport covered in this paper comprise: (i) overvalued exchange rates; (ii) subsidies; (iii) administered prices, i.e., prices or rates fixed by the government; and (iv) entry and capacity controls. This list is not exhaustive since other issues such as the provision of credit are not examined. This paper only deals with road transport since it plays a much more significant role than railways in the transport of agricultural products.

1.07 It is noted, however, that distortions in agricultural marketing do not only derive from various policies pursued by government, but may also be caused by the actions of certain interest groups. For instance, in the Ivory Coast and the Yemen Arab Republic there is collusion among truck operators in order to ration excess capacity.

1.08 The ultimate focus of this paper is the demand for and the supply of transport services. It identifies and illustrates the effects of distortions on these two quantities. A supply-side effect is defined as an impact on primarily the cost of transport per ton-km. Demand-side effects cover all the effects on the demand for transport of agricultural
commodities, which are not due to lower transport costs. The review cannot always provide definite answers as to the nature of the effects since some policies affect both the demand-side and the supply-side, and several policies are inter-related and together work to affect marketing and transport in a complex way.
II. CONTESTABILITY THEORY AND ECONOMIC EFFICIENCY

2.01 Economic policies of developing countries -- heavily dependent on agriculture for employment and for earning foreign exchange -- would be expected to encourage the efficient allocation of resources in the agricultural sector. The thrust of agricultural policies would therefore aim to exploit the country's comparative advantages by promoting exports of agricultural products, for which world-market prices exceed the local cost of production, and by stimulating the production of crops for domestic consumption, which cost less than imports. International trade at world-market prices would, in other words, be expected to serve as a vehicle for economic growth. In response to competition from within the country as well as from abroad such economic policies would also be expected to permit the exploitation of economies of scale and to generate technological improvement as further spurs to economic growth.

2.02 Many studies have shown that government interventions in agriculture and transport to control demand, supply and prices have fostered inefficiencies and have had undesirable side effects (ref. 7, 30). A system whereby demand, supply and prices are determined by market forces is a better means to promote efficiency. The basis for this contention is that agricultural marketing agents and road haulers operate in contestable markets.

2.03 Contestable Markets. The core of contestability theory is that contestable markets yield efficient production and prices that preclude excess profits in the long-run. Contestability is a wider concept than competition; in fact a competitive market is one type of contestable market. The main requirement for a market to be contestable is that entry into and exit from it is not impeded, or, in practical terms is fairly easy. There is, therefore, no need for an industry to be made up of a large number of firms as is required for a market to be perfectly competitive. According to contestability theory even markets served by one, or a few firms, can be compatible with economic efficiency, provided that entry into and exit from the market is (i) possible at relatively low costs, (ii) not hampered due to limited access to capital, and (iii) not hindered by lack of information about alternative technologies. The threat of potential competitors will suffice to prevent a single, or a few firms, from exploiting a potential monopoly situation in the market. Thus, the threat of competition should stimulate cost-effective production and prices equal to, or close to, marginal costs (ref. 4, 14, 15).

2.04 Contestability theory is particularly relevant to the marketing of agricultural commodities in developing countries. The reason is that many market segments are thin in rural areas, with little room for more than one, or a few marketing agents. However, in general, entry into agricultural marketing is easy. The main factors of production, not considering processing, are labor, vehicles, and some working capital. These factors should be easy to mobilize, provided the markets for these factors operate reasonably well. Thus, given that information is available about market conditions in thin markets, potential competition should act as a spur to cost effectiveness and cost-related prices. The relevance of
contestable markets in agriculture is perhaps best illustrated by the markets for fruit and vegetables where government intervention is minimal in Africa and elsewhere. Although substantial physical losses in some countries could be reduced or avoided by governments' promotion of appropriate packing material, the marketing of these products is in general considered to function reasonably well (ref. 12, 23). The reason is often two-fold: fruits and vegetables are high value-crops and are frequently produced in the vicinity of urban areas where the market size is fairly large.

2.05 Similarly, entry into road transport can be expected to be easy, even in thin markets. In fact, Baumol and Bailey (ref. 4) claim that "with the possible exception of barge transportation, trucking should perhaps be the most contestable of the economy's industries" (p. 133). For thick markets, the contestability feature of trucking is reinforced by the fact that, with respect to firm-size it is a constant returns-to-scale industry, as shown by numerous econometric studies (ref. 5, 30, 35, 36, 38, 49). Casual observations in many countries reveal that road transport is an industry where firm size is not determinative, as small and large firms compete with each other. In fact, one reason why regulation of road transport has often been advocated so forcefully by established members of the trucking industry -- as well as by the railways -- is that competition is tough.

2.06 Deregulation and Privatization. With growing insight into the deficiencies of regulatory regimes, several countries, including the UK, the USA and Sweden, have started to deregulate road transport. The experience to date shows that there is no evidence of the negative effects which advocates of regulation normally cite. As a whole, bankruptcies have not been abnormally high and there has been no significant move towards concentration of the industry due to predatory pricing on the part of large carriers. Prices, which have tended to increase in thin markets and to decrease in thick markets, have become more closely related to costs. Deregulation seems also to have acted as a spur towards quicker technical development and lower cost or improved customer services, including the marketing of transport services (ref. 13, 16, 24, 39, 57, 58). Information on the experience of deregulation in developing countries is not available, since this is a rather recent development. There is, however, no prima facie evidence to expect the experience of developing countries to differ significantly from that of developed countries.

2.07 Another argument against regulations is that their implementation requires costly and inefficient bureaucracies, which also offer extensive opportunities for favoritism and graft. The many roadblocks for traffic inspection is the first evidence a visitor to many African countries encounters. Roadblocks are used to check compliance with various kinds of regulations, including transport and agricultural marketing regulations. They cause considerable costs in administration and also lower the productivity of road transport. The severity of this intervention can be illustrated by the situation in the Ivory Coast, in 1984, where roadblocks were encountered every 20 to 30 km on major highways. Drivers and truckowners often had to pay off the police at these blocks to reduce harassment, with bribes amounting to as much as 25 percent of total transport cost and a
consequent increase in the marketing costs of agricultural products (ref. 18).

2.08 In a major policy initiative announced in April 1986, the Government of Nigeria removed one constant source of disincentive to farmers when it decided to wind up all six Commodity Boards by December 1986. The internal and external marketing of these commodities are now open to private individuals and companies. The decision to wind up the Boards, which had enjoyed a monopoly position in the purchase and marketing of their respective cash crops, was based on the realization that, on balance, they had for some time become more of a deterrent to increased agricultural production and that their operations had also become costly and inefficient. In addition, the Government is already in the process of liquidating its parastatal national trucking company and privatizing four agricultural production parastatals. In the near future, seven additional agricultural production parastatals will be privatized or wound up. These reforms should reduce the transport and marketing costs of the commodities.

2.09 One Stage versus the Gradualist Approach. The issue of undesirable government intervention raises the question whether reforms should be introduced in one stage or according to a more gradualist route. The former approach may increase transition costs relative to the gradualist approach, and several reforms at once may be politically unacceptable in view of expected public uproar. Naturally, the second approach delays benefits expected from reform. Bale (ref. 6) suggests the following types of transitional questions to be raised in order to decide on the approach:

--- "if a gradualist approach is undertaken, should there be uniform or discriminating treatment of sub-sectors during the transition period?";

--- "if uniform, what are the choices among alternative uniform processes?"; and

--- "if non-uniform, what should be the nature of the discrimination between activities?"

Bale stresses the importance of identifying transitions that are sustainable even if this involves a reform package that is less than perfect. He suggests the following types of questions to examine sustainability: "Who are the winners and losers from the policy reform? How long does it take for the winners to feel the gains and for the losers to feel the losses? What is the role of other compensatory policies in minimizing the losses?"

2.10 Warranted Government Intervention. The above discussion may have given the reader the impression that carte blanche to mindless deregulation and privatization is advocated. However, an all-pervasive laissez-faire position on the role of regulation may not be desirable. The following paragraphs give examples of warranted government intervention.

2.11 One implication of contestability theory for marketing and road transport is that government policies are most effective if directed
towards enhancing competitive conditions. The aim of such policies would be to make entry into markets easy by reducing entry barriers and by making the market more transparent, i.e., to ensure that information about market prices and other conditions are easily available. Information about market prices can be conveyed via radio, or newspapers, or can be posted at market places. Transparency can also be improved by setting aside separate areas in towns and villages to serve as wholesale markets for agricultural products, or as places where transport brokers can operate as intermediaries. In transport, competition can be enhanced by promoting the availability of a wide range of transport options. Thus combined rail/road transports are made more competitive if railway services could be sold by independent transport brokers. Competition in transport as well as in marketing is also strengthened if simple transport aids such as bikes and hand-carts and appropriate packing materials are promoted through demonstration and, where applicable, abolishing the exemptions of import duties on motorised vehicles. Finally, other forms of warranted government intervention to facilitate entry are the provision of extension services and training, and the availability of credit. Additional examples will be given in this paper. The principal aim should be to improve the supply and quality of transport and marketing services so that they can respond flexibly to demand at minimum cost.

2.12 While contestable markets may be widespread through agricultural marketing and transport, at least potentially, there are also markets which do not have this feature, especially where there are significant economic entry and exit barriers. The most important constraint on unimpeded entry and exit is considerable sunk costs. Sunk costs arise when a factor of production is not easily transferable into another market. A road is a classical example, since its construction cost becomes sunk once it has been built. When an industry is characterized by both sunk costs and scale economies, one producer can obtain the position of a natural monopolist. An example in the transport sector pertains to railways. In marketing, processing is sometimes characterized by scale economies, which favor production by one, or a few firms with large sunk costs. For natural monopolies there is a need for price regulations in order to prevent too high monopoly prices (ref. 4, 15, 31), either in the transport or the marketing and processing of agricultural products.

2.13 To determine the administered price, the concept of stand-alone cost (SAC) is useful. SAC is used to compute the price a competitor in the marketplace would need to charge in serving a captive operator, or a group of operators, who benefit from sharing joint and common costs. For instance, a railway rate level calculated by the SAC methodology represents the theoretical maximum rate that a railroad could levy on shippers without substantial diversion of traffic to potential competing road transport services. It is, in other words, a simulated competitive price. The competing service could be a shipper providing service for himself, or a third party assumed ready to compete with the railroad for traffic. In either case, the SAC represents the minimum cost of an alternative to the service provided by the railroad.

2.14 Within the context of sunk costs as an entry barrier, it should be noted that the use of a few large mills with large sunk costs, entails
more transport than the use of many small mills and fosters capital intensive transport means. With large mills, the grain needs to be moved longer distances for milling and distribution compared to the distance to be carried with many smaller mills situated throughout the country. In addition, indications are that costs of production of large mills, with factor prices ruling in Africa, are often equal to or more than those of artisanal mills. One example is provided by rice milling in the Ivory Coast. In 1984, the unit operating cost for large commercial mills was estimated at about CFAF 40-50 per kg of white rice, while the cost of using an artisanal mill was less than half, or about CFAF 15 per kg (ref. 18). Another example is maize milling in Zambia. In 1985, the cost of milling a 90 kg sack of maize meal was about ZK 15 for commercial mills, compared with about ZK 9 to 13 for artisanal mills (ref. 19). Based on calculations of cost-effectiveness of maize milling-operations, Uhlig and Bhat (ref. 54) demonstrate that for factor prices ruling in developing countries, artisanal mills have unit operating costs as low as, or lower than large-scale mills. Besides, consumers often prefer the meal of small mills, which has a better nutritional value due to a higher protein content. Consequently, policies promoting the construction of large mills for their large scale economies should be carefully examined to determine their comparative cost advantage over small mills, if any, as well as their impact on the total transport cost of hauling the grains and distributing the processed products.

2.15 Within the context of contestable and free market economies, the normal practice would be to rely primarily on international prices as determinants of domestic prices. However, international prices of certain commodities and products may not be fully reliable for this purpose if they are temporarily subsidized or commodities are dumped in the world market by major suppliers. Government intervention on the part of developing countries in the form of, for instance, subsidized export prices for certain agricultural products would be warranted if other countries, or major suppliers, subsidize or resort to dumping practices, and thereby distort world prices of these products temporarily. However, subsidy policies of certain agricultural products may not be of a temporary nature. In this situation developing countries are well advised to use the internationally subsidized prices as determinants of domestic prices and to use their limited resources in manufacturing or agricultural activities where their comparative advantages can be exploited. International prices may also be influenced by the strength or weakness of world currencies due to, for example, sizeable movements of international capital flows into or from these currencies. In addition, sizeable swings in international capital flows may affect the exchange rate of a developing country. These factors need to be taken into account when formulating tariff and domestic price policies. Developing countries should create adequate capabilities to monitor and assess the impact of these factors and, if need be, to formulate compensatory policies.
III. OVERVALUED EXCHANGE RATES

3.01 Many developing countries have pursued, or are pursuing, policies resulting in overvalued exchange rates. A currency is overvalued when the price of foreign exchange is lower than what it would be under free-trade equilibrium. Overvaluation requires either that import duties be imposed on some or all imports, or that imports be rationed by allocating foreign exchange according to import quotas. Although both measures are often used simultaneously, developing countries have tended to rely more on quantitative restrictions. This paper primarily treats the consequences of import quotas to ration scarce foreign exchange on the performance of the agricultural and transport sectors.

3.02 The two main arguments advanced to support the maintenance of overvalued exchange rates are closely interlinked. One is the belief that the foreign demand for traditional exports of developing countries is income inelastic and that the growth in demand is sluggish. Consequently, the other argument has been that the best way of achieving economic growth would be to promote industrial development through substituting domestic manufactured goods for imported ones. Foreign exchange control regimes have thus aimed at promoting primarily the industrial sectors of developing countries. The substitution has been promoted by imposing import duties, or quantitative import restrictions, on goods to be substituted, while duties have been low or non-existent on the inputs required by the emergent industries. A further tool commonly used has been the provision of credit to these industries at relatively low or subsidized interest rates (ref. 2, 42). Another argument sometimes advanced to support the maintenance of overvalued exchange rates is that they curb inflation. There is, however, sufficient evidence that in the long-run this is not so (ref. 50).

3.03 In retrospect, protectionist policies have proved to be ineffective and their economic costs to be substantial. One reason is that an overvalued exchange rate prevents a country from exploiting its comparative advantage as determined by world market prices. More important is the absence of dynamic effects, on account of limited exposure to domestic and foreign competition. Protected industries often have monopolistic positions and operate in an environment lacking incentives to operate efficiently, to innovate, and to modernize in order to stay in tune with progress in the rest of the world. In addition, the small size of the domestic market often prevents such industries from exploiting economies of scale (ref. 8, 9, 10, 43, 65). The economic costs of these industrial policies have resulted in lower economic growth, especially of agriculture as well as other supporting sectors, including transport.

1/ Related to this is the idea that farmers are not responsive to price changes, an assumption for which there is no empirical support (ref. 3, 11, 52). In fact, there is empirical support that farmers are responsive to price changes (ref. 17, 18, 19).
3.04 Experience shows that the demand for exports of developing countries is not as inelastic as claimed (ref. 51). Several empirical studies also show that countries which have pursued export promoting policies have been more successful in achieving economic growth (ref. 2, 22, 29, 44). Yet, several developing countries are reluctant to devalue their currencies in order to reduce or eliminate overvaluation for fear that eliminating overvaluation will give rise to inflation and will undermine the financial viability of many companies. In the short-run, an adjustment of the exchange rate may well have such consequences. But in the long-run, overvaluation means that many imports and potential exports consumed locally are being provided at artificially low prices below the real cost to the country (ref. 40 and 41).

3.05 Effects on Demand for Transport. Protectionist policies harm agricultural development in developing countries. Overvalued currencies reduce the incentives to produce crops for exports as relative prices favor production for the domestic market. For instance, in Nigeria the artificially high value of the Naira prior to September, 1986, made the sale of goods with a domestic market, such as palm oil and palm kernels, extremely profitable. Early in 1986, palm oil sold for about N 900 per ton in Nigeria, but only at N 200 per ton if exported at the official exchange rate of N=US$1. Protectionist policies often also promote imports of food products through liberal foreign exchange quotas, or low or non-existent import duties. Overvalued currencies may thus result not only in a shift in production away from products earning foreign exchange, but as a whole in reduced agricultural activity, including production for domestic consumption. There are, however, time limits on the pursuit of these policies. Overvalued currencies over time tend to aggravate the foreign exchange position requiring, eventually, that imports, including food, be reduced and that domestic food production be stimulated by increasing domestic producer prices. This happened, for example, in Tanzania and Zambia as explained below.

3.06 Currency reform to reduce or eliminate overvaluation can, therefore, be expected to affect the pattern of agricultural production substantially and the consequent effects on transport can be complex. Not only will quantities, in terms of volumes and distances, be affected, but also the composition and the direction of transport flows. If the reform has its desired development impact it will also lead to a higher rate of growth in transport demand. One important implication for the planning of new transport facilities when major reforms of the foreign exchange regime are being considered or implemented, is that past and present traffic flows may be poor indicators of future demand. A much broader approach to demand forecasting is called for to take into account the expected impact of currency and other reforms on the growth and pattern of agricultural production and consumption.

3.07 One example of the effects of an overvalued exchange rate is its incidence on maize marketing in Tanzania, where the unofficial exchange rate for the shilling (TSh) varied between 5 to 10 times the official rate, during the first half of the 80s. Producer prices for maize were low, because they were set by the government on a par with import prices; maize was not subject to any import duty. This policy has hampered Tanzania's
goals to become self-sufficient in food crops and to promote the production of export crops. Whereas the country was able to export maize, its most important food crop, in the 60s, the overvalued currency later reduced producer prices to such an extent that maize was imported (ref. 37). In 1984/85 about 150,000 tons of maize grain were imported to supplement the 75,000 tons bought locally by the official marketing board, the National Milling Corporation (NMC) (ref. 17).

3.08 Valued at the official exchange rate, the per ton cost of maize grain in Tanzania, including marketing and transport cost up to the wholesale level, was in 1984/85, on average TSh 2,000 per ton lower for imported maize than for locally procured maize. The higher cost of local maize reflected the government's more recent policy to stimulate domestic production by increasing real producer prices. If the shilling had been less overvalued in 1984 and worth, say, 1/3 of the official value then, a ton of imports would have become about 1,000 TSh more expensive than local production. In that event, it would have been possible to raise the producer prices so that the local farmers' net receipts, i.e., after deduction for expenses for inputs such as fertilizers, would have increased by at least 25 percent. Such an increase may well be sufficient to encourage production to a level where imports would be reduced substantially, or eliminated altogether.

3.09 As to the transport of maize, a more balanced exchange rate in Tanzania could have resulted in:

(i) elimination of, or reduction in the unloading of maize in the ports;

(ii) an increase in domestic traffic by road and rail as well as a change of the traffic flows, as imported maize consumed near the ports in the eastern part of the country would have been replaced by local maize mainly grown in the western part of the country; and

(iii) a greater variation in traffic flows during the year since imports would have been replaced by local production sold by the farmers during a very short period of the year due to pan-temporal prices (para 5.03); however, the change would have been insignificant as imports have been arriving intermittently rather than evenly in recent years due to the shortage of foreign exchange.

3.10 Another example is Zambia, where the auctioning system introduced for foreign exchange in October 1985 caused an effective devaluation of the Zambian Kwacha from ZK 2.40 to about ZK 6.00 in relation to the US dollar. This major adjustment of the currency is expected to have far-reaching effects, inter alia on the production and consumption of wheat. Under the overvalued exchange regime, the relatively low consumer prices set by the government for wheat together with rapid urbanization led to a rapid increase in demand, estimated at about 150,000 tons for 1985. At the same time, the low producer prices provided little incentive to grow wheat locally. Local production was only of the order of 10,000 tons per year
during the early 80s. Foreign exchange shortages limited imports to 80,000 tons, leaving a balance of excess demand of about 60,000 tons in the mid-80s (ref. 19).

3.11 Following currency devaluation, the producer prices were adjusted accordingly and preliminary estimates indicate that they may provide sufficient incentive for the farmers to increase production to about 100,000 tons in 1990, although farmers' costs will have gone up since the foreign exchange component of irrigated wheat production is about 60-70 percent of total cost. At the same time, it is estimated that the higher prices for wheat may slow down the previous growth in consumption and that total demand may be reduced to about 115,000 tons in 1990. These estimates indicate that imports could decline from 80,000 tons in 1985 to about 15,000 tons in 1990 (ref. 45).

3.12 The currency devaluation will have a significant impact on the transport system. Wheat is imported by rail, either via Durban in South Africa (Zambia Railways), or via Dar es Salaam in Tanzania (TAZARA). The required carrying capacity for both railways is highly dependent on the volume of wheat imports. Although the forecast decline in wheat imports will be partly offset by additional imports of fertilizers and other supplies for locally produced wheat, significant reductions in rail and port capacity requirements are expected. For TAZARA, which had expected to need 200 additional wagons at a cost of about US$10 million to meet rising wheat imports, these wagons are probably no longer required (ref. 53). At the ports, the need for equipment to unload wheat imports will be equally reduced; in particular this may affect the Dar es Salaam port project started in 1985 (ref. 61).

3.13 Effects on Supply of Transport. Overvalued currencies and quantitative import restrictions on, for example, vehicles and spare parts may have significant repercussions on the efficiency and cost of road transport. To prevent import agents from making excessive profits, foreign exchange quotas are normally accompanied by price controls. The low official prices on imported goods give rise to black markets and a dual pricing structure whereby some imports are sold at the officially controlled prices and some at unofficial prices. As unofficial prices may be very much higher, the competitive conditions in transport become distorted.

3.14 The allocation of import quotas gives rise to other problems as well. Import quotas require the government to determine how much foreign exchange should be allocated to each sector of the economy as well as to each type of import item or category. Due to lack of reliable data in many developing countries it is virtually certain that the quota system will result in unbalanced allocations so that, for instance, far too much may be allocated to new vehicles compared to spare parts for existing trucks as was the case in Tanzania in 1985. Some quantity rationing systems are even more restrictive in that the authorities may decide in detail on, for example, which truck owner should receive what and how much. Experience shows that such detailed allocation systems all too often mean that resources are allocated to trucking operations which are not necessarily...
the most efficient ones. The effects of overvaluation on the performance of the transport industry are highlighted in the example below.

3.15 In 1985 the Tanzanian government controlled the domestic prices of vehicles and spare parts in the same way as for other goods, by regulating the margins between import, wholesale, and retail prices (ref. 56). The officially low prices have resulted in excess demand for trucks, spare parts, tires and, sometimes, fuel, forcing the government to ration these imports quantitatively. The allocation of trucks is handled through a two-tier system. The type and quantity of trucks are determined by the State Motor Corporation under the Ministry of Trade and Industry. It recommends national and regional distributions of trucks for approval by the Prime Minister's office. At the regional level, the trucks are allocated by a Regional Motor Vehicle Allocation Committee to crop authorities, parastatal transport companies, village cooperatives and private truck owners. There are no set rules or principles for the allocation at both the national and regional levels; decisions are confidential and cannot be appealed. The priorities of regional authorities are that vehicles should be primarily distributed to experienced and reliable operators in order to ensure the transport of crops. Truckers have claimed that a disproportionate number of the new vehicles was being allocated to the transport wings of parastatal crop authorities and parastatal trucking companies (ref. 46). Data for 1984 and 1985 show that two-thirds of total vehicle imports went to the public sector, whereas its share in the trucking fleet was 23 percent and the private sector had an acute need for new vehicles and spare parts. Vehicle imports did not include trucks provided by donors, which normally are also allocated to the public sector (ref. 59).

3.16 The quantitative allocation system operated by the Tanzanian government has not been successful as evidenced by a flourishing black market for tires, fuel and spare parts. Since Tanzania is not isolated from neighboring economies, the unofficial prices tend to be influenced by what the inputs could fetch in Kenya, Burundi and Zambia at the unofficial exchange rate. The black market prices of tires and spares in 1984 were about five times the official prices, which reflects the difference between the unofficial and official exchange rates between Kenyan and Tanzanian Shillings.

3.17 Although transport rates are not officially fixed in Tanzania, the fact is that the rates are determined by parastatal marketing boards as a result of their dominance in the market. A typical long distance rate was about TSh 2.5/ton-km in 1984. The operating cost for a 25-ton truck-trailer combination was estimated at TSh 2.0/ton-km, provided inputs were bought at official prices. If inputs were bought at unofficial prices, the cost was about TSh 3.0/ton-km. Rates in interregional traffic were thus insufficient to sustain an operator who had to rely heavily on inputs at unofficial prices, whereas truckers with access to inputs at official prices probably found long distance traffic to be quite lucrative (ref. 17).

3.18 This dual pricing structure has led to a shortage of transport capacity, primarily for the transport of agricultural products, a problem
recognized by the government as a major constraint on agricultural development. The problem was not caused by a real shortage of trucks, but by the fact that the rates were unremunerative. Early scrapping of vehicles aggravated this artificial shortage. Consequently, overvalued currencies foster production processes that are more capital intensive than warranted from economic efficiency considerations, on account of the fact that capital becomes too cheap in relation to labor. In road transport, overvaluation reveals itself in a heavy demand for new vehicles. Truckowners typically wanted to replace their vehicles already after 2 to 3 years, if they could. Although road conditions in Tanzania are poor and vehicle maintenance costs rise quickly after a few years of operation, the relatively low price of new trucks reduced the desired replacement time considerably below what was economically justified. A further impetus to early replacement was that spare parts often had to be obtained in the unofficial market at high costs.

3.19 Overvalued currencies combined with quantitative allocations of imports thus have multiple effects on the economic cost of transport and hence on the cost of marketing. Marketing and transport costs are inflated due to the fact that: (i) resources are allocated to less efficient truckers if parastatals have a senior claim; (ii) transport becomes too capital intensive; (iii) unbalanced allocations are made between different types of inputs; and (iv) a shortage of capacity to undertake transport may arise when rates do not cover the costs of inputs purchased at unofficial prices. In addition, the allocation system requires a considerable bureaucracy. As these problems stem from the use of import quotas it could be argued that it would be more efficient to use import duties exclusively to ration foreign exchange, and then for all imported goods and not just for inputs to road transport. While import duties would not have an effect on overvaluation as such, they would: (i) eliminate the black market; (ii) lessen the risk of supplies going to inefficient operators; (iii) eliminate most of the costs associated with the allocation system; and (iv) ensure that there is a better balance in the supply of different types of inputs. Import duties would also alter the price relations among inputs, thereby fostering less capital intensive techniques in road transport (ref. 21, 22). The danger of imposing import duties is, however, that it may result in an absence of neutral incentives across and within sectors. Since import duties would have to be used for all imported goods, it would be better to devalue an overvalued currency, because this would be less cumbersome and costly in terms of administrative costs and would make exports more competitive in the world market as well as optimize the country's comparative economic advantages in world trade.
IV. SUBSIDIES

4.01 Agricultural marketing in developing countries is frequently affected by the subsidization of food consumption as well as transport. Subsidies can be extended directly by covering part of the costs of parastatal companies either in marketing or transport. Subsidies may also be extended by making inputs available at prices below cost, which is a common practice in Africa for fertilizers. Another policy practice favoring food consumption as well as road transport is that imports are subject to no, or low, import duties, while other imports pay heavy duties; this difference in import duties may be viewed as another form of subsidy. Finally, another form of subsidy is access to credit at low or negative real interest rates. Subsidized food affects the demand for transport, while subsidized transport affects the cost of transport services and thereby the demand for agricultural products.

4.02 Food Subsidies. The justification for food subsidies is closely linked to the reasons for maintaining overvalued exchange rates (para 3.02). In the 50s and 60s the strategy pursued by many developing countries to attain economic growth emphasized substitution of locally manufactured products for imported ones. Consequently, resources had to be shifted out of agriculture into manufacturing. Low food prices have been one of the means to achieve such a transition by providing incentives to people to become laborers in the industrial plants, usually located in or near urban areas (ref. 32).

4.03 Subsidized food prices have a detrimental effect on agricultural production and economic development since it distorts relative prices in several different ways. First, for local food, subsidized consumer prices must be accompanied by higher producer prices, or subsidized input prices, in order to maintain a balance between supply and demand. This induces farmers to produce for the local market rather than for export. Second, subsidized food imports reduce the market for local production. A reduction in the market for local production can also be the result of newly acquired tastes by the urban population for imported food products such as rice and wheat. Third, subsidies have to be financed and the required taxes have further repercussions on efficiency and agricultural production.

4.04 One important source of revenues to finance government expenditures, including subsidies, in Africa is taxes on international trade, including agricultural exports. Their popularity can be explained by the fact that the cost of collection is low and that control is relatively easy (ref. 11). But export taxes on agriculture give rise to hidden costs in that they tax a sector in which the country may have comparative advantages and which is an important earner of foreign exchange. The reason is that since world market prices can generally be viewed as fixed, the incidence of the tax falls entirely on the producer and distributor. As a consequence the production of exports is reduced. These hidden costs may be far higher than the cost savings related to administrative ease in taxing exports.
4.05 The impact of subsidies and taxes on the economy of developing countries can be seen from their share in government budgets. Revenues from export and import taxes make up in total about 15 to 30 percent of government revenues in low and middle income economies importing oil. In these countries about 15 to 25 percent of total government expenditures is accounted for by subsidies and transfers, of which a large part is for food subsidies (ref. 62, 63).

4.06 Predicting the consequences of removing a subsidy requires information about its incidence, i.e., about who actually benefits from it. In the case of subsidized food consumer prices there may be several beneficiaries, due to overlapping policies, so that only part -- if any -- of the benefits may actually accrue to consumers. First, part or all of the subsidy may be absorbed by producers, as higher producer prices may have to be paid to induce farmers to produce more. Second, part of the subsidies may be absorbed by inefficient marketing agents. This is due to the fact that subsidized food is often channelled through parastatal marketing boards, which normally are legal monopolies. Third, part or all of the subsidy may be absorbed by transport when, for instance, pan-territorial prices (para 5.03) favor producers in distant regions.

4.07 The presence of several interventions in agricultural marketing makes it exceedingly difficult to predict the specific effects on the demand for transport in the event food subsidies are removed. For example, the elimination of subsidies may obviate the need for a monopolistic marketing board, whose inefficiencies may have absorbed all or most of the entire subsidy. These inefficiencies may have been due partly to weak incentives to be cost-conscious and partly to the fact that the required subsidies were not being provided on a timely basis. As a consequence, consumer prices may after the abolishment of monopolistic marketing boards and subsidies turn-out to be lower and not higher, as might be expected if only the removal of subsidies were considered. Incidentally, the elimination of a marketing board would generally alter the pattern and cost of related transport.

4.08 Another problem with subsidized prices is that they may lead to excess demand over supply, precipitating a black market and hence a dual pricing system. In this situation it is difficult to predict the effects on the demand for transport, if it were decided to remove the subsidies and eliminate the black market. This is partly due to the fact that there are normally few data available on the flow of illegally marketed food crops.

4.09 The effects of subsidies being channelled through a marketing monopoly can be illustrated by the experience with the marketing of maize in Zambia. In 1984 NAMBOARD, the parastatal marketing board with a legal monopoly in maize marketing, paid ZK 24.50 per bag to the producers of maize and then sold it to the millers at ZK 26.00 per bag. The margin of ZK 1.50 per bag between these two prices was clearly insufficient for NAMBOARD to cover its costs, reflecting the government's intention to subsidize maize. In fact, NAMBOARD's distribution costs amounted to ZK 12.95 per bag, resulting in a total of ZK 37.45 per bag before the sale to the millers. Effectively, this implied a subsidy of ZK 11.45 per bag,
corresponding to about 30% of its cost, or almost 90% of NAMBOARD's distribution costs.

4.10 Reforms of agricultural marketing policies in Zambia, to allow for competition and market determined prices and to eliminate the aforementioned subsidy, may result in a small increase in the consumer price of maize. This increase could be much smaller than the size of the subsidy for the following reasons. First, part of the effect of the consumer price increase would be offset by lower producer prices due to lower demand. Second, available data indicate that NAMBOARD was inefficiently operated and that significant savings could be made in labor utilization and transport operations. Third, maize marketing in Zambia is also affected by the practice of pan-territorial and pan-temporal pricing policies which inflate costs.

4.11 Another example pertains to the subsidies provided for the consumption of imported white rice in the Ivory Coast, which have had a more direct impact on the total demand for transport. In the Ivory Coast, the Caisse de Perequation des Prix des Produits de Grande Consommation (CPPGS) handles all imported rice, while wholesaling and retailing are done by private, licensed agents. CPPGS sets consumer and producer prices and supervises the marketing of both imported and locally produced rice. During the 1970s and early 80s, the government gradually increased import duties to offset the increasing overvaluation of the local currency (CFAF), but imports of white rice were exempt from duty. The relative low price of imported rice stimulated total consumption as evidenced by the increase in imports, from next to nothing in the mid-70s, to 363,000 tons in 1982. In addition, as official producer prices for rice were influenced by world market prices, the low import prices led to a fall in producer prices from CFAF 152.20 per kg in 1974 (in 1982 prices) to CFAF 50.00 per kg in 1982. This decline did not, however, affect local production materially as most of it was distributed at much higher free market prices through unofficial channels. Unofficial rice prices were much higher than the official ones because local rice was preferred by the consumers and, therefore, could fetch a premium. The low import prices led to an overall increase in consumption and hence in the demand for transport.

4.12 The marketing of imported rice in the Ivory Coast has had further repercussions on the demand for transport as subsidies were extended not only through low import prices, but also through the subsidization of transport costs as follows. The wholesale price was fixed by a margin over the import price to cover the wholesalers' handling costs, including transport. However, this margin is the same throughout the country and was insufficient to cover long distance transport. CPPGS therefore agreed to pay for transport of rice in excess of 100 km, including the first 100 km, while it expected wholesalers within a radius of 100 km of its two distribution centers to cover all transport costs up to 100 km from their price margin. This system provided no incentive for wholesalers located between 50-100 km from CPPGS distribution centers to buy from CPPGS. Instead, these wholesalers bought their rice from wholesalers located at a distance of over 100 km from the distribution centers, so that on average rice was transported over a circuitous route of about 125 km rather than the direct route of 75 km.
4.13 The complications caused by excess demand due to low consumer prices can also be illustrated by the maize market in Tanzania during 1984. At that time maize meal was being retailed at a subsidized price of TSh 2.50 per kg, while maize grain was being sold officially at TSh 5.20 per kg. Not surprisingly, consumers only demanded meal. Since official producer prices were also low (para 3.07), the National Milling Corporation (NMC) was unable to meet the demand and maize had to be rationed, mostly to serve government employees and other selected consumers in urban areas (ref. 60). The rest of the population had to resort to unofficial channels, where farmgate prices were about TSh 8.00 per kg, which was about four times the official farmgate price. It is estimated that in 1984 total maize production in Tanzania was 1,650,000 tons, of which 1,310,000 tons were used for subsistence consumption, while about 75,000 tons were sold in the official market. The estimates indicate that about 265,000 tons, or almost 80% of locally marketed maize, were channelled through the unofficial market. A reformed pricing policy would have significant effects on the demand for transport of maize, but the problem is how to predict them since little is known about unofficial maize marketing. This applies not only to total quantities of different regions, but also to where and how they are being transported.

4.14 Subsidies for Road Transport. Subsidies in road transport may be general in that they benefit all transporters. One example is the provision of credit at low, or even negative real rates of interest; for instance in the early 80s credit was available for the purchase of trucks in Tanzania at 8.5 to 11% rates of interest, while the inflation amounted to about 20 to 30%. Subsidies may also be earmarked for certain organizations such as parastatal trucking companies and transport wings of parastatal crop authorities, which play important roles in the road transport sector in Africa. These operators sometimes receive inputs free of duties as well as trucks, spares and technical assistance at concessional prices, or even at no cost. One argument advanced for earmarked subsidies is that the payment of duties or taxes by parastatal trucking operations is viewed as an unnecessary transfer between different government accounts. Another argument is that the subsidies are supposed to induce the companies to undertake work which private operators are not willing to do.

4.15 Subsidies and exemptions from import duties work to make the transport industry more capital intensive than warranted from an economic point of view since low prices induce operators to buy new equipment. Consequently, although financial costs and rates may become lower, the economic costs of transport are higher than without the subsidy. Subsidies directed to only one segment of the industry distort competitive conditions. They may result in higher economic costs and even in higher rates when subsidies benefit less efficient operators, who would not survive in the absence of subsidies. Vague public accountability, poor financial management, and lack of incentives to be efficient are often the reasons why these subsidies result in inefficient operations. Transport subsidies may therefore be counterproductive and increase the economic cost of marketing agricultural products.

4.16 One example of how subsidies may distort competition is provided by the Regional Transport Corporations (RETCOs) in Tanzania. In 1984,
there were six of these parastatal trucking companies of which five had been supported by a loan from the World Bank. The loan covered new trucks, technical assistance, spare parts and training. The money was onlent to the RETCOs on conditions generally prevailing in Tanzania and also available to the private sector. However, the trucks and spare parts were sold to the RETCOs without imposing import duties and sales taxes, which normally amounted to as much as 50% of the CIF value. In FY1983/84 the five RETCOs supported by the loan had a combined net operating income of TSh 27.9 million. However, if the trucks had been procured on the same conditions as for the private sector, the net operating income would have been negative, or TSh 13.0 million (ref. 17). Losses would have been even larger, if imported spare parts had not been priced at the official exchange rate. The poor actual profitability of the RETCOs was primarily due to poor vehicle utilization and higher overhead costs than in the private sector (ref. 47). Thus, their perceived costs were well below the economic costs to the country.

4.17 Subsidies for road transport often emanate from donor financed projects, when donors fail to consider the impact of their project on the overall performance of the road transport industry. One example is the trucking fleet operated by the Relief and Rehabilitation Commission in Ethiopia. Most of the trucks, spares and workshop facilities were provided free of charge to the Commission, while substantial technical assistance has been made available by donors (ref. 34). The assistance was justified by the drought in Ethiopia and the need to provide transport from the ports to areas in need. In 1985, the private sector remained competitive, but its share of the market was shrinking as a result of import restrictions limiting their access to essential supplies while public sector operations could expand thanks to the acquisition of relief trucks. It should also be noted that subsidies to organizations with limited experience in the transport industry do not necessarily result in the optimal use of resources.

4.18 Subsidized transport rates are sometimes used as an instrument of regional development policy. In other words, subsidized rates to and within depressed areas are intended to stimulate economic development in these regions. The success of such a strategy is not guaranteed since these rates may retard the depressed region's development by reducing its natural economic protection against competition from more advanced regions in the country. In addition, practice has shown that such rates can result in secondary distortions. For instance, competitive relations among road and rail transport may be affected. For these reasons, policy instruments such as temporary tax privileges and/or subsidies for investment, or employment, in depressed areas are preferred to subsidized transport rates since they are less likely to result in secondary distortions.

4.19 Scheduled carriers in developing as well as developed countries are often assisted by restricting competition from unscheduled services in the same market. By creating monopolistic market conditions, the authorities enable the scheduled carriers to earn profits on some routes, which are often used to cross-subsidize nonprofitable but desirable services on other routes. Cross-subsidization causes secondary distortions by raising the price of transport services on the profitable routes above their most
efficient level. In addition, the creation of monopolistic conditions must be supplemented with some control over prices and operations to ensure that the monopolistic position is not abused. The outright granting of public subsidies, although not advocated by the author, is preferred to cross-subsidization since it does not require the creation of monopoly positions. They also give rise to smaller economic distortions since the burden of the corresponding general taxes is more widely spread.

4.20 If a government insists on subsidized scheduled carrier services they can often be made more cost-effective by inviting bids for routes with given frequency of services, in national and local newspapers. The invitation could state a monthly amount of subsidy to be paid to the award winner or lowest rate bidder. Alternatively, the bid could be the amount of subsidy the local government would have to pay the operator given a set transport rate. Awards for franchise operations should be given for periods of 3 to 5 years, to make the operations attractive to the bidder and to enable the government to assess the performance of the licensee.

4.21 It is noted that in developing countries scheduled transport services often serve the transport market for semi-finished and finished goods rather than agricultural products. In Africa, scheduled services for the transport of goods, including agricultural products, exist in only a few countries, such as Zimbabwe. The use of scheduled passenger services (buses) in developing countries is widespread. Insofar as farmers often transport their produce in buses, government intervention in the provision of these services could effect the efficiency of the marketing of agricultural products.

4.22 Warranted Subsidies The above discussion may have given the reader the impression that subsidies should never be considered. In some situations, such as the introduction of new techniques in agricultural production or the introduction of new transport aids (para. 2.11), a subsidy could be justified on the basis of arguments of an "infant" industry. Furthermore, subsidies may be warranted for equity reasons, such as to combat malnutrition, to extend primary health care or education. However, while there may be valid reasons for the subsidy, caution must be exercised when a proposed subsidy is considered. The following basic questions should be addressed when analyzing a subsidy program:

-- What are the objectives of the subsidy?;

-- What is the "effectiveness" of the subsidy in achieving its objectives?;

-- What is the appropriate duration of the subsidy?;

-- What is the "affordability" of the subsidy?;

-- Is the subsidy appropriate to the Government's institutional and administrative capabilities and its need to maintain policy credibility?; and
Can the subsidy be made transparent to both the decision-makers and beneficiaries?

4.23 All subsidy programs should be reviewed periodically, say about every five years to determine whether the subsidies reach the intended beneficiaries or others and whether the program is cost-effective, since over time the beneficiary group tends to expand beyond the target group. The need for a subsidy may have declined or disappeared altogether, or it may have become a too heavy burden on the budget in relation to alternative expenditures, or it may have caused unexpected costly distortions in the economy. Therefore, there may be a need to revise, to retarget and to reorganize a subsidy program, or to eliminate it altogether.
V. ADMINISTERED PRICES

5.01 A common feature both in agriculture and in road transport is that prices are controlled by the government. In agriculture, both consumer and producer prices of staple food crops are often fixed as well as producer prices of export crops. Occasionally, controls of producer prices are limited to the setting of minimum prices (ref. 32). Price reviews normally take place once a year. To administer the system of fixed prices, governments have often resorted to parastatal marketing boards. These boards have the exclusive right to trade in specified agricultural products and often also in the marketing of inputs such as fertilizers. Parastatal marketing boards may opt to perform part of their duties through cooperatives and licensed agents.

5.02 The control of prices, or rates, in road transport is more varied and is less pervasive than in agriculture. Besides fixed tariffs, which do not permit any deviation in any direction, price controls may consist of bracket, or fork tariffs, which allow prices to vary within a prescribed margin. Rate regulation can also be in the form of either a ceiling, or a floor, to free market prices.

5.03 Agricultural Prices. Administered agricultural prices are normally pan-territorial and pan-temporal, i.e., they are the same throughout the country and do not vary during a given period of time, usually one year. Different prices may be fixed for different quality grades (for example cotton) and different varieties (for example rice). There are also administered prices which vary within the country to reflect the cost of transporting the product from a surplus region to a deficit region. For example, consumer prices for maize meal in Tanzania vary since 1984 between regions to reflect transport costs. This system tends to minimize transport costs through its influence on the location of production. At the same time, another type of a differentiated administered producer pricing system exists for maize grain, which pays higher producer prices in remote regions which are at a comparative disadvantage to supply deficit regions if transport costs are taken into account. This pricing system, therefore, increases the volume of transport and the economic cost of marketing the crops.

5.04 Several arguments are advanced to justify administered price systems:

(i) One major reason is the desire to eliminate or reduce the uncertainty from fluctuating prices for consumers and producers. Due to the risk aversion of farmers, fluctuating prices are a disincentive to production and, therefore, lead to higher prices in the long run.

(ii) Income distribution may be another reason. Producer prices are fixed at a high level in order to improve farmers' incomes or to encourage production in certain areas; however, low consumer prices to assist urban populations are more common. A related reason may be some belief that it is "fair" that every producer
should be paid, or every consumer should pay the same price for the same product.

(iii) Price control may also be initiated to avoid monopolistic elements in the production/marketing cycle. For instance, for cotton, its seed must be separated from the fibre by ginning before it can be marketed. The most economical way of ginning is near the farm, but typically there is no room for more than one gin in a given area. As the cost of an existing gin is largely sunk, the ginning market is not easily contestable. In other words, the gin represents a natural monopoly. Price control may be necessary in such a situation to prevent the owner of the gin from reaping monopoly profits.

5.05 While price regulation may be required in markets with a natural monopoly, these markets are the exception. As stated in section II most markets can be expected to be contestable and many are even characterized by constant returns-to-scale. Hence, the argument against price controls in the form of fixed prices, or price differentials to certain areas is that they give rise to distortions, either because they lead to a market disequilibrium, or because they make the cost of transport and marketing unnecessarily high. Using price controls as an instrument of income distribution is generally ineffective, partly because the price of an agricultural commodity is only a part of a household's real income and partly because price controls can benefit both rich and poor people; their impact may, therefore, extend beyond the intended target population (ref. 26).

5.06 An alternative solution often recommended to overcome, or at least to reduce the uncertainty of fluctuating prices in the absence of insurance markets, is to establish a parastatal marketing board as a buyer and seller of last resort with set floor and ceiling prices. The marketing board would then essentially play the same role as a central bank in a system of exchange rates, which are fixed within given bounds. The marketing board would enter the market by selling from its own stock when consumer prices tend to rise above the ceiling and by buying when producer prices tend to fall below the floor price. The floor and ceiling prices in such a pricing system would vary with location as well as with changes in world market prices, and would therefore be close to a price regime conducive to the efficient use of resources, including transport. A marketing system for food crops which partially operates according to these principles has been established in India (ref. 52). The system is likely to be more cost-effective than the system of fixed prices. Newbery and Stiglitz (ref. 48) question seriously the desirability of price stabilization schemes, both from the point of view of the producer and of the consumer. As an alternative they advocate schemes which directly aim at stabilizing farmers' incomes.

5.07 As pan-territorial prices do not penalize producers and consumers in far-away locations, they cause farmers in distant locations to produce more and consumers in deficit regions to consume more than justified from an economic efficiency point of view. They may, therefore, have diverted attention of producers and consumers alike from other commodities with
market potential. Pan-territorial prices may have been regarded as a readily available instrument to assist remote areas, but leave unanswered the question whether the production of the relevant commodities is in accordance with the comparative potential advantage of these regions, which, if it is to be realized, may require different support from a Government. Pan-territorial prices, therefore, result in high marketing and transport costs. A further consequence of pan-territorial prices is that transport investments to reduce transport costs have little or no impact on farmers' incomes and, therefore, on development; the usual expected increase in transport demand from reduced transport costs will not materialize (ref. 25). In a competitive system with prices set by market forces, reduced transport costs will be translated into higher producer prices being paid to farmers, which will result in an increase in production and subsequently in the demand for transport.

5.08 The implications of a pan-territorial pricing system can be illustrated by the market for maize in Zambia, where the government established mandatory consumer and producer prices as follows. Until 1974, a differential producer price system prevailed for maize, reflecting the comparative locational advantages of different producer and consumer centers. A basic price was paid to farmers in provinces located along the railway and near main consumption centers, while a lower price was paid in the Eastern Province, a maize surplus area at quite a distance from the main deficit areas. Varying higher prices were paid in maize deficit areas, according to their greater distance from the railway and major producer centers. Since 1974 producer prices have been uniform throughout the country. Apart from its effect on total demand and production of maize this has significantly changed the pattern of production. In 1973, more than 80% of surplus maize was marketed in the Central and Southern Provinces located near main urban areas. By the mid-eighties their share had been reduced to about 50%, while the peripherally located Northern and Eastern Provinces had increased their share from 10 to almost 40%. This shift in production has produced a corresponding shift in long transport distances and costs.

5.09 For Zambia, a World Bank study (ref. 64) contains an estimate of potential savings in transport costs, if the Government were to introduce a different pricing system for maize to reflect differences in transport costs between regions. This estimate indicates that the transport of an average bag of maize (90 kg) would be reduced by about 20%, which is equivalent to a reduction of 50 km in the average haul of a bag. As the transport element made up about 40% of NAMBOARD's margin in 1984, a differentiated pricing system to reflect transport costs would have lowered marketing costs by about 8% (ref. 18).

5.10 In Southern Ghana much of the land can be used to grow food or cocoa. The government pays the farmers a fixed price for cocoa. In 1982, farmers had in many places dug up their cocoa farms, or failed to replace old and poor yielding trees to grow food in response to the relatively higher food prices, although on the international market the price of cocoa was 9 times the price of maize. As in Zambia, the shift in production has produced a corresponding shift in transport. Naturally, it can be argued that it would have been better to concentrate on growing more cocoa and
less food and, if necessary, to import extra food with the extra export earnings from cocoa. In the light of the modern approach to agricultural development, which calls for extensive extra-industry support, it is interesting to note that cocoa growing developed in Ghana in the 19th century without government supplies of inputs, capital, extension advice, seeds, or insecticides. The main ingredients for success were a profitable market, suitable land, local entrepreneurship, capital, labor, and a source of cocoa seedlings.

5.11 Pan-territorial agricultural prices primarily affect transport costs by lengthening the transport distances to be covered, while pan-temporal prices, on the other hand, inflate the cost per ton-km, i.e., the supply-side of transport. Pan-temporal prices induce the producers to sell their product as soon as it is harvested, since they have no incentive for maintaining their own stock in anticipation of better prices later in the year. Similarly, consumers have no incentive to buy when the price is low and to maintain their own stocks; instead they buy as needed. As a result, prices fixed over the year concentrate the marketing operations in a very short season and force the marketing agents to take on the entire storage function. This not only inflates storage costs (ref. 26 and 60), but also the cost of transport as a peakedness in demand for transport services increases the size of the required vehicle fleet and reduces the likelihood of obtaining back-hauls. Both these effects decrease truck utilization and push up transport rates.

5.12 The actual costs of pan-temporal prices for the transport of agricultural products -- and for additional storage facilities -- are very difficult to determine, but the importance of these problems should not be underestimated. For example in Zambia, the total grain storage capacity under the auspices of NAMBOARD was 1.1 million tons in 1984, and ongoing and planned programs are expected to bring that capacity up to close to 1.5 million tons in 1990. Another illustration is provided by the situation in Ruvuma, a maize surplus region in Tanzania, where during one day of harvest in 1984 the main storage facility was full with 6,000 tons of maize, while NMC was trying to evacuate another 7,000 tons. The total of 13,000 tons being handled by NMC at that time represented about 60% of total annual quantities to be purchased. The capacity of the vehicle fleet operated by NMC would have been more than sufficient to evacuate this production, provided the work could be evenly spread over the year. Since this was not possible, a substantial portion of the production had to be transported by other operators under contract (ref. 17).

5.13 Transport Rates. Maximum and minimum rates are based on different types of arguments (ref. 49). Maximum rates are used: (i) to limit profits where shortages of trucking services would drive up free market rates; (ii) as an anti-inflationary instrument; and (iii) as a means to stimulate the development of remote areas. Minimum rates have been defended on the grounds that they would protect the less knowledgeable trucker from quoting too low prices, or to prevent under-pricing by aggressive firms so that they could increase their market share.

5.14 Rate ceilings are not effective to solve the problems associated with a shortage of capacity either in the short-run or in the long-run. If
anything they can make things worse. Long-run shortages of capacity in the industry and excessive profits are evidence of entry and capacity controls (Section VI). Rate control in the presence of long-run shortages is likely to give rise to a black market and to create inefficiencies in the performance of the industry and, thereby, create higher economic costs in transport and marketing. Besides the real cause of the problem, i.e., the capacity shortage, will not be remedied. The only effective way of improving the performance of the market and reducing profits is to reduce the barriers of entry and to allow for competition.

5.15 Temporary shortages tend to occur in countries where major crops are harvested and sold within a short time and, especially, where the harvesting seasons of two or three major crops overlap. While short-term capacity problems cause free market rates to show high volatility, this does not normally signify that excessive profits are being made. The high prices during peak seasons are necessary in order to make effective use of the available fleet and to ensure that it is used intensively during this season. An alternative policy to solve the capacity problem, often pursued by developing countries, is to increase the size of the fleet. This policy is more costly than stimulating better use of existing trucks by paying higher rates. Indeed, the variability of transport rates over a year demonstrates that the pricing system is functioning and also provides signals to marketing agents to examine whether transport and distribution costs could be reduced by constructing additional storage near farms.

5.16 Maximum rates are ineffective as a means to control inflation as transport is not a price leader. If rates are capped, inflation will make them unremunerative, thereby causing shortages and bankruptcies, and stifling the development of the industry, or they may be ignored. Maximum rates are also ineffective as an instrument of regional development. Such a policy could work to retard the development of a depressed region instead, since its natural economic protection against competition from more advanced regions in the country would be reduced. Maximum rates may also reduce the supply of services below justified economic requirements and, thereby, reduce the incentive for production.

5.17 The validity of both arguments advanced for minimum rates (para 5.13) is doubtful. Experience in developing countries shows that truckers are generally well informed about costs and prices. They are also well aware of the fact that road transport is normally very competitive and that attempts to enlarge market shares by lowering rates below costs are self-defeating. The practice of minimum rates may have negative effects if the floor is set above the free market rate. This will attract additional operators into the sector, causing capacity utilization to fall and the economic cost of transport to rise. It may also lead to an expansion of own-account fleets, which cannot be subjected to minimum prices, since an own-account operator is only involved in the movement of goods which he owns or produces.

5.18 Fixed rates are normally expressed as the fee to be paid per ton-km. They may vary as a function of distance and commodity transported and sometimes also with the size of the truck, with lower rates being paid for the larger trucks as, for instance, in Tunisia. Frequently fixed rates
do not fully account for return-hauls and do not allow for differences in the costs of transport on bitumen, gravel and dirt roads. Neither do they allow for variations over the year. The inflexibility of fixed transport rates hampers agricultural development. For example, the absence of rebates for back-hauls provides no incentive for marketing agents to coordinate maize and fertilizer flows. Fixed rates also mean that investments to reduce transport costs will not have any development impact, since cost savings will be pocketed by the truckers rather than translated into higher producer, or lower consumer prices (ref. 25).

5.19 Fixed rates for agricultural transport are particularly damaging for short transport hauls in rural areas where road conditions give rise to large cost variations. Frequently they are too low to cover costs for some routes. The resulting shortage of transport disrupts agricultural marketing, or causes excessive losses of produce leading to a decline in agricultural production. In Zambia, for example, there has been a shortage of trucks to move maize from rural collection centers to NAMBOARD depots and to bring fertilizers to farmers. During the first half of the 80s, this problem was recognized as being the major bottleneck in agricultural marketing (ref. 45). Substantial quantities of maize were left to rot in the field, while fertilizers were delivered late, or not at all. To remove this bottleneck the government pursued two different approaches. One was to provide trucks to Provincial Cooperative Unions which act as purchasing and primary marketing agents on behalf of NAMBOARD. This had limited results as the cooperatives proved to be poor and costly operators. The other approach was to induce private truckers by providing them with tires, which were in short supply due to import restrictions, or by resorting to veiled threats to revoke, or not to renew, a trucker's license.

5.20 Both of these approaches failed to recognize the real causes of the problem, namely that the rates fixed by the government for short-distance transport of maize and fertilizers were unremunerative. Analysis of transport costs on dirt roads in rural areas in 1985 shows that the rates required to cover costs would have had to be, on average, about twice the rate fixed by the government (ref. 19). The government believed that its rates reflected costs. The problem was an error in the transport cost calculations. It is not simply a question of having qualified staff to do an adequate job; the problem is that cost conditions in rural areas show such variability that it defies any meaningful fixed price. Under these circumstances, the better alternative is to rely on the market to set prices and to direct government efforts towards fostering competition and the transparency of the markets.

5.21 In short, maximum, minimum and fixed rates are impractical since demand for transport services is highly variable over time and place and, therefore, any rate system would have to be rather complex to avoid economic inefficiencies and distortions. If a government decides to control transport rates, fork-tariffs are more efficient than fixed rates, especially if adequate information is disseminated about the recommended rate brackets covering, inter alia, distance, road conditions and nature of goods to be transported, in newspapers or via the radio. Naturally, such a program requires monitoring, since road conditions change over time. Such a system would reduce the distortions in the supply and demand for
transport associated with fixed rates and, thereby, improve the marketing and production of agricultural products.
VI. ENTRY AND CAPACITY CONTROLS

6.01 Entry controls screen private operators who want to enter a market, while capacity controls control the supply of each operator and thus total supply. Entry and capacity controls are found both in agricultural marketing and in road transport. Wholesalers of rice in the Ivory Coast, for example, have to be licensed by CPPCS (para 4.11) to enter the market, but once a license has been obtained there are no limits on how much rice they may sell. Tanzania retailers have to obtain a license in order to sell maize on behalf of NMC. In Zambia, NAMBOARD operates a system for the allocation of maize grain to private and parastatal mills, which, although it is not based on licenses, determines the capacity utilization of each mill each year. The "need" for the controls in agriculture stems largely from other agricultural policies such as administered prices. Their effects on the demand for transport are in general dominated and masked by the effects of these other policies. This section will therefore focus on the controls in the road transport sector alone.

6.02 Entry Controls. Entry into the transport industry is often restricted in developing countries. These restrictions may be qualitative or quantitative in nature. Qualitative entry restrictions establish certain minimum standards of personal qualifications of the operator and are primarily designed to prevent unsuccessful ventures which would not be in the interest of the public. Qualitative restrictions may consist of moral qualifications such as the absence of a criminal record, professional qualifications such as sufficient knowledge of the transport industry, and/or financial qualifications such as adequate involvement of the carrier's own capital. Decisions on moral qualifications seem inappropriate for a regulatory agency, since they are the concern of the judicial system. It is doubtful whether financial restrictions are effective since the licensee can withdraw his capital from the road transport business as soon as a license has been obtained. The case for some types of professional qualifications may, however, be argued. There may be a need for an adequate track record in road safety and for some ability to maintain books and prepare financial statements for tax purposes. It is important that such qualifications are very clearly specified, so that they are not subject to discretionary interpretation by the regulatory agencies. It is also important that extension services are provided so that newcomers can easily overcome entry hurdles in the form of professional qualifications.

6.03 Quantitative entry restrictions usually assign operating rights for specific routes, regions, commodity classes, etc. They do not usually regulate the number of vehicles to be used by a licensed carrier. It is therefore a misconception that quantitative entry restrictions prevent "over-investment", which is the argument often advanced by their advocates. Quantitative restrictions prevent:

(i) efficient, complementary operation on routes or in regions for which a firm's or individual's license is not valid;

(ii) capacity utilization on the back-haul for commodities other than those for which the carrier is licensed; and/or
(iii) temporary excess capacity in one sub-market from being utilized in other sub-markets or effective optimum utilization of the existing fleet during peak demand periods.

As a consequence, quantitative restrictions tend to result in overcapacity, thereby driving up the cost of transport and of marketing.

6.04 In the 70s, Tunisia had regulations prohibiting its regional parastatal transport companies to transport goods outside one of the five zones to which they were assigned (Tunis, Sousse, Sfax, Gabes, and Interieur); this limitation seriously affected the efficiency of transport between these zones. Although these regulations have been abolished, a rather comprehensive regulatory framework administered by the Ministry of Transport and Communications still exists today. Only the transport of goods by trucks with a vehicle gross weight of less than 3.5 tons is "free," i.e., not subject to any authorization. This has led to an inefficient trucking fleet, since it consists of a relative large share of small trucks, often used in long-distance freight.

6.05 The importance of easy entry into the trucking industry queries the validity of regulations which separate operators of own-account trucks from those doing business for hire or reward. Own-account trucks are typically not authorized to carry freight for others, which reduces their utilization. Especially in developing countries, where agriculture is dominant, it is important to be able to mobilize capacity from all segments of the industry to meet peak demand, particularly since own-account trucks are not only owned by large companies, but also by small businesses such as wholesalers and retailers. These trucks can be mobilized during peak demand and thereby facilitate the evacuation of crops and reduce potential losses. To draw in these trucks during the peak season, Zambia issues temporary licenses valid for about 3 months. Mobilization of the own-account trucks also enhances competition and the overall utilization rate of the fleet.

6.06 The supply of transport services may also be influenced by collusion among truck operators, as for instance, in the Yemen Arab Republic. Following the sharp increase in oil prices in 1973, many of its people became migrant workers in the Gulf States, especially in neighboring Saudi Arabia, and their remittances spurred high economic growth in their country. Quite a number of returning migrant workers used their earnings to enter into the trucking industry. In line with tight-knit tribal and village traditions, the truckers organized themselves in groups, primarily to distribute the traffic amongst themselves. Since entry into the group was free for kinship members, many more truckers than needed found it attractive to join. That there was an excessive number of trucks was evidenced by the very slow turn-over. In the early 80s, truckers frequently had to wait several days and at times even more than one week, before their turn came up for a new haul. This arrangement has tended to keep transport and marketing costs high, since truckers were able to maintain tariffs higher than those which could have prevailed under free competition.
6.07 Restricted competition as in Yemen is very costly, particularly in trucking since it results in low load factors and poor vehicle utilization. It also encourages parastatal and private companies to establish their own vehicle fleets, which further aggravates vehicle utilization and raises operating costs. The cost in terms of excessive size of vehicle fleets can be high. In the case of Yemen it is believed that the country could have managed with less than half, perhaps even with one-quarter of the available fleet.

6.08 The practice of truckers restricting competition by collusion cannot be combatted by resort to legislation alone. Antitrust and similar legislation is very difficult to implement effectively in many developing countries. Another approach which could be more effective would be to assess the feasibility of those types of measures which loosen economic entry barriers and reduce the cost of entry into the market, or enhance the transparency of the market. For instance, one approach would be to promote brokerage activities. This could be done by Designating areas in towns and cities near main market places as "truck-stops." Freight forwarders and brokers of transport services would operate at these stops while the establishment of gas stations, repair shops and other service facilities would also be encouraged. To get the truck-stop established might require the government or municipality to allocate a lot and set up simple terminal facilities.

6.09 Another approach to strengthen competition in the transport market is to promote the availability of many different means of transport, and not only trucks. Particularly in rural areas, transport can often be undertaken by simpler forms of transport including carts and bikes. If such simple transport aids are available in rural areas, the small farmers could limit their exposure to restrictive transport and marketing practices as they would be able to bring the produce themselves to market places where competition is stronger. Simple transport aids can play a significant role in agricultural marketing in remote areas and their absence is a characteristic of many countries displaying poor agricultural performance (ref. 20).

6.10 Capacity Controls. The purpose of capacity regulations is to ensure that the "right" capacity is available in the market, or in specific sub-markets. But capacity licensing generally also serves the function of controlling the entry of emergent truckers. One argument advanced for the imposition of capacity controls is that without them competition will lead to excess capacity, resulting in low utilization, low profitability, and a drain on foreign exchange. Another reason for capacity licensing has been the protection of railways, which, for instance, has been the primary motive for licensing schemes of many countries in Southern Africa, including Zimbabwe and Mozambique. Resort to such regulations may result in a high vehicle utilization but poor levels of service. It also tends to drive up the cost of transport and marketing and may contribute to a short supply of services during peak demand.

6.11 Capacity restrictions are either individual/firm-oriented or market-oriented. A mixture of these two systems sometimes exists, when, for instance, in a firm-oriented system the issuing of new licenses is
suspended during a recession of demand. In the former systems, individuals or firms have to obtain a permit to procure a vehicle. Some countries like Tunisia have an extreme form of capacity restrictions since individuals and privately owned industries and commercial firms do not have a free choice in deciding on the load capacity of a truck they wish to buy. For a farmer this capacity is determined by the size of irrigated and non-irrigated land and/or the number of cows and goats he owns. For a businessman and industrial/commercial firms the capacity is determined by the annual amount of tax he or the firm has paid in the year prior to the purchase of the vehicle. Naturally, such arbitrary measures are costly and are not recommended.

6.12 If a government decides on a restrictive policy (which is not advocated by the author) carriers should be granted a license for additional capacity based on a demonstration that the investment can earn a return at least equal to the standard imposed by the licensing authority. Although an individual/firm-oriented capacity restriction is preferable to market-oriented restrictions and quantitative entry restrictions, its use is not recommended since government authorities are normally not in a better position to judge a firm's future prospects than the carrier himself. The use of capacity restrictions to protect state-owned and parastatal transport companies has almost universally resulted in inefficient operations of these companies and consequent heavy subsidies. Realization of other objectives of individual/firm-oriented restrictions, such as the prevention of a drain on foreign exchange, can better be achieved by taxation. Vehicles' sales taxes normally avoid the discretionary administrative power inherent in the evaluation of prospective returns under capacity restrictions.

6.13 Market-oriented licensing systems are designed to control the expansion of total capacity, either in the entire road transport industry, or in separate markets. They require a rationing scheme to distribute capacity among individual applicants who always demand more capacity than what is to be licensed. Market-oriented licensing systems, which are found in several developing countries, may be subdivided into quota systems and proof-of-need systems.

6.14 In practice, quota systems are the outcome of conflicting political pressures from different interest groups. Available capacity tends to be interpreted in terms of tons regardless of differences in services. Sometimes available capacity involves the number of vehicles, which may produce a bias in favor of large vehicles and consequent inefficiencies. Given the fact that most developing countries lack adequate, statistical data on demand and available capacity and that modal split often depends on deliberate policy and/or unknown user preferences, it is of no surprise that quotas are based on political pressures rather than economic considerations. They usually involve the established carriers' right to object against a new license being granted on the basis that they already provide the needed services or plan to do so. Quota systems may result in a bias against new dynamic firms wishing to use new marketing, production, and/or management systems. They may also lead to favoritism, graft and corruption. In short, they prevent a rational distribution of available resources. If a country wishes to maintain a quota system, the public
auction of licenses, as practised in Lebanon in the seventies, seems to be a more efficient and equitable method, although it tends to increase the cost of transport.

6.15 Proof-of-need systems involve separate decisions on individual applications. The total number of licenses is not established explicitly as in the quota systems. The separate decisions are made during public inquiries, in which all interested parties have the right to be represented. In Zambia, for instance, public inquiries are held twice a year. The applicant has to demonstrate that there is a market for his proposed services and that existing facilities are insufficient to satisfy demand. Competing carriers are given an opportunity to discredit the applicant's claims, while the parastatal trucking company CHL has officially been given the right to veto all applications.

6.16 On the surface, individual/firm-oriented systems appear similar to proof-of-need systems. The difference is, however, that in the latter systems the licensing authorities consider what competitors are already supplying together with existing capacity that could be used to supply the proposed services. The public inquiry is often cumbersome and costly both to the individual applicant and the licensing authority.

6.17 In some countries a dual system exists. That is, capacity restrictions apply to some types of vehicles and not to others. For instance, in Tanzania, anyone who has access to sufficient foreign exchange is allowed to import pick-up trucks, while the procurement of other trucks is subject to authorization. In Tunisia, only the procurement of trucks with a gross vehicle weight of less than 3.5 tons is not subject to any authorization. Such dual systems are likely to result in inefficiencies since they may give rise to a situation where long-distance transport of commodities is carried out by small trucks, where the use of medium or large sized trucks would have been more efficient.

6.18 Advocates of entry and capacity controls often argue that their removal would cause the transport industry to become more unstable resulting in less reliable and/or more expensive transport services. The available evidence of the performance of road transport in countries which have abandoned entry and capacity controls (e.g., U.K. and USA) shows that it has not given rise to any significant negative effects such as bankruptcies of transport firms (ref. 13, 16, 24, 27, 39, 57), although some firms may have opted for mergers. The thrust of the above explanations is that there is ample evidence showing that trucking regulations tend to drive up the cost of transport and marketing and, at worst, may contribute to a shortage of trucks to meet peak demand and thereby to agricultural losses and a lack of timely inputs.
VII. CONCLUSIONS AND RECOMMENDATIONS

7.01 Marketing costs, excluding the costs of processing and milling, make up a substantial portion (25 to 60%, depending on local conditions) of the final prices for agricultural products in developing countries, while about half of the marketing costs consists of transport costs. It is, therefore, important to pay sufficient attention to marketing policies and activities, including the transport element. The text has shown that extreme caution must be exercised when assessing the effects of the macro-economic framework on the agricultural and transport sectors and of the intervention in one sector on the other. This calls for close coordination between macro and sector economists as well as between transport and agricultural economists.

7.02 The principles of contestability theory are particularly relevant to the marketing of agricultural commodities in developing countries. The main requirement for a market to be contestable is that entry into and exit from it is not impeded, or, in practical terms fairly easy. The basic thrust of contestability theory is that a system whereby demand, supply and prices are determined by market forces is a better means to promote efficiency than government controls and different forms of intervention. However, carte blanche to mindless deregulation and privatization is not advocated. Examples of warranted government intervention are:
(i) ensuring the easy availability of information about market prices;
(ii) the making available of areas in towns and villages for wholesale markets of agricultural products; (iii) assistance with the development of places where transport brokers can operate as intermediaries; (iv) the promotion of a wide range of transport options; and (v) price regulations if natural monopolies exist due to significant entry and exit barriers. When a government intends to reduce its intervention in the macro economic framework or in particular sectors, it is well advised to assess the pros and cons of extensive reforms at once versus a more gradualist approach.

7.03 Overvalued currencies in several countries have reduced the incentives to produce crops for exports since relative prices favored production for the domestic market. Overvalued currencies may result not only in a shift in production away from products earning foreign exchange, but as a whole in reduced agricultural activity, including production for domestic consumption. Currency reform to reduce or eliminate overvaluation can, therefore, be expected to affect the pattern of agricultural production substantially. In the transport sector this means that quantities transported may change in terms of volumes, distances, direction, and composition. Consequently, the planning of new transport facilities can no longer be based on an analysis of past and present traffic flows.

7.04 Due to a deteriorating foreign exchange position, overvalued currencies often require that imports be controlled and reduced. Overvalued currencies combined with quantitative allocations of imports inflate costs of marketing and, in particular, transport, since: (i) resources are allocated to less efficient truckers if parastatals have a senior claim; (ii) transport becomes too capital intensive; (iii) allocations to different types of inputs may be imbalanced; and (iv) a shortage of transport
services may arise when rates do not cover the costs of inputs purchased at unofficial prices. While increased import duties would not affect overvaluation as such, they would: (i) eliminate the black market; (ii) lessen the risk of supplies going to inefficient operators; (iii) eliminate most of the costs associated with an allocation system; (iv) ensure that there is a better balance in the supply of different types of inputs; and (v) foster less capital-intensive techniques in the road transport industry. However, import duties (i) may result in an absence of neutral incentives across and within sectors; (ii) are administratively more cumbersome and costly than devaluation; and (iii) do not make exports more competitive in the world market. Devaluation rather than increasing import duties is, therefore, the preferable solution. The long-term advantages of devaluation outweigh its short-term disadvantages such as a temporary rise in inflation.

7.05 Subsidized food affects the demand for transport, while subsidized transport affects the price of transport services and thereby the demand for agricultural products. Subsidized food prices may have a detrimental effect on agricultural production, because they can distort relative prices in different ways: (i) subsidized consumer prices for local food often must be accompanied by higher producer prices or subsidized input prices; (ii) subsidized food imports reduce the market for local production; and (iii) subsidies have to be financed and the required taxes may have further repercussions on efficiency and agricultural production. In view of administrative ease, governments often resort to taxation of exports to finance subsidies, but export taxes on agricultural products may give rise to hidden costs in that they tax a sector in which a country may have comparative advantages and which is an important earner of foreign exchange.

7.06 Direct and hidden subsidies such as exemptions from import duties, which may be general or earmarked for certain organizations such as parastatal trucking companies, may make the transport industry more capital intensive than warranted from an economic view point. Consequently, although financial costs and transport rates may become lower, the economic costs of transport may be higher than without the subsidy. Subsidies directed to only one segment of the transport industry distort competitive conditions and may result in transport rates which may be higher than what they would be in the absence of such subsidies. Policy instruments such as temporary tax privileges and/or subsidies for investment or employment in depressed areas are preferred to subsidized transport rates since they are less likely to result in secondary distortions. Cross-subsidization among scheduled carrier or bus services is also not recommended, because it may hide the economic cost of the related distortions in the demand and supply of these services.

7.07 A general problem with subsidies is that they may lead to excess demand over supply, precipitating a black market and hence a dual pricing system. In conclusion, caution must be exercised when a proposed subsidy is considered. If they are introduced based on the arguments of an "infant industry," they should be of a temporary nature. Predicting the consequences of removing a subsidy requires information about its incidence, i.e., about who actually benefits from it, which is difficult to assess.
The elimination of a subsidy may result in a zero or much smaller increase of consumer prices than normally expected.

7.08 While price regulations may be required in markets with a natural monopoly, these markets are the exception. Using agricultural price controls as an instrument of income distribution is generally ineffective, partly because the price of an agricultural commodity is only part of a household's real income and partly because price controls can benefit both rich and poor people. A solution often recommended to overcome, or at least reduce, the uncertainty of fluctuating prices is to establish a parastatal marketing board as a buyer and seller of last resort with set floor and ceiling prices. Although such prices are preferable to fixed agricultural prices, a system whereby prices are established by market forces should be the ultimate aim. Pan-territorial agricultural prices tend to widen the pattern of production and consumption and thereby give rise to high marketing and transport costs. Since prices are fixed, they result in a situation where investments to reduce transport costs have little or no impact on farmers' incomes and, therefore, on development. Pan-temporal agricultural prices tend to concentrate the marketing of agricultural products in a short period during the harvest season and thereby inflate storage costs as well as the per ton-km costs of transport.

7.09 Transport rate ceilings are not effective to solve the problems associated with a shortage of capacity, either in the short-run or in the long-run. While short-term capacity problems cause free market rates to show volatility, this does not normally signify that excessive profits are being made by truckers. High prices during peak seasons may be necessary to make effective use of the available fleet. Long-run shortages of capacity in the trucking industry and excessive profits are evidence of entry and capacity controls. Solutions to long-term shortages of capacity should, therefore, be sought in these areas, rather than relying on transport rate ceilings. If a government decides to control transport rates, fork-rates are more efficient than minimum, maximum, or fixed rates. However, a system whereby a government publishes recommended rather than compulsory fork-rates, which, inter alia, depend on distance, road conditions, and nature of goods transported, may be the most cost-effective way for a government to intervene.

7.10 Entry controls screen private operators who want to enter a market, while capacity controls control the supply of each operator and thus total supply. The "need" for these controls in agriculture stems largely from other agricultural policies such as administered prices and their effects are in general dominated and masked by the effects of these other policies. In the transport industry, entry controls may be qualitative or quantitative in nature, while capacity restrictions are either individual/firm-oriented or market-oriented. Qualitative entry controls are only recommended if they deal with issues such as road safety and some ability to maintain books and prepare financial statements for tax purposes. It is important that such qualifications are clearly specified so that they are not subject to discretionary interpretation. In addition, extension services should be provided so that newcomers can easily overcome entry hurdles in the form of professional qualifications.
7.11 Quantitative entry restrictions in transport assign operating rights for specific routes, regions, and commodity classes. Their use is not recommended since they tend to result in localised imbalances between supply and demand and an inefficient trucking fleet. Consequently, they tend to increase the costs of transport and marketing. In addition, owners of own-account trucks should be allowed to do business for hire or reward in order to make better use of the fleet, especially during periods of peak demand. Entry restrictions can also exist in the absence of government regulations if there is collusion among truck operators in order to ration excess capacity. Such a situation calls for a warranted government intervention by, for instance, the promotion of brokerage activities and the availability of many different means of transport.

7.12 The use of individual/firm- and market-oriented capacity restrictions is also not recommended since such regulations tend to increase the costs of transport and marketing and contribute to a short supply of services during peak demand. Prevention of a drain on foreign exchange, which is often cited by the advocates of these restrictions, can be achieved better by taxation. Market-oriented licensing systems may be subdivided into quota systems and proof-of-need systems. In practice, quota systems are the outcome of conflicting political pressures from different interest groups. They may result in: (i) a bias against new dynamic firms wishing to use new marketing or management systems; and (ii) favoritism and corruption. If a country wishes to maintain a quota system, the public auction of licenses appears to be the most efficient and equitable method. Proof-of-need systems involve separate decisions by the authorities on individual applications, and may therefore open the door to discrimination and possible corruption.
REFERENCES


