UNITED ARAB REPUBLIC

THE INSTITUTE OF NATIONAL PLANNING

Memo. No. 225

THEORETICAL PROBLEMS IN REGIONAL INCOME ACCOUNTING

by

Prof. Robert J. Trusk

24th August, 1962.

CAIRO

International Association For

Research in Income and Wealth

Middle East Regional Conference

Istanbul, 24th - 29th August 1962

Theoretical Problems in Regional Income Accounting

Prepared by

Prof. Robert J. Trusk

Turkey

PRINTED IN

INSTITUTE OF NATIONAL PLANNING

3 MOHAMED MAZHAR STR.

ZAMALEK CAIRO

U.A.R.

Theoretical Problems in Regional Income Accounting

Robert J. Trusk

This paper is, perhaps, more of an appeal for help than it is one of enlightenment. Economic planning for development at the regional level has become recognized in many countries as an important adjunct to planning at the national level, however, one of the major obstacles for the planner and research worker is the lack of adequate income data by regions. Most income accounting systems are designed to classify national income data and to measure overall economic growth. To a certain extent some information can be obtained from the national accounts that is useful for regional income accounting purposes, but there are some theoretical difference between the two accounting systems. A recent attempt to ascertain the income structure of the Bursa region here in Turkey might well illustrate two theoretical problems in regional income accounting I wish to discuss in this paper.

Bursa is a small province on the south shore of the Sea of Marmara. The area of the region covers about 10,894 square kilometers, or 1.4% of the total area of the country . The population in 1960 was estimated at 695,099 or 2.5% of the total population, however, the population density in 1960 was 64 per square kilometer in Bursa as compared to 36 per square kilometer for all of Turkey. The economy of the region is primarily agricultural, but it is also an important industrial center.

The income model employed for the Bursa region was a simple double entry system showing the value added by factor payments according to industrial sector in one column and the distribution of this income by factor payments in the second column. An attempt was made to ascertain the disposition of the income , but this had to be abandoned because of the lack of data, time, and financial resources. The income at factor prices for the region is presented in Table 1.

Table 1

Net Domestic Income, Bursa and Turkey, 1959

At current prices

Sector	Bursa		Turkey
	TL (000 omited)	%	% Domestic Income
1. Agriculture	686,801	51.6	44.
2. Mining	6,195	.5	1.8
3. Manufacturing	292,387	22.0	13.3
4. Electricity, Water etc.	8,356	.6	.4
5. Construction	50,121	3.8	6.3
6. Wholesale and Retail Trade	114,412	8.6	7.8
7. Transportation	55,379	4.1	6.6
8. Financial Institutions	11,681	.9	2.7
9. Services			
a, Professional	12,844	1.0	4.5
b. Tourism	13,060	1.0	
10. Ownership of Dwellings	16,643	1.3	3.8
11. Government			
a. Services	56,521	4.3	8.3
b. Utilities	4,373	.3	
Total	1,328,773	100.0	100.0

Note: The government sector includes only the collected and disbursed in Bursa. The cost of the control government and military is not included.

Source: A Preliminary Economic Survey of the Bursa Region, Business Institute, University of Istanbul, Istanbul, 1962.

It might be pertinent at this point to describe brifely the methods used to calculate the income for this region for they have a direct bearing on the problems of regional income accounting in many underdeveloped countries. Income for the agricultural sector was calculated in the most simple, most direct manner possible. That is, the total value of output was calculated from production and price data for the region. The cost of inputs were calculated in the same fashion. The depreciation cost was calculated by applying the national depreciation rates to the machinery and equipment and farm buildings in use in the region. The difference between the value of output and cost of inputs was the income created in the agricultural sector.

(Footnote: Estimates for this sector were made by Doç. Dr. Gülten Kazgan, Faculty of Economics, University of Istanbul.)

The method used to calculate value added in the manufacturing sector was much less direct than that used in agriculture because of the paucity of the data available for this sector. However, the method for estimating value added in the manufacturing sector for Bursa was the same as that used by the Central Statistical Office for estimating the value added in the manufacturing sector for all of Turkey.

Manufacturers in Turkey are divided into three groups; the state owned enterprises, manufacturers with ten or more employees or using ten or more horsepowered machinery, and the third group is composed of all manufacturers who do not fall into either of the other groups. Current data on the first two groups is fairly accurate and available for regions, but data on the third group, the small manufacturing

firms, must be estimated from a base figure that is now, twelve years old.

The value added per worker for the small firms and large firms was c alculated from the 1950 census of manufacturers. (Indirect taxes are included but depreciation is excluded in arriving at the value added figure.) For estimating the value added in current years for the small firms, the average yearly increase in value added by the large firms was applied to the estimates of the number of workers in the small firms. The number of workers in the small firms was estimated from the increase in the urban population according to the population census. There was some adjustment in favor of the small manufacturing firms to account for the increase in mechanization.

(Footnote: Lay, Hasan and Lieberman, Milton, National Income experience of Turkey, Central Statistical Office, Ankara, 1962. Estimates for the Bursa region were made by Doç. Dr. Kenan Gürtan, Institute of Statistics, University of Istanbul.)

The third important sector , the wholesale and retail trade sector, was calculated by direct sampling and interview. A listing of the merchandising firms was available at the Chamber of Commerce in Bursa. By stratifying the firms into size and type of product sold and then sampling each group to obtain price mark-ups and sales volume, it was possible to estimate the net value added in this sector. (Footnote: Nezih Neyzi of the Business Institute, University of Istanbul made these estimates.)

The number of firms in the other sectors were few enough to utilize existing data at the Bursa Chamber of Commerce and to interview

a majority of the business firms to obtain the necessary information. Data for the government sector was not entirely satisfactory because of the difficulty of separating income and expenditures made in Bursa from the national accounts. The income in the govern ment sector as noted in Table 1 is therefore, underestimated.

One sector that is conspictously absent from our accounting system is the net income from the rest of the world. Despite the highly refined income models and systems already devised, (Footnote: Tiebout, Charles M. " A Method of Determining Incomes and Their Variations in Small Regions,"Papers and proceedings of the Regional Science Association, Vol 1, 1955; Leven Charles L. "A Theory of Regional Social Accounting," Ibid, Vol 4, 1958; and Hochwald, Werner, et. al. Local Impact of Foreign Trade, National Planning Association, Washington D. C., 1960.) there is no provision in the national accounting systems of most countries for estimating the flow of income into and out of regions. This problem becomes even more serious when it is realized that techniques of interpolating for income flows between regions have not been developed that can be applied to the type of data usually available in underdeveloped countries . The lack of accounting for inter-regional flows of income in national accounting systems is, perhaps, the most serious problem facing economists who are attempting to work on economic development problems at the regional level.

The flow of income into and out of a region is important in the study of regional economic development because it indicates whether or not a region is producing the income

necessary to sustain its population . A region that must import income means that it is draining income, and possibly savings, from other regions of the country which may be a rather unhealthy sign. On the other hand , if a regional economy is exporting income it may mean that it is sacrificing its own means of growth for the benefit of other regions. The outflow of income may also shed some light on the institutional arrangements of the region.For instance, if there is a great deal of absentee ownership there may be a significant amount of income flowing out of the region, thus keeping the local population at a law income level . The outflow of income may also reduce the amount of savings thereby restricting the amount of investment that could take place within the region . The little evidence available for the Bursa region indicates that income is leaving the region, especially income earned in the agricultural and wholesale and retail trade sectors, and being invested in other regions of the country.

A breakdown of income imported and exported from a region by industrial sector would be even more useful for regional income analysis since it would indicate what sector, or sectors, of the local economy appear to be the most lucrative. Development planners could then focus their attention on fostering industries related to those sectors within specific regions.

The net income from the rest of the world account is only the first approximation to an even more elaborate analysis that would be helpful for regional economic planning purposes. The next step would be to construct a commodity flow table of the products produced and their value imported and exported from a region. With this informa-

tion, meaningful ratios could be calculated that would indicate the extent to which the regional economy is integrated into the national economy. One of the characteristics of the developed economies is the high degree of area specialization and trade between regions. In underdeveloped countries it is more typical to find the greater part of the production in regions consumed locally and not much production taking place beyond the needs of the local population and the demands of the absentee owners. Collecting regioanl commodity flow data may not be considered a primary function of the income section of a national statistical bureau, but I bring it up at this point because I believe this kind of data would be useful for estimating regional income.

Up to this point, the discussion has concentrated on the first column, or income produced by sectors, of the double entry income accounting system. I would now like to briefly discuss one of the problems in estimating the amounts paid to the various factors as they would appear in the second column of the income accounting system. The problem is essentially one of finding more suitable methods of apportioning imputed payments. Admittedly this is also a widespread problem in national income accounting systems in many underdeveloped countries where the majority of the business firms are family-owned and managed enterprises.

The techniques currently employed for separating income data by factor payments on a national level cannot always be applied on a regional basis because of the diversity in regional economies. When a region has a mono-economy, such as agriculture, it may be possible to use one technique to apportion imputed payments, or when a region is highly industrialized another technique can be used for that

particular region. But when a regional economy is a combination of large and small land holdings and large and small manufacturing and merchandising firms, such as is true in Bursa, it becomes extremely difficult to break down the income according to factor payments without adequate regional income data.

In the Bursa region, for instance, it was estimated that 50% of the encome earned was classified as mixed income . Mixed income was more typical of small business firms (including farms and small stores) than the larger ones, but inasmuch as the number of the small firms is greater than the number of large firms, apportioning their income into rent, interest, profits, and wages became a problem of some magnitude that could not be entrusted to interpolation techniques without the aid of more detailed income data.

It can, perhaps, be generally assumed that the mixed income of small business firms is composed mostly of wages and profits. An inspection of many of the small business units in Bursa revealed that the capital investment usually consisted of a few hand tools and some raw material inventories. The actual business was conducted in old buildings where the rent or return on investment was insignificiant. These small firms rely on unpaid family members or one or two paid workers, usually apprentices, Thus, it is not too unreasonable to consider the mixed income of these small firms as a combination of profits and wages.

One approach to the problem of apportioning imputed income payments in regions that immediately comes to mind is a well designed sampling schemes.Sampling methods and direct interviewing can be used

to gather data for overall estimates, but to obtain specific data for detailed income accounts is another matter. The firms that require sampling for information are generally the small firms that are owned by individuals or close family relatives who are very suspecious of people who ask questions, especially by strangers. This is , of course, a typical reaction in most tradition bound societies. A second disadvantage of interviewing the owners of small firms is that many of them cannot answer the questions even if they are willing to cooperate. Their accounting systems are usually no more advanced than their mode of operations.

In view of the theoretical and practical problems in calculating factor income payments for regions, if becomes necessary to appeal to the national income accountants to incorporate into the national income accounting system some additional accounts that could be used for calculating these payments. At this point only a few suggestions can be ventured , but it appears that the most important data classified by regions should include employment numbers by acrivity, cash outlays for factor payments, investments, consuption, government income and expenditures (including transfer payments), and net income transfers from the rest of the world.

The value of regional economic planning for development in underdeveloped countries has already progress to the point where its usefullness is no longer in doubt.

Footnote: Robock, Stfan H. "Regional Aspects of Economic Development," Papers and Proceedings of the Regional Science Association, Vol. 2, 1956, and " Regional and National Economic Development in India ", Ibid, Vol 6, 1960;and shoemaker, James H. "Hawaii: A Case Study in Regional Analysis for Area Development," Ibid, Vol. 2,56

However, before effective planning to develop local resources can take place , a standarized income accounting system to record regional income data becomes a foregone necessity. In this paper , I have tried to indicate the two most serious problems in estimating income data for regional economic analysis. No doubt others will appear as more empirical research is carried out.