

THE USE OF AN ACCOUNTING MATRIX IN INTEGRATING ECONOMICS INTO TOWN AND REGIONAL PLANNING

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The decisions of town and regional planners have economic consequences not only in their direct costs but in the ways local economies function thereafter. However, the lack of data and the fact that in South Africa the location and development of towns were governed by overriding factors such as the discovery of minerals and government policy on physical decentralisation, meant that many physical planners in South Africa did not require a strong economic background for their work. Under present conditions these planners find that their training and experience are inadequate.

In order to address these problems in a practical, management-based manner, this paper suggests the use of an approach whereby a local economy is described in terms of an accounting matrix. This is useful in making the most of limited data and in describing the essen-

tial features of a local economy succinctly in terms understandable by non-economists. The approach is illustrated by a description of a relatively simple settlement economy. Its use in deciding on an appropriate programme of physical planning is discussed.

Die besluite van stads- en streekbeplanners het ekonomiese gevolge, nie net ten opsigte van die direkte koste daarvan nie, maar ook ten opsigte van die wyse waarop plaaslike ekonomieë daarna funksioneer. Die tekort aan data en die feit dat die ligging en ontwikkeling van stede in Suid-Afrika deur oorheersende faktore beheer is soos die ontdekking van minerale en regeringsbeleid ten opsigte van fisiese desentralisasie, het egter daartoe gelei dat baie fisiese beplanners in Suid-Afrika nie 'n stewige ekonomiese agtergrond in hul werk nodig gehad het

nie. Onder die huidige omstandighede ondervind hierdie beplanners dat hul opleiding en ondervinding onvoldoende is.

Om hierdie probleme op 'n praktiese, bestuursgeoriënteerde wyse aan te spreek, stel hierdie referaat voor dat 'n benadering gebruik word ingevolge waarvan 'n plaaslike ekonomie in terme van 'n rekeningkundige matriks beskryf word. Dit is 'n nuttige metode aangesien die grootste voordeel moontlik uit beperkte data gehaal word en die wesentlike kenmerke van 'n plaaslike ekonomie kort en bondig beskryf word in terme wat vir die nie-ekonoom verstaanbaar is. Die benadering word toegelig met 'n beskrywing van 'n relatief eenvoudige nedersettingseconomie. Die gebruik daarvan ten einde te besluit op 'n geskikte program vir fisiese beplanning, word bespreek.

INTRODUCTION

Town and regional planners take differing decisions on land use and physical structures and these have differing economic consequences not only in their direct costs but in the way in which local economies function thereafter. Town and regional planners therefore need to have economic data provided in such a way that they are inspired to contemplate solutions which are appropriate to the particular economies they are dealing with. They must be able to select and recommend suitable projects and they must be able to evaluate achievements in economic terms. This paper deals with certain shortcomings in this regard in South Africa and suggests a way towards achieving these aims more effectively.

The need to integrate economics into town and regional planning more effectively in South Africa was dealt with recently by McCarthy (1983) who, looking at the problem of development in the Third World, pointed out the importance of understanding the nature of development, the characteristics of different socio-economic systems and the particular constraints which inhibit development. Van Zyl (1983) was one of a number of people who pointed out inadequacies in planning practices which arise because town and regional planners were "basically trained to do physical planning and not 'comprehensive' or non-physical (eg economic and social) planning." He said that: "The wider concept of planning clearly requires a multi-disciplinary,

multi-professional approach, the scope of which should be determined by the particular job on hand and not by the limits of one or other profession".

The problem is not one of a generally inadequate background amongst planners of the theory and practice of regional economics. Stanwix (1985) in Chapter 2 reviews the theoretical framework for the consideration of regional economic growth. He deals, inter alia, with regional policy goals and analysis, neo-classical regional growth theory, the export-base model, the cumulative causation model, the core-periphery model, the Richardson model and discusses these in terms of how appropriate they would be in undertaking a study of the Natal regional economy.

The export-base model appears to have been used most often. In its modern form which takes into account supply-side considerations as well it is understood that a local economy needs an economic base, that is it needs to "export" goods and services to other local economies, and that it has a local income-multiplier which can be stronger or weaker depending on the size and sophistication of the particular local economy. Good connections between economies promote activity; poor connections inhibit it. A vigorous economy is one that constantly renews its export base and increases its income multiplier. Dewar and Dewar (1974) discussed the policies affecting the regional development in the Western Cape essentially in these terms. Border (1979) also discussed the factors to be taken into account with regard to the economic growth and development of Bloemfontein in these terms. Davies et al (1980) decided that the regional input-output methodology, which is closely allied to the export-base model, would be the most appropriate technique to be used in developing a "strategy for survival" for the greater East London/King William's Town development region.

In South Africa a major problem is that data is not readily available in a form in which detailed analyses can be made of local economies in the ways outlined above. Export-base and input-output studies usually require considerable effort and time. Physical planning, therefore, relied for the most part on a limited number of key statistics about local economics, a broad understanding of what was happening in the economy as a whole, and the assumption that unless causes could be found to the contrary, the physical distribution of activities would tend to continue in the future as they had in the past. For the conditions of the times this approach was probably satisfactory. The location and development of towns were governed by overriding factors such as the discovery of minerals or by an explicit government policy with regard to decentralisation of activities which was based on social considerations. The economies of towns and regions could be relied upon to show

long-term growth and economic consequences of physical planning decisions did not seem to be material. An example of physical planning under these conditions is given in the description provided by Du Plooy (1976) about the planning that was done for the new town of Atlantis. However, the situation arose that many planners who had not needed a very strong economic background found that their training and experience were inadequate for present conditions: hence the comments by McCarthy and Van Zyl referred to earlier.

The evidence, much of it informal, is that this situation is no longer regarded as being satisfactory in South Africa, as elsewhere. Elaborate proposals have been shelved because they were out of touch with economic reality either in terms of demanding expenditures beyond what society was willing to allocate or misunderstanding the dynamics of the areas they were dealing with. McCarthy (1984) questioned the validity of the plan for the Pretoria-Witwatersrand-Vereeniging region taking into account, inter alia, the limitations concerning the assumptions; the model; and the employment ratios. He warned against the consequences of inaccurate forecasts: incorrect planning and budgeting and misdirection of the course of the economy. Faccio (1984), Van Zyl (1984) and Dewar and Dewar (1974) also dealt with the inadequacies of planning in not taking economic factors properly into account. The need to be more effective in this regard vis-a-vis Third World conditions prevailing in South Africa was stressed by Van Zyl (1983) and Van Zyl (1984).

The response to these shortcomings has been varied. McCarthy (1984) suggested that rather than relying on a single projection a set of alternative forecasts should be used. Alternative scenarios were, in fact, used in planning Atlantis (Du Plooy 1976) but these merely indicated "high" and "low" projections without changing the essentially passive response of the physical planners to projected situations. Barnard (1985) describes a computer based technique for dealing with the complex task of handling all the interfacing subsystems and suggests generating scenarios until a "best scenario is finally constructed".

These responses do not get the roots of the problem. Hulley (1984:18), in a somewhat different context, gets close: "The central question addressed in a social impact assessment is: What difference is the proposed development making and likely to make in the lives of residents of the area targeted for development?" Boaden (1982) was also close when using an income-multiplier analysis as a way of arriving at appropriate housing policy. His example is referred to again later in this paper.

AN ACCOUNTING — AND PRACTICAL MANAGEMENT — APPROACH

In order to address the problems outlined above in a practical, management-based, manner this paper suggests the use of an approach whereby a local economy is described in terms of an accounting matrix. A matrix provides a convenient framework for ordering whatever data is available. By ordering the data in this way useful ideas are provided as to what inferences can be made. A matrix allows cross-checks to be made of different estimates. A description in terms of a matrix can indicate the essential dynamic features of a local economy succinctly and in terms understandable by non-economists. In many instances this approach is good enough for practical physical planning.

The approach is illustrated in the next section by an example for a relatively simple "settlement" economy. The description is based on studies done by the author in consultations but which he does not wish to quote directly and although the example is a hypothetical one it does reflect many of the characteristics which are found in settlement economies.

AN EXAMPLE: A BRIEF DESCRIPTION OF ECONOMIC ACTIVITY IN "SETTLEVILLE" IN 1985

Exhibit 1 summarises in "macro" terms the Settleville economy. The figure is an accounting matrix in which the first five rows reflect current incomes and in which the first five columns reflect current expenditures for various broad categories of activity in the local economy. The sixth column reflects expen-

ditures on capital formation by all sectors of the economy. Distinction is made between the "formal" and the "informal" productive sectors. "R.O.W." indicates the "rest of the world" which, as far as Settleville is concerned, includes all economic activities that take place outside the defined physical boundaries. The "surpluses" row contains the differences between the incomes of the various sectors as reflected in the rows above and the expenditures of those sectors as reflected in the relevant columns.

The matrix is an adaptation for local use of the national accounts of a nation and can be as useful in grasping the essentials of the local economy as national accounts are useful in obtaining an understanding of a nation's economy. It will, in use, need descriptive elaboration of the data it contains. This is done briefly below.

The export base of the region is fundamentally the income that households earn from the "rest of the world". It was estimated that some 15 000 households earned an average of R340 per month mainly from being employed as unskilled workers in the adjoining town. The corresponding total is shown by the figure of R5 100 000 in the "household" row and the "R.O.W." column in the matrix.

Households are also shown to have earned: R300 000 from being employed by government in various rôles such as social workers and teachers; R60 000 per month from employment in the informal sector and R170 000 per month from the formal sector partially

in the form of salaries and wages paid by local businesses to their employees and partially as the net income taken out of the businesses by the owners.

In the "households" column, households are shown to have spent a considerable amount of their income in the formal sector of the local economy – some R1 700 000 per month, mostly in purchases from the approximately 30 formal shops in the area. The bulk of the household expenditure – R3 380 000 per month – was, however, spent outside the area in the "rest of the world". This would have included purchases made in the adjoining town but also the train and bus fares incurred whilst earning their incomes outside the area. Some R50 000 per month was estimated as having been spent in the informal sector in patronising local vendors, shebeens, etc. Taxes paid amounted to R200 000 per month and household savings were estimated to have been R300 000 per month.

The formal sector is shown as having earned the bulk of its income from sales to households – R1 700 000 per month. Sales to the informal sector were estimated to have been small – R10 000 per month. Income earned by formal sector businesses from capital expenditures on buildings, equipment and stocks in the area are shown to have been R70 000 per month. R50 000 per month was earned in sundry sales to the "government" sector. Business sales to other businesses are shown in the intersection of the first column and first row, amounting to R20 000 per month. These would include purchases of sundry material from local shops

by the one formal building firm operating in the area. The bulk of the expenditure of the formal sector, just as with households, is shown to have been purchases made in "the rest of the world" mainly by the shops of the goods they trade in – R1 400 000 per month. Payments and income accruing to households were estimated to have been R170 000 per month as indicated before. Surpluses accruing to the businesses as such and not distributed to the owners were estimated to have been R60 000 per month.

The informal sector is shown as having earned the bulk of its income from the provision of services to local households – R50 000 per month. R10 000 per month was estimated as having been the income from services to the "rest of the world", eg attendance at local shebeens and cinemas by people from outside the area. The amount of R30 000 per month under the column "Investment" reflects the value of new "informal" housing that was built. The expenditure of the informal sector was mainly the informal income of the household sector amounting to R60 000 per month although there were purchases in the "rest of the world" amounting to R20 000 per month, eg for some of the materials used for informal housing and some of the ingredients used in brewing liquor in the shebeens. There were also purchases of R10 000 per month from the local formal sector.

The "government" sector is shown as having raised some R200 000 per month in revenue from the "formal" sector mainly being the regions' share in general sales taxes and direct taxes paid by businesses. It also raised R200 000 per month in direct taxes paid by households. Current expenditure by government in the form of social pensions, schooling, clinics, etc is shown as having exceeded income from the area by some R100 000 per month which is reflected in the negative figure of R100 000 in the "surpluses" row and the "government" column.

The "rest of the world" column reflects the expenditure of the rest of the world in the region and thus reflects the "exports" of the region. Conversely the "rest of the world" row reflects "imports" by the region. Thus the figure

EXHIBIT 1

SUMMARY OF ESTIMATES OF ECONOMIC ACTIVITIES IN "SETTLEVILLE" — 1985
(Rows reflect incomes and surpluses – columns reflect expenditures)

R 000's/month

	Formal	Informal	Households	Govt	R.O.W.	Investment	Totals
FORMAL	20	10	1 700	50		70	1 850
INFORMAL			50		10	30	90
HOUSEHOLDS	170	60		300	5 100		5 630
GOVERNMENT	200		200				400
R.O.W.	1 400	20	3 380	150			4 950
SURPLUSES	60		300	-100	-160		100
TOTALS	1 850	90	5 630	400	4 950	100	

of minus R160 000 per month in the "surpluses" row and the "rest of the world" column reflects the situation that "exports" exceeded "imports" by R160 000 per month and the negative sign therefore indicates a balance of payments surplus for the region.

In national accounting terms "surpluses" must always equal "investments" and is something which follows from setting up the data in the form of a matrix. It is an insight of considerable importance in economic theory. What is reflected here is that the "formal" sector had operating surpluses of R60 000 per month and that the "household" sector had operating surpluses (more commonly termed "net personal savings") of some R300 000 per month. The "government" sector is shown to have had a deficit of R100 000 per month and the "rest of the world" had a deficit (thus giving the local economy a surplus) of R160 000 per month. These surpluses and deficits totalled R100 000 per month which equals the investment expenditure in the "investment" column. Re-arranging the data and transferring the balance of payments deficit to the "investment" side of the equation shows that the domestic economy generated some R260 000 of surpluses which were "invested" in real assets to the tune of R100 000 and in building up financial assets (the difference between money earned from "exports" and money earned from "imports") of R160 000. What is not immediately apparent, however, is that in fact the surpluses in the local economy were nearly all moved out through "capital outflow" by the residents investing their savings in financial institutions which did not invest in the region and that the capital formation that took place had to be funded by a "capital inflow" stemming from non-residents. Thus the local economy financed capital formation outside the region and the capital formation that did take place required "foreign" financing. The implications of this is discussed in the next section of the paper.

The description given above is brief. There is no reason why each item could not be elaborated upon in considerable detail both qualitatively and quantitatively.

A fuller description of the formal business sector would be helpful. In more developed economics it might be useful to try and develop an input-output matrix within the formal sector row and column in order to better understand the interrelationships between businesses – a matter of considerable importance in developing a structure plan. However, the amount of detail that would be provided would have to be a compromise between what information the planning team would like to have and the difficulties and costs that would be involved in obtaining the data. An essential supplementary element in the description would be to describe the quality of the housing stock and what the social facilities are like – in Settleville these are very poor indeed.

SOME USES IN PHYSICAL PLANNING

For the purposes of illustration it is assumed that the aim of planning in the Settleville economy would be to upgrade living conditions and aid development in whatever way physical planning could make a contribution, but that not a great deal of money is likely to be forthcoming from outside the local economy. To the extent that it is available it will need to be very judiciously allocated and as far as possible the World Bank principle of "replication" would need to apply. This is typical of the kind of brief facing physical planners to-day. For example Viljoen (1986:2) describes the problem vis-a-vis the situation in informal shack areas around Durban as "Provision of engineering services will have to be applicable to a third world situation using appropriate technology which will be affordable by the community".

The pace at which capital formation can take place would therefore in the first instance be limited by the pace at which real incomes are rising. The data indicates that there were in all about 17 000 households earning an average of R350 per month in 1985. If real incomes were to rise at, say, 3 per cent per year then, in 1985 money, real incomes would be rising by some R2 100 000 per year not counting any increases in the numbers of households. If 50 per cent were to be available for paying for the costs of new capital

formation and 50 per cent of the costs relating to new capital formation were to relate to operating and maintenance expenses, then some R500 000 per year rising each year by R500 000 would be available to service new capital formation. At present rates of interest (of the order of 17 per cent per annum for long-term money) capital expenditures each year would therefore have to be limited to below R3 million per year. The proportions used in the above example would need to be verified as being reasonable, but what is important is to arrive at the correct order of magnitude. Errors in the estimates will not radically change the conclusion that capital expenditures would have to be modest in order to be able to be absorbed by this particular economy unless they were to be subsidised.

How best to propose a programme of capital expenditures would then have to be considered. The experience that the World Bank has accumulated over 35 years of aiding development and reported by Baum and Stokes (1985) needs to be taken into account. The concept of "targeting" is meant to indicate that it is always necessary to be explicit in which way specific groups of people are intended to benefit from particular projects. As far as possible benefits should be quantified and be projected within a clear time frame. Thus cost-benefit studies are required for each and every expensive project that is being considered. As part of such cost-benefit studies the benefits to the local economy as a whole of any particular project that is being contemplated can be traced through reasonably quickly. The benefit of increasing the level of investment in the economy has a multiplier effect through the economy and it is worth making explicit estimates of how the figures in the matrix are likely to change. For example, a housing scheme might provide better accommodation, but if the work is done by outside contractors and workmen, "imports" will siphon off most of the multiplier effect. After such houses have been built employment within the region might not have increased at all, earnings will not have been enhanced on any sustainable basis and residents having to pay higher rents might actually be worse off. Smaller

scale housing schemes based on training local residents so that they can do the work themselves could, on the other hand, provide lasting benefits. Local incomes could be increased and maintained at the higher levels because of people having developed higher skills and improved capabilities and the general possibilities to afford the end-result will have been improved if other measures were taken concomitantly to contain the income multiplier within the local economy. Boaden (1982:157) has dealt with this particular subject in some detail. In the summary to his paper he says: "For purposes of illustration, the community is defined as Durban's African population which has its own economy which interacts mainly with that of Metropolitan Durban. If the economic position of this community is to be improved cash inflows to the local economy must be maximised, cash outflows from the economy must be minimised and circulation, ie the number of transactions occurring within the local economy before the cash flows out of the system must be as large as possible. The housing process, through the choice of appropriate technology, provides an opportunity for this to happen". The way in which he demonstrates his points in his paper is fundamentally taking national accounting concepts and tracing through the multiplier effects of various possibilities.

Just as with smaller housing schemes, local incomes can also be increased and maintained at higher levels by breaking down infrastructure works into smaller scale projects. The World Bank has a great deal of literature on the subject and private consulting firms are now offering specific expertise in this area.

The point about development assistance is that it is not good enough to deal in principles and offer solutions without taking the local situation into account. The analysis provided above allows the particular likely consequences of any proposed projects to be explored and formally traced in order to give the physical planning team both a clear indication as to what kind of projects may be considered, and also to put them into a position to choose between projects which are both

appropriate to the needs of the people and their abilities to pay.

In the end, however, the local economy will remain stagnant if it cannot increase its "exports" to the "rest of the world". A central feature of the Settleville economy is that its major export is the sale of its labour and that it has a very high level of "imports". In this respect it is no different to the economy of a typical residential suburb within a town. However, if the residential suburb has growing unemployment and difficulties in finding work for its residents, it too, might need to take explicit action in order to improve its fortunes. In the case of Settleville any physical planning which will (within the constraints of affordability) enhance the ability of residents to improve their net earnings from the sale of their labour will be highly prized. For example anything which allows them to reduce the inordinate time it takes to get to work, with perhaps as simple a solution as constructing bicycle tracks and ensuring the safekeeping of bicycles at the bus terminuses, might have a high benefit to cost ratio. In the long run a local training centre which will enable skills to be improved and salaries and wages to be higher than they would otherwise be might be a good project. Any physical planning which will encourage local enterprise will allow the domestic multiplier to be increased or even increase exports. And so on. The challenge in economic description is to enable physical planners to visualise the impact that their proposals would have on the local economy and to be able to quantify economic benefits relative to costs.

To some extent the "capital outflow" referred to earlier where local residents prefer to invest their savings in financial institutions which invest outside the area rather than in real assets within their community is a constraint on growth. Investment then requires outsiders to perceive opportunities within the area and this is often not so easy to achieve. The Settleville economy is characterised by generating savings, which are already higher than the investment actually taking place there. If physical planning can contribute in any way to a situation whereby local inhabitants perceive more local oppor-

tunities this would be a positive contribution to development. In this regard the indirect effects of carefully targeted projects which generate pride in the community could be of great importance.

These examples indicate in which ways a better understanding of the local economy as provided by the kind of description given above can be a stimulus to creative thinking about possible solutions as well as assisting in practically selecting priorities. In order to meet another criteria of the World Bank, namely, accountability, the estimates could be updated periodically. Then it will be possible to assess whether the measures that were taken did contribute to the desired economic aims or not. Eventually, it would be hoped that statistics would be gathered on this basis as a matter of course.

If the constraint on self-help is lifted then it is clear that the pace of economic development of any region can be accelerated with financial help from outside the region in the form of capital grants, loans, or on-going subsidies. These would be reflected as capital inflows in an ancillary analysis and as additional "exports" (in a more elaborate accounting matrix subsidies would be shown separately as transfer payments into the local economy). The scale at which such help would be meaningful can once again be judged by simulating the effects on the local economy in the accounting matrix. A rapid growth in assistance may simply flow right out of the local economy again in the form of "imports" because of the inability of the local economy to respond quickly enough to the stimulus provided. Financial help from outside the region is only really productive if, when it ceases, economic activity continues at a higher level than it was when the help was provided. Thus help has to be provided at a pace at which it can be profitably absorbed.

WARNINGS AGAINST REGARDING A REGION AS A MINI-ECONOMY
Stanwix (1985:7) in his chapter on a theoretical framework rightly points out the pitfalls of regarding any local area as a mini-economy. He points out, inter alia, that a regional economy is characterised by a high degree of openness and that: "The regional policy

maker cannot control the region's money supply, its exchange rate with the rest of the world or the rate of its immigration (emigration), and has only limited fiscal powers through local taxation. The variables which the national policy-maker attempts to manipulate are often not even measurable at a regional level."

These warnings do not negate the value of using an accounting matrix in the manner outlined above. In the first instance a local economy needs to be described to be understood. The use of an accounting matrix is of considerable help in enabling this to be done succinctly in terms understandable by non-economists. In the second instance such a description is useful precisely in illustrating in specific detail the features referred to by Stanwix. The example used in this paper highlights to what extent the Settleville economy is open and therefore helps to focus attention narrowly on actions which are likely to have lasting benefits for the inhabitants.

Stanwix deals with the various models of regional growth in his review of the theory. The use of an accounting matrix is free from any particular theory of regional, or national, growth. Whichever way growth does take place, it must reveal itself in the various accounts used in a matrix. Thus describing a local economy in the same terms as a national economy is not to be confused with regarding such a local economy as a mini-economy which can be manipulated in the same way as a national economy.

MAKING THE ESTIMATES

The point was made earlier that in South Africa data is not readily available in a form in which detailed analyses can be made of local economies. A practical management approach to this problem can cut through a lot of difficulties. If this practical view is accepted then one can often find that there is enough data available or that enough data can be found at reasonably little cost. The problem lies more in how to make the most of the available data. Provided that data is of the correct order of magnitude and that it is dealt with in such a way that it provides understanding of the situation, it is often good enough for prac-

tical planning. This is particularly so for a relatively simple economy such as that of the hypothetical Settleville described above. In this case the description would have been based on sample surveys concerning housing incomes, rough estimates of population and a count and classification of the businesses in the area. Interviews would have been presented to interested parties such as officials with a knowledge of the area and to local residents and businessmen in order to test whether they "made sense" in respect to the areas of which they had first-hand knowledge. Maasdorp and Maasdorp (1983) describe how in a simple economy a combination of socio-economy surveys with anthropological studies are invaluable in obtaining a clear idea of the structure of a particular community. Such surveys and studies can provide valuable supplementary data for filling out the matrix.

One of the important uses of the estimates is to trace through the multiplier effects of various actions undertaken in physical planning. In the first instance the ratios between the various magnitudes contained in the accounting matrix can serve as a basis for establishing to what extent the benefits of any action are likely to be contained within the local economy. However, the aim is usually to change the nature of the economy and therefore changing ratios are implied. Because data are not readily available estimates may have to be rough and ready. Tomlinson (1983) was concerned with this problem in estimating regional impacts and describes the use of linkage analysis to overcome the absence of suitable data reasonably simply.

One of the benefits of using a matrix is that it greatly aids the estimating process itself. By forcing a "double" look at each element it allows estimates which may have been arrived at in a variety of ways to be adjusted to be consistent with one another. Another point is that although the description may not always be very detailed it always is "complete" and, as such, can be used in order to make comparisons with other local economies.

The estimating process is undoubtedly more difficult for more complex local economies but, again, sampling and

an ordering of perceptions about the nature of the economy into a matrix can be of great assistance in obtaining a usable "first approximation" view of the nature of the particular economy. The value of trying to get better data can then be assessed comparing "need to know" with the costs and difficulties of getting it.

WIDER USES

The possibilities for increasing insights with the use of accounting procedures were discussed in a few papers in the mid 1970s. Johnston (1976) discussed the advantage of using an accounting procedure to deal with urban planning issues as locational decisions, maintaining full employment, promoting welfare, maintaining a positive balance of trade and optimum city size. Schinnar (1976) proposed an accounting framework for simultaneous demographic and economic planning and while not explicitly relating this to regional planning his paper provides an example of the benefits of incorporating multiple objectives in an accounting framework. Tapiero (1976) referred to the fact that in recent years attention has been given to the possible uses of accounting in helping to achieve social goals. His use was even wider. The purpose was to account for the losses implied in a local polluting activity and he concluded that the accounting approach can provide a guideline for breaking down the component effect of a facility on its environment. These attempts, however, did not seem to be taken any further probably due to the kind of difficulties raised by Richardson (1977). In commenting on Johnston's paper he doubted the usefulness of the national accounting system for the purposes outlined by Johnston. He referred to the difficulty of quantifying in money terms some of the welfare components and to the fact that national accounts have no spatial dimension and provide a poor framework for analysis of alternative intercity distributions. Moreover available urban data bears little resemblance to the information used in national accounting analysis and there is no satisfactory way of reconciling the two different data sets.

The Central Economic Advisory Service (1986) initiated and sponsored a major research project with a view to

the development of a set of Social Accounting Matrices (SAMs) for South Africa. Such SAMs are more formal and extended versions of the simplified accounting matrix described in this paper. In its publication the Central Economic Advisory Service provides an introductory section about the origins and possible applications of SAMs and describes two applications: one which focuses on inter-personal incomes distributions and employment and a second one which is based on an analysis of the regional distribution of personal incomes and certain other economic activities.

CONCLUSION

This paper set out to deal with certain shortcomings with regard to the integration of economics with town and regional planning. The essential points made were that the economic situation needs to be clearly and unambiguously understood by the planning team and that the problem revolved less around the inadequacy of data than in finding a way of making the best use of the data which is available. On a "need to know" basis rough estimates are often perfectly adequate. It is no longer valid to simply project key economic variables – the planning team needs to understand the dynamics of the local economy in specific quantitative terms. Using an adaptation of the national accounting framework to order the data, describing a local economy in terms of an accounting matrix may well prove to be a good way of achieving these aims.

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