

THE PREPARATION OF NATIONAL ACCOUNTING ESTIMATES FOR SOUTH WEST AFRICA AND A PRESENTATION OF CONSOLIDATED SERIES FOR SOUTH AFRICA, SOUTH WEST AFRICA AND THE THREE BRITISH PROTECTORATES (1920-59)

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I. INTRODUCTION

THIS paper consists of two parts. The first deals with some problems encountered in preparing estimates of income, expenditure and saving for South West Africa, while the second sets out provisional national accounting series incorporating the Republic of South Africa, South West Africa, Basutoland, Swaziland and Bechuanaland, for the last forty years.<sup>1</sup> A brief description of the methods and sources employed together with some of the more important estimates in connection with South West Africa appears in an appendix.<sup>2</sup>

In the extension of the geographical coverage of South Africa's system of national accounts to include the four territories in question, it was decided to adopt the framework and concepts in use in the Republic.<sup>3</sup> Since the four economies are relatively small and the purpose of the consolidation is to obtain an historical series, it follows that negligible margins of error are not required. The consolidated series are expressed to the nearest million pounds and the estimates for South West Africa to the nearest £100,000, i.e. the accounting unit applied in the case of South Africa. Attention will be focused on the case of South West Africa in examining some of the estimating problems encountered, because quantitatively speaking it is the

<sup>1</sup> The Department of Economic Research and Statistics of the South African Reserve Bank has been compiling a consolidated series for these territories since 1957/58. See *Quarterly Bulletin of Statistics*, South African Reserve Bank, No. 48, June 1958, p. xii, and for a complete post-war series see *idem*, No. 50, December 1958. The Bank's advice on technical matters of estimation in preparing the present pre-war and war series is gratefully acknowledged.

<sup>2</sup> A more detailed presentation of the territory's National Income and Expenditure over the years 1920-56 is given in *The South African Journal of Economics*, March 1960. For a comprehensive survey, including many underlying series, reference may be made to D. C. Krogh, *The National Accounting Framework of South West Africa*, unpublished thesis, University of Pretoria, 1959.

<sup>3</sup> See p. 217 for the need for this extension. The framework and concepts are mainly those recommended by the United Nations in *A System of National Accounts and Supporting Tables*, 1960: *Concepts and Definitions of Capital Formation*, 1953; and *Methods of National Income Estimation*, 1955.

more important of the four territories involved. As background to this discussion it is useful to give an outline of the territory's economic structure and basic data.

## II. SOUTH WEST AFRICA'S ECONOMIC STRUCTURE AND DATA

From the point of view of national accounting the two most notable features of the South West African economy are its small size and heterogeneous nature. The former implies *inter alia* that the economy is typically undiversified and heavily dependent on foreign trade, which is highly concentrated.<sup>1</sup> In connection with the heterogeneous character of the economy it may be pointed out that there are such marked differences in respect of structure, organization and levels of development that the exchange and traditional sectors are readily recognizable in South West Africa as the so-called *Police Zone* and the region lying outside it, respectively.<sup>2</sup> The first basic feature together with its related characteristics tends to facilitate the task of the national accountant except with respect to problems of industrial classification, whereas the second leads to progressively more difficult conceptual and practical problems as the field of investigation moves from the modern exchange to the subsistence sector. Fortunately, however, the relative scope of the latter and, therefore, also its quantitative significance is considerably smaller in the case of South West Africa than that in tropical African territories.<sup>3</sup>

The economic relations between the foreign, modern exchange and traditional sectors in South West Africa compare with those of one of two types of simplified models which were recently put forward by a United Nations study as opposite

<sup>1</sup> With respect to these related characteristics see, for example, the findings of S. Kuznets, 'Economic Growth of Small Nations', *The Challenge of Development*, Jerusalem, 1958, pp. 9-18. The territory's total population is about half a million. Two-thirds of its total male labour force is engaged in primary production and nearly 80 per cent of all agricultural output and practically all mining production is exported. The share of the three principal commodities in total exports is 65 per cent, and 60 per cent of all exports go to the United Kingdom and United States. About 80 per cent of all imports come from the Union.

<sup>2</sup> The *Police Zone*, so designated by the Germans to indicate the region to which normal police protection is confined, is the sector to which European settlement is restricted. It covers about two-thirds of the territory in area and slightly more than half the total population is resident within its boundaries.

<sup>3</sup> In so far as the scope of subsistence activity in South and Central Africa tends to correspond to the size of the African section in each community it may be pointed out that South West Africa ranks second lowest in the number of Africans per European. The number is slightly more than half that of Southern Rhodesia and just more than double that of the Union.

extremes between which most African economies lie and towards one or other of which each of them inclines.<sup>1</sup> Accordingly, it may briefly be pointed out that, firstly, the exchange sector has been brought about largely by foreign capital and enterprise, mainly in mining, and by foreign settlement,<sup>2</sup> which explains among other things the fact that this sector is highly capitalized, almost completely dependent on local European and foreign savings and employs advanced techniques. Secondly, the traditional sector has come to be linked to the exchange sector by means of a large outflow of unskilled African wage-earners from the former to the latter.<sup>3</sup> The nature of the latter relationship tends to reduce the difficulties of incomplete coverage and of valuation as far as the economic activities of Africans are concerned. The importance of foreign factors in the first relationship lays emphasis on the estimation of their share in domestic production, while the aspect of specialization in primary production raises important valuation difficulties in respect of changes in stocks.

Before considering these problems a brief survey of the available basic data is appropriate. In the predominant exchange sector (the *Police Zone*) there is a substantial amount of statistical evidence available, due mainly to the fact that, on the one hand, South West Africa is a typical open economy and, on the other, South Africa reported annually on the general administration and development of the territory during the inter-war period. The basic data included in these reports are, however, still being compiled on a current basis and although the collection of separate foreign trade figures for the territory has been discontinued since 1957, the variety of sources and quality of data have improved considerably during the post-war years.

<sup>1</sup> See *Structure and Growth of Selected African Economies* (U.N.), 1958, p. 3, and *Economic Survey of Africa Since 1950* (U.N.), 1959, p. 12.

<sup>2</sup> According to S. H. Frankel, *Capital Investment in Africa*, 1938, Tables 28 and 32, total overseas capital invested in South West Africa amounted to nearly £90 *per capita* before World War II, apparently by far the highest figure for any single territory in Africa south of the Sahara. The value of mining output *per capita* is highest in South West Africa compared with all African territories. In respect of foreign settlement see footnote 3 p. 207. The mainstay of the European population is livestock farming, which accounts for the fact that the territory has the highest number of livestock per head of its total population in Africa. See *Economic Survey of Africa*, *op. cit.*, pp. 64 and 27.

<sup>3</sup> Thus, for example, shortly after the war an official survey determined that about 40 per cent of all Africans employed in the exchange sector were '... either being recruited or detribalized Extra-Territorial and Northern Natives now permanently resident within the Police Zone.' *Report of the S.W.A. Native Labour Commission 1946-1948*, Windhoek, p. 7.

The latter may be ascribed to the remarkable overall economic progress experienced in South West Africa since the war and such other developments as the increase in the scope of agricultural marketing boards, the extension of the tax system, the imposition of conservation measures in the case of fisheries, special studies and improved censuses. Nevertheless, major statistical shortcomings still remain in the case of private non-primary activities, particularly as far as the service industries, including trade, are concerned.

Very little data exist about economic activities in the predominantly subsistence sector. The population, livestock and migrant labour figures are the most useful but often these are no more than rough estimates. There are no meaningful prices for locally produced commodities, since there are no villages or nearby markets as are often encountered in other parts of Africa.<sup>1</sup> On the other hand, average rates of compensation in the case of unskilled African labour constitute a fairly reliable valuation basis for deriving employment income aggregates because of the undiversified nature of such earnings.

On the whole, the considerable degree of commercialization and variety of data in the *Police Zone* point towards the feasibility of preparing conventional national accounting estimates for this sector, whereas doubts arise in this connection in the case of the traditional sector lying outside this region, which is, however, relatively small from a quantitative point of view.

### III. PRODUCTION BOUNDARY AND INDUSTRIAL CLASSIFICATION

The first task is to obtain totals of the annual output of the whole economy on the basis of the gross value added by each industrial category. In drawing the overall production boundary along the lines recommended by the United Nations, according to which only the unexchanged part of all 'non-primary' production performed by producers outside their own trades is excluded, it means in practice that as far as the traditional sector is concerned only primary economic activities and public expenditure are covered by the investigation, an approach which

<sup>1</sup> Thus, in connection with the region falling outside the *Police Zone* it may be stated that, 'each kraal is an independent economic unit having its own agricultural lands, stock, water, etc.', *U.G. 49-1947*, para. 78, and 'there is nowhere in the Union where the African is more self-sufficient in his way of life and less affected by contact with Europeans'. Lord Hailey, *An African Survey, Revised 1956*, p. 437.

is consonant with the data available on any regular basis.<sup>1</sup> Since more comprehensive approaches are, however, often adopted in the case of homogeneous economically backward communities, mainly for the purpose of welfare comparisons, it was decided to determine for a particular post-war year the order of magnitude of the omission involved in disregarding untraded non-primary production in the case of all Africans in the territory. A most comprehensive estimate for 1951 yielded an amount of £839,000 in the case of Africans resident outside the *Police Zone* and £523,000 in the case of Africans within the *Police Zone*, together an amount not exceeding £1½ million or 3·5 per cent of the Domestic Product calculated on the conventional basis.<sup>2</sup>

The basis of valuation for primary output included in the conventional series is farm prices which are derived mainly from export market prices after making rough allowances for rail and distribution charges, differences in quality and distance from the nearest railway communication. This practice is in general accordance with the recommendations of the United Nations and is also adopted in the case of South Africa, although it may tend to undervaluation. In addition, on the assumption that the relative scope of subsistence activity has declined over the years, particularly as far as such activities in the *Police Zone* are concerned, the conventional aggregates would tend to overstate the degree of long-term economic improvement.

In respect of the industrial distribution of the domestic product series set out in Table IV in the appendix, it should be pointed out that there are numerous departures from the *International Standard Industrial Classification*, which grow in

<sup>1</sup> The productive activities of households are conventionally restricted to the employment of domestic servants and 'home ownership'. The income originating in own construction of African houses, almost exclusively non-cement huts, is not taken into account on the grounds that the valuation of such structures exclude unpaid labour and profit margins. Compare *Methods of National Income Estimation*, op. cit., pp. 31 and 46. The income derived from 'home ownership' is also disregarded in this instance, since these structures are viewed and treated as a kind of durable consumption good. The income and expenditure of migrant workers from the traditional sector are, of course, duly accounted for in the exchange sector.

<sup>2</sup> These aggregates are based on detailed *per capita* estimates prepared for some 3·7 million Bantu resident in diverse rural areas in South Africa. The estimates cover all conceivable non-primary subsistence production which was evaluated on a local exchange basis to the extent possible. See H. J. J. Reynders, *Nywerheidsontwikkeling in die Bantoegebiede van Suid Afrika* (Industrial Development in the Bantu Areas of South Africa), unpublished thesis, University of Pretoria, 1956.

number the earlier the period considered particularly for secondary and tertiary industry, owing to lesser specialization in domestic activities and to poorer data.

In this connection it may be pointed out that it is not possible to show separately the income originating in the various branches of manufacture or in the supply of many kinds of private services except for the base years.<sup>1</sup> Preference was also given to a classification which distinguishes, on the one hand, between the private and public sector and, on the other, between Government enterprises and general government on both a local and central Government level, rather than to adhere to a strict industrial classification. The reasons for this are to be sought, firstly, in the very small size of the individual income contributions originating in the Government supply of such services as education, health, communications, electricity and water and, secondly, in the analytical usefulness of indicating the size of the direct overall effect of the public sector on the total product. In this respect it may further be pointed out that owing to the absence of data indicating to what extent construction was undertaken by private contractors, all income originating in this kind of capital formation by public authorities was included in the latter, thereby distorting the industrial classification between construction and services and, at the same time, also between the private and public sectors, but to a lesser extent.<sup>2</sup> On the whole it would appear that in the case of South West Africa it is not always feasible nor very useful to prepare a detailed industrial classification, as is often found in economically advanced countries.

#### IV. UNREALIZED SALES AND SOME IMPUTATIONS

The problem of valuation arising from unrealized transactions in the case of changes in stocks of primary products

<sup>1</sup> For some particular examples reference may be made to *National Accounting Framework of South West Africa*, op. cit., pp. 143 and 223. In Table I in the appendix to the present paper some quantitatively small product contributions have been grouped together with other categories for the convenience of tabulation. In connection with base year data considerable difficulties of classification still remain. For example, in the *1951 Population Census* it is stated that the activities of 250 out of 1,154 European males and 1,729 out of 3,093 African males who were gainfully occupied in service industries, excluding transportation and trade, could not be adequately described for classification purposes.

<sup>2</sup> Despite this biased classification in favour of the public sector reference to Table IV in the appendix will show that during the post-war decade the product contribution of public authorities, including public enterprises and an imputation for rent, averaged less than 8 per cent of the total.

assumes important proportions in South West Africa, due to the dominance of livestock production and mining in the economy. In order to measure the value of physical changes in stocks it has to be decided whether cost of production or market prices are to serve as basis, and an attempt should be made to eliminate elements of capital gain or loss associated with price fluctuations as far as possible.

It has been suggested that where such stock changes are determined on the basis of physical data, valuation adjustments in respect of the distorting effects arising from price changes need not generally be effected and that the valuation in such cases may conveniently be based on average prices ruling during the year.<sup>1</sup> This is usually the practice followed in the case of changes in livestock holdings, and the justification for using average market prices, duly adjusted for regional and quality variations, rather than cost figures derives, firstly, from the fact that such prices often fluctuate less than those of other agricultural products, especially export products, and secondly, from considerations of the aims of national accounting.<sup>2</sup>

More complicated considerations present themselves in valuing stock changes in the case of mining products, particularly diamond stocks, where unusual fluctuations are encountered in year-to-year market prices, cost of production and the ratio between these averages.<sup>3</sup> Since average market prices tend to fluctuate in greater sympathy with changes in current values than do average costs, and because historical data are available about mining output, sales and the value of the latter, it was decided to use average market prices as valuation basis on the grounds that this would be conceptually more tenable and statistically more feasible. Although this procedure corresponds to that of valuing changes in livestock holdings it is

<sup>1</sup> See, for example, *Methods of National Income Estimation*, op. cit., p. 51.

<sup>2</sup> These may be formulated as an attempt to obtain the most comprehensive measure of the total value of goods and services produced within a year and the best impression of the extent to which resources have either been diverted into stock creation or made available by running down the level of stocks. Compare, for example, H. C. Edey and A. T. Peacock, *National Income and Social Accounting*, 1954, pp. 74-75, in this connection.

<sup>3</sup> Mining companies often use average cost of production in valuing stock changes. In the case of the diamond mining company in South West Africa this basis was employed during the period 1920 to 1931, but after this year and up to 1951 diamonds on hand were either ignored or valued at some minimum token price. The average cost is often influenced rather fortuitously by changes in the number and quality of diamonds recovered.

necessarily arbitrary in nature, like all other practices where imputations are involved.<sup>1</sup> Obviously, another method would yield different results for particular years, but the net effect would tend to be the same for any number of years.<sup>2</sup>

Particular difficulties of imputation were also encountered in another respect, viz. in making an allowance for income originating in private households in the form of rent from the use of buildings for residential purposes. It has already been pointed out that in the case of South West Africa this calculation has been restricted to the European section of the community.<sup>3</sup> Other qualifications are also often found in practice in framing the size of this income component. Thus, for example, in South Africa rent on farm dwellings is not taken into account and in most countries a qualification of ownership is applied in deriving the relevant estimate.<sup>4</sup> Similar restrictions would lead to a substantial underestimation in the case of South West Africa in view of the relative significance of the territory's European farming community and that of home ownership by public authorities and enterprises not principally engaged in supplying residential accommodation, and they do not, therefore, appear to be justified.<sup>5</sup> An attempt was consequently made to include rent arising from urban, farm and miners' houses, and the amount in the case of the two latter accounted for 45 per cent of the total concerned in 1956.

<sup>1</sup> Since there are, however, considerable fluctuations around the average annual price and it is unrealistic to assume that changes in diamond stocks in South West Africa do not influence market prices, it follows that the use of the average market price is in itself also an imperfect valuation basis.

<sup>2</sup> In South Africa, where the share of mining output is considerably smaller, average cost of production is used to compute the value of changes in the stocks of mining products.

<sup>3</sup> Compare footnote 1 p. 210 and also A. R. Prest and I. G. Stewart, *National Income of Nigeria 1950-1951*, Colonial Research Studies, No. 11, 1953, pp. 41 and 45.

<sup>4</sup> The estimate is conventionally restricted to income '... originating from the use of dwellings owned by individual landlords (including rented as well as owner-occupied dwellings) and in corporate and non-corporate enterprises principally engaged in hiring out premises to other transactors. . . .' See *A System of National Accounts and Supporting tables*, op. cit., p. 32.

<sup>5</sup> Nearly 40 per cent of the European population live outside urban areas and the proportion was considerably higher in pre-war years. 'The Government acts as landlord to its public servants', a condition which dates back to early times . . . 'in the time of the Germans the State had to build houses for its public servants for the simple reason that there were none and because public servants in many cases only served temporarily in the Territory', *U.G. 26-1952*, p. 11. The same applies in the case of mining companies and other less important enterprises.



## V. INTERTERRITORIAL ORGANIZATIONS AND THE SHARE OF FOREIGN FACTORS

In view of the close administrative and economic ties between South West Africa and South Africa considerable practical difficulties might be expected in the treatment of interterritorial organizations, whose local activities should be treated similarly to those of resident institutions for domestic accounting purposes. Fortunately, however, there are sufficiently reliable data about the local activities of at least the most important single organization involved, viz. the South African Railways and Harbours Administration, which allow the separate calculation of its role in domestic income generation and expenditure.<sup>1</sup> The same applies to the public administrative departments of Police and Native Affairs, which form integral parts of South Africa's Civil Service, and in the case of the major private firms concerned.<sup>2</sup>

In deriving the national income series the net amount of current factor income flowing to foreign capital and labour must be determined. In calculating the international investment income component in the case of South West Africa, it is of particular importance to draw a distinction between the net income *accruing* to foreigners and the net amount *actually remitted* abroad, because, as is evident from Table V in the appendix, substantially different national income figures are obtained depending on which of these two approaches is employed.<sup>3</sup> Thus, for example, whereas the amount of net factor income outflow calculated according to the former approach averaged 27.5 per cent of the domestic income during the post-war decade, the corresponding average calculated on the basis of actual remittances came to only 14.2 per cent.<sup>4</sup>

<sup>1</sup> For some inevitable but minor adjustments and qualifications reference may be made to *The National Accounting Framework of South West Africa*, op. cit., pp. 199-201.

<sup>2</sup> The fishing industry is the most important case in point. Some difficulty was experienced in the case of financial institutions which could only be overcome by resorting to rough approximations.

<sup>3</sup> This distinction was not made in calculating the component net foreign employment income, because of the paucity of data and the quantitative insignificance of this flow, and actual remittances were estimated.

<sup>4</sup> In general, the flow of net factor income *accruing* to foreigners tends to grow and decline more rapidly during periods of economic expansion and contraction, respectively, than that of net income *actually remitted* abroad, a phenomenon which might reasonably be expected to be characteristic of the type of economy under consideration.

From the point of view of quantitative significance no important problems were encountered either in the way of data or in establishing the foreign control over assets and liabilities in framing the estimates of net foreign investment income. This should largely be ascribed to the fact that, firstly, the flow is predominantly outward, secondly, foreign owned enterprises operating locally are largely concentrated in a few lines of production, mainly mining, transportation and the processing of fish and, finally, the most important of these units are organized in companies, which greatly facilitate the collection of data.

In the case of foreign employment income more complicated problems arise in deciding the nationality of the relevant labour units, but because of the relatively small size of this flow the application of varying resident criteria would not tend to affect the aggregates in any appreciable way. The rule applied in the case of Europeans rests on the consideration as to whether the population censuses of South West Africa include the particular employees as local residents, and in so far as Africans are concerned, the estimates were conveniently based on the available data about such foreign employees.<sup>1</sup>

#### VI. CAPITAL EXPENDITURE AND SAVING

When South West Africa came to be treated as an integral part of South Africa for trade statistics purposes it was no longer possible to derive the former's domestic expenditure<sup>2</sup> and domestic saving as residuals from the estimates of total product and capital expenditure by way of allowing for net exports and foreign borrowing, respectively. Neither is it possible to obtain the aggregates in question by way of direct estimation, because no attempt has been made to compute the size of private consumption expenditure and personal saving due to serious shortcomings in data. Since the figures of Government consumption expenditure and saving are based on official accounting records, and do not, therefore, give rise to

<sup>1</sup> For further details see *The National Accounting Framework of South West Africa*, op. cit., pp. 48-49.

<sup>2</sup> Defined as the total of private and public consumption expenditure and domestic capital formation, which is, of course, not necessarily commensurate with the total expenditure on the domestic product—the balance being either a surplus of imports or exports. The relevant estimates for the years prior to 1957 appear in Table VI in the appendix.

considerable difficulties in this respect,<sup>1</sup> attention will here only be given to the calculation of domestic capital formation and corporate saving.

In connection with the former it may be pointed out that although import statistics proved useful in estimating total expenditure especially on machinery and equipment, and the accounting records of the major mining companies could be utilized to determine the size of capital formation in this particular industry, formidable difficulties remained due to poor data in deriving the value of construction and the capital expenditure by agriculture and the service industries. These latter estimates had to be based largely on the value of building plans passed in the case of urban construction and on identifiable imports in the case of agriculture, which demanded some arbitrary assumptions to arrive at the final aggregates. It was not found possible to give a breakdown of fixed capital expenditure by industry under the broad category 'Private Non-Primary Industry', and a similar shortcoming applies to the category 'Public Authorities', but with respect to expenditure by type of asset.<sup>2</sup>

Apart from the problems discussed earlier in connection with the valuation of changes in livestock holdings and stocks of mining products, the almost complete lack of data dictated the use of a very crude but not uncommon method in gauging the value of other stock changes. The approach rests on the assumption of a constant relation between the level of the relevant stock and total income, and it should, therefore, only be expected to yield rough approximations.<sup>3</sup>

No great difficulties were encountered in the way of basic data required to determine the size of corporate saving, because these were readily available in the form of annual accounts of the few major mining, manufacturing and trading companies and the South African Railway Administration. However, since considerable adjustments are called for in respect of such items as depreciation allowances, taxes, capital gains and stock valuations, it cannot be said that these estimates

<sup>1</sup> However, since the data is not collected for national accounting purposes a considerable amount of reinterpretation and processing is inevitable. For further details reference may be made to *The National Accounting Framework of South West Africa*, op. cit., pp. 285-7.

<sup>2</sup> See Table VII in the appendix.

<sup>3</sup> For further details reference may be made to *The National Accounting Framework of South West Africa*, op. cit., pp. 283-4.

are among the most reliable for any particular year, but the margins of error involved are probably considerably reduced for any number of years.

This concludes the brief survey of some of the more important estimating problems encountered in the preparation of basic national accounting data for South West Africa. The following sections set out the incorporated series for South Africa, including South West Africa and the three smaller British Protectorates over the years 1920 to 1959.

#### VII. THE CONSOLIDATED SERIES

Balance of payments estimates have always been prepared for South Africa including South West Africa and the three British Protectorates, due to the fact that they constitute one currency area, whereas national accounting calculations have until recently been confined to South Africa only. This difference in coverage did not give rise to formidable problems, since it was possible to make the necessary adjustments on the basis of separate trade statistics for the territories concerned. When the Department of Customs and Excise discontinued the series covering trade between South Africa and South West Africa in 1957, however, South African national accounting statisticians were forced to incorporate South West Africa and the Protectorates in their estimates. Thus the South African Reserve Bank recently revised its national accounting statistics, using as a basis the work done by Krogh on South West Africa<sup>1</sup> and Erasmus on Bechuanaland.<sup>2</sup> The consolidated series since 1946 are published by the Bank in its *Quarterly Bulletin of Statistics* and these figures are included in the tables below for the years 1946 to 1959. In order to fill the need for comparable historical series, dating back to 1920, on income, expenditure and saving for the territories combined, the present extended consolidation has been prepared.

This involves the estimate of the relevant figures for the three Protectorates for the years 1920 to 1945. The main source of information is the reports published annually by Her Majesty's Stationery Office on the affairs of each of the Protectorates. As

<sup>1</sup> *The National Accounting Framework of South West Africa*, op. cit.

<sup>2</sup> *Die probleem van ekonomiese ontwikkeling in Afrika met spesiale verwysing na Betsjoenalandprotektoraat* (The Problem of Economic Development in Africa with special reference to the Bechuanaland Protectorate.) (Unpublished thesis, University of Pretoria, 1959.)

in the case of South Africa, no allowance is made for the income accruing in the subsistence economy apart from the value of farm produce consumed. Although the estimates are subject to a rather large margin of error, it must be remembered that in 1946 the net domestic product of all three territories combined amounted to only about £9 million or about 1.2 per cent of the combined total for South Africa, South West Africa and the Protectorates.

Due to the close economic connections between South Africa and South West Africa, as well as the Protectorates, and the resultant flow of factor income payments between these territories, a number of adjustments have to be made in consolidating their separate income series. As regards South West Africa the main items concerned have been discussed in an earlier part of this paper, while in the case of the Protectorates it need only be pointed out that the main adjustment concerns the inter-regional flow of labour.<sup>1</sup>

Table I gives the estimates of the net domestic product, net national income and the gross national product at market prices for all the territories combined, using Frankel's total income figures for the years 1920 to 1945 as a basis in the case of South Africa.<sup>2</sup>

The expenditure on gross national product as shown in Table II is obtained by utilizing the estimates published by the Reserve Bank since 1946, the balance of payments estimates prepared by du Plessis<sup>3</sup> and the capital formation figures for South Africa prepared by Willers.<sup>4</sup> Table III shows the sources of saving of the enlarged economy.

In this connection it should be mentioned, however, that the capital formation figures for the years 1920 to 1945 are not strictly comparable with those for the period 1946 to 1959, because the official figures for the latter period include an

<sup>1</sup> The estimates are based mainly on information given by Sheila T. van der Horst in her *Native Labour in South Africa*, Oxford University Press, 1942.

<sup>2</sup> See S. Herbert Frankel, 'An Analysis of the Growth of the National Income of the Union in the period of Prosperity before the War', *The South African Journal of Economics*, June 1944, for the figures up to 1942-3. Subsequent articles in the *Journal* brought the estimates to 1945-6.

<sup>3</sup> J. C. du Plessis, *The Measurement and Economic Significance of South Africa's Foreign Liabilities and Assets*, University of Stellenbosch, 1958. (Unpublished thesis.)

<sup>4</sup> J. J. D. Willers, *Kapitaalvorming en Kapitaalbesit in die Unie, 1910-53*. (Capital Formation and Wealth in the Union, 1910-53), University of Pretoria, 1955. (Unpublished thesis.)

TABLE I

*Net Domestic Product, Net National Income and Gross National Product for South Africa, South West Africa and the British Protectorates Combined*

(£ millions)

	Net domestic product	Net national income	Gross national product at market prices
1920	237	213	245
1921	203	185	219
1922	199	182	213
1923	222	201	233
1924	235	212	248
1925	244	222	260
1926	253	230	269
1927	270	247	288
1928	279	257	300
1929	269	247	291
1930	249	229	273
1931	230	211	253
1932	231	214	257
1933	256	235	279
1934	289	267	312
1935	323	299	349
1936	359	331	384
1937	378	350	408
1938	391	366	427
1939	420	390	453
1940	460	429	493
1941	513	483	552
1942	565	536	578
1943	615	588	664
1944	659	631	710
1945	697	668	762
1946	728	698	806
1947	803	773	896
1948	877	842	978
1949	967	924	1,064
1950	1,132	1,074	1,227
1951	1,235	1,166	1,339
1952	1,343	1,272	1,469
1953	1,536	1,462	1,688
1954	1,650	1,569	1,826
1955	1,754	1,669	1,953
1956	1,920	1,830	2,136
1957	2,005	1,917	2,252
1958	2,046	1,958	2,320
1959	2,120	2,034	2,427

TABLE II

*Expenditure on the Gross National Product for South Africa, South West Africa and the Three British Protectorates Combined*

(£ millions)

Year	Expenditure on goods and services	Gross domestic capital formation	Gross expenditure of the economy	Exports of goods and services less imports of goods and services	Expenditure on the gross national product
	(1)	(2)	(1)+(2)=(3)	(4)	(3)+(4)=(5)
1920	193	76	269	- 24	245
1921	194	26	220	- 1	219
1922	200	19	219	- 6	213
1923	186	46	232	1	233
1924	202	52	254	- 6	248
1925	225	49	274	- 14	260
1926	232	52	284	- 15	269
1927	240	51	291	- 3	288
1928	251	58	309	- 9	300
1929	249	53	302	- 11	291
1930	243	36	279	- 6	273
1931	233	21	254	- 1	253
1932	236	4	240	17	257
1933	207	41	248	31	279
1934	263	57	320	- 8	312
1935	269	79	348	1	349
1936	296	95	391	- 7	384
1937	321	103	424	- 16	408
1938	352	99	451	- 24	427
1939	353	100	453	—	453
1940	395	84	479	14	493
1941	461	83	544	8	552
1942	487	58	545	33	578
1943	550	60	610	54	664
1944	577	88	665	45	710
1945	624	108	732	30	762
1946	688	203	891	- 85	806
1947	823	257	1,080	-184	896
1948	875	279	1,154	-176	978
1949	919	264	1,183	-119	1,064
1950	967	273	1,240	- 13	1,227
1951	1,067	400	1,467	-128	1,339
1952	1,211	338	1,549	- 80	1,469
1953	1,337	432	1,769	- 81	1,688
1954	1,403	475	1,878	- 52	1,826
1955	1,506	492	1,998	- 45	1,953
1956	1,633	499	2,132	4	2,136
1957	1,720	542	2,262	- 10	2,252
1958	1,829	565	2,394	- 74	2,320
1959	1,855	493	2,348	79	2,427

TABLE III

*The Financing of the Gross Capital Formation for South Africa, South West Africa  
and the Three British Protectorates Combined*

(£ millions)

Year	Gross domestic saving	Net foreign borrowing and realization of foreign assets	Gross domestic capital formation
1920	52	24	76
1921	25	1	26
1922	13	6	19
1923	47	— 1	46
1924	46	6	52
1925	35	14	49
1926	37	15	52
1927	48	3	51
1928	49	9	58
1929	42	11	53
1930	30	6	36
1931	20	1	21
1932	21	— 17	4
1933	72	— 31	41
1934	49	8	57
1935	80	— 1	79
1936	88	7	95
1937	87	16	103
1938	75	24	99
1939	100	—	100
1940	98	— 14	84
1941	91	— 8	83
1942	91	133	58
1943	114	— 54	60
1944	133	— 45	88
1945	138	— 30	108
1946	118	85	203
1947	73	184	257
1948	103	176	279
1949	145	119	264
1950	260	13	273
1951	272	128	400
1952	258	80	338
1953	351	81	432
1954	423	52	475
1955	447	45	492
1956	503	— 4	499
1957	532	10	542
1958	491	74	565
1959	572	— 79	493



inventory valuation adjustment<sup>1</sup> which was not undertaken for the former period due to the unreliability of the estimates of investment in inventories.<sup>2</sup> In addition, except for a few years in the early twenties and again in the early thirties, the price level in South Africa had been remarkably steady up to the outbreak of the Second World War.

#### VIII. FUTURE RESEARCH REQUIREMENTS

The extension of the geographical coverage of the national accounting system of South Africa to include South West Africa and the smaller Protectorates should be regarded as a progressive step, since it is doubtful whether such estimates would otherwise have come to be prepared on a regular basis for these smaller territories.<sup>3</sup> Moreover, it is very useful for many purposes of analysis to have an overall view of the territories whose economies are so closely integrated. There still remains considerable scope for further research to improve the existing basic national accounting estimates of South Africa and to make them more useful for the purpose of economic study and policy. Among the more important projects there can be included, firstly, real income and expenditure series; secondly, a more detailed and standardized industrial classification of the total product; thirdly, estimates which recognize the heterogeneous nature of the economy and, finally, a revision of the inter-war income figures, and possibly also an extension of all historical series to pre-World War I years. It is encouraging to know that almost all these fields in addition to input-output and financial flow analyses, are at present receiving attention.

<sup>1</sup> The same qualifications also apply to the income series of Table I.

<sup>2</sup> Changes in inventories are estimated on the basis of a constant relation between stocks and income.

<sup>3</sup> Compare A. R. Prest, *The Investigation of National Income in British Tropical Dependencies*, 1957, pp. 28-29.

## APPENDIX

## THE BASIC NATIONAL ACCOUNTING SERIES OF SOUTH WEST AFRICA: METHODS AND SOURCES

This appendix presents the domestic and national income, expenditure and saving series of South West Africa and contains short notes on the methods and statistical sources utilized in their computation. All the figures are expressed in terms of current prices.<sup>1</sup>

I. *The domestic product and national income (1920-59)*

The gross domestic product series are set out in Table IV by type of industrial activity. The estimates exclude that part of African subsistence activity which normally falls outside the conventional production boundary. The totals are rounded off to the nearest £100,000 and the constituent amounts are given to the nearest £1,000.

The production method is principally used in deriving the product contribution originating in primary activities, but the more direct income method could also be applied in the case of agriculture for the period 1936 to 1956, mining for the post-war years and fisheries for the period 1950 to 1956. A combination of these two approaches or only the income method has to be relied upon in the case of secondary and tertiary production due to insufficient data.

In addition to the *Annual Statements of Trade and Shipping (1920-56)* which constitute a basic source for preparing many of the domestic product (and capital formation) series, and the *Annual Reports to the League of Nations on the Administration of S.W.A. (1920-39 and 1946)* which contain most of the statistical material available for the pre-war years, the following proved to be the most valuable:

(a) *Agriculture*: (1) Agriculture Censuses 1945/46, 1950/51 and 1954/55, S.A. Bureau of Census and Statistics; (2) Estimates of the Occupational Distribution and Wages of Africans, and Production and Population in Native Reserves and the area outside the Police Zone for post-war years, S.W.A. Departments of Native Affairs and Agriculture; (3) *Annual Reports of the Dairy Industry and Meat Trade Control Boards*, S.W.A. Dept. of Agriculture; (4) *Report of the Farming Industry Commission, 1927-1928*; (5) *Report on Land Settlement in S.W.A. 1926*; (6) *Report of the S.W.A. Native Labourer's Commission, 1945-1948*; (7) *Report of the Long-Term Agricultural Commission, 1948-1949*; (8) *Report on the Marketing of Livestock, 1950*; (9) *Report on Long-term Marketing Scheme for Meat, 1952-1953*; (10) *Report on Marketing of Karakul Wool, 1953-1954* (all Reports kindly made available by the S.W.A. Administration); (11) *Die S.W.A. Boer-Der S.W.A. Farmer*, weekly periodical, Windhoek; (12) *South West Africa Annual*, Windhoek; (13) Population Censuses 1921, 1926, 1936, 1946 and 1951, including an Agricultural Census in the former and Income Censuses in the two latter, S.A. Bureau of Census and Statistics; (14) Constituent Series of Consumers' Price Index for Windhoek

<sup>1</sup> Reference may be made to *The South African Journal of Economics*, op. cit., pp. 14-15, for a presentation of the territory's real domestic and national income series with 1937-8=100.

TABLE IV  
Gross Domestic Product by Type of Industrial Activity (1920-1959)

Year	Primary Industry			Secondary Industry			Tertiary Industry: Private			Tertiary Industry: Public			Gross domestic product at factor cost £ millions
	Agriculture and fishing	Mining	Total primary industry	Manu- facturing	Private urban construction	Total secondary industry	Trans- portation and trade	All other services	Total private tertiary industry	General government	Government enterprises	Total public authorities	
	£'000	£'000	£ millions	£'000	£'000	£ millions	£'000	£'000	£ millions	£'000	£'000	£ millions	
1920	837	3,786	4.6	165	25	0.2	823	404	1.2	389	43	0.4	6.5
1921	392	1,017	1.4	152	24	0.2	525	338	0.9	390	54	0.4	2.9
1922	798	1,075	1.9	143	21	0.2	382	369	0.8	376	48	0.4	3.2
1923	593	2,231	2.8	221	28	0.2	522	398	0.9	380	48	0.4	4.4
1924	703	2,031	2.7	116	40	0.2	663	472	1.1	394	53	0.4	4.5
1925	625	2,570	3.2	230	62	0.3	804	517	1.3	392	62	0.5	5.3
1926	770	2,523	3.3	345	85	0.4	860	587	1.4	428	72	0.5	5.7
1927	823	2,837	3.7	365	77	0.4	925	608	1.5	450	72	0.5	6.2
1928	1,537	2,056	3.6	344	88	0.4	997	681	1.7	483	75	0.6	6.3
1929	963	2,631	3.6	297	166	0.5	1,094	759	1.9	510	86	0.6	6.5
1930	257	2,143	2.4	282	85	0.4	796	720	1.5	526	100	0.6	4.9
1931	562	686	1.2	270	55	0.3	572	611	1.2	464	93	0.6	3.3
1932	955	206	1.2	273	22	0.3	371	466	0.8	343	71	0.4	2.7
1933	364	-20	0.3	242	31	0.3	417	447	0.9	310	68	0.4	1.9
1934	1,098	-27	1.1	177	29	0.2	486	483	1.0	330	78	0.4	2.7
1935	1,932	509	2.4	217	40	0.3	522	515	1.0	351	78	0.4	4.2
1936	2,177	931	3.1	269	70	0.3	786	545	1.3	398	84	0.5	5.3
1937	2,835	1,135	4.0	223	49	0.3	902	611	1.5	432	85	0.5	6.3
1938	3,036	1,856	4.9	205	49	0.3	870	647	1.5	454	86	0.5	7.2
1939	3,506	685	4.2	235	27	0.3	830	696	1.5	477	88	0.6	6.5
1940	2,531	217	2.7	249	33	0.3	853	746	1.6	478	93	0.6	5.2
1941	3,528	519	4.0	233	30	0.3	1,065	805	1.9	470	93	0.6	6.7
1942	3,188	363	3.6	230	38	0.3	980	756	1.7	487	98	0.6	6.1
1943	5,290	845	6.1	370	16	0.4	1,262	774	2.0	523	102	0.6	9.2
1944	5,484	1,107	6.6	397	51	0.4	1,355	813	2.2	611	110	0.7	9.9
1945	4,524	1,275	5.8	391	235	0.6	1,634	984	2.6	726	118	0.8	9.9
1946	4,104	1,659	5.8	422	384	0.8	2,107	1,148	3.3	916	167	1.1	10.9
1947	6,291	2,346	8.6	487	380	0.9	2,808	1,424	4.2	1,195	253	1.4	15.2
1948	7,341	4,180	11.5	551	713	1.3	3,238	1,630	4.9	1,453	291	1.7	19.4
1949	7,079	5,537	12.6	625	443	1.1	3,470	1,859	5.3	1,540	352	1.9	20.9
1950	9,841	8,652	18.5	751	948	1.7	4,185	2,193	6.4	1,601	373	2.0	28.5
1951	11,698	14,793	26.5	902	1,316	2.2	5,384	2,726	8.1	1,720	473	2.2	39.0
1952	12,104	16,285	28.4	1,460	1,325	2.8	6,294	3,170	9.5	2,101	580	2.7	43.3
1953	13,432	16,495	29.9	1,967	1,344	3.3	7,126	3,932	11.1	2,536	810	3.3	47.6
1954	15,030	17,258	32.3	2,492	1,234	3.7	7,798	4,357	12.2	2,979	824	3.8	52.0
1955	16,160	24,642	40.8	2,645	1,369	4.0	9,369	5,159	14.5	3,244	855	4.1	63.4
1956	16,409	31,331	47.7	3,368	1,329	4.7	9,764	5,423	15.2	3,582	1,055	4.6	72.3
1957*	16,700	26,600	43.3	3,800	1,300	5.1	10,100	5,800	15.9	3,800	1,100	4.9	69.2
1958*	13,600	21,600	35.2	4,400	1,400	5.8	10,600	6,100	16.7	4,100	1,200	5.3	63.0
1959*	12,000	25,600	37.6	4,600	1,400	6.0	11,000	6,500	17.5	4,700	1,300	6.0	67.1

since 1938, S.A. *Bureau of Census and Statistics*; and finally (15) *Abstract of Agricultural Statistics*, 1957, Union Dept. of Agriculture, Division of Economics and Markets.

(b) *Fisheries*: (1) Post-war data on Fish Production and Sales, S.W.A. Dept. of Fisheries; (2) *S.A. Fishing Industry Handbook and Buyers' Guide*, Cape Town; (3) *S.W.A. Annual 1948 and 1953*, op. cit.; and (4) Post-war Operating Accounts of major Fishing Companies.

(c) *Mining*: (1) Operating Accounts of the three major Mining Companies; (2) Annual Reports of the Inspector of Mines, S.W.A. Dept. of Mines; and (3) African Labour Statistics, S.W.A. Dept. of Native Affairs.

(d) *Manufacturing and construction*: (1) Industrial Censuses 1920 to 1925/26, *Official Year Books of the Union, 1920-1927*; (2) Operating Accounts of Breweries 1930-1956; (3) Annual Output and Production Statistics of Dairy Factory Products, *Annual Reports of the Dairy Industry Control Board*, op. cit., 1943-1956; (4) *S.W.A. Trade and Farms Directory*, periodical, Windhoek; (5) Population Censuses, op. cit.; and finally (6) Municipal Valuation Records and Building Plans passed in main urban areas, S.W.A. Administration.

(e) *Public authorities*: (1) *Annual Reports of the Controller and Auditor-General on the Accounts of the Administration of S.W.A.*, S.W.A. Admin.; (2) *Estimates of Revenue and Expenditure of S.W.A.*, S.W.A. Admin.; (3) Annual Reports on the Activities of Local Authorities, S.W.A. Admin.; and (4) Annual Accounts of almost all Local Authorities, kindly made available by the S.W.A. Administration.

(f) *Transportation*: (1) *Annual Reports of the Controller and Auditor-General on the S.A. Railways, Accounts and Statement of Accounts*, Union Govt. Printer; (2) *Annual Reports of the General Manager of Railways and Harbours*, Union Govt. Printer; (3) *Report of the Commission on the Economic and Financial Relations between the Union of S.A. and the Mandated Territory of S.W.A.* (U.G. 1-61935); (4) Population Censuses, op. cit., and finally (5) *S.W.A. Trade and Farms Directory*, op. cit.

(g) *Trade*: (1) Population Censuses 1946 and 1951, op. cit.; (2) Operating Accounts of two major Trading Companies; and (3) Estimates of Turnovers of Trading Establishments, S.W.A. Dept. of Revenue.

(h) *All other services*: (1) Population Census 1946 and 1951, op. cit.; (2) Estimates of Average Income in Professional Occupations S.W.A. Dept. of Revenue; (3) Number and Average Earnings of Domestic Servants, S.W.A. Dept. of Native Affairs; (4) Municipal Valuation Roles, op. cit.; and finally (5) Average Rents on non-privileged Dwellings in Windhoek, 1926, 1930 and 1932 to 1956, *Official Year Books of the Union*.

(i) *African non-primary subsistence activity falling outside the conventional production boundary*: (1) Population Census and Estimates 1951, op. cit.; (2) H. J. J. Reynders, *Nywerheidsontwikkeling in die Bantoegebiede van Suid-Afrika*, op. cit.; (3) G. Wagner, 'Some Economic Aspects of Herero Life', *African Studies*, 1954, Vol. 13, Nos. 3 and 4; (4) J. D. Jones Rheinallt, *The Administration of S.W.A. - Welfare of the Indigenous Population*, S.A. Institute of Race Relations (undated but published after 1952); (5) *S.W. Annual*, op. cit.; and finally (6) N. J. van Warmelo, 'Notes on the Kaokoveld and its People', *Ethnological Publications*, No. 26, 1951, Dept. of Native Affairs, Pretoria.

The national income figures which are derived from the total product series after adjusting for the net amount of factor income flowing to foreign capital and labour are given in Table V to the nearest £100,000. The

TABLE VI  
*Disposal of Gross Domestic Product by Type of Expenditure (1920-56)*  
 (£ millions)

<i>Gross Domestic Expenditure</i>										
Year	<i>Consumption Expenditure</i>			<i>Gross Domestic Capital Formation</i>					Net exports: exports minus imports	Expenditure on gross domestic product
	Private consumption expenditure	Govt. consumption expenditure	Total consumption expenditure	Fixed capital formation	Net increase in stocks: livestock, minerals, S.A.R. and Govt. trading	Net increase in stocks: trading and other	Total net increase in stocks	Total capital formation		
1920	1.8	0.7	2.5	0.4	2.0	1.5	3.5	3.9	0.3	6.7
1921	1.3	0.6	1.9	0.5	0.3	0.5	0.8	1.3	-0.1	3.1
1922	2.1	0.6	2.7	0.4	0.5	-0.6	-0.1	0.3	0.4	3.4
1923	1.6	0.6	2.2	0.5	0.2	0.2	0.4	0.9	1.6	4.7
1924	1.9	0.6	2.5	0.6	0.7	0.2	0.9	1.5	0.8	4.8
1925	2.3	0.6	2.9	1.1	0.4	0.1	0.5	1.6	1.0	5.5
1926	3.1	0.6	3.7	1.0	0.4	0.2	0.6	1.6	0.7	6.0
1927	3.2	0.6	3.8	0.9	1.1	0.2	1.3	2.2	0.6	6.6
1928	3.7	0.7	4.4	1.0	1.0	0.1	1.1	2.1	0.3	6.8
1929	4.2	0.7	4.9	1.2	0.7	—	0.7	1.9	0.2	7.0
1930	3.1	0.7	3.8	0.9	1.0	—	1.0	1.9	-0.3	5.4
1931	3.1	0.6	3.7	0.6	0.3	-0.7	-0.4	0.2	-0.3	3.6
1932	2.0	0.4	2.4	0.2	0.4	-0.4	—	0.2	0.3	2.9
1933	1.9	0.4	2.3	0.2	-0.6	-0.2	-0.8	-0.6	0.4	2.1
1934	2.3	0.4	2.7	0.3	-0.3	—	-0.3	—	0.2	2.9
1935	1.9	0.5	2.4	0.4	0.5	0.3	0.8	1.2	0.9	4.5
1936	2.6	0.5	3.1	0.7	0.5	0.5	1.0	1.7	0.9	5.7
1937	3.2	0.6	3.8	0.7	1.0	0.3	1.3	2.0	1.1	6.9
1938	3.6	0.6	4.2	0.8	2.2	0.1	2.3	3.1	0.4	7.7

TABLE VI (continued)  
*Disposal of Gross Domestic Product by Type of Expenditure (1920-56)*  
 (£ millions)

Year	<i>Gross Domestic Expenditure</i>									
	<i>Consumption Expenditure</i>			<i>Gross Domestic Capital Formation</i>					Net exports: exports minus imports	Expenditure on gross domestic product
	Private consumption expenditure	Govt. consumption expenditure	Total consumption expenditure	Fixed capital formation	Net increase in stocks: livestock, minerals, S.A.R. and Govt. trading	Net increase in stocks: trading and other	Total net increase in stocks	Total capital formation		
1939	4.4	0.6	5.0	0.7	1.5	0.1	1.6	1.3	0.7	7.0
1940	3.9	0.6	4.5	0.6	-0.3	-0.2	-0.5	0.1	1.0	5.6
1941	4.4	0.6	5.0	0.7	-0.2	-0.1	-0.3	0.4	2.0	7.4
1942	3.9	0.6	4.5	0.6	0.4	0.1	0.5	1.1	1.3	6.9
1943	5.5	0.6	6.1	0.5	0.2	0.3	0.5	1.0	3.0	10.1
1944	5.4	0.8	6.2	0.8	0.5	0.8	1.3	2.1	2.7	11.0
1945	5.4	1.0	6.4	1.5	0.3	0.1	0.4	1.9	2.8	11.1
1946	8.0	1.2	9.2	2.4	-1.0	0.2	-0.8	1.6	2.5	13.3
1947	10.4	1.5	11.9	4.0	0.9	0.8	1.7	5.7	-0.9	16.7
1948	10.4	1.7	12.1	5.9	1.2	1.5	2.7	8.6	0.9	21.6
1949	11.8	1.9	13.7	4.9	0.9	0.9	1.8	6.7	2.5	22.9
1950	12.3	2.0	14.3	6.6	1.1	2.5	3.6	10.2	6.4	30.9
1951	13.7	2.2	15.9	8.2	3.4	3.1	6.5	14.7	11.1	41.7
1952	16.2	2.9	19.1	11.1	1.5	2.4	3.9	15.0	12.2	46.3
1953	22.1	3.4	25.5	12.5	2.8	5.7	8.5	21.0	4.6	51.1
1954	24.0	3.6	27.6	12.2	0.7	2.8	3.5	15.7	12.6	55.9
1955	24.1	4.0	28.1	12.3	4.5	2.7	7.2	19.5	20.3	67.9
1956	26.3	4.6	30.9	13.0	4.8	3.3	8.1	21.1	25.3	77.2

quantitative effect of the distinction between net income *accruing* to foreigners and net income *actually remitted* abroad, mentioned previously on p. 214, is shown in the tabulation by referring to the former as Approach A and the latter as Approach B. The required data for these calculations are obtained from the sources listed above under the particular industries concerned.

TABLE V  
Gross National Income at Current Prices According to Approaches A and B (1920-56)  
(£ millions)

Year	Approach A			Approach B		
	Net international factor income flow	Col. 1 as percentage of dom. product	National income A	Net international factor income flow	Col. 4 as percentage of dom. product	National income B
	(Col. 1)	(Col. 2)	(Col. 3)	(Col. 4)	(Col. 5)	(Col. 6)
1920	3.3	50.8	3.2	0.1	1.5	6.4
1921	0.8	27.6	2.1	0.1	3.4	2.8
1922	0.7	21.9	2.5	—	—	3.2
1923	1.8	40.9	2.6	0.1	2.3	4.3
1924	1.4	31.1	3.1	0.1	2.2	4.4
1925	2.0	37.7	3.3	0.5	9.4	4.8
1926	1.8	31.6	3.9	0.5	8.8	5.2
1927	2.2	35.5	4.0	0.4	6.5	5.8
1928	1.5	23.8	4.8	0.4	6.3	5.9
1929	2.0	30.8	4.5	0.6	9.2	5.9
1930	1.6	32.7	3.3	0.1	2.0	4.8
1931	0.3	9.1	3.0	—	—	3.3
1932	—	—	2.7	—	—	2.7
1933	—	—	1.9	1.0	52.6	0.9
1934	—	—	2.7	1.1	40.7	1.6
1935	0.3	7.1	4.9	1.1	26.1	3.1
1936	0.6	11.3	4.7	1.2	22.6	3.1
1937	0.7	11.1	5.6	0.5	7.9	3.8
1938	1.5	20.8	5.7	0.3	4.2	6.9
1939	0.4	6.2	6.1	0.3	4.6	6.2
1940	0.1	1.9	5.1	0.4	7.7	4.8
1941	0.4	6.0	6.3	0.7	10.4	6.0
1942	—	—	6.1	0.7	11.5	5.4
1943	0.7	7.6	8.5	1.6	17.4	7.6
1944	0.6	6.1	9.3	1.5	15.2	8.4
1945	0.8	8.1	9.1	1.1	11.1	8.8
1946	0.9	8.3	10.0	1.3	11.9	9.6
1947	1.3	8.6	13.9	1.4	9.2	13.8
1948	2.8	14.4	16.6	1.4	7.2	18.0
1949	3.8	18.2	17.1	1.9	9.1	19.0
1950	7.3	25.6	21.2	3.4	11.9	25.1
1951	13.1	33.6	25.9	6.3	16.2	32.7
1952	14.7	33.9	28.6	7.9	18.2	35.4
1953	14.7	30.9	32.9	7.8	16.4	39.8
1954	16.4	31.5	35.6	8.7	16.7	43.3
1955	23.2	36.6	40.2	11.4	18.0	52.0
1956	30.2	41.8	42.1	14.0	19.4	58.3

## II. The disposal of the domestic product (1920-56)

Table VI indicates the annual disposal of the total product by type of expenditure, while Table VII gives a breakdown of the item fixed capital formation by industrial use and type of asset, and an abbreviated statement of all international transactions in goods and services, summarized under the item net exports in Table VI, appears as Table VIII. As explained previously, figures shown under the item private consumption expenditure in Table VI are arrived at as residual amounts, and it remains to comment on the calculation of the other series.

TABLE VII  
Gross Fixed Capital Formation by Industrial Use and Type of Asset (1920-1956)

Year	Agriculture			Mining			Private non-Primary Industry			Public Authorities			Gross Fixed capital formation £millions
	Building and construction	Machinery and equipment	Total	Building and construction	Machinery and equipment	Total	Building and construction	Machinery and equipment	Total	General government	Government enterprises	Total	
	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	£'000	
1920			156			47	84	20	104	128	—	128	0.4
1921			196			31	123	18	141	103	29	132	0.5
1922			137			35	106	47	153	67	15	82	0.4
1923			103			93	160	68	228	58	12	70	0.5
1924			178			102	195	65	260	68	28	96	0.6
1925			269			247	390	89	479	69	17	86	1.1
1926			293			206	359	72	431	74	31	105	1.0
1927			354			71	241	104	345	91	24	115	0.9
1928			414			73	281	94	375	126	30	156	1.0
1929			455			112	318	125	443	146	41	187	1.2
1930			406			78	166	108	274	135	56	191	0.9
1931			245			15	93	73	166	81	64	145	0.6
1932			101			4	39	41	80	37	26	63	0.2
1933			59			3	48	49	97	26	6	32	0.2
1934	40	48	88	7	2	9	55	63	118	25	6	31	0.3
1935	60	74	134	26	9	35	84	69	153	23	14	37	0.4
1936	84	116	200	85	28	113	154	129	283	40	15	55	0.7
1937	134	152	286	93	31	124	117	124	241	65	12	77	0.7
1938	167	164	331	67	22	89	121	140	261	78	12	90	0.8
1939	166	158	325	32	11	43	84	97	181	94	15	109	0.7
1940	162	196	358	28	9	37	92	99	151	92	10	102	0.7
1941	138	252	389	19	6	25	51	136	187	93	6	99	0.7
1942	74	211	285	19	6	25	93	109	202	73	8	81	0.6
1943	30	170	199	39	13	52	94	123	159	68	12	80	0.5
1944	106	299	405	12	4	16	111	125	272	108	16	124	0.8
1945	283	422	705	9	3	12	366	209	575	168	31	199	1.5
1946	419	482	901	29	18	47	477	399	876	359	92	452	2.4
1947	796	553	1,349	417	250	667	584	548	1,132	648	207	855	4.0
1948	959	634	1,594	886	532	1,418	1,110	708	1,818	817	252	1,069	5.9
1949	838	787	1,624	477	286	763	693	778	1,471	778	278	1,056	4.9
1950	959	980	1,940	866	520	1,386	1,531	774	2,305	697	272	969	6.6
1951	1,410	1,378	2,787	846	507	1,353	2,081	844	2,925	768	342	1,110	8.2
1952	1,685	1,810	3,495	1,667	1,000	2,667	2,064	1,257	3,301	1,175	507	1,682	11.1
1953	1,894	1,907	3,802	1,781	1,069	2,850	2,086	1,465	3,551	1,484	856	2,340	12.5
1954	2,517	1,854	4,371	1,438	863	2,301	1,914	1,111	3,025	1,875	603	2,478	12.2
1955	3,079	2,122	5,201	624	374	998	2,223	1,205	3,428	1,990	701	2,691	12.3
1956	2,788	2,315	5,104	619	371	990	2,522	1,455	3,977	2,076	804	2,880	13.0



TABLE VIII

*Abbreviated Schedule of International Transactions in Goods and Services (1920-1956)*

Year	Merchandise imports	Net travel and transport	Govt. expenditure	Miscellaneous	Total imports	Total exports	Balance
	£'000	£'000	£'000	£'000	£ millions	£ millions	£ millions
1920	2,253	108	4	72	2.4	2.7	+ 0.3
1921	1,269	75	2	67	1.4	1.3	- 0.1
1922	1,198	58	3	67	1.3	1.7	+ 0.4
1923	1,307	67	4	64	1.4	3.0	+ 1.6
1924	1,781	111	3	63	2.0	2.8	+ 0.8
1925	2,267	162	5	75	2.5	3.5	+ 1.0
1926	2,593	190	6	63	2.9	3.6	+ 0.7
1927	2,603	174	8	63	2.8	3.4	+ 0.6
1928	2,991	196	9	64	3.3	3.6	+ 0.3
1929	3,191	223	20	69	3.5	3.7	+ 0.2
1930	2,192	156	7	63	2.4	2.1	- 0.3
1931	1,705	89	5	51	1.9	1.6	- 0.3
1932	926	54	4	42	1.0	1.3	+ 0.3
1933	1,098	59	5	45	1.2	1.6	+ 0.4
1934	1,321	68	6	24	1.4	1.6	+ 0.2
1935	1,565	85	6	54	1.7	2.6	+ 0.9
1936	2,040	123	7	78	2.3	3.2	+ 0.9
1937	2,583	164	8	61	2.8	3.9	+ 1.1
1938	2,532	159	9	42	2.7	3.1	+ 0.4
1939	2,401	133	8	67	2.6	3.3	+ 0.7
1940	2,593	88	14	72	2.8	3.8	+ 1.0
1941	3,072	85	11	79	3.3	5.3	+ 2.0
1942	2,961	93	10	93	3.2	4.5	+ 1.3
1943	3,668	102	11	84	3.9	6.9	+ 3.0
1944	4,440	127	13	69	4.7	7.4	+ 2.7
1945	5,361	147	13	85	5.6	8.4	+ 2.8
1946	7,439	143	19	83	7.7	10.2	+ 2.5
1947	10,054	259	21	79	10.4	9.5	- 0.9
1948	11,636	370	24	90	12.1	13.0	+ 0.9
1949	12,414	288	20	116	12.8	15.3	+ 2.5
1950	13,835	356	26	151	14.4	20.8	+ 6.4
1951	18,909	546	31	191	19.7	30.8	+ 11.1
1952	21,422	635	37	191	22.3	34.5	+ 12.2
1953	26,001	903	69	195	27.2	31.8	+ 4.6
1954	24,155	722	131	194	25.2	37.8	+ 12.6
1955	27,254	1,028	138	219	28.6	48.9	+ 20.3
1956	28,484	1,059	129	274	29.9	55.2	+ 25.3

(a) *Revaluation of total product at market prices:* The total product at factor cost is expressed in terms of market prices by adding indirect taxes net of subsidies. The result of the adjustment is shown in the last column of Table VI under the item expenditure on gross domestic product, and the sources noted under Section I (e), (1) and (4) above supply the required data for the conversion.

(b) *Net exports of goods and services:* The series in question in Table VI is derived from Table VIII. The following supplementary sources can be utilized to obtain a uniform basis of valuation and to extend the scope of coverage of the basic data given in the *Trade Returns* mentioned in Section I above: (1) Annual Reports of the Inspector of Mines, S.W.A. Dept. of Mines; (2) Reports on the marketing of Livestock from S.W.A., mentioned above under Section II (a), (3), (7), (8), (9) and (10); (3) Arrival and Departure Statistics and Railway Passenger Bookings, in either *Official Year Books of the Union* or *Reports to the League of Nations*; (4) Annual Accounts of major Mining Companies with foreign head offices; (5) *Report on Economic and Financial Relations between the Union and S.W.A.* (U.G. 16-193); and finally (6) *Annual Reports of the Controller and Auditor-General on the Accounts of S.W.A.*, op. cit.

TABLE IX  
*Gross domestic saving and capital formation*  
 (£ millions)

Income	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
(a) Gross personal saving	1.2	2.8	5.9	3.9	8.4	11.6	10.8	11.0	9.6	14.7	12.1
(b) Gross corporate saving	-0.6	-0.6	1.1	2.2	2.9	5.1	4.1	5.2	4.3	7.1	9.8
(c) Current surplus of public authorities	2.2	1.2	1.1	1.2	1.9	2.8	4.4	4.8	5.7	6.6	10.5
(d) Total gross domestic saving	2.8	3.4	8.1	7.3	13.2	19.5	19.3	21.0	19.6	28.4	32.4
(e) Net foreign borrowing + gifts	-1.2	+2.3	+0.5	-0.6	-3.0	-4.8	-4.3	—	-3.9	-8.9	-11.3
(f) Total funds available	1.6	5.7	8.6	6.7	10.2	14.7	15.0	21.0	15.7	19.5	21.1
Expenditure											
(g) Gross public capital formation	0.5	0.9	1.1	1.1	1.0	1.1	1.8	2.3	2.5	2.7	3.1
(h) Gross private capital formation	1.1	4.8	7.5	5.6	9.2	13.6	13.2	18.7	13.2	16.8	18.0
(i) Gross domestic capital formation	1.6	5.7	8.6	6.7	10.2	14.7	15.0	21.0	15.7	19.5	21.1

(c) *Capital formation*: The fixed capital expenditure figures shown in Table VI are equivalent to the totals appearing in Table VII. The nature of the available data largely decides which of the three approaches, viz. the expenditure, supply or finance method, is the most appropriate in constructing Table VII. The latter method is only applied in deriving part of the capital expenditure by the South African Railways in the territory, while the two former have often to be employed in combination to arrive at the expenditure by industrial category. The Supply approach proves particularly useful in determining capital expenditure by type of asset. The estimates of the industrial distribution are based on data supplied by most of the sources noted under the respective industrial categories listed in Section I above, while the expenditure by type of asset is based on relevant import statistics in the case of machinery and equipment, and on municipal valuation data, building plans passed, cement imports and population data in the case structures, but the same source often supplies information relevant to both types of categories, such as Agriculture and Mining Censuses. As is evident from an inspection of Table VI the annual net increase in stocks is divided into two series; the first is based on data used in determining the product contributions of the industrial categories involved, whereas the second is derived on the basis of a constant relation between stocks and income. In respect of the latter it should be added that the figures obtained for 1953 and 1954 were suspected of being understatements and they have, consequently, been inflated on the basis of the trend in general imports.

(d) *Public consumption expenditure*: The relevant series in Table VI are derived from detailed accounting information supplied by the sources listed under Section I (e) above, after some considerable processing of the data, required for national income purposes.

### III. *The finance of capital expenditure (1946-56)*

The estimates of saving by source used in the finance of capital formation appear in Table IX. The figures of gross domestic saving (item (d)) are derived as residuals by deducting net foreign borrowing and transfers (item (e)) from the amounts given as total funds available or gross domestic capital expenditure. The estimates shown as item (e) are calculated as the annual net exports of goods and services, including factor income payments to foreigners. The breakdown of domestic saving is obtained by determining the size of corporate saving, based on the annual accounts of the major mining and manufacturing companies and the South African Railway Administration, and the Current Surplus of Public Authorities, based on the data supplied by the sources mentioned under Section I (e) above, yielding personal saving including errors and omissions as residual amounts. The range of variations in these latter figures narrows considerably when the amounts are brought into relation with the National Income series.