

NATIONAL INCOME ESTIMATION IN AN OIL ECONOMY: SOME PRELIMINARY NOTES ON SAUDI ARABIA

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INTRODUCTION

THE discovery of oil in Saudi Arabia and its large-scale exploitation is a relatively recent phenomenon. The first oil well in the Kingdom was drilled in 1935 but production on a commercial scale did not begin until 1938. As late as 1945, annual crude oil production totalled 21 million barrels only, as against the present level of well over 500 million barrels. Government oil revenues, which were estimated at \$375 million during 1961, amounted to only \$10.4 million in 1946. The transformation of the economy as a result of the growth in oil income has thus been a matter largely of the last ten or fifteen years. The very steep increase in Government spending has been exerting severe pressure on the administrative machinery and has been responsible for an acute shortage of technical personnel. It is not altogether surprising therefore that only limited progress has been possible in the vital, but socially less urgent, task of organization of statistical services in the Kingdom. The paucity of basic statistical data is typified by the absence of a population census. No really reliable estimate of population is available. While an official U.N. estimate for 1956 placed the population at 6.04 million, unofficial estimates (including a World Health Organization estimate) give figures as low as 3 million. Information on the subsistence agricultural sector is also scanty, since there is no system of regular reporting of crops, etc.

Under the circumstances an approach to national income estimation might appear, at first sight, to be of doubtful value. However, from the point of view purely of estimating an aggregate of gross domestic or national product, the very heavy dependence of the economy on a single commodity, viz. oil, is extremely helpful. The fact that oil operations are carried out by a single company² Arabian American Oil Company

¹ Advisor to the Saudi Arabian Monetary Agency. The views expressed in this paper are his personal views and have no connection with his official position.

² Saudi Arabia has also a 50 per cent interest in oil income from the operations in Kuwaiti neutral zone where concessions are held by American-owned Getty Oil Company and Japanese-owned Arabian Oil Company.

(A.R.A.M.C.O.), means that its production account is in effect the production account of the oil sector. Furthermore, the payment of oil income to the Government in the form of royalties and income-tax ensures that a very substantial portion of gross national expenditure is routed through the Government Budget, estimates of which are regularly published. Finally, inasmuch as the monetary sector of the economy is almost completely dependent on imports (agricultural production for the market is very limited and large-scale industry almost non-existent), the import statistics provide a valuable indirect check on the level and the composition of goods absorbed in the various sectors of the economy. The foregoing factors minimize the possibility of a large overall margin of error.

The worthwhileness of an approach to national income estimation in a case like Saudi Arabia lies mainly in the provision of a framework for the organization and development of various statistical series. In countries which are beginning almost from scratch in the statistical field, the role of national accounts as a central frame of reference can be invaluable. The practical task of ensuring the most economic and efficient use of the limited resources (particularly trained workers) can be greatly facilitated in less developed countries if a system of national accounts, however simplified to begin with, helps to outline priorities and ensures fairly automatic co-ordination of statistical activities.

It is with these considerations in view that an attempt has been made in the subsequent sections to explore the field of national income estimation in Saudi Arabia. Some of the relevant conceptual problems are discussed and extremely tentative estimates for major sectors are provided. The purpose of this paper would have been fulfilled if it throws some light on the pattern on which further work in the field should be undertaken.

SOME CONCEPTUAL PROBLEMS

The basis of all national income accounting is the following identity between national product, national income and national expenditure:

<i>Gross</i>	<i>Gross</i>	<i>Gross</i>
<i>national product</i>	=	<i>national income</i>
=		<i>national expenditure</i>
Value added in:		
Agriculture	Wages and	Personal consumption
Fishing	salaries	Government purchases
Forestry	Profits	Gross domestic capital
Minerals	Rent	formation

Manufactures	Interest	Net investment abroad
Services	Depreciation	(adjusted for gifts)
Government		<i>Less:</i> Indirect taxes
		<i>Plus:</i> Subsidies

The above table illustrates that national income, which is a measure of the money value of goods and services produced (or received) in a country, can be regarded from three points of view and measured in three different ways. The first column indicates the national output originating in different branches of economic activity. This value is not identical with the gross value of the sales of each industry; it excludes, in order to avoid double counting, the value of commodities including imports used up in the process of production. The second column indicates how the income arising out of production activity is distributed among the various factors of production. Finally the third column shows how income paid out is absorbed in various uses.

This simple presentation obscures a number of conceptual difficulties which are familiar in the literature and need not be dwelled upon here. There are, however, one or two basic definitional issues which have direct relevance for Saudi Arabia.

First and foremost is the difference between national and domestic totals. Gross national product means income of all residents of a country. Income of residents as a result of economic activity abroad should be included while income payable to non-residents should be deducted. Normally the distinction between the productive activity of residents of a country and the productive activity within the geographical limits of the country is not important. However, in countries like Saudi Arabia where foreign-owned companies operate and where a sizeable portion of the geographical product is paid out to non-residents, this distinction assumes significance. As we shall see, over 40 per cent of the net output of the oil sector in the Kingdom takes the form of investment income payments by A.R.A.M.C.O. Moreover the Saudi economy relies to a considerable extent on foreign workers. Apart from the oil industry where about one-fourth of the labour force is non-Saudi, there are a large number of foreigners¹ employed in Government, business and domestic service.

It is clear, therefore, that the concept of domestic product as

¹ Technically most of these foreigners engaged in service or professional work are residents and their remittances are treated as transfer payments for balance of payment purposes. But from the national product point of view this flow really represents factor income payments abroad.

distinct from national product has very real relevance for Saudi Arabia. The significance of gross national product as a rough guide to the welfare of the inhabitants of the country is obvious. But at the same time gross domestic product gives a better idea of the production potential and national resource base of the country. Moreover, to the extent that the distribution of oil profits between the Government and the foreign oil interests is a matter of negotiation and has been subject to change in most oil producing countries in the past, the distinction between national and domestic product is arbitrary. A further example of the limitation of the national concept is provided by figures of gross capital formation. In so far as a substantial part of the gross capital formation is in the oil sector it would be misleading to relate it to national product alone. All this stresses the need for preparing detailed estimates on both a geographical and a national basis.

Turning to the alternative approaches for estimating national income, it appears that in Saudi Arabia, as perhaps in most other less developed countries, the most fruitful line of attack is through the product approach. In the absence of a population census, the estimates of working population and its distribution by occupation are non-existent. Furthermore in so far as there is no income-tax for Saudi Nationals tax data cannot be used for estimating incomes. Finally, a distinct corporate sector does not exist and the few joint stock companies that operate do not, in the absence of a company law, publish regular balance sheet and profit and loss statements. These considerations rule out the possibility of estimating income through distributive shares. Indeed due to the predominance, outside the oil sector, of unincorporated enterprises, the distinction between wages and salaries, profits and rent does not have much meaning.

The expenditure approach similarly suffers from the handicaps that no expenditure surveys have been made and that the distinction between investment and consumption expenditure, in the absence of a large corporate sector and the existence of a sizeable subsistence sector, is more than usually hazy.

In contrast, the product approach yields fairly reliable figures of output, at least for the dominant oil and Government sectors. Still we have to contend with two main difficulties, namely the coverage of the subsistence sector and the valuation of the non-marketed production. It is well known that the drawing of a line

between productive and non-productive activity is a particularly difficult task in a less developed economy. This task is further complicated by the existence of a sizeable semi-nomadic population in Saudi Arabia and the absence of detailed economic surveys in 'settled' villages. In view of the above facts the coverage of the subsistence sector output remains somewhat incomplete. As regards the valuation of non-marketed production, the method of valuing at ex-farm prices is generally favoured. It is, however, difficult if not impossible to gather information on ex-farm prices in a country as sparsely populated as Saudi Arabia. The alternative is to take market prices and to make allowance for transport and distribution costs. But as there is no definite basis on which this can be done, we have preferred to use unadjusted market prices. This means that subsistence sector output, i.e. agriculture and livestock production, includes value added to it in transport and trade. This factor has to be kept in view in estimating output in the latter sectors.

TENTATIVE ESTIMATES

On the basis of the approach outlined above it has been possible to estimate the net product of the six major sectors of the Saudi economy, viz. Oil, Government, Agriculture, Manufacturing, Construction, and Transport and Communications. The estimates relate as far as possible to year 1959 (Hijri year 1378-9). The sources and the methods of estimation, as well as detailed statistics, are given in the appendix. It would suffice to note here that except for oil and the Government sector, the output figures must be regarded as tentative. The summary of the results is given below:

Gross Domestic Product Originating in Major Sectors

	(S.Rs. million)
Oil	2,623
Government	437
Agriculture	260
Manufacturing	47
Construction	149
Transport and communication	151

We must hasten to add that it has not been possible to estimate net product originating in electricity and gas, banking, insurance and real estate, wholesale and retail trade, ownership of dwellings and miscellaneous services. It is, however, suggested that allowance for these incomplete sectors can be made on a percentage

basis if we desire to have a preliminary, though extremely rough, estimate of national product. Broadly speaking this adjustment can be made on the basis of the structure of national output in other countries in the region. In Pakistan the above sectors account for nearly 30 per cent of the gross product in other sectors, while in Turkey their share is close to 25 per cent. In Saudi Arabia some of the service industries, notably insurance and real estate, are less developed but, because of heavy dependence on imports and the difficulties of transport, the value added in trade is relatively more important. Still on the whole, a lower contribution of the service industries (other than construction and transport) would be in keeping with the generally less developed character of the Saudi economy. Considering this, an addition of 20 per cent to the total of gross national product arrived at above appears to be realistic. This yields a lump sum estimate of S.Rs.516 million¹ for the uncovered sectors.

We now have a preliminary estimate of S.Rs.4,183 million for gross domestic product at factor cost. After making allowance for net factor income payments abroad, the gross national product is placed at S.Rs.2,992 million.

	(S.Rs. million)
Gross domestic product	4,183
Less: Factor income payments abroad:	
Oil ²	1,188
Other ³	70
	1,258
Plus: Factor income receipts from abroad ⁴	67
Gross national product	2,992

The use of even these admittedly crude estimates enables us to make several 'concrete' observations on the structure of the Saudi economy. The gross national product is only about 70 per cent of the gross domestic product. The net output in the oil sector accounts for 62 per cent of domestic product and a little over 50 per cent of national product. Net Government product forms over 14 per cent of gross national product while Govern-

¹ Twenty per cent of the gross national product in the six sectors.

² Net earnings of ARAMCO and remittances of foreign contract employees.

³ Estimated net remittances abroad of other foreign employees. Source: Tax Dept.

⁴ Government revenue from Getty Oil and Arabian Oil.

ment budgetary expenditure, as defined by us, accounts for over 43 per cent of gross national expenditure. The ratio of exports to G.D.P. is about 66 per cent while the proportion of exports to G.N.P. is as high as 92 per cent. Imports account for about 30 per cent of the G.N.P. The contribution of agriculture, including livestock and fisheries, which is by and large outside the range of the monetary economy, is estimated at S.Rs.260 million or less than 9 per cent of the total national product, while manufacturing, which is largely small-scale, contributes only S.Rs.47 million, i.e. less than 2 per cent of G.N.P.

The relatively low output in the subsistence sector (i.e. agriculture) throws some doubt on the high population estimates for Saudi Arabia. Assuming that the U.N. estimate of 6 million was correct, and that no increase in population has taken place since 1956, the rural-nomadic population must be around 5 million. (The urban population does not exceed a million even according to the most liberal estimates.) It is also fair to assume that the income of the rural-nomadic population is derived almost entirely from agriculture and livestock. Now, the value of major agricultural crops, livestock, fruit and vegetables, etc., according to our estimates, is in the neighbourhood of S.Rs.260 million only. This gives a per head income of only S.Rs.52 in the subsistence sector and compares with the lowest income *per capita* of around \$40 (S.Rs.150) in the poorest communities. This clearly suggests that either the population estimate is grossly inflated or the subsistence sector output greatly underestimated. In so far as the difference we have to explain is very large, nearly 200 per cent even after allowing for a substantial understatement of agricultural output, the high population estimated remains open to suspicion.

The conversion of the estimated gross national output (1959) at the then existing exchange rate¹ (\$1 = S.Rs.3.75) gives an output valued at nearly \$900 million. The *per capita* income may range anywhere from \$150 to \$300 per annum depending upon the population estimate. It is, however, our belief that the latter figure gives a closer idea of the economic reality in the Kingdom. If this belief is correct, Saudi Arabia is decidedly one of the most prosperous countries in the Middle East today.

¹ There are several reasons for adopting the official rate. This rate has been used in the first place in converting oil revenues into Saudi Riyals. Secondly even with the existence at that time of exchange control and a free market rate, the basic necessities, i.e. foodstuffs, etc., were imported at the official rate.

APPENDIX

Oil

The following table provides a statement of value added for the oil sector.

TABLE I
Statement of value added for the oil sector, 1959

(S.Rs. million)

Allocations		Sources	
Income tax and royalties	1,099	Exports of oil	2,781
Depreciation	148	Domestic sale of goods and services	80
Wages and salaries:		Addition to plant	97
(a) Local payments	188	Change in inventory (decrease)	- 14
(b) Remittance by foreign contract employees	88		
Net earnings by A.R.A.M.C.O. transferred abroad	1,100	Total value of production	2,944
		<i>Minus:</i> Goods and services purchased from other producers:	
		(a) From abroad	247
		(b) From domestic sources	74
Total allocations of value added	2,623	Total value added	2,623

The table is based on A.R.A.M.C.O. operations for 1959 and does not include the result of concessions to Getty Oil and Arabian Oil Companies in Kuwait Neutral Zone in which Saudi Arabia has a 50 per cent share. The Government oil revenues from these companies (\$17.8 million in 1959) can, perhaps, best be treated as a factor income from abroad.

Local wages and salaries represent the expenditures benefiting the Saudi economy less A.R.A.M.C.O. purchases of goods and services from domestic sources.

The purchases of goods and services abroad include payroll benefits paid abroad. The purchases from domestic sources consist mainly of payments to local construction and transport companies and contractors by A.R.A.M.C.O.

Government

Government activity has been taken to include services rendered in the field of administration and defence by both

central and local Government (municipalities). The operations of Saudi Rail Road, Posts, Telegraph and Telephones Department and Saudi Airlines have been excluded and are covered under Transport and Communications.

TABLE II

*Consolidated Government Receipts and Outlay Statement,
1378-9 A.H. (1959)*

Allocations		Sources	
Wages and salaries	437	Oil royalties and income taxes	1,145
Purchases from other producers and imports	337	Indirect taxes	152
Private treasury	235	Rental of state property	5
Bank commission and repayments of debt	140	Service payments by investment Co.	5
Net expenditure on:			
Railways, P.T.T., and Saudi Airlines	52		
Compensation for requisitioned property	25		
Other transfer expenditure	49		
Net unclassified expenditure	32		
Total outlay	1,307	Total receipts	1,307

The output of the Government sector is, following the normal procedure, valued at cost, i.e. it covers the remuneration of Government employees. It has, however, not been possible to impute net rent on buildings owned and occupied by the Government.

The Saudi Government budgets give a break-down of all civil administration expenditure into salaries and emoluments and other expenses. The wages and salaries paid to military personnel had to be estimated. It was assumed that 50 per cent of the total expenditure of the General Office of the Army is for salaries and related benefits. The entire spending on development projects, mostly construction activity, is assumed to have been in the form of payments to contractors. Our treatment of the Royal Family corresponds to that of a private household. The expenditure on Private Treasury is not considered as contributing to Government product as it is more akin to a transfer payment. A limitation of the Government sector figures which needs to be mentioned is that only budget estimates are published and data

on actual expenditure is not readily available. It seems, however, that in the case of wages and salaries to Government employees, the actual expenditure does not diverge much from the estimates.

Agriculture

Major crops: F.A.O. crop estimates relating to the year 1956-7 are the only recent data available about agricultural production in Saudi Arabia. It is generally believed that the output of major crops is stagnant. We have, therefore, used the F.A.O. estimates without any adjustment for the intervening period.

TABLE III

	Annual Production (Tons)	Estimated Gross Value (S.Rs. millions)
Dates	200,000	112.00
Wheat	43,000	14.45
Rice	4,000	2.24
Barley	23,000	} 35.28
Maize	21,000	
Millet	13,000	
Sorghum	69,000	
Coffee	200	0.66
Lentils	300	} 0.71
Sesame	1,300	
		165.34
<i>Less allowance for seed and wastage 5%</i>		8.27
		157.07

The gross value of major crop production has been arrived at by estimating average market prices. These latter must be regarded, at best, as rough approximations.

It has been assumed that in agriculture inputs other than labour and seeds are either negligible or are free goods. A deduction of only 5 per cent has been made for seeds and wastage from the estimated gross value in order to arrive at value added. As discussed in the text, this value added, inasmuch as it has been arrived at in market prices, covers the contribution (imputed) of trade and transport sectors to agricultural crops.

It may be noted that in estimating agricultural output the main fodder crop, alfalfa, which is widely grown in most oases

and probably covers some 100,000 acres, has been excluded. This is done because the value of livestock production has been estimated on a gross basis and the entire alfalfa crop can be assumed to be an input in that sub-sector.

Livestock

The main basis of estimating livestock production is the number of slaughterings in municipality slaughter houses, less imports. However, allowance had to be made for production and consumption in the rural areas on the basis of a reproduction approach. For this purpose the F.A.O. estimates of livestock were used. The coverage of the nomadic and semi-nomadic sector must essentially be regarded as incomplete.

The gross as well as net value of livestock output on the basis of various assumptions works out to S.Rls.86.9 million. As mentioned above the production of the main input other than labour, ie. alfalfa, is covered indirectly under this head.

Fruit and Vegetables

The average area in fruits and vegetables is estimated at 11,000 to 12,000 acres. The value added is placed at S.Rls.13 million.

Fish

The annual catch does not exceed 5,000 tons. Its net value is estimated at S.Rls.3 million.

Manufacturing

Industry in Saudi Arabia is mostly small-scale and is limited mainly to machine shops, automobile mechanics, furniture manufacturers, tile and marble plants, flour mills, beverage factories, ice plants and printing presses. The only exception is the cement industry. A large cement factory has been operating in Jeddah since 1958. Another has started operating recently in the eastern province.

While no formal census of industrial enterprises has been undertaken a survey team of German industrial consultants carried out a fairly exhaustive examination of the industrial position and prospects in 1961. Fairly good data exist on the number of enterprises in each branch of industry, the number of workers, annual turnover and invested capital.

TABLE IV

Value added in Industry, 1959

	(S.Rls. million)
Cement	3.2
Tiles and marble	5.0
Machine shops	3.0
Automobile mechanics	6.0
Building, carpentry and furniture	3.4
Flour mills and bakeries	1.8
Ice plants	2.5
Printing presses	4.5
Beverage industry	4.0
Others	13.5
	46.9

It must be stressed that the above figures do not include very small establishments, i.e. self-employed or employing only two or three workers. Their aggregate contribution to the national production cannot be regarded as negligible but is difficult to estimate. Anyhow, strictly speaking, these activities should be covered under other services.

There are at present no operating mining enterprises in Saudi Arabia.

Transport and Communications

The Saudi Railroad, Airways and Post, Telegraph and Telephones are operated by the Government. It appears that these services, particularly P.T.T., are rather heavily subsidized. Gross sales by these departments totalled only about S.Rls.50 million in 1959. Their factor payments alone were estimated at S.Rls.51 million. But it may be mentioned that the net combined deficit of these departments (see Table II) covers capital spending by them.

The value of road transport is more difficult to estimate. The two main consumers of road transport are the pilgrims and A.R.A.M.C.O. Sales to these two sectors were estimated at S.Rls.52 million for 1959. In the rest of the economy also road transport plays a major role as the chief means of travel and haulage of goods. From the scattered figures of movement of goods, number of vehicles and transport charges, it appears that gross sales of transport to other than pilgrims and A.R.A.M.C.O.

are probably not less than S.Rls.100 million. This is admittedly no more than an informed guess. Furthermore, assuming the value added in road transport at two-thirds of gross sales, we arrive at net product of S.Rls.101.3 million.

Construction

The gross sales of S.Rls.249 million in construction have been arrived at mainly on the basis of imports of construction materials and assumptions about the import component in building. The data check broadly with independent estimates of private and Government construction:

	(S.Rls. million)
Private construction	100
A.R.A.M.C.O., Government and municipalities	149
	<hr/>
	249

The net value added is estimated at S.Rls.149.4 million after making due allowance for estimated purchases from other sectors.