INPUT-OUTPUT TABLES OF TANZANIA MAINLAND

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Abstract

The article traces the efforts made in constructing Input-Output Tables for Tanzania Mainland and in particular looks at the key sectors that have been identified in the various Input-Output Tables. From the five Input-Output Tables considered in this study, 13 sectors have been identified as key sectors that have influenced the economy of Tanzania Mainland for the period from 1969 to 1992. A closer look at the recent 1992 Input-Output Table seems to indicate that 4 sectors of Grain Milling, Hotels and Restaurants, Spinning and finishing textiles, and financial intermediation are the current most influential sectors in the system of the economy of Tanzania Mainland. Accordingly, these key sectors may be used in the projection and simulation exercises in order to assess the viability of plan targets and to explore the implications of alternative development strategies in the planning process.

Keywords: Key sectors, Index of power of dispersion, and Index of sensitivity of dispersion, indices of coefficient of variation

1.0 Introduction

It is widely accepted that the economy of any country should be carefully planned and well managed in order to achieve economic development and growth.

However, in any actual planning situation, the strategic choice open to planners and politicians is circumscribed by the knowledge and technical sophistication of the planners, the planning effort that can be managed, the data available, and the receptivity of the political decision-makers to deal with distilled but still technical information.

Input-output (industry inter-dependency approach) microeconomic planning models are among the most popular planning sophistication that can preoccupy analysts.

Admittedly, there is a pessimistic proposition in some circles that input-output analysis solely focuses on changes in the structure of industry. In a way, this proposition is reinforced by the observed tendency throughout the world that, in practice, short-term

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models are macro-economic and long-term models are of an input-output type. Manifestly, one reason for this development is the recognition that it is industry that creates wealth and that most of the economic development issues requiring attention would involve close monitoring of the performance of industry. This, indeed, accelerates the demand for good and consistent measures of industrial activity which cannot start anywhere else than in the compilation of an input-output table.

All the same, the proposition is highly misleading because input-output planning methods are capable of facilitating various other economic issues other than that of tracing the inter-industry flows. For example, timely input-output tables may facilitate quality control checks on the whole variety of estimates going into the national accounts. This is an important contribution on the aspect of data which is needed for any planning endeavour whatever line of discipline of a planner. More significantly, macro-econometric models are now increasingly incorporating some input-output innovations in specifying structural relationships.

2.0 Economic Planning in Tanzania

There is considerable literature on the use of macroeconomic models and input-output tables in developing countries as planning tools. See, for example, Weisskoff and Wolff (1975), Taylor (1979), Bishop (1966), Hazari and Krishnamurty (1970), Manne (1979), and Bulmer-Thomas (1982).

A number of attempts have also been made in Tanzania by academics and researchers to show how sophisticated planning tools can be used for planning in Tanzania. See, for example, Kim (1978), Sternberg (1986), Rugaimukamu (1986), Mtatifikolo (1998), and Mtatifikolo (2005). In spite of these attempts, economic planning in Tanzania has not, for most of the time, utilized sophisticated planning methods. It is only recently that the MACMOD (1998 and 2003) model has been implemented for government planning.

The input-output models, on the other hand, have not systematically been used for planning so far. This is surprising because six input-output tables for Tanzania are known to exist. The first effort devoted to the construction of an input-output table for Tanzania was that of Peacock and Dosser (1954). Manifestly, at that time the Tanzania economy exhibited very weak inter-industry exchanges and consequently only 14 sectors were identified and even then the table displayed a substantial number of cells with zero or near zero entries signifying no or weak exchange between the relevant sectors.

The table was published in 1958 in the "National Income of Tanganyika 1952-54" (Colonial Research Study No. 26). The second effort was by the then Central Statistical Office for the year 1961 that identified 17 sectors. The table is available in the background to the Budget, an Economic Survey (1969). The third effort was by a

United Nations' expert appointed under the United Nations programme of technical cooperation. The table identified 45 sectors. After the availability of more and improved data, the 1969 Input-Output table was revised to give the 1970 table by the same United Nations expert as a fourth attempt. The 1970 table retained the same 45 sectors of the 1969 Table. The fifth effort was by the Bureau of Statistics in collaboration with the Department of Economics, University of Dar es Salaam, for the year 1976. This Table which was published in 1986 identified 73 sectors.

A national workshop was held in 1986 to discuss papers on the utilization of this table and the proceedings of the workshop, (Komba and Wagao, eds. 1986), are available at the National Bureau of Statistics. The sixth effort was by the National Bureau of Statistics in collaboration with a local working group under the supervision of an expert supported by the Swedish International Development Cooperation Agency (SIDA) for the year 1992. An international workshop was held in 1999 to discuss papers on the use of Input-Output tables and applications of the 1992 Input-Output table. The table identified 76 sectors and is given in the National Bureau of Statistics (1999).

The main objective of this study is to trace the efforts made in constructing input-output tables in Tanzania and in particular to find out the key sectors of the Tanzania economy as depicted in the various input-output tables.

3.0 Planning With an Input-Output Model

Input-Output analysis is a particular planning technique with a wide variety of applications of which two must be clearly distinguished.

First, Input-Output analysis may be used for projection and forecasting purposes. After some manipulation, an inter-industry transactions matrix can provide information to the planner on how much of commodities of each type will be required at some future date assuming a certain growth rate of final demand. Information of this nature is important if planning is to achieve consistency and if future bottlenecks in the productive process are to be avoided.

Second, Input-Output analysis can be used for simulation purposes. The simulation of development is concerned with what is economically feasible, as opposed to forecasting, which is concerned with what one expects to happen on the basis of certain set assumptions. In the case of simulation, there is no presumption that the simulated changes in the economy are actually going to occur. If they are economically feasible, the changes could occur, but whether they do or do not may depend on a variety of prior changes of an economic or institutional nature which may be outside the planner's control.

Using an Input-output table for simulation purposes requires first that the feasible changes (e.g. new activities) be identified, and then that the table be used to estimate the impact of the changes on the rest of the economy. Again, with some manipulation the inter-industry transactions matrix can then be used for providing answers to a number of policy questions.

Formal Representation

The Input-Output system is usually written as:

$$(I - A)\,X = Y \qquad (3.1)$$

where,

I is an m x m identity matrix

A is an m x m matrix of technical coefficients

X is an m x 1 Output vector

Y is an m x 1 final demand vector

m is the number of production sectors in an economy

In this system, Y is assumed known or exogenously determined and therefore the issue is to use the already determined matrix, and the known vector Y to obtain the unknown vector X.

If the inverse in equation (3.1) exists, then a unique solution can be determined for the vector X.

The solution to equation (3.1)is given as:

$$X = (I - A)\,X^{-1}Y \qquad (3.2)$$

Both forecasting and simulations would be done using equation (3.2)

In forecasting, the known or estimated final demand vector Y and the known structural coefficient matrix inverse, $(I - A)^{-1}$ are used to determine the Output vector X using equation (3.2). The forecasted values would then be compared with the existing capacity of domestic production in the key sector and other sectors. If there is a discrepancy between the projected values and the expected values from the existing production capacities then plan revisions are necessary. This is known as consistent forecasting, since Output in each sector is consistent with demands from both final and inter-industry sources.

Simulation exercises could similarly be straightforwardly performed using equation (3.2) What is required here is first to identify feasible changes in the economy. These changes may include setting up of new industries, introducing import-substitution

policies, and so on. On the basis of the known structure of the economy and the expected changes, estimates of the final demand vector can be made. The estimated final demand vector would be plugged into equation (3.2) and together with the known structural coefficient matrix inverse $(I - A)^{-1}$, the output vector X could be determined.

Key Sectors

Projections and simulation exercises are bound to be more useful when they are directed at what are called "key sectors" than when done haphazardly. Key sectors are those that exert considerable influence on a greater number of sectors of an economy. Any changes made to these industries, therefore, are likely to be diffused quickly through the economic system to effect the intended results.

Accordingly, one useful assignment would be to determine key sectors in an Input-Output table. A number of methods of determining key sectors are available but Rasmussen's method is probably most widely used and is in a way most appealing for its application of elementary statistical ideas. The method is based on computing a normalized arithmetic mean which is supplemented by a measure of variability. This is in line with recommendations made in descriptive statistics about summary measures.

Equation (3.2) may be re-written as

$$X = ZY \qquad (3.3)$$

where $Z = (I - A)^{-1}$

If the various elements of $(I - A)^{-1}$ are represented by Z_{ij} then Rasmussen's first pair of indices used in determining key sectors are:

$$U_{\cdot j} = \frac{mZ_{\cdot j}}{Z_{\cdot\cdot}} \qquad (3.4)$$

where $Z_{\cdot j} = \sum_{i=1}^{m} Z_{ij}$

and $Z_{\cdot\cdot} = \sum_{i=1}^{m}\sum_{j=1}^{m} Z_{ij}$

$$U_{i\cdot} = \frac{mZ_{i\cdot}}{Z_{\cdot\cdot}} \qquad (3.5)$$

where $Z_{i\cdot} = \sum_{j=1}^{m} Z_{ij}$

The indices $U_{\cdot j}$ and $U_{\cdot j}$ are termed by Rasmussen as the **"index of power of dispersion**

and **index of sensitivity of dispersion"**. $U_{\cdot j}$ and $U_{i\cdot}$ can also be interpreted as measures of Hirschman's backward and forward linkages. An industry with $U_{\cdot j} > 1$ indicates that the industry draws heavily on the rest of the system, and vice versa, in case of $U_{\cdot j} < 1$. Similarly, $U_{i\cdot} > 1$ indicates that the industry number i will have to increase its output more than others for a unit increase in final demand from the whole system. Since the indices $U_{\cdot j}$ and $U_{i\cdot}$ are based on averages it is advisable to have an idea of the spread of the various individual values around the average. Accordingly, Rasmussen gives another pair of indices as a measure of variability in the effect of one industry on other industries. These indices are called indices of coefficient of variation and are defined as:

$$V_{\cdot j} = \frac{\sqrt{\frac{1}{m-1}\sum_{i=1}^{m}(Z_{ij} - \bar{Z}_{\cdot j})^2}}{\bar{Z}_{\cdot j}} \qquad (3.6)$$

$$V_{i\cdot} = \frac{\sqrt{\frac{1}{m-1}\sum_{j=1}^{m}(Z_{ij} - \bar{Z}_{i\cdot})^2}}{\bar{Z}_{i\cdot}} \qquad (3.7)$$

where $\bar{Z}_{\cdot j} = \frac{\sum_{i=1}^{m} Z_{ij}}{m} = \frac{Z_{\cdot j}}{m}$

$$\bar{Z}_{i\cdot} = \frac{\sum_{j=1}^{m} Z_{ij}}{m} = \frac{Z_{i\cdot}}{m}$$

A high $V_{\cdot j}$ can be interpreted as showing that a particular industry draws heavily on one or a few sectors and a low $V_{\cdot j}$ as an industry drawing evenly from other sectors. The $V_{i\cdot}$ can be interpreted similarly.

With an average supported by a measure of variability, a key sector can then be defined as one in which:

(a) both $U_{\cdot j}$ and $U_{i\cdot}$ are greater than unity, i.e. $U_{\cdot j} > 1$, $U_{i\cdot} > 1$) and

(b) both $V_{\cdot j}$ and $V_{i\cdot}$ are relatively low.

It is noted that the measure $U_{\cdot j}$ and $U_{i\cdot}$ give both the direct and indirect effects of a particular industry on other industries, but for comparison purposes, it would be more appropriate to look at the indirect effects only or even better still, to focus on the indirect effects on other industries exclusive of the industry considered.

To analyse indirect effects, the attention would be focused on matrix $(Z-I)$ instead of the matrix Z. "Indices similar to those given in equations (3.4) – (3.7) could then be defined basing on the matrix $(Z-I)$ and these are to be denoted, respectively, by $'U_{\cdot j}$, $'U_{i\cdot}$, $'V_{\cdot j}$ and $'V_{i\cdot}$.

In analyzing indirect effects of one industry on the others exclusive of the industry itself, attention would be directed on the matrix $(Z-\hat{Z})$, where $\hat{Z}$ is a diagonal matrix as defined below.

$$\hat{Z} = \begin{bmatrix} z_{11} & 0 & 0 & \ldots & 0 \\ 0 & z_{22} & 0 & \ldots & 0 \\ 0 & 0 & z_{33} & \ldots & 0 \\ . & . & . & \ldots & . \\ . & . & . & \ldots & . \\ . & . & . & \ldots & . \\ 0 & 0 & 0 & \ldots & z_{mm} \end{bmatrix}$$

Again, indices of power of dispersion, sensitivity of dispersion, and coefficients of variation can be defined for the matrix $(Z-\hat{Z})$. These four quantities are to be denoted, respectively, by $"U_{\cdot j}$, $"U_{i\cdot}$, $"V_{\cdot j}$ and $"V_{i\cdot}$.

In this article, a key sector is defined as one that meets the minimum requirements, (a) and (b), given above.

4.0 Key Sectors as Determined From the Five Input-Output Tables of Tanzania Mainland

For the 1961 Input-Output table, there is no key sector. This is not surprising since the inter-industry linkages were very low by that time.

As shown in Table 4.1a, the 1969 Input-Output table had only 4 key sectors.

Table 4.1a: $U_{\cdot j}$ ***and*** $U_{i\cdot}$ ***of the Key Sectors of the 1969 Input-Output Table***

Sector	$U_{\cdot j}$	Rank	$U_{i\cdot}$	Rank
20. Textiles and wearing apparel	1.696	1	1.540	2
24. Chemicals, petroleum, and rubber products	1.546	2	1.643	1
25. Metallic and non-metallic products	1.459	4	1.489	4
32. Electricity and water supply	1.473	3	1.509	3

Source: Computed From the 1969 Input-Output Table

From Table 4.2a, it is observed that for the 1970 Input-Output table there were again four key sectors as for the 1969 Input-Output table but that two of the key sectors had changed. Instead of metallic and non-metallic products and Electricity and water supply of the 1969 Input-Output Table, the 1970 Input-Output Table gives Automobile assembling and repairs and Construction as the two other key sectors.

Table 4.2a: $U_{\cdot j}$ ***and*** $U_{i\cdot}$ ***.of the Key Sectors of the 1970 Input-Output Table***

Sector	$U_{\cdot j}$	Rank	$U_{i\cdot}$	Rank
20. Textiles and wearing apparel	1.130	1	1.119	2
24. Chemicals, petroleum, and rubber products	1.009	4	1.108	3
27. Automobile assembling and repairs	1.052	3	1.092	4
33. Construction	1.127	2	1.130	1

Source: Computed from the 1970 Input-Output table

Table 4.3a indicates that for the 1976 Input-Output table, the key sectors had risen to 9.

Table 4.3a: $U_{\cdot j}$ ***and*** $U_{i\cdot}$ ***.of the Key Sectors of the 1976 Input-Output Table***

Sector	$U_{\cdot j}$	Rank	$U_{i\cdot}$	Rank
6. Tobacco	1.218	3	1.117	7
31. Grain Mill Products	1.324	1	1.008	9
40. Textiles	1.050	5	1.264	4
46. Paper, printing, and publishing	1.041	6	1.548	2
48. Fertilizers and agro-chemicals	1.008	8	1.079	8
54. Iron steel and non-ferrous	1.267	2	1.474	3
59. Electricity	1.001	9	1.231	5
61. Construction	1.076	4	1.137	6
62. Commerce	1.014	7	4.655	1

Source: Computed from the 1976 Input-Output table.

Among the nine key sectors identified in the 1976, Input-Output Table are those that had already been identified in earlier Table, such as Textiles, Chemicals, Iron steel, Electricity, and Construction. For the first time an unprocessed crop emerged as a key sector. This crop is Tobacco. Also, Paper, printing, and publishing, and commerce emerged for the first time.

As can be noted from Table 4.4a, there were again 9 key sectors for the 1992 Input-Output table.

Table 4.4a: $U_{.j}$ and $U_{i.}$ of the Key sectors of the 1992 Input-Output Table

Sector	$U_{.j}$	Rank	$U_{i.}$	Rank
12. Growing of tobacco	1.056	8	1.152	6
35. Grain milling	1.368	2	1.312	4
42. Spinning and finishing of textiles	1.201	4	1.342	3
50. Manufacture of pulp and paper	1.206	3	1.001	9
60. Manufacture of metal products	1.091	7	1.037	8
66. Collection and distribution of water	1.187	5	1.217	5
69. Hotels and restaurants	1.168	6	1.568	2
72. Post and telecommunication	1.026	9	1.075	7
73. Financial intermediation	4.007	1	5.133	1

Source: Computed from the 1992 Input-Output table

Table 4.1b: $V_{.j}$ and $V_{i.}$ of the Key sectors of the 1969 Input-Output Table

Sector	$V_{.j}$	Rank	$V_{i.}$	Rank
20. Textiles and wearing apparel	4.292	1	4.755	4
24. Chemicals, petroleum, and rubber products	4.460	2	4.057	1
25. Metallic and non-metallic products	4.708	4	4.209	2
32. Electricity and water supply	4.579	3	4.253	3

Source: Computed from the 1969 Input-Output table

Table 4.1b: $V_{.j}$ and $V_{i.}$ of the Key sectors of the 1969 Input-Output Table

Sector	$V_{.j}$	Rank	$V_{i.}$	Rank
20. Textiles and wearing apparel	4.292	1	4.755	4
24. Chemicals, petroleum, and rubber products	4.460	2	4.057	1
25. Metallic and non-metallic products	4.708	4	4.209	2
32. Electricity and water supply	4.579	3	4.253	3

Source: Computed from the 1969 Input-Output table

Table 4.3b: $V_{.j}$ and $V_{i.}$ of the Key sectors of the 1976 Input-Output Table

Sector	$V_{.j}$	Rank	$V_{i.}$	Rank
6. Tobacco	5.381	3	6.357	9
31. Grain Mill Products	4.441	1	6.137	8
40. Textiles	5.409	4	4.965	5
46. Paper, printing, and publishing	6.356	8	4.259	2
48. Fertilizers and agro-chemicals	5.527	5	5.228	6
54. Iron steel and non-ferrous	6.785	9	5.981	7
59. Electricity	5.696	6	4.723	3
61. Construction	5.223	2	4.957	4
62. Commerce	5.908	7	1.354	1

Source: Computed from the 1976 Input-Output table

Table 4.4b: $V_{.j}$ and $V_{i.}$ of the Key Sectors of the 1992 Input-Output Table

Sector	$V_{.j}$	Rank	$V_{i.}$	Rank
12. Growing of tobacco	5.992	8	6.374	9
35. Grain milling	4.690	1	5.354	5
42. Spinning and finishing of textiles	5.165	4	4.576	2
50. Manufacture of pulp and paper	5.385	5	6.297	8
60. Manufacture of metal products	5.591	6	5.816	7
66. Collection and distribution of water	4.968	2	4.698	3
69. Hotels and restaurants	5.027	3	3.839	1
72. Post and telecommunication	5.911	7	5.546	6
73. Financial intermediation	6.827	9	5.310	4

Source: Computed from the 1992 Input-Output table

For the six Input-Output Tables surveyed in this study, the weak criterion of key sectors would identify 13 sectors. These are (1) Textiles and wearing apparel, (2) Chemicals, petroleum, and rubber products, (3) Metallic and non-metallic products, (4) Electricity and Water, (5) Automobile assembling and repairs, (6) Construction, (7) Tobacco, (8) Grain Mill Products, (9) Paper, printing, and publishing, (10) Iron steel and non-ferrous (11) Commerce, (12) Hotels and Restaurants (13) Post and Telecommunication, and (14) Financial intermediation.

The division of the key sectors is that there would be 1 sector, (tobacco) from the broad economic activity of agriculture of the national accounts, 6 sectors (Textiles and wearing apparel, Chemicals, petroleum, and rubber products, Metallic and non-metallic products, Textiles and wearing apparel, Chemicals, petroleum, and rubber products, Automobile assembling and repairs, Grain Mill Products, Paper, printing, and publishing), from the broad economic activity of manufacturing in the national accounts, 1 sector (Electricity and Water) from the broad economic activity of Electricity and Water, 1 sector (Construction) from the broad economic activity of Construction, 2 sectors (Commerce, and Hotels and Restaurants) from the broad economic activity of Trade, Hotels, and Restaurants, 1 sector (Post and Telecommunication) from the broad economic activity of Transport and Communication and 1 sector (Financial intermediation) from broad economic activity of Financial and Business services of the national accounts.

All these Key sectors have identified by using the weak criterion of Key sectors applied to each Input-Output Table. However, a cursory look through Tables 4.1a – 4.4a and 4.1b – 4.4b is not appropriate for drawing a clear line between the relationship of the ranking from the indices of power of dispersion and those of the sensitivity of dispersion. In other words, it is not immediately clear whether high ranks of power of dispersion tend to be associated with high ranks of sensitivity of dispersion or vice-versa.

For example, from Table 4.4a for the 1992 Input-Output Table, Indices of power of dispersion would seem to suggest that sectors 73, 35, 50, 42, and 66 draw heavily on other industries. Indices of sensitivity of dispersion, on the other hand, would seem to suggest that except for sectors 72, 60, and 50, all the other 6 sectors would have to increase their output more than others for a unit increase in final demand from the whole system. Indeed, the cursory would seem to suggest that sectors 73, 35, and 42 stand out above the other key sectors on the basis of the averages only. Of course, in order to make an appropriate decision, a look at the measure of variability is also needed. Again, from a cursory look at Table 4.4b, sector 66, collection of water and distribution, seems to draw evenly from other sectors and the system of sectors seems to draw evenly on this sector.

However, before making any definitive conclusion it is imperative to carry out a statistical test on the relationship between $U_{\cdot j}$ and $U_{i\cdot}$ of the different Input-Output

Tables $V_{\cdot j}$ and $V_{i\cdot}$ the statistical test to be used is the Spearman's rank correlation coefficient $r_s = 1 - \frac{6\sum_{i=1}^{n} d_i^2}{n(n^2-1)}$

where, $d_i = x_i - y_i$ the difference between ranks of the different pairs and n is the number of the different pairs.

The hypotheses to be tested are the two-tailed:

$H_0 : r_s = 0$

$H_1 : r_s \neq 0$

and we choose the level of significance $\alpha = 0.05$.

The results for $U_{\cdot j}$ and $U_{i\cdot}$ for the different tables are:

$r_{s1} = 0.8, \quad r_{s2} = 0.6, \quad r_{s3} = -0.6, \quad r_{s4} = 0.45$

where:

r_{s1} is the Spearman's rank correlation coefficient between $U_{\cdot j}$ and $U_{i\cdot}$ of the 1969 Input-Output Table.

r_{s2} is the Spearman's rank correlation coefficient between $U_{\cdot j}$ and $U_{i\cdot}$ of the 1970 Input-Output Table.

r_{s3} is the Spearman's rank correlation coefficient between $U_{\cdot j}$ and $U_{i\cdot}$ of the 1976 Input-Output Table.

r_{s4} is the Spearman's rank correlation coefficient between $U_{\cdot j}$ and $U_{i\cdot}$ of the 1992 Input-Output Table.

From the Statistical tables of the critical values of the Spearman's rank correlation coefficient we have the critical regions of and for (-1.0) and (1) for n = 4 and (-1, - 0.643) and (0.643, ∞) for n = 9.

For the four Input-Output Tables, we conclude that there is no correlation between the ranked pairs of $U_{\cdot j}$ and $U_{i\cdot}$ at the 5 per cent level of significance since none of the calculated r_s values falls in the relevant critical region. That is, it would seem that the paired ranks for the averages come at random for the four Input-Output tables of 1969, 1970, 1976, and 1992.

As regards the variability, for the same specified hypotheses above, we have the results for $V_{\cdot j}$ and $V_{i\cdot}$ for the different tables as:

$r_{s1} = -0.4, \quad r_{s2} = 0.8, \quad r_{s3} = -0.467, \quad r_{s4} = 0.483$

where:

r_{s1} is the Spearman's rank correlation coefficient between $V_{.j}$ and $V_{i.}$ of the 1969 Input-Output Table.

r_{s2} is the Spearman's rank correlation coefficient between $V_{.j}$ and $V_{i.}$ of the 1970 Input-Output Table.

r_{s3} is the Spearman's rank correlation coefficient between $V_{.j}$ and $V_{i.}$ of the 1976 Input-Output Table.

r_{s4} is the Spearman's rank correlation coefficient between $V_{.j}$ and $V_{i.}$ of the 1992 Input-Output Table.

Again, even for variability, we conclude that there is no correlation between the ranked pairs of $V_{.j}$ and $V_{i.}$ at the 5 per cent level of significance since none of the calculated r_s values falls in the relevant critical region. That is, it would seem that the paired ranks for variability come at random for the four Input-Output tables of 1969, 1970, 1976, and 1992.

For the purposes of this study, it has been decided to focus on the recent 1992 Input-Output Table and use the average of the ranks to determine the influence of the various sectors on the economy. On the basis of this criterion, it would seem that the sectors of grain milling, hotels and restaurants, spinning and finishing textiles, and financial intermediation are currently the most influential sectors in the system of the economy of Tanzania mainland.

6.0 Conclusion

A detailed analysis of five Input-Output Tables of Tanzania Mainland, has revealed that there are 13 key sectors that have had considerable influence over the period, from, 1969 to 1992. These are the sectors that have had relatively high linkages in the economic system and therefore influenced many sectors in the system. Accordingly, if investment were to be made in these sectors, a greater part of the economy would have been affected and the required structural changes would probably have been effected quickly and evenly.

A closer look at the recent 1992 Input-Output Table indicates that 4 sectors of Grain milling, hotels and restaurants, spinning and finishing textiles, and financial intermediation are the current most influential sectors in the system of the economy of Tanzania Mainland. Accordingly, these key sectors may be used in the projection and simulation exercises in order to assess the viability of plan targets and to explore the implications of alternative development strategies. In all this, the fundamental Input-Output equation (3.2) plays the key role. Basically, once the final demand sector is

known or estimated, it is simply pre-multiplied by the structural coefficient matrix $(I - A)^{-1}$ to obtain the Output sector.

It is interesting to note that one of these sectors concerns supply of food, another concerns the supply of clothing, another deals with Hotels and Restaurants that cater for food, shelter, and entertainment, and the final one concerns financial matters that are crucial for a vibrant economy.

The most important point being made and stressed is that once the key sectors are identified, special attention should be accorded to those sectors in the planning process in order to facilitate a quick and even structural change in the economy that will put the economy on a quick and smooth development path.

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