STRUCTURAL INTERDEPENDENCE OF THE TURKISH ECONOMY

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This study by Messrs Chakraverti and Çınar and Miss Canalp is a subtantial input into our improved knowledge of the Turkish economy. It is the first extensive application of Input-Output Analysis to this economy. This being so, we must expect a lot of weaknesses in the data and a lot of Gordian knot cutting in the analysis. The data used pertain to the year 1963. The Input-Output results we had to be content with until recently were derived from 1959 data. Compared with the 1959 analysis there are some clear improvements. The number of sectors has been increased to 37 : 6 primary, 21 manufacturing and 10 tertiary.

The 1959 analysis did not isolate sectors like Professions and Personal services, Ownership of dwellings, Banking, insurance and co-operatives. Other novelties are the separation of Trade and transportation, the latter being split into Railway transportation ant Other transportation. The authors can, therefore, use producers' prices (enhanced by indirect taxes) as a basis for valuing the transactions. This is clearly much better than the 1959 buyers' prices system.

This has to be seen as a great leap forward. The authors wisely decided also to make a step backward, in the handling of imports. They dropped the (1959) distinction between competitive imports (substitutable domestic inputs available) and non-competitive imports (no substitutable domestic inputs available).

The reason for this tactical retreat was that data in general have been extracted from cost accounts, and that no separate information could be found there on *imported* inputs. (Import statistics do not provide any information on the *destination* of imported goods.)

As was stated already, the transactions matrix has been derived from cost accounts, which means *columnwise.* Sometimes this could be supplemented by (sparse) data on flows of products, e.g. electricity.

To complete this global view of the study we report that final demand has been split into six components: Private and Public consumption, Private and Public capital formation, Exports (ex-factory), Changes in stocks. Changes in stocks complete the (open) Input-Output system. They are not always residuals. No distinction is made as to rents, direct tax, profits, wages etc. We have to be content with a single row Gross value added at market prices. Thanks to the greater refinement, the 1963 matrix provides a much more disaggregate composition of national income (Cf. the 13-group National Income results of the State Institute of Statistics.). We find a detailed breakdown of income by industrial origin.

Thus on the whole there are many substantial improvements. We shall now discuss the work in more detail. This discussion is bound to be ecclectic given the size of the enquiry.

The book has two parts. The first deals with data and procedures. The second gives the Input-Output structure, some international comparisons and forecasts of price changes due to changes in indirect tax rates.

Chapter I is of an introductory nature. Chapter II (Layout and nature of the interindustry transactions table of 1963) deals with procedure, treatment of imports, taxes, distribution margins etc.

Chapter III (Indirect taxes on commodities and services) contains a nice study of the indirect taxation system of this country. It must be of great use to the student of the Turkish economy. The ultimate aim pursued in this chapter is, of course, the sectoral allocation of indirect taxes. (Six have been distinguished.)

In Chapter IV (Sectoral outputs with taxes) we get an impression of the achievements of the 37 sectors.

Chapter V (Distributive margins) is a valiant piece of work. Here the authors estimate and then dissect the earnings of (trade and transportation) intermediaries. First they estimate the conglomerate by using retail, wholesale and total margins. This leads to values of inputs at producers' prices enhanced by commodity taxes.

Unfortunately there are some misprints and omissions in this part which reduce the reading pace and pleasure. (E.g.V[., producers'value of Q_j., the quantity of the ith commodity passing through the retail trade channel is not defined.)

Having estimated the conglomerate the authors set out to disaggregate it. They use the earnings of the railways from goods transportation and allocate them to the various sectors. (Only ten percent are unspecifed, and hence arbitrarily allocated) Next comes the distribution of these row totals over the columns, the estimation of the $r^\wedge$. This is done by more or less intelligently guessing which sector uses which commodity. Sometimes the guessing approaches knowing, e.g. in the cases of sugarbeets and tobacco. When there is more than one obvious user of a commodity, earnings are split in proportion to the gross earnings of distributors as determined above. Here we come across one of the favourite methods used by the authors: proportionalization. This can lead to serious distortions, especially when applied repeatedly to the same data. After $r^\wedge$; Other transportation earnings $0_{i.}$ are estimated. First, again row totals are being estimated for several types of transportation: road transport (long-distance and short-distance), large-scale shipping, animal transportation and airways.

It is obvious that here we are in deep waters, and this is not limited to shipping. Animal transportation is quite intangible, and so is to some extent even road transport. His Indian experience has undoubtedly helped Dr Chakraverti to deal with these problems of a little developed economy. Out of this finally come the $0_{.} = 20/y$. The authors derive then the   as they derived the r_{ij}. When no adequate information is available they estimate by proportionalization :

$$O_{ij} = v_{2j} \frac{(1)}{[d_{ij}} \quad r_{ij})$$ ' where dy stands for aggregate distributive margins as estimated earlier.

The trade earnings proper, t_{ij} are derived as residuals: $t_{ij} = d_{ij} - R_{ij} - O_{ij}$. It is very hard to deny that arbitrary methods have been used in this chapter. It is, however, difficult to suggest less unreasonable alternatives. The final vindication will be in forecasting.

In Chapter VI (Imports: Valuation, structure and sectoral allocation) considerable attention is given to problems of valuation and allocation of imports. We get an impression of the role of imports, and the rate of import duties. A separate import column (cif) is constructed. Chapter VII (Notes on sectoral estimates) is very extensive (about 100 pages).

In fifteen paragraphs the whole system of production and inter-industry deliveries is quantified. Due to non-repoiting, unclassified inputs and pool statistics (the latter mainly for the small-scale private-sector industry) there is again a lot of uncertainty.

The paragraph on Banking is very unsatisfactory. The inputs are estimated by generalizing the cost structures of Emlâk Kredi Bankası and Eti Bank. The earnings picture of Banking is not much more attractive; e.g. it is known that the sector received 104 million TL interest earnings from large-scale industry. This sum is then distributed over the individual industries, the criterion being gross value added.

Chapter VIII (Final demand) has a weak section, that on household consumption.

When they wrote this section, the authors had at their disposal only the (rural) Çukurova Budget Survey and the (urban) Izmir and Adana surveys. The value of the Çukuraova results was considerably limited because of the presence of a sizable "miscellaneous" item. It was decided to effect a breakdown of this item by using part of the superior Izmir distribution of expenditures, of comparable income expenditure groups. The two lowest Izmir income groups were used for this purpose, some adjustment being made for the slightly different average expenditure (1173 TL; 1160 TL in the Çukurova survey). The rest of the İzmir data and Adana data were thought to represent urban consumption patterns in this country. (The average expenditure in the lowest income group in the Adana survey is 1663 TL.).

There we are clearly in quicksand. Additional criticism has to be directed at the Izmir and Adana surveys themselves which show expenditures (far) in excess of incomes: 883 and 492,1663 and 978,1868 and 1657, 3133 and 2904. (The first pair belongs to İzmir, the rest to Adana).

In this dubious way consumer final demand is constructed. Fortunately a modest number of checks can be made, which give some more confidence to the authors.

In the second part of the study we find an analysis of all the preceding finds. In Chapter I (Structural characteristics of the Turkish economy, 1963) the I-A and $(I-A)^{-1}$ matrices are derived. Chapter II gives the ultimate disposition of sectoral outputs. In Chapter III an "International comparison of Turkish economic structure" is attempted. This failed to impress the reviewer. Even if we have some minimum belief

in the u and v coefficients defined and computed there, it is still difficult to see what the use of all this is in d3cision making by private industry or the state. Chapter **IV** (Analysis of price-changes pursuant to changes in indirect-tax composition) is confused and confusing. The basic idea here is that we can compute how prices change in reponse to changes in "prices" of gross value added and indirect tax. (This means for indirect taxes the tax rate.) We shall use the following symbols :

A, the coefficients matrix (value)

g, the vector of gross value added (factor cost) + indirect tax.

g, the vector of total production (value).

A and q are derived on basis of a price vector p.

Let there be a "price" change in gross value added plus indirect tax leading to g_{19} say. **A** new price vector pj will then emerge ensuring value equilibrium. The relation is :

$$P - i_{P1} = (I-A) - iQ - i_{g1} \tag{1}$$

where P and Q are p and q written in diagonal matrix form.

The formula can be derived easily.

In terms of the new prices we have :

$$^z s + gi = qi$$

where Z is the interindustry deliveries matrix

q_1 is the vector of total production

s is a summation vector. (All three measured in new prices p_x)

Clearly $Z = P_x P''^1 AQ$

$$q_i = P_i P \sim\sim^1 q = P^{-1} P_1 q, \text{ hence}$$
$$QA' P \sim^1 P_i s + g_x = P^{-1} P_x q$$

or $AT - i_{P1} + Q - i_{g1} = P - i_{P1}$

from which follows (1).

If we put $P! = p$, $g_i = g$ we get

$$s = (I-A') - i Q - i g$$

or $s = A's = Q-^1. \tag{2}$

In the book formula (2) is derived properly. There is a trace of formula (1), but its derivation and presentation are wrong, mainly due to printing errors. Particularly confusing is the explicit introduction of "prices" of indirect taxes and value added of sectors. There is

certainly no need to bring in the second "price" as value added is not changed. Only the tax rates are altered, but this can be achieved simply by changing the tax sums (The 1967 tax rates are used).

This section of the chapter is not very clear, we may say.

The book as a whole is a solid and serious piece of work, although it is lacking in clarity here and there. The many printing errors, language errors and missing or wrong-numbered tables (e.g. A.5.1 and 2, A 7.1.) do not add any clarity. This is a pity, because it reduces the value of the book. When these shortcomings are repaired, the book could be a fine introduction to Input-Output Analysis for Turkish students.

The reviewer hopes that an imporoved version will be published, which will use more recent data, particularly on consumer expenditures. An attempt could then be made to verify the price forecasts of Chapter IY (Part 2 of the book). Despite the criticisms voiced above, the authors have to be congratulated on their work.

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