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DETERMINING THE AGRICULTURAL SECTOR'S ROLE IN REGIONAL DEVELOPMENT IN SOUTH AFRICA¹

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Abstract

The role and contribution of the agricultural sector in regional development has been argued positively for economic growth and development. Promoting support programmes for commercial and subsistence/emerging agriculture should therefore receive priority in regional support programmes. An analytical approach to determine agriculture's role has been proposed as well as to establish the required policy measures and public sector support. Two requisites for the application of this proposed approach needs to be emphasized: (i) A reasonable level of data and information is required. It is however, believed that this data base is sufficiently representative for South Africa's various regions to determine major policy approaches and support programmes. The establishment of commodity based linkages and multipliers will further enhance these processes; (ii) In the present South African environment consultation and participation of all relevant groupings during policy making processes seem imperative. Each region will have to give content to this aspect in its own right.

1. Introduction

On request of the Conference Organizing Committee the objective of this paper will firstly be to explore some theoretical and analytical thinking on the position and role of agriculture in a regional economy. The paper will furthermore apply some of the theoretical approaches attempting to answer the question whether the South African agricultural sector does have a positive role to play in regional development, especially during the present turbulent times. An approach and framework of analyses will thirdly be proposed.

2. Agriculture in economic and regional development

The position and role of agriculture in regional development can be described from various angles and perspectives. Economists might use the concepts of contribution to GDP and comparative advantages; politicians will analyse the potential of those involved in the agricultural sector to support them through parliamentary votes and non-parliamentary means; ecologists will refer to the uneasy relationship between agricultural growth and the environment; socio-economists will refer to the importance of agriculture as a social safety net; farmers might discuss the role of agriculture as provision of food and fibre as well as being the "cultural backbone" of a nation; etc.

Volumes have been written on this subject and some of these writings were very influential in development thinking and policies. To establish a realistic and operational viewpoint on this matter some of the most influential approaches and arguments will now briefly be analysed with reference to South Africa:

2.1 The agricultural development versus industrial development argument.

The analyses of long-run determinants of growth shows that changes in factor productivity are a major factor in the process of growth (Kuznets, 1971). Agriculture, at a first glance, does not score high on this criterion. An analysis of long term economic growth in 100 countries show that the growth rate of value added and input use in agriculture is about 40 - 50% less than in the manufacturing sector. (Syrquin, 1989). This evidence questions the importance of agricultural investment viz-a-viz industrial investment. These observations led to statements such as: "the first task of industrialisation is to transform peasants into full or part time industrial workers"; (Rosenstein - Rodan, 1943) or as in the Lewis two sector model where it is implied that the supply of surplus labour out of

agriculture is unlimited and the pace of economic growth is constrained mainly by the demand for labour in the non-agricultural sectors (Lewis, 1954).

There are three basic characteristics of the agriculture sector that explains this neglect in theories of economic development (Mellor, 1986). First, a main activity in agriculture at early stages of development is food production for domestic consumption. Second, in a developing economy the agricultural sector produces the major part of national income and employs large quantities of resources especially labour. Due to low levels of technology in agriculture however, these resources are used at low levels of productivity. Finally low income elasticity of demand for agricultural commodities, especially food and higher factor productivity in the emerging non-agricultural sectors, inter alia due to technological innovation, progressively reduces the share of agriculture in a growing domestic economy.

These views of the agricultural sector imply that agricultural growth is not effected by the process of industrialisation, that economic growth is generated through the process of industrialization and that agriculture has no significant impact on this process (Kuznets, 1971). There is thus no active role that agriculture can play since labour is already in surplus and flows freely from the declining agricultural sector to the growing industrial sector. "No policy efforts on behalf of agriculture's own modernization is thus needed because the sector declines naturally" (Timmer 1989).

According to these views it should be argued that the agricultural sector shall not qualify for policy support and incentives in view of the residual nature of its impact on economic growth. Amongst some influential South African economists this position was supported during the sixties and seventies. The explanation of policy approaches supporting industrial decentralization during the seventies and eighties will partly be found in these views.

Various pitfalls of an industrialisation orientated strategy, ignoring agricultural contributions can however be identified. Firstly, it is argued that the capital requirements necessary to accelerate labour absorption from agriculture or by protecting import substituting industries are scarce and expensive. Given the restricted availability of capital stock the rate of growth which is needed to absorb the surplus labour out of agriculture is therefore very seldom attainable (Badiane, 1990). Secondly, and this has been proven in the South African situation, is that efforts to directly promote industrial development required a

substantial mobilisation of private and public sector resources. Unless industrial development at growth points were heavily subsidised or inflationary import substituting policies were followed, industrial development incentives in general could not generate financial benefits in excess of costs. From an fiscal affordability and economic cost benefit viewpoint this approach proved to be non-viable and unsustainable and led to the present revision of the 1982 industrial decentralization incentive policy to consider other economic sectors according to economic criteria (R.I.D.P. Report, 1989).

2.2 The agricultural linkages argument.

Johnson and Mellor (1961), in their major article "The Role of Agriculture in Economic Development" in the American Economic Review, advocated the argument that growth in the agricultural sector is strongly linked to processes in the rest of the economy through factor markets as well as producer and consumer goods. This article comprehensively argued agriculture's crucial role in stimulating overall growth processes through the following functions: (a) increasing the supply of food and fibre for domestic consumption; (b) releasing labour from the agricultural sector for industrial development; (c) generating demand for output from the emerging manufacturing sector; (d) increasing domestic savings and therefore increasing rural purchasing power for the output of the manufacturing sector; and (e) providing foreign exchange earning through exports. Lewis (1954), gave support to this argument by recognising the wage good constraint and concluding that (a) industrialisation depends upon agricultural improvements; (b) industrial and agrarian revolutions always go together; and (c) economies in which agriculture is stagnant does not show industrial development.

The argument that agriculture could have a key role to play in the industrialisation and modernization of the domestic economy was put forward by Mellor (1979, 1986), because of the interrelationships and multipliers between food supply, rural purchasing power and labour and capital linkages in the economy. In Mellor's proposal agriculture performs two key related functions. First, because food makes up the bulk of expenditure amongst a large percentage of the population, food production provide great opportunities to support increased employment and increase wage earnings. Secondly, income and employment linkages outside the farming sector is stimulated because of increased spending by rural classes on farm requisites, consumer goods and other production inputs. The concept of "agricultural demand-led industrialization" is also supported by Adelman (1984) on the above lines of argumentation.

Linkages are defined as forward and backward interactions between economic sectors while the multipliers are the result of increased employment and income earnings due to linkages. The concept of multipliers and linkages was used by Van Rooyen (1989) to argue the potential contribution of developing agriculture to economic growth in South Africa. Van Seventer, *et al.*, 1991 used this approach to determine the linkages generated by agro-industries and concluded that inter agri-deliveries and intra sectoral linkages are important to determine the impact of investment decisions. They established that clusters of industries could be identified to optimize linkages and multipliers. Van Zyl and Vink (1988) quantified employment and income linkages in commercial agriculture while Kirsten and Van Zyl (1990) analysed the impact of irrigation investment by using this methodology. The dynamic nature of changing demand and supply was accommodated in most of these studies *inter alia* through predictions of population growth, changing elasticities, etc.

The concept of multiplier/linkages analyses however, has not yet been accepted widely in the South African regional decentralization programme, while emphasis is still placed on the concept of comparative/competitive advantages and Location Quotients (Barlowe, 1978; Loots, 1991). One serious problem with the use of these techniques in general input:output (I:O) calculations for multiplier/linkage analyses

in particular deals with the restricted manner in which distributional issues are incorporated. I:O analyses does not allow for households with different income levels or for population groups which have different expenditure patterns. To accommodate some of these problems a larger matrix structure was developed - the so called Social Accounting Matrix (SAM). A SAM was drawn up for South Africa at the request of CEAS. Although the present data base is not very solid, especially on a regional basis, the results are promising (De Lange & van Seventer, 1986; 1990.) This is important in view of the increasing priority of equity and distributional issues in decision making in South Africa. The extension of multiplier/linkage analyses to include agricultural commodities should on a regional basis also be considered.

Cost benefit analyses (CBA) is used to calculate the net economic impact of an investment. Shadow pricing enable the inclusion of multipliers and linkages in benefits and costs (Gittinger, 1982). In view of the relative ease and accuracy of CBA application in the agricultural sector, compared with the extensive data needed for the determination of linkages and multipliers, CBA is often favoured in project analyses (Van Rooyen, 1986). The accommodation of distributional issues within CBA furthermore enable the inclusion of equity as well as efficiency considerations (DBSA, 1991).

Both multipliers/linkages and CBA are useful "tools" to assist in determining the impact of agricultural growth and investment. Project/programme analyses might therefore consider utilizing both methodologies.

The relevancy of the linkages/multiplier argument is illustrated by the following: (i) The contribution of the agricultural sector to GDP in 1988 was 5,3 percent, with 13,6 percent of the economically active people directly employed in agriculture. However, the total impact of this sector on the economy was measured as 12,89 percent of GDP with 24,4 percent employed (Van Zyl and Van Rooyen, 1990). (ii) Van Zyl and Vink (1988) show that agriculture has the largest employment/production multiplier, while the income/production multipliers are average. From their analyses it can be concluded that increases in agricultural production will result in the creation of more job opportunities throughout the economy than can be created by an increase input/output of the same order in any of the industries included in the analyses (See Table 1). (iii) Regional comparisons are important in this respect. In Region D the agricultural sector directly employed 100 people for every R1 million of GDP. If the direct and indirect effects are considered employment however, will increase to 159,4 jobs - 50% plus more! In Region G the agricultural sector employed 189 people directly and 213 indirectly. Region F indicates 165 and 185 job opportunities respectively. In Region D the direct impact on income from R1 million increase in final demand for agricultural commodities will generate R 133 400 additional income in the agricultural sector and R246 500 in the regional economy - almost twice! (1985 prices). In Region G this contribution is R590 900 and R723 100 respectively with R590 000 and R731 200 in Region F (Table 2). (DBSA, 1990).

2.3 Multi-sectoral or intersectoral analyses.

A convincing argument can now be put forward that thinking on the role of the agricultural sector should change from a view of agricultural development versus industrial development versus manufacturing versus business development etc, i.e. a multi-sectoral approach to agricultural development in support of the development in other sectors of the economy and visa versa i.e. and an intersectoral approach. From these arguments it can be concluded that the ultimate objective of an agricultural orientated development strategy must be to foster agricultural and non-agricultural growth. Consequently, according to the Kuznets position, defining a role for the agricultural sector requires an understanding of how agriculture influences the use of factors of production in non-agricultural sectors.

Table 1 - Selected sectoral multipliers (direct and indirect) according to the 1985 production structure.

Sector	Capital	Employment	Income	Final Demand	Income	Employment
	Prod (per unit)	Prod Labourers per R mil)	Prod (per unit)	Production (per unit)	Capital (per unit)	Capital Labourers (per R mil)
Agriculture	2,4	100,9	0,93	1,6	0,39	42,0
Mining	1,8	51,1	0,95	1,3	0,53	28,4
Fertilizer and pesticides	2,2	43,2	0,76	2,2	0,35	19,6
Agricultural Machinery	1,3	43,9	0,86	1,8	0,66	33,8
Elect, steam & gas	6,5	29,2	0,94	1,6	0,14	4,5
Build const	1,6	82,8	0,88	2,2	0,55	51,8
Commerce	1,7	46,5	0,94	1,5	0,55	27,4
Transport	4,4	45,2	0,90	1,5	0,20	10,3
Services	2,2	6,4	0,98	1,2	0,45	2,9

Source: Van Zyl and Vink, 1988

Table 2 : The relative contribution of the agricultural sector in regional development : Regions D, E and F

Regions	Contribution to:			
	Gross Geographic Product		Employment	
	Direct	Indirect	Direct	Indirect
Region D	R133 400	R246 500	100	159,4
Region F	R590 900	R731 200	165	185,0
Region G	R590 900	R723 100	189	213,0

*Effect of exogenous increases of R1 million in final demand.
Source: (DBSA, 1990)

The above insights indicate the fallacy of a multi-sectoral or uni-sectoral approach, which for example view agricultural investment in competition with industrial investment, without allowing for complementary and supplementary relationships and linkages.

3. Agriculture's key role in economic growth

The argument now relates to the determination of the correct role for the agricultural sector to play to stimulate economic growth in the wider regional and national context region. Empirical analysis of experience of different countries lend strong support to the positive interrelationship between agriculture development and overall economic growth. A comparison of the growth performance of developing countries with more than a twenty percent contribution of agriculture to total GDP, during the decade of the 70's, shows that in 17 of 23 countries where the agriculture rate of growth exceeded three percent, overall GDP growth rates were higher than 5%. More over, 11 of the 17 countries with GDP growth rates below three percent displayed agriculture growth rates below one percent (World Bank 1982).

Mellor (1986) sites three conditions for agriculture to serve as a primary source of growth. First, the size of the agriculture sector in the omestic economy must be large enough to induce aggregate effects. Second, agricultural growth must be based on cost reducing technological change. Third, the rate of growth of demand for labour must be accelerated. Once these conditions are met, agriculture will have a major influence on the overall growth process through the following mechanisms:

First, by raising the supply of food for domestic production and generating foreign exchange through exports to finance the excess demand for food, it prevents the real wage rate from increasing to levels that could constrain in the non-agricultural sector; second, the expansion of rural incomes induced by cost reducing technologies creates demand for inputs and consumer goods and services; and third, due to productivity increases, resources can be transferred from the agricultural sector to the rest of economy without constraining growth in the agricultural sector. From the analyses so far it can be argued that agriculture's role in national and regional development depends on (a) the stimulation of linkages with other economic sectors; (b) food provision and food security policies and (c) trade policy. With pro-active strategies towards optimizing linkages between the agricultural sector and industry, the encouragement of local food production and an aggressive trade and export drive, agriculture is likely to play a key role in the process of economic growth and development. A framework of analyses is now proposed to operationalize this approach in the decision making process.

This framework will entail the answering of three questions affirmatively (Mellor, 1986): (i) Can agriculture production be increased in a region by means of advances in resource productivity? (ii) Can effective demand for agriculture commodities expand a pace with accelerated agricultural growth? (iii) Can a dynamic agriculture provide an effective demand pull for growth in the other sectors? It must be realised that these three questions will have to be answered in terms of policy objectives. In view of the emerging situation in South Africa, a fourth question can in this respect be added: (iv) Can agriculture development and agriculture growth contribute to a more equitable efficient and sustainable economic development pattern within a region and between regions (Van Rooyen, 1989). This issue primarily deals with policy and is now examined.

4. Policy setting in different environments

4.1 The changing political environment

With the above conclusions on the role of agricultural development in mind, the first objective of this paper has been met ie. to determine if the agricultural sector does have a contribution to make to economic growth and regional development. One issue however, is still outstanding to gain a perspective on the impact of agricultural investment. This issue deals with the question of appropriate agricultural policies and strategies to ensure a positive contribution from this sector. This issue of course is very much related to the changing political market. The political market in South African agriculture is presently

undergoing dramatic changes with various new players, while the status of some of the old players are uncertain i.e. agricultural unions, regional governments implementing institutions etc. Although the results of changes in the political market on agricultural matters is still unclear and sometimes even confusing, it can be accepted that equity and redistribution of access and resources will list high on the political agenda. The recent scrapping of the racially based land acts should be viewed in this context. The redistribution of access and entitlements will change historically determined optimum positions. The concept of economic efficiency can thus not be viewed as politically neutral. These happenings of course will have an impact on agricultural policies and strategies in national and regional context. The sheer magnitude of the agricultural sector, formally employing 1.4 million of the EAP, housing \pm 5 million persons in white rural areas and further more accommodating 1 million plus small holders in the homeland areas identify this sector as important for growth and equity considerations. Linked to these realities are issues related to land reform, food security, farm labour.

4.2 Policy Settings

Various approaches to agricultural development policy can be argued, based on the phases of agricultural transformation (Mosher, 1966; Mellor, 1966; Hayami and Ruttan, 1972; Johnston and Mellor, 1961). In this section the relation between agricultural policy and different environments as defined by Timmer (1988) will be highlighted in view of the applicability of this approach to South Africa where the agricultural economy is faced with differing environments within the political, social and economic domains (Brand, *et al* 1991). These environments are now briefly discussed.

(i) Getting agriculture moving (Mosher environment):

In the early stages of development the environment is concerned with "getting agriculture moving" (Mosher 1966). A significant share of a country's resources may well be extracted from agriculture at this stage, because the rest of the economy is so small. Direct or indirect taxation of agriculture is therefore the only significant source of government revenue. Building a productive agriculture requires that some of these resources be devoted to the agricultural sector itself. These resources should be allocated to research programmes and infrastructure as well as to favourable price incentives to farmers to adopt new technology as it becomes available.

(ii) Agriculture as contributor to economic growth (Johnston-Mellor environment):

As investments in agriculture begin to pay off, the second phase emerges in which an environment is created with the agricultural sector as key contributor to the overall growth process through a combination of factors outlined by Johnston and Mellor (1961). Differences in labour productivity and income between the rural, industrial and urban sectors is still observed. The crucial emphasis is on activating the linkages and multipliers and stimulating industrial development.

(iii) Integrating agriculture into the economy (Schultz-Ruttan environment):

The process of narrowing the gap between the above mentioned sectors gives rise to the third environment for agriculture, in which agriculture is integrated into the rest of the economy through the development of more efficient labour and credit markets that link the urban and rural economies. The improved functioning of factor markets merely speeds the process of extracting labour and capital from those uses in agriculture with low returns for those in industry or services with higher productivity. The direct proportional contribution of agriculture to the economy is now declining although productivity and income differentials are declining. The improved market action have welfare consequences as well, because they lessen the burden of individuals trapped in low-

income occupations. These gains has costs, however. As agriculture is integrated into the macro economy, it becomes much more vulnerable to fluctuations in macro policies and prices and level of aggregate activity and trade (Schuh 1979). Management by traditional instruments for the agricultural sector, such as extension activities and specific programmes for commodity development and marketing becomes increasingly ineffective and costly (Hayami and Ruttan, 1971).

(iv) Agriculture in industrial economies (DG Johnson environment):

The treatment of agriculture in industrialized economies create the fourth environment for development of agriculture. As the share of the labour force in agriculture falls below about 20 percent and the share of food expenditures in urban households budgets drop to about 30 percent, low-cost food is not as important to the overall economy nor is it as expensive in relative terms. A host of political problems arise if low farm incomes are allowed to push resources out of agriculture. Farmers do not want to leave, especially if they sell farms under duress at low prices; and urban-based based unions do not want to see them coming to the cities in search of industrial jobs. A nostalgic memory of farming as "way of life" leads many farmer migrants living in cities to lend political support to higher incomes for agriculture, even at the expense of higher grocery bills, which may be barely noticeable by wealthy consumers. By this stage of the process, the share of the farm-gate price of the commodity in the consumer's market basket is small because of processing and marketing costs. Commodity price supports become the primary vehicle for supporting farm incomes, and the subsidies have substantial effects on resource allocation. Farmers invest heavily in land and machinery when farm prices are high, only to produce surpluses that are impossible to sell profitably (Johnson, 1985). Eventually, the budgetary and distortionary costs of this approach become so high that even very wealthy countries such as the European Community, Japan, or the United States must face choices to diminish over agricultural support.

The policy environments for agriculture during these four phases and appropriate policy settings in each environment are shown in Table 3.

4.3 Role of the public sector

The particular policy setting will have a definite impact on policy measures and the role of the public sector in support of agricultural development. The concept of a "normalized" agricultural system clearly does not correspond to real world situations. Mosher's concept of functional components of the agricultural system however, still provides sound guidelines (1971). This view argues that farming is influenced by the agri-milieu, consisting of political, economical, environmental, cultural etc, dimensions and dealing with policy and regulatory services; commercial support activities (provision of inputs, credit, marketing, management services); and non-commercial support services (research, extension, provision of bulk infrastructure). The role of the public sector would primarily focus on policy formulation, regulatory services and supporting research, extension and bulk infrastructure programmes. The public sector would furthermore have a responsibility to assist the emerging private sector to farm and to move towards participating in the provision of commercial services through an "affirmative programme" approach (Van Rooyen, *et al*, 1990). Policy measures and strategies to achieve this will of course be designed according to the relevant environment.

4.4 Policy settings in South Africa.

The application of the above framework to South Africa, takes account of the dualistic nature of agriculture. "Homeland" agriculture predominantly finds itself in the "Mosher environment", although some successful applications of

Table 3: Differing environments, policy settings and policy measures in agriculture.

Environment	"Getting Agriculture Moving" (Mosher Environment)	Agriculture as contributor to Growth" (Johnston-Mellor Environment)	"Integrating Agriculture into the Macro (Schultz Ruttan Environment)	"Agriculture in industrial Economies" - (D.G. Johnson Environment)
Policy settings	institutional change; new appropriate technology; access to markets and incentives; significant investment in rural infrastructure and human capital; local institutional development	establish market links with industry; technology and incentives to create a dynamic agricultural sector; improve factor markets; to mobilise rural resources and incomes	declining share of food in urban budgets; push to make agriculture efficient; shift resources out but income distribution programmes for lagging rural productivity environmental concerns and "way of life" issues	small share of food commodities in consumer budgets; income distribution a political issue; unemployment in the industrial sector creates pressure to keep labour in agriculture;
Policy measures and strategies	Affirmative programmes to support emerging and small holder farmers improved political lobbying power; small scale and scale neutral technology; infra-structural development; access to farmer support services; human capital development and training; land acquisition programmes; upgrading of market entitlements, etc.		Restructuring programmes in commercial agriculture: increase price responsiveness; more flexible arrangements to engage production factors - land, labour, capital; improved financial and strategic management; non-farming employment programmes; refined lobby actions; direct consumer production linkages	

Adapted from Timmer, 1988

agricultural development aid ie. through farmer support programmes (Thomas and Van Rooyen, 1990; Singini and Sibisi, 1990) did create a "Johnston-Mellor" environment. Linkages with the modern industrialised South African economy resulted in alternatives to homeland small holders of which farming, a low profit earning activity, is considered as one of many. Legal constraints and institutional barriers furthermore reduce incentives to allocate productive resources to farming in these areas. Policy measures emphasising entitlement and affirmative programmes will have to be considered within these two environments (Brand, *et al* 1991). Commercial farming in white South Africa largely finds itself in the "Shultz-Ruttan" environment. Some typical "D.G. Johnson" features, are also now emerging to influence South African agriculture. Policy measures in these environments would focus on the restructuring of the farming sector and delivery systems to become more efficient, increasingly flexible and more responsive to prices and changing consumer tastes (Brand, *et al*, 1991). Political pressure to attend to redistributional issues, both from the side of white farming lobby groups and black political groupings and increasing urban rural competition is also observed. Policy formulation in the future South Africa will have to take account of the various conditions prevailing in regions to ensure an effective policy mix to optimise the contribution of the agricultural sector to economic growth and distribution of welfare. Democratic or broad-based consultation and participation also seems a prerequisite for future policy formulation. Some policy measures and strategies appropriate to the South African environment is listed in Table 3.

It is important to note that alternative strategies to achieve certain policy objectives should equally be considered. This point is illustrated by the following argument: By using "typical"

capital:output ratios for farming in South Africa the impact of R1 million investment in agriculture in Region D was determined to generate 80 jobs over the short run and 48 permanent jobs in the economy (Van Seventer, 1991). These results ranked agriculture fourth behind trade, financial services and commerce. Agriculture however, created almost twice the number of jobs than manufacturing. If the capital:output can be improved through the promotion of alternative farming systems linkages can even be improved. Comparisons between two agricultural development strategies in this respect is informative. Farmer settlement schemes funded by DBSA with an objective to establish full time irrigation commercial farmers recorded fixed capital investment per farmer of R200 000 with annual variable costs of R4 500. Farmer Support Programmes (FSP's) reaching + 30 000 small holders on the other hand recorded fixed capital investments of R5 000 per irrigation and R350 per dryland farmer. Annual variable costs were R2 000 and R780 respectively. As to productivity increases FSP's generally recorded substantial higher levels than settlement projects (DBSA 1991;). Higher income elasticities of demand amongst poor rural groups supported through FSP's, furthermore argues in favour of these broad based FSP as a strategy to optimise linkages (Van Rooyen, 1989). From an economic impact viewpoint small holder support programmes should therefore receive priority in regional agricultural investment programmes. Institutional arrangements in this respect are also important. The notion of "one Department of Agriculture" with a central policy making function does have merit. However, it must be realised that various policy settings occur. Specific policy measures will be required with differentiated implementing capacities preferably at regional and sub-regional levels. The role of the public sector will therefore differ within regions.

5. Determining the role of agriculture in the regional economy

From the above analyses it follows that: (i) the South African agricultural sectors' optimal contribution to regional growth should be sought in inter-sectoral relationships and linkages. Intra-sectoral and multi-sectoral analyses will not capture this sectors true role; (ii) to ensure an optimal contribution from the agriculture sector, the policy setting and environment will have to be determined and policy measures formulated accordingly. These policy measures and strategies will determine the role of the public sector as well as financial report and incentives granted to the agriculture and sector; (iii) the changing political market with a corresponding change in the social welfare function, will have an impact on agriculture policy objectives and measures emphasising distributional considerations.

In order to determine the role of the agriculture sector the following approach is now proposed.

This approach attempts to:

- i) ask the "right" questions as proposed in section 3;
- ii) assess the answers in terms of the applicable policy environment and policy setting; and to
- iii) formulate appropriate policy measures, strategies and institutional responsibilities and determine financial support.

6. Conclusions

The role and contribution of the agricultural sector in regional development has been argued positively for economic growth and development. Promoting support programmes for commercial and subsistence/emerging agriculture should therefore receive priority in regional support programmes. An analytical approach to determine agriculture's role has been proposed as well as to establish the required policy measures and public sector support. Two requisites for the application of this proposed approach needs to be emphasised:

- (i) A reasonable level of data and information is required. It is however, believed that this data base is sufficiently representative for South Africa's various regions to determine major policy approaches and support programmes. The establishment of commodity based linkages and multipliers will further enhance these processes.
- (ii) In the present South African environment consultation and participation of all relevant groupings during policy making processes seem imperative. Each region will have to give content to this aspect in its own right.

Note

1. This paper reflects the opinions of the authors. It does not necessarily represent the policy of the two institutions concerned. The contribution of the following is acknowledged with appreciation: Mike Muller, Dirk van Seventer, Gerhard Coetzee and Nick Christodoulou.

References

- ADELMAN, I. (1984) - Beyond export-led growth, *World Development*, Vol 12, No 9:937-949.
- BADIANE, O. (1990) - The Role of Agriculture in Economic Development, Paper presented at the Inter-Conference Symposium on Agricultural restructuring of Southern Africa, Swakopmund, Namibia.
- BARLOWE, R. (1978). *Land Resource Economics*. Prentice Hall, Englewood Cliffs N.J.

BRAND, SS, CHRISTODOULOU, NT, VAN ROOYEN, CJ and VINK, N. (1991) - Agriculture and Redistribution : A growth with Equity Approach. Unpublished paper.

DE LANGE, AR and VAN SEVENTER, DE. (1986). Implications and implementation of income redistribution : An investigation based on social accounting matrix, Post Conference Series, Second Carnegie Inquiry into Poverty and Development in Southern Africa.

DE LANGE, AR and VAN SEVENTER, DE. (1990). The contribution of social accounting matrices to economic enquiry in South Africa: A Review, *Development Southern Africa* Vol 7, No 2.

DBSA. (1991). Internal CBA discussion paper - Rural and Agricultural Group.

DBSA. (1990). Economical and Social Memoranda Regions D, F&G, Midrand.

FENYES, TI, VAN ZYL, J and VINK, N. (1987). Structural imbalances in South African agriculture. *SAJE*, Vol 56, No 2&3.

GROENEWALD, JA and WE KASSIER. (1990). Setting the Scene, Country paper: SOUTH AFRICA IAAE/AGRECONA Inter-Conference Symposium, Rössing Country Club, Swakopmund, NAMIBIA.

GITTINGER, JP. (1972). *Economic analysis of agricultural projects*. London, The John Hopkins University Press.

HAYAMY, Y and RUTTAN, VW. (1971). *Agricultural development: An international perspective*. The John Hopkins Press. London.

JOHNSTON, BF and MELLOR, JW. (1961). The role of agriculture in economic development. *American Economic Review*, Vol 51, No 4:567-593.

KIRSTEN, JF and VAN ZYL, J. (1990). The economic impact of irrigation agriculture : Methodological aspects and an empirical application. *Development Southern Africa*, Vol 7, No 2.

KUZNETS, S. (1971). *Economic growth of nations: total output and production structure*. Cambridge, Mass.

LEWIS, WA. (1954). *Economic development with unlimited supplies*. The Manchester School, Vol 2.

LOOTS, JL. (1991). Comparative advantage in the Western Cape. Position paper for "Growing the Cape". Unpublished.

MELLOR, JW. (1966). *The economics of agricultural development*. Ithaca, N.Y., Cornell University Press.

MELLOR, JW. (1979). *New economics of growth*, Ithaca, N.Y., Cornell University Press.

MELLOR, JW. (1986). Agriculture on the road to industrialization. In "Development strategies reconsidered", J.P. Lewis and V. Kallab, (editors) *US Third World Policy Perspectives No.5*. Transaction Books for the Overseas Development Council, New Brunswick, N.J.

MOSHER, AT. (1971). *To create a modern agriculture. Organization and planning*. New York, Agricultural Development Council.

RIDP REPORT. (1989). Report of the Panel of Experts on the Evaluation of the Regional Industrial Development Programme as an Element of the Regional Development Policy in Southern Africa.

ROSENSTEIN-RODAN, PM. (1943). Problems of industrialization of Eastern and Southern Europe. *The Economic Journal*, Vol LIII, June Sept: 203-211.

SINGINI, R and SIBISI, L. (1990). Can farmer support programmes generate employment and promote development in South Africa? "Development Employment and the New South Africa". Development Society of Southern Africa.

SYRQUIN, M. (1989). Sector proportions and economic development: The evidence since 1950. In "The balance between industry and agriculture in economic development". Vol. 2, Sector proportions. Williamson, J.G. and V.R. Panchamukhi (eds.). MacMillan Press, London.

THOMAS, J AND VAN ROOYEN, CJ. (1990). Can farmer support programmes generate employment and promote development in South Africa? "Development Employment and the New South Africa". Development Society of Southern Africa.

TIMMER, CP. (1988). The agricultural transformation. In *Handbook of development economics*, H.B. Chenery and T.N. Srinivasan (eds.), vol. 1, North-Holland, Amsterdam. (Chap. 8).

VAN ROOYEN, CJ, VAN ZYL, J and VINK, N. (1990). Privatization or Nationalization in Agriculture. Paper read at the AEASA annual conference in Durban, September, 1990.

VAN ROOYEN, CJ. (1989). Presidential address, 27th Annual Conference of the Agricultural Economic Association of Southern Africa, 25th September 1989, University of the Orange Free State, Bloemfontein.

VAN ROOYEN, CJ. (1986). Guidelines for economic analysis of agricultural development projects - Development Southern Africa, Vol 3, No 4.

VAN ZYL, J AND VAN ROOYEN, CJ. (1990). Agricultural production in South Africa, Harvest of Discontent, The Land Question in South Africa. IDASA

VAN ZYL, J AND VINK, N. (1988). Employment and growth in South Africa: An agricultural perspective - Development Southern Africa, Vol 5, No 2.

VAN SEVENTER, DEN. (1991). Region D multiplier effects. Unpublished document, DBSA.

VAN SEVENTER, DEN. FAUX, CS and VAN ZYL, J. (1991) - An input-output analyses of agribusiness in South Africa.

WORLD BANK. (1982). World Development report. Washington D.C.: World Bank.