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# NATIONAL PRODUCT AND FIXED ASSETS IN THE TERRITORY OF YUGOSLAVIA 1909–1959

By Ivo Vinski

THIS paper presents the results of my investigation on economic growth in the present territory of Yugoslavia in the past half-century, expressed in terms of real national product and fixed assets series.

The first part of the paper deals with some conceptual problems and the historical background, followed by an analysis of findings. The national product and fixed assets series are given in the tables of Appendix I. Appendix II contains a general survey of methods and sources used for the national product and fixed assets estimates.

## I. SOME CONCEPTUAL ISSUES

The national product and fixed assets series for the period 1909–59 cover, in principle, the same territory, i.e. the present territory of Yugoslavia. The series for the inter-war period include, therefore, the territory of Istria, the Slovenian Littoral, some Adriatic islands, and the Dalmatian town Zadar, which in that period were under Italian sovereignty. For the period prior to the Balkan Wars the estimates of national product and fixed assets cover the territory of the former Kingdom of Serbia and Montenegro and the corresponding territories, which in that period formed part of the Austro-Hungarian and the Ottoman Empire. From a strictly conceptual standpoint various objections might be raised against the construction of such a national product time series, especially for the period 1909–12, when the state Yugoslavia did not yet exist. The series is extended thus far to provide an indication of the level of economic growth attained in the final stage of the period of peace (lasting from the Berlin Congress until the Balkan Wars) preceding the Unification of Yugoslavia.

In order to present national product and fixed assets series in real terms all estimates throughout this paper are calculated on a 1953 price basis. The advantages or disadvantages of the

choice of a specific price base year are debatable. For the construction of historical series for national product and related totals some scholars prefer to apply 1938, 1929, or some other pre-war price basis. It must be pointed out, however, that in the post-war period fundamental changes in the interrelation of prices among various commodity and service groups have taken place in practically all countries as compared with the pre-war price structure. I am aware of the fact that by applying a 1953 price base the price relationships prevailing in that year are projected back to the period prior to the First World War. It does seem reasonable, however, to magnify the significance of such a bias, as 'viewing economic performance in the past from the proportions of contemporary measures' is inherent in human nature.

Besides the pricing problems in comparing national product estimates for periods as long as half a century there are various biases, tending to influence the rate of growth in both directions. Some of the biases mentioned in Professor Kuznets' paper,[1] definitely influence the product series given in this paper. But appropriate adjustments could easily be introduced. In the light of these facts the ascertainment of economic growth by the stock approach seems to produce a less biased measure than estimates by the flow approach.

In the absence of data on business and consumers' inventories for long periods the stock approach for the measurement of economic growth is confined in this paper to fixed assets only (including uncompleted projects). I am conscious that this limitation represents a shortcoming in measuring economic growth by the stock approach, as the relation between the volume of fixed assets and inventories changes in the course of time. But I am not in a position to give an indication of the extent to which the exclusion of inventories may affect the rate of growth of the stock of assets in the period 1910–59.

The series for the stock of fixed assets are valued both at undepreciated and depreciated replacement cost. The former provide a measure of the productive capacity of fixed assets.[2] The

[1] Simon Kuznets, 'National Income and Economic Growth', Paper presented at the Fourth Conference of the International Association for Research in Income and Wealth, *Hindsgavl*, September 1955.

[2] See also F. Grünig, 'An Estimate of the National Capital Account of the Federal German Republic', *Income and Wealth, Series VIII*, London, Bowes & Bowes, 1959.

latter is a measure of the remaining value of fixed assets in terms of the useful length of life which is still to be expected from the assets in question. In principle, this double presentation of fixed assets should be superfluous, if depreciation allowances were a precise measure of the decline in economic services rendered by fixed assets due to the process of ageing and obsolescence. But in practice depreciation is still a very inadequate measure of these phenomena. It appears therefore preferable to present fixed assets series in both ways.

## II. HISTORICAL HERITAGE

Although Yugoslavia's peoples settled in south-eastern Europe fourteen centuries ago, the foundation of the state Yugoslavia was achieved only forty years ago. Moreover, for one-tenth of this short time span since the unification of Yugoslavia's peoples in 1918, her territory was again fragmented during the occupation of the Second World War.

Comparisons between national regions in Yugoslavia reveal substantial differences in the level of economic growth and in the level of civilization in general. These differences are mainly attributable to the historical heritage, and only to a limited extent to natural conditions. For centuries the national regions of Yugoslavia belonged to countries on very different levels of economic and social conditions. The impact of Yugoslavia's historical heritage is still evident today.

A better understanding of these facts may be gained from the table below which shows the reproducible tangible wealth level of the national regions of Yugoslavia, estimated by the author of this paper in a recently published regional wealth study.[1]

These differences in the reproducible tangible wealth level are formidable indeed. From the figures in the below table it may be seen that the north-western regions of Yugoslavia (Slovenia, Croatia, and Voyvodina) are on a substantially higher level than her south-eastern regions (Bosnia and Herzegovina, Serbia proper, Montenegro, Macedonia, and Kosovo and Metohiya).[2]

[1] *Procjena nacionalnog bogatstva po područjima Jugoslavije* (Wealth Estimates for the National Regions of Yugoslavia), published in Zagreb, 1959.

[2] For the purposes of a regional wealth analysis it seems preferable to break down the territory of the People's Republic Serbia into Serbia proper, Voyvodina, and Kosovo and Metohiya.

TABLE I

*Reproducible Tangible Wealth*[1] *per Head at the End of 1953*

| Region | Population (millions) | Reproducible tangible wealth per head (thousand dinars) | | Indices (Yugoslavia = 100) | |
|---|---|---|---|---|---|
| | | Undepreciated | Depreciated | Undepreciated | Depreciated |
| Slovenia | 1·5 | 1,025 | 671 | 185 | 180 |
| Croatia | 4·0 | 696 | 451 | 126 | 121 |
| Voyvodina | 1·7 | 649 | 402 | 117 | 108 |
| Bosnia and Herzegovina | 2·9 | 445 | 337 | 80 | 90 |
| Serbia proper (5) | 4·5 | 441 | 303 | 80 | 81 |
| Montenegro | 0·4 | 411 | 296 | 74 | 79 |
| Macedonia | 1·3 | 342 | 245 | 62 | 66 |
| Kosovo and Metohiya | 0·8 | 247 | 167 | 45 | 45 |

This division line (which is also marked in the above table) corresponds roughly to the borderline between the Ottoman Empire and Central Europe, which lasted for nearly half a millennium.[2] Historical monuments and works of art indicate that before the invasion of the Turks the level of civilization was high in Serbia, Bosnia, and Macedonia by medieval standards. But during the Turkish occupation, embracing nearly eighteen generations,[3] stagnation on the Ottoman pattern was introduced. In that period the western and northern parts of the present territory of Yugoslavia followed the economic and social development in Central Europe, though with some time lag and at a somewhat slower pace.

Have these regional differences, recorded in 1953, widened or narrowed since the First World War? Although there are strong arguments in favour of a narrowing of differences, it is not possible to answer this question in quantitative terms due to lack of data. Nevertheless, in considering the economic growth indicators for Yugoslavia as a whole in the past half-century, as given in the tables of Appendix I, the factors of historical heritage must be borne in mind, for they played an important role in economic performance.

[1] Includes fixed assets (completed and uncompleted), business inventories, consumers' stocks, and standing timber (excluding natural forests). Net foreign assets are not included.

[2] A part of Montenegro, however, has never been under Ottoman rule.

[3] In this context the term generation is used to indicate the mean interval between two successive generations.

### III. SUMMARY OF FINDINGS

My national product and fixed assets estimates are given in the tables of Appendix I. In this section some conclusions based on these estimates are summarized.

(1) Total net domestic product at market prices in real terms rose three-and-a-half times in the half century under consideration. This means an annual rate of growth of total net domestic product of 2·6 per cent. In the nineteen inter-war years (1920–39) net domestic product increased by nearly three-fourths or 3·1 per cent on an annual average. Reckoned from the period 1922–23 (when the 1909–12 level was attained) net domestic product increased up to 1938/39 by two-thirds or 3·1 per cent on an annual average. In the twelve post-war years (1947–59) net domestic product rose two and a half times; this increase represents an annual rate of growth of 7·1 per cent. Thus, the rate of growth of total net domestic product in the post-war period more than doubled as compared with the inter-war period.

Viewed in the short-term, the following tendencies in national product are discernible. In the 1920s a steady rise until 1929; then the decline until 1935 due to the world economic depression; from 1936 until 1939 an increase in economic activity, reaching a peak in 1938/39. In the post-war period three sub-periods can be distinguished. A sharp increase in the years 1947–49, followed by stagnation in 1950–52, the latter mainly caused by exceptional droughts in 1950 and 1952 and by factors in the field of foreign-trade relations with Eastern Europe. Since 1953 a marked upward movement has taken place. Total net domestic product in real terms rose 9·2 per cent on an annual average in the period 1953–59.

In considering this 2·6 per cent annual rate of growth of net domestic product for the past half-century one must bear in mind the impact of the Balkan Wars, the First World War, and the Second World War on the factors of production in the territory of Yugoslavia. It would be a matter of speculation, however, to guess the increase of national product assuming that there had been no wars. Though a formal estimate of this kind would suggest considerably higher rates, such a construction could not be regarded as meaningful. The three major wars fought by Yugoslavia's peoples are an integral part of the formation and the actual economic growth of Yugoslavia.

(2) The gross domestic product series displays very similar movements to the net domestic product series in the period from 1909–12 to 1959, though these movements are not quite parallel. The former is slightly slower, due to the fact that annual depreciation allowances increased in this period by 154 per cent, whereas net domestic product increased by 242 per cent.

(3) Net domestic product per head rose two and a half times in the half-century covered by this series, whereas total net domestic product increased three and a half times in the same period, as mentioned in paragraph (1). This difference is due to a population increase of 5·3 millions in the present territory of Yugoslavia from 1910 until 1959.

TABLE II

*Population of the Present Territory of Yugoslavia*

| Year | Total population (millions) | Agricultural | | Non-agricultural | |
|---|---|---|---|---|---|
| | | Millions | % | Millions | % |
| 1910 | 13·1 | 10·4 | 80 | 2·6 | 20 |
| 1921 | 12·5 | 9·8 | 78 | 2·7 | 22 |
| 1931 | 14·5 | 11·0 | 76 | 3·5 | 24 |
| 1948 | 15·8 | 11·1 | 70 | 4·7 | 30 |
| 1953 | 17·0 | 10·8 | 63 | 6·2 | 37 |
| 1959 | 18·4 | —[1] | — | —[1] | — |

[1] Data not available.

The annual rate of growth of *per capita* net product for the period from 1909–12 to 1959 amounts to 1·9 per cent; for the inter-war period (1920–39) to 1·7 per cent; for the post-war period (1947–59) to 5·8 per cent. A comparison between the annual rate of growth of total and *per capita* net product is summarized below.

TABLE III

*Annual Rates of Growth of Net Product and Population (per cent)*

| Period | Net product total | Population | Net product per head |
|---|---|---|---|
| Total period (from 1909–12 to 1959) . | 2·6 | 0·7 | 1·9 |
| Inter-war period (from 1920 to 1939) . | 3·1 | 1·4 | 1·7 |
| Post-war period (from 1947 to 1959) . | 7·1 | 1·4 | 5·8 |

(4) The undepreciated replacement value of the stock of fixed assets in the present territory of Yugoslavia more than doubled (an increase of 122 per cent) in the period 1910–59, yielding an annual rate of growth of 1·6 per cent. In the twenty years of the inter-war period (1919–39) the volume of the stock of fixed assets increased by 45 per cent or 1·8 per cent per annum. In twelve post-war years (1947–59) the volume of the stock of fixed assets increased by 66 per cent or 4·3 per cent on an annual average.

(5) The depreciated replacement value of the stock of fixed assets in 1959 is roughly four-fifths higher than in 1910 (the annual rate of growth amounts to 1·3 per cent). In the twenty inter-war years (1919–39) the value of the stock of fixed assets increased by 22 per cent (1·0 per cent per annum). In twelve post-war years (1947–59) this increase amounted to 80 per cent or 5·0 per cent annually.

(6) A comparison between the rate of growth of the undepreciated and the depreciated stock of fixed assets reveals substantial deviations.

TABLE IV

*Annual Rates of Growth of Fixed Assets*

| Period | Undepreciated stock (per cent) | Depreciated stock (per cent) |
|---|---|---|
| Total period (1910–59) . . . | 1·6 | 1·3 |
| Inter-war period (1919–39) . . . | 1·8 | 1·0 |
| Post-war period (1947–59) . . . | 4·3 | 5·0 |

In the above sub-periods two different tendencies can be discerned. Owing to a relatively low investment level in the inter-war period, the rate of increase of the depreciated stock of fixed assets lagged behind the rate of increase of the undepreciated stock of fixed assets. An opposite tendency has been taking place in the post-war period owing to a considerably higher volume of investment. These proportions result, in fact, from the ratio between the undepreciated and depreciated stock of fixed assets, on the one hand, and the relation between new investment and net investment, on the other. In other words, a new investment/net investment ratio which is lower than the undepreciated stock/depreciated stock of fixed assets ratio

results in a rejuvenescence of the stock of fixed assets, and vice versa.

TABLE V

*Investment and Fixed Assets Ratios*

| | Inter-war period (1920–39) | Post-war period (1947–59) |
|---|---|---|
| New investment/net investment ratio . | 2·5 | 1·5 |
| Undepreciated stock/depreciated stock of fixed assets ratio . . . . . | 1·6 | 1·7 |

Regarding the annual rates of growth of fixed assets for the total period 1910–58, amounting to 1·6 per cent and 1·3 per cent respectively, it must be kept in mind that they result not only from movements in the inter-war and post-war period but also from war years. The impact of the latter is considerable, owing to war destruction, on the one hand, and an accelerated ageing of the total stock of fixed assets, on the other.

(7) As a consequence of the phenomena described in the preceding paragraph, the proportion between the undepreciated and depreciated stock of fixed assets displays marked changes in the period under consideration.

TABLE VI

*Stock of Fixed Assets and Accrued Depreciation in Selected Years*

| End-year | Stock of fixed assets (billion dinars)[1] | | Accrued depreciation | |
|---|---|---|---|---|
| | Undepreciated | Depreciated | Billion dinars | % |
| 1910 | 4,340 | 3,170 | 1,170 | 27 |
| 1919 | 4,190 | 2,929 | 1,261 | 30 |
| 1929 | 5,170 | 3,351 | 1,819 | 35 |
| 1939 | 6,040 | 3,550 | 2,490 | 41 |
| 1948 | 6,081 | 3,415 | 2,666 | 44 |
| 1953 | 7,483 | 4,377 | 3,106 | 42 |
| 1958 | 9,227 | 5,496 | 3,731 | 40 |

[1] One billion equals one thousand millions in this and subsequent tables.

In the initial year in this series accrued depreciation is relatively low in proportion to the undepreciated stock of fixed assets. This phenomenon may be primarily ascribed to the fact that the process of modern industrialization and urbanization in

the present territory of Yugoslavia – with the exception of Montenegro and those regions which until 1912 formed part of the Ottoman Empire – began only a few decades before 1910 (in the territory of the former Kingdom of Serbia not even before the turn of the century). In the inter-war period depreciation accrued faster than the increase of the stock of fixed assets. This movement was accelerated during the Second World War. In the post-war period a movement in the opposite direction has been taking place owing to a high level of investment.

The changes in these proportions are attributable to the relative volume of investments, as outlined in paragraph (6). In addition to this, in interpreting the long-term changes of these proportions attention should be focused on the fact, that in the stock of fixed assets a structural shift has been taking place in the past half-century towards industrial and other equipment. These changes have implied a relatively faster increase of depreciation allowances as compared with the growth of the undepreciated stock of fixed assets in the period under consideration.

(8) In the past half-century the pace of increase of the stock of fixed assets has been markedly different in the various branches, as can be seen in the table below. (All figures referring to the stock of fixed assets, given in this paragraph, are based on undepreciated replacement values rather than on depreciated values, as the former represents a more appropriate indicator for capacity.)

TABLE VII

*The Growth of Fixed Assets*

(Indices based on end-year values, 1910 = 100)

| | 1910 | 1929 | 1939 | 1953 | 1958 |
|---|---|---|---|---|---|
| Total stock of fixed assets | 100 | 119 | 139 | 172 | 213 |
| Productive fixed assets | 100 | 118 | 141 | 191 | 249 |
| Manufacturing, mining, and electricity | 100 | 183 | 280 | 729 | 1,138 |
| Agriculture | 100 | 117 | 280 | 134 | 164 |
| Transport and communications | 100 | 107 | 126 | 148 | 174 |
| Other | 100 | 127 | 145 | 198 | 250 |
| Non-productive fixed assets | 100 | 120 | 136 | 151 | 171 |
| Residential buildings | 100 | 120 | 134 | 144 | 161 |
| Other | 100 | 124 | 151 | 192 | 228 |

As a consequence of these differences in the pace of increase of various branches, substantial changes in the structure of the total stock of fixed assets occurred in this period. The table below shows the percentage distribution of the stock of fixed assets in the present territory of Yugoslavia for selected years.

TABLE VIII

*Percentage Distribution of the Stock of Fixed Assets*

| | 1910 | 1929 | 1939 | 1953 | 1958 |
|---|---|---|---|---|---|
| Total stock of fixed assets | 100 | 100 | 100 | 100 | 100 |
| Productive fixed assets | 53 | 52 | 54 | 59 | 62 |
| Manufacturing, mining, and electricity | 4 | 6 | 8 | 17 | 22 |
| Agriculture | 20 | 19 | 18 | 15 | 15 |
| Transport and communications | 25 | 23 | 23 | 22 | 21 |
| Other | 4 | 4 | 4 | 4 | 4 |
| Non-productive fixed assets | 47 | 48 | 46 | 41 | 38 |
| Residential buildings | 40 | 40 | 38 | 33 | 30 |
| Other | 7 | 8 | 8 | 8 | 8 |

*Notes*

Components may not add exactly to totals on account of rounding errors.

For the coverage of the above components see notes to Table XVII in Appendix I.

During the inter-war period the proportion between productive and non-productive fixed assets did not change substantially. But in the post-war period a marked shift in favour of the former is obvious. This shift originates mainly from the rapid increase of the manufacturing, mining, and electricity component, on the one hand, and the lagging of the residential buildings component, on the other.

(9) The relation between the increment of the stock of fixed assets (valued at gross replacement cost) and the increase of gross national product in the inter-war period as a whole, and in the post-war period as well, amounts to 4·1. This ratio is considerably lower than the average stock of fixed assets/national product ratio. The latter is presented below as the relation between the undepreciated stock of fixed assets and national gross product (gross basis), on the one hand and the depreciated stock of fixed assets and national net product, on the other (net basis).

Looking at these proportions, one must keep in mind that

stocks are not taken into account in the computation of these ratios. In the absence of data it is not possible to give any idea

TABLE IX

*Fixed Assets/National Product: Average Ratios*

| Period | Gross basis | | | | Net basis |
|---|---|---|---|---|---|
| | Manufacturing, mining, electricity | Agriculture | Other branches | Total | Total |
| 1909–12 | 1·6 | 3·2 | 12·6 | 6·8 | 5·7 |
| 1920–23 | — | — | — | 6·9 | 5·5 |
| 1924–27 | — | — | — | 6·2 | 4·7 |
| 1928–31 | 1·6 | 3·4 | 11·4 | 5·9 | 4·3 |
| 1932–35 | — | — | — | 6·7 | 4·7 |
| 1936–39 | 1·8 | 3·3 | 11·3 | 5·9 | 3·9 |
| 1947–50 | — | — | — | 5·5 | 3·5 |
| 1951–54 | 2·7 (2·3)[1] | 3·6 | 10·9 | 5·9 | 3·9 |
| 1955–58 | 2·3 (2·0)[1] | 3·5 | 9·6 | 5·1 | 3·4 |

[1] The figures in brackets represent fixed assets/national product ratios calculated net of uncompleted projects.

of the extent to which the movements of the above ratios are affected by the omission of stocks.

The average fixed assets/national product ratio, reckoned on a gross basis, declines in the 1920s. This is most probably due to a generally high level of economic activity in that period. During the Great Depression period the ratio increased sharply owing to the reduced volume of production. By the late 1930s the ratio came back to the level prevailing in the late 1920s. During the twelve post-war years the ratio displays an upward movement until 1954, followed by a sharp downward movement in the last sub-period. These movements are probably influenced by the fact that a considerable amount of investment in the post-war period has been devoted to large-scale projects which take a long time to mature.

The average fixed assets/national product ratio, calculated on a net basis, displays movements on similar, though not parallel lines as the average ratio reckoned on a gross basis. These deviations may be attributable to an accelerated ageing of the total stock of fixed assets in the inter-war period and to a rejuvenescence of the stock of fixed assets in the post-war period.

The interpretation of long-term changes in the fixed assets/national product ratio is complicated by the fact that the series for 1910–59 covers three periods with a fundamentally different economic and social background. These periods are separated by major wars causing violent destruction to the various factors of production. A consistent interpretation of the changes in the fixed assets/national product ratio would call for a much more detailed analysis of the various factors determining these phenomena in the course of Yugoslavia's economic development.

(10) The percentage share of investment in national product was low in the inter-war period, but increased sharply in the post-war period, as presented below.

TABLE X

*Share of Investment in National Product*

| Period | Gross investment in gross product (per cent) | Net investment in net product (per cent) |
|---|---|---|
| *Inter-war period* | 15·2 | 4·4 |
| Sub-periods: | | |
| 1920–24 | 18·0 | 6·7 |
| 1925–29 | 16·8 | 6·5 |
| 1930–34 | 10·7 | −1·0 |
| 1935–39 | 16·0 | 5·6 |
| *Post-war period* | 27·6 | 18·4 |
| Sub-periods: | | |
| 1947–51 | 29·1 | 20·1 |
| 1952–56 | 28·5 | 18·6 |
| 1957–59 | 23·8 | 15·2 |

The investment rate in the inter-war period displays a slightly declining tendency (though most of the sharp decrease in the sub-period 1930–34 was caused by the Great Depression).

In the post-war period the investment rate has been on a considerably higher level than in the inter-war period. Within the post-war period, however, the investment rate has shown a tendency to decline, especially in the sub-period 1957–59. This tendency is not due to a decrease in the volume of investment, but originates from the fact that national product increased at a higher rate than the volume of investment, implying simultaneously a decline of the investment rate. The substantial rise

of national product in recent years reflects in part the effects of very high investment rates achieved in earlier years.

The post-war volume of investment in fixed assets exceeds considerably the corresponding pre-war magnitudes, as may be seen below. (Estimates for both periods are given at 1953 prices.)

TABLE XI

*The Volume of Investment*

| | 1920–39 | 1947–59 |
|---|---|---|
| *Net investment* | | |
| Total period, billion dinars . . . | 621 | 2,662 |
| Annual average, billion dinars . . . | 31 | 205 |
| Annual average per head, thousand dinars . | 2 | 12 |
| *New Investment* | | |
| Total period, billion dinars . . . | 1,850 | 4,019 |
| Annual average, billion dinars . . . | 92 | 309 |
| Annual average per head, thousand dinars . | 6 | 18 |

The above figures show that the level of net investment in the post-war period has increased on an average roughly six times and the level of new investment about three times compared with the inter-war period. These facts have played a significant role in the acceleration of Yugoslavia's economic growth.

(11) In 1910 the share of the gainfully occupied population in agriculture (including women) amounted to four-fifths of the total labour force. By 1953 this fraction had been reduced to two-thirds.[1]

In that period the share of the gainfully occupied agricultural population in Yugoslavia's total labour force decreased by two-tenths, whereas the share of agriculture in national product declined in the same period by more than three-tenths. In 1910 the share of agriculture in total labour force was nearly twice as high as its share in national product. Similar proportions prevailed in the mid-inter-war period. This change in the relation between labour force and national product is primarily attributable to major shifts which have occurred in Yugoslavia's economic structure since the Second World War.

[1] Distribution of the labour force, national product and fixed assets are presented in Table XVIII (Appendix I). They refer to 1910, 1931, and 1953, for which population census data are available. An extension to 1959 has not been feasible due to lack of information on the gainfully occupied population in agriculture since 1953 (last population census).

(12) In the period from 1910 until 1953 Yugoslavia's labour force increased from 6·3 to 7·9 million workers.[1] Seven-eighths of this 1·6 millions increase originates from the growth of the labour force in non-agricultural branches of activity. Labour force in non-agricultural branches, reckoned as a whole, more than doubled in 1953 as compared with 1910. In the same period real net product originating from non-agricultural branches rose two and a half times, whereas real product of agriculture and related industries increased by one-third.

The table below presents a survey of the growth of the labour force, total net product, and real product per worker expressed in index numbers.

TABLE XII

*Real Product per Worker*

(Indices, 1910 = 100)

| | Labour force | | Net product total[3] | | Real product per worker | |
|---|---|---|---|---|---|---|
| | 1931 | 1953 | 1931 | 1953 | 1931 | 1953 |
| Agriculture, including forestry and fishing . | 105[2] | 104[2] | 129 | 133 | 123 | 129 |
| Manufacturing, mining, electricity, construction, and handicrafts . . | 138 | 231 | 173 | 442 | 126 | 192 |
| Services . . . . | 127 | 201 | 124 | 153 | 97 | 76 |
| TOTAL . . . | 110 | 125 | 137 | 206 | 124 | 165 |

[2] Including the female labour force in agriculture.

[3] In order to avoid distortions caused by year-to-year fluctuations, the above national product indices are derived from national product annual averages for the periods 1909–12, 1928–31, and 1952–55.

In this period of forty-three years (1910–53) real product per worker, reckoned for the economy as a whole, increased by 65 per cent, or 1·2 per cent on an annual average. In the twenty-one years of the first sub-period under consideration (1910–31) real product per worker rose on an average 1·0 per cent per annum; in the twenty-two years of the second sub-period (1931–53) the annual increase amounted to 1·3 per cent.

The most pronounced increase in real product per worker appears in the 'Manufacturing, mining, electricity, construction

[1] In this paragraph the expression workers is used to represent gainfully occupied population.

and handicrafts' group of industries, especially in the second sub-period (1931–53). The increase in real product per worker in agriculture and related industries has been moderate. The decline of the 'Services' group indices for the second sub-period is mainly attributable to major shifts within the 'Services' group, which have taken place in Yugoslavia since the Second World War. These shifts have caused a marked decline in the relative position of commerce and banking and a rapid increase of various public non-profit institutions the services of which are valued at cost price for the purposes of national product computation.

# APPENDIX I

## TABLE XIII

*National Product of the Present Territory of Yugoslavia*

(Evaluated at 1953 prices)

| Year | Net domestic product at market prices | | | | De-preciation (billion dinars) | Gross domestic product at market prices adjusted for international comparisons (billion dinars) |
|---|---|---|---|---|---|---|
| | Yugoslav income concept (billion dinars) | Adjusted for international comparisons | | | | |
| | | Total (billion dinars) | Indices, 1901–12 = 100 | Per head (thousand dinars) | | |
| Annual average 1909–12 | 508 | 560 | 100 | 43 | 76 | 636 |
| 1920 | 474 | 522 | 93 | 42 | 73 | 595 |
| 1921 | 485 | 535 | 96 | 42 | 75 | 610 |
| 1922 | 500 | 551 | 99 | 43 | 77 | 628 |
| 1923 | 527 | 580 | 104 | 45 | 79 | 659 |
| 1924 | 564 | 622 | 111 | 47 | 81 | 703 |
| 1925 | 593 | 653 | 117 | 49 | 84 | 737 |
| 1926 | 636 | 699 | 125 | 51 | 86 | 785 |
| 1927 | 624 | 688 | 123 | 50 | 89 | 777 |
| 1928 | 683 | 749 | 134 | 53 | 91 | 840 |
| 1929 | 721 | 789 | 141 | 56 | 93 | 882 |
| 1930 | 709 | 774 | 138 | 54 | 94 | 868 |
| 1931 | 687 | 751 | 134 | 51 | 95 | 846 |
| 1932 | 619 | 681 | 122 | 46 | 96 | 777 |
| 1933 | 639 | 702 | 125 | 47 | 96 | 798 |
| 1934 | 663 | 728 | 130 | 48 | 97 | 825 |
| 1935 | 647 | 717 | 128 | 46 | 98 | 815 |
| 1936 | 737 | 810 | 145 | 52 | 100 | 910 |
| 1937 | 745 | 823 | 147 | 52 | 103 | 926 |
| 1938 | 805 | 889 | 159 | 56 | 106 | 995 |
| 1939 | 850 | 938 | 168 | 58 | 109 | 1,047 |
| 1947 | 752 | 836 | 149 | 53 | 103 | 939 |
| 1948 | 904 | 998 | 178 | 63 | 106 | 1,104 |
| 1949 | 997 | 1,097 | 196 | 68 | 114 | 1,211 |
| 1950 | 928 | 1,030 | 184 | 63 | 119 | 1,149 |
| 1951 | 967 | 1,070 | 191 | 64 | 125 | 1,195 |
| 1952 | 862 | 967 | 173 | 57 | 132 | 1,099 |
| 1953 | 1,017 | 1,125 | 201 | 66 | 140 | 1,265 |
| 1954 | 1,067 | 1,182 | 211 | 68 | 153 | 1,335 |
| 1955 | 1,226 | 1,347 | 241 | 76 | 156 | 1,503 |
| 1956 | 1,215 | 1,339 | 239 | 75 | 165 | 1,504 |
| 1957 | 1,479 | 1,612 | 288 | 90 | 175 | 1,787 |
| 1958 | 1,498 | 1,633 | 292 | 90 | 183 | 1,816 |
| 1959 | 1,770 | 1,916 | 342 | 104 | 193 | 2,109 |

TABLE XIV

*Fixed Assets in the Present Territory of Yugoslavia*

(Evaluated at 1953 prices)

| End-year | Undepreciated replacement value | | Depreciated replacement value | |
|---|---|---|---|---|
| | Billion dinars | Indices, 1910 = 100 | Billion dinars | Indices, 1910 = 100 |
| 1910 | 4,340 | 100 | 3,170 | 100 |
| 1919 | 4,190 | 96 | 2,929 | 92 |
| 1920 | 4,276 | 98 | 2,967 | 94 |
| 1921 | 4,372 | 100 | 3,013 | 95 |
| 1922 | 4,460 | 102 | 3,050 | 96 |
| 1923 | 4,540 | 104 | 3,077 | 97 |
| 1924 | 4,636 | 107 | 3,119 | 98 |
| 1925 | 4,734 | 109 | 3,160 | 100 |
| 1926 | 4,827 | 111 | 3,195 | 101 |
| 1927 | 4,941 | 113 | 3,248 | 102 |
| 1928 | 5,053 | 116 | 3,298 | 104 |
| 1929 | 5,170 | 119 | 3,351 | 106 |
| 1930 | 5,251 | 121 | 3,368 | 106 |
| 1931 | 5,304 | 122 | 3,356 | 106 |
| 1932 | 5,352 | 123 | 3,339 | 105 |
| 1933 | 5,404 | 124 | 3,326 | 105 |
| 1934 | 5,458 | 126 | 3,314 | 104 |
| 1935 | 5,538 | 127 | 3,328 | 104 |
| 1936 | 5,635 | 129 | 3,358 | 106 |
| 1937 | 5,760 | 132 | 3,414 | 108 |
| 1938 | 5,900 | 136 | 3,483 | 110 |
| 1939 | 6,040 | 139 | 3,550 | 112 |
| 1947 | 5,812 | 134 | 3,214 | 101 |
| 1948 | 6,081 | 140 | 3,415 | 107 |
| 1949 | 6,390 | 147 | 3,646 | 115 |
| 1950 | 6,661 | 153 | 3,836 | 121 |
| 1951 | 6,940 | 160 | 4,028 | 127 |
| 1952 | 7,185 | 165 | 4,179 | 131 |
| 1953 | 7,483 | 172 | 4,377 | 138 |
| 1954 | 7,802 | 180 | 4,583 | 145 |
| 1955 | 8,141 | 188 | 4,807 | 152 |
| 1956 | 8,487 | 195 | 5,029 | 158 |
| 1957 | 8,849 | 204 | 5,258 | 166 |
| 1958 | 9,227 | 213 | 5,496 | 173 |
| 1959 | 9,648 | 222 | 5,769 | 182 |

TABLE XV

*Perpetual Inventory Computation of the Undepreciated Stock of Fixed Assets*

(At 1953 prices)

| | Investment in fixed assets (billion dinars) | | | Undepreciated stock of fixed assets | |
|---|---|---|---|---|---|
| | Gross investment | *Less* scrapped assets | New investment | Total (billion dinars) | Annual rate of growth (%) |
| Stock, end-year 1919 | | | | 4,190 | |
| Additions in 1920 | 111 | 25 | 86 | + 86 | 2·0 |
| Stock, end-year 1920 | | | | 4,276 | |
| Additions in 1921 | 121 | 25 | 96 | + 96 | 2·2 |
| Stock, end-year 1921 | | | | 4,372 | |
| Additions in 1922 | 114 | 26 | 88 | 88 | 2·0 |
| Stock, end-year 1922 | | | | 4,460 | |
| Additions in 1923 | 106 | 26 | 80 | 80 | 1·8 |
| Stock, end-year 1923 | | | | 4,540 | |
| Additions in 1924 | 123 | 27 | 96 | 96 | 2·1 |
| Stock, end-year 1924 | | | | 4,636 | |
| Additions in 1925 | 125 | 27 | 98 | + 98 | 2·1 |
| Stock, end-year 1925 | | | | 4,734 | |
| Additions in 1926 | 121 | 28 | 93 | + 93 | 2·0 |
| Stock, end-year 1926 | | | | 4,827 | |
| Additions in 1927 | 142 | 28 | 114 | + 114 | 2·4 |
| Stock, end-year 1927 | | | | 4,941 | |
| Additions in 1928 | 141 | 29 | 112 | + 112 | 2·3 |
| Stock, end-year 1928 | | | | 5,053 | |
| Additions in 1929 | 146 | 29 | 117 | + 117 | 2·3 |
| Stock, end-year 1929 | | | | 5,170 | |
| Additions in 1930 | 111 | 30 | 81 | + 81 | 1·6 |
| Stock, end-year 1930 | | | | 5,251 | |
| Additions in 1931 | 83 | 30 | 53 | + 53 | 1·0 |
| Stock, end-year 1931 | | | | 5,304 | |
| Additions in 1932 | 79 | 31 | 48 | + 48 | 0·9 |
| Stock, end-year 1932 | | | | 5,352 | |
| Additions in 1933 | 83 | 31 | 52 | + 52 | 1·0 |
| Stock, end-year 1933 | | | | 5,404 | |
| Additions in 1934 | 85 | 31 | 54 | + 54 | 1·0 |
| Stock, end-year 1934 | | | | 5,458 | |
| Additions in 1935 | 112 | 32 | 80 | + 80 | 1·4 |
| Stock, end-year 1935 | | | | 5,538 | |
| Additions in 1936 | 130 | 33 | 97 | + 97 | 1·7 |
| Stock, end-year 1936 | | | | 5,635 | |
| Additions in 1937 | 159 | 34 | 125 | + 125 | 2·2 |
| Stock, end-year 1937 | | | | 5,760 | |
| Additions in 1938 | 175 | 35 | 140 | + 140 | 2·4 |
| Stock, end-year 1938 | | | | 5,900 | |
| Additions in 1939 | 176 | 36 | 140 | + 140 | 2·4 |
| Stock, end-year 1939 | | | | 6,040 | |
| Stock, end-year 1947 | | | | 5,812 | |
| Additions in 1948 | 306 | 36 | 269 | + 269 | 4·6 |
| Stock, end-year 1948 | | | | 6,081 | |
| Additions in 1949 | 345 | 36 | 309 | + 309 | 5·1 |
| Stock, end-year 1949 | | | | 6,390 | |
| Additions in 1950 | 309 | 37 | 271 | + 271 | 4·2 |
| Stock, end-year 1950 | | | | 6,661 | |
| Additions in 1951 | 317 | 38 | 279 | + 279 | 4·2 |

TABLE XV—*continued.*

*Perpetual Inventory Computation of the Undepreciated Stock of Fixed Assets*

(At 1953 prices)

| | Investment in fixed assets (billion dinars) | | | Undepreciated stock of fixed assets | |
|---|---|---|---|---|---|
| | Gross investment | *Less* scrapped assets | New investment | Total (billion dinars) | Annual rate of growth (%) |
| Stock, end-year 1951 | | | | 6,940 | |
| Additions in 1952 | 283 | 38 | 245 | + 245 | 3·5 |
| Stock, end-year 1952 | | | | 7,185 | |
| Additions in 1953 | 338 | 40 | 298 | + 298 | 4·1 |
| Stock, end-year 1953 | | | | 7,483 | |
| Additions in 1954 | 359 | 40 | 319 | + 319 | 4·3 |
| Stock, end-year 1954 | | | | 7,802 | |
| Additions in 1955 | 380 | 41 | 339 | + 339 | 4·3 |
| Stock, end-year 1955 | | | | 8,141 | |
| Additions in 1956 | 387 | 41 | 346 | + 346 | 4·2 |
| Stock, end-year 1956 | | | | 8,487 | |
| Additions in 1957 | 404 | 42 | 362 | + 362 | 4·3 |
| Stock, end-year 1957 | | | | 8,849 | |
| Additions in 1958 | 421 | 43 | 378 | + 378 | 4·3 |
| Stock, end-year 1958 | | | | 9,227 | |
| Additions in 1959 | 466 | 45 | 421 | + 421 | 4·6 |
| Stock, end-year 1959 | | | | 9,648 | |

TABLE XVI

*Perpetual Inventory Computation of the Depreciated Stock of Fixed Assets*

(At 1953 prices)

| | Investment in fixed assets (billion dinars) | | | Depreciated stock of fixed assets | |
|---|---|---|---|---|---|
| | Gross investment | *Less* depreciation | Net investment | Total (billion dinars) | Annual rate of growth (%) |
| Stock, end-year 1919 | | | | 2,929 | |
| Additions in 1920 | 111 | 73 | 38 | + 38 | 1·3 |
| Stock, end-year 1920 | | | | 2,967 | |
| Additions in 1921 | 121 | 75 | 46 | + 46 | 1·5 |
| Stock, end-year 1921 | | | | 3,013 | |
| Additions in 1922 | 114 | 77 | 37 | + 37 | 1·2 |
| Stock, end-year 1922 | | | | 3,050 | |
| Additions in 1923 | 106 | 79 | 27 | + 27 | 0·9 |
| Stock, end-year 1923 | | | | 3,077 | |
| Additions in 1924 | 123 | 81 | 42 | + 42 | 1·4 |
| Stock, end-year 1924 | | | | 3,119 | |
| Additions in 1925 | 125 | 84 | 41 | + 41 | 1·3 |
| Stock, end-year 1925 | | | | 3,160 | |
| Additions in 1926 | 121 | 86 | 35 | + 35 | 1·1 |
| Stock, end-year 1926 | | | | 3,195 | |
| Additions in 1927 | 142 | 89 | 53 | + 53 | 1·6 |
| Stock, end-year 1927 | | | | 3,248 | |
| Additions in 1928 | 141 | 91 | 50 | + 50 | 1·5 |

TABLE XVI—*continued.*

*Perpetual Inventory Computation of the Depreciated Stock of Fixed Assets*

(At 1953 prices)

| | Investment in fixed assets (billion dinars) | | | Depreciated stock of fixed assets | |
|---|---|---|---|---|---|
| | Gross investment | *Less* depreciation | Net investment | Total (billion dinars) | Annual rate of growth (%) |
| Stock, end-year 1928 | | | | 3,298 | |
| Additions in 1929 | 146 | 93 | 53 | + 53 | 1·6 |
| Stock, end-year 1929 | | | | 3,351 | |
| Additions in 1930 | 111 | 94 | 17 | + 17 | 0·5 |
| Stock, end-year 1930 | | | | 3,368 | |
| Additions in 1931 | 83 | 95 | −12 | − 12 | −0·4 |
| Stock, end-year 1931 | | | | 3,356 | |
| Additions in 1932 | 79 | 96 | −17 | − 17 | −0·5 |
| Stock, end-year 1932 | | | | 3,339 | |
| Additions in 1933 | 83 | 96 | −13 | − 13 | −0·4 |
| Stock, end-year 1933 | | | | 3,326 | |
| Additions in 1934 | 85 | 97 | −12 | − 12 | −0·3 |
| Stock, end-year 1934 | | | | 3,314 | |
| Additions in 1935 | 112 | 98 | 14 | + 14 | 0·4 |
| Stock, end-year 1935 | | | | 3,328 | |
| Additions in 1936 | 130 | 100 | 30 | + 30 | 0·9 |
| Stock, end-year 1936 | | | | 3,358 | |
| Additions in 1937 | 159 | 103 | 56 | + 56 | 1·7 |
| Stock, end-year 1937 | | | | 3,414 | |
| Additions in 1938 | 175 | 106 | 69 | + 69 | 2·0 |
| Stock, end-year 1938 | | | | 3,483 | |
| Additions in 1939 | 176 | 109 | 67 | + 67 | 1·9 |
| Stock, end-year 1939 | | | | 3,550 | |
| Stock, end-year 1947 | | | | 3,214 | |
| Additions in 1948 | 306 | 106 | 201 | + 201 | 6·2 |
| Stock, end-year 1948 | | | | 3,415 | |
| Additions in 1949 | 345 | 114 | 231 | + 231 | 6·8 |
| Stock, end-year 1949 | | | | 3,646 | |
| Additions in 1950 | 309 | 119 | 190 | + 190 | 5·2 |
| Stock, end-year 1950 | | | | 3,836 | |
| Additions in 1951 | 317 | 125 | 192 | + 192 | 5·0 |
| Stock, end-year 1951 | | | | 4,028 | |
| Additions in 1952 | 283 | 132 | 151 | + 151 | 3·7 |
| Stock, end-year 1952 | | | | 4,179 | |
| Additions in 1953 | 338 | 140 | 198 | + 198 | 4·7 |
| Stock, end-year 1953 | | | | 4,377 | |
| Additions in 1954 | 359 | 153 | 206 | + 206 | 4·7 |
| Stock, end-year 1954 | | | | 4,583 | |
| Additions in 1955 | 380 | 156 | 224 | + 224 | 4·9 |
| Stock, end-year 1955 | | | | 4,807 | |
| Additions in 1956 | 387 | 165 | 222 | + 222 | 4·6 |
| Stock, end-year 1956 | | | | 5,029 | |
| Additions in 1957 | 404 | 175 | 229 | + 229 | 4·5 |
| Stock, end-year 1957 | | | | 5,258 | |
| Additions in 1958 | 421 | 183 | 238 | + 238 | 4·5 |
| Stock, end-year 1958 | | | | 5,496 | |
| Additions in 1959 | 466 | 193 | 273 | + 273 | 5·0 |
| Stock, end-year 1959 | | | | 5,769 | |

TABLE XVII

*Structure of the Undepreciated Stock of Fixed Assets in Selected Years*

| | End-year figures in billions of dinars at 1953 prices | | | | | |
|---|---|---|---|---|---|---|
| | 1910 | 1919 | 1929 | 1939 | 1953 | 1958 |
| Total stock of fixed assets | 4,340 | 4,190 | 5,170 | 6,040 | 7,483 | 9,227 |
| Productive fixed assets | 2,290 | 2,150 | 2,700 | 3,240 | 4,378 | 5,712 |
| Manufacturing, mining and electricity | 175 | 170 | 320 | 490 | 1,276 | 1,991 |
| Agriculture[1] | 830 | 755 | 970 | 1,100 | 1,116 | 1,361 |
| Transport and communication | 1,120 | 1,070 | 1,200 | 1,410 | 1,659 | 1,948 |
| Other[2] | 165 | 155 | 210 | 240 | 327 | 412 |
| Non-productive fixed assets | 2,050 | 2,040 | 2,470 | 2,800 | 3,105 | 3,515 |
| Residential buildings | 1,720 | 1,710 | 2,060 | 2,300 | 2,472 | 2,760 |
| Other[3] | 330 | 330 | 410 | 500 | 633 | 755 |

[1] Excluding land with the exception of improvements to land, and excluding rural dwellings as well (the latter are comprised in item 'Residential buildings').

[2] This item includes fixed assets in construction, handicrafts, commerce (including hotels) and forestry (excluding standing timber).

[3] This item includes fixed assets in health and social security, public utilities, public administration, education, research, and art (excluding historical monuments and works of art).

TABLE XVIII

*Distribution of the Labour Force, National Product and Fixed Assets in Selected Years*

| | 1910 | 1931 | 1953 |
|---|---|---|---|
| I. ABSOLUTE FIGURES | | | |
| *Labour force*, thousands: | | | |
| Agriculture, including forestry and fishing | 5,070 | 5,310 | 5,260 |
| Manufacturing, mining, electricity, construction, and handicrafts | 550 | 760 | 1,270 |
| Services | 670 | 850 | 1,350 |
| Total | 6,290 | 6,920 | 7,880 |
| *National Product*, billions of dinars at 1953 prices: | | | |
| Agriculture, including forestry and fishing | 243 | 314 | 324 |
| Manufacturing, mining, electricity, construction, and handicrafts | 120 | 208 | 530 |
| Services | 197 | 244 | 301 |
| Total | 560 | 766 | 1,155 |
| *Fixed Assets*, billions of dinars at 1953 prices: | | | |
| Agriculture, including forestry and fishing | 870 | 1,070 | 1,199 |
| Manufacturing, mining, electricity, construction, and handicrafts | 248 | 446 | 1,419 |
| Services | 3,222 | 3,788 | 4,865 |
| Total | 4,340 | 5,304 | 7,483 |

TABLE XVIII—*continued*

*Distribution of the Labour Force, National Product and Fixed Assets in Selected Years*

| | 1910 | 1931 | 1953 |
|---|---|---|---|
| II. PERCENTAGE DISTRIBUTION | | | |
| *Labour Force:* | | | |
| Agriculture, including forestry and fishing . | 81 | 77 | 66 |
| Manufacturing, mining, electricity, construction, and handicrafts . . . | 9 | 11 | 16 |
| Services . . . . . | 11 | 12 | 18 |
| *National Product:* | | | |
| Agriculture, including forestry and fishing . | 44 | 41 | 28 |
| Manufacturing, mining, electricity, construction, and handicrafts . . . | 21 | 27 | 46 |
| Services . . . . . | 35 | 32 | 26 |
| *Fixed Assets:* | | | |
| Agriculture, including forestry and fishing . | 20 | 20 | 16 |
| Manufacturing, mining, electricity, construction, and handicrafts . . . | 6 | 8 | 19 |
| Services . . . . . | 74 | 72 | 66 |

*Notes*

Labour force is defined as the gainfully occupied population. Female labour force in agriculture is included. It has not been feasible to exclude handicrafts from mining, manufacturing, electricity, and construction, as in the pre-war censuses these branches were not registered separately.

National product is defined in the above table as net domestic product at market prices (adjusted for international comparisons). These national product figures represent annual averages for the periods 1909–12, 1928–31, and 1952–55. Home-grown agricultural products consumed on farms are valued at ex-farm prices.

Fixed assets percentage shares are based on undepreciated values. Land and standing timber are excluded. Rural dwellings are included in the 'Services' group rather than in the 'Agriculture, including forestry and fishing' group.

The 'Services' group embraces transport and communication, commerce, and banking, dwellings and public utilities, health and social security, recreation, education and research, public administration, etc.

Components may not add exactly to totals on account of rounding-off errors.

## APPENDIX II

### METHODS AND SOURCES

#### 1. *General Approach*

In order to present the national product and fixed assets series in real terms all items concerning national product, fixed assets, investment and depreciation in the envisaged period 1909–1959 are computed at 1953 prices rather than at current prices. The choice of this price basis enables a link with my previous detailed estimates of Yugoslavia's national income and wealth, which are computed at 1953 prices ('National Wealth of Yugoslavia at the end of 1953'

published in *Income and Wealth, Series VIII*; 'National Expenditure of Yugoslavia, 1953–1954', *Ekonomski pregled*, Zagreb, No 5/1956, English summary, pp. 366–371).

The estimates for the period 1909–59, given in this study, cover the present territory of Yugoslavia (including the districts Koper and Buje, which until October 1954 formed part of the former Free State of Trieste). To the estimates for the pre-war territory of Yugoslavia I added estimates covering the territory of Istria, the Slovenian Littoral, some Adriatic islands, and the Dalmatian town Zadar, which in that period were under Italian sovereignty (the population of these territories numbered nearly 600,000 inhabitants in that period). The main sources for production, employment, and other economic indicators in these territories in the interwar period represent statistics of the Istituto Centrale di Statistica in Rome and various Bulletins published by the Chamber of Corporations in Pula and by the Institute of Statistics and Economics at the University of Trieste directed in the 1920s by Professor Livio Livi.

All items for 1959, given in this study, should be regarded as provisional estimates.

### 2. *National product*

The national product aggregates are defined in this study as domestic product, computed by the production approach. Thus, net income from abroad is not included in these aggregates. For the construction of national product series in real terms, shown in Table XIII, 1953 prices are applied to the physical volume of production in the period rather than converting current values of national product into the 1953 price basis. For this reason the national product series are not presented in current values.

The second column of Table XIII presents a net national product series computed on the basis of the Yugoslav income concept. This concept does not include services supplied by public administration, education, and health institutions, and excludes professions and rent as well. In order to establish international comparability I brought these estimates into line with the western income concept, as shown in Table XIII. For purposes of international comparability in the analysis throughout this paper only adjusted national product totals are used.

All national product series are calculated at market prices rather than at factor cost. Home-grown agricultural products consumed on farms are valued at ex-farm prices.

The starting-point for the construction of the national product series was the detailed estimate prepared in my national income study for 1953 mentioned above. The national product total in that

study differs by only 0·5 per cent from the estimates prepared by the Central Statistical Office (*Yugoslav Statistical Yearbook*, 1954, p. 111). This difference originates from some minor adjustments I introduced into the computation of depreciation allowances.

For the evaluation of the volume of agricultural output various detailed studies prepared by Dr. Vladimir Stipetić are available. For the period 1929–55 his study 'Poljoprivredna proizvodnja na današnjem područ ju FNR Jugoslavije 1929–55' ('Agricultural Output for the Present Territory of Yugoslavia from 1929 to 1955'), published by the Federal Economic Institute (Beograd, 1957). For the period 1920–28 Dr. Stipetić's paper read at the Fourth Annual Meeting of the Yugoslav statistical society 'Korekcija jugoslavenske statistike biljne proizvodnje za razdoblje 1920–28' ('Adjustments of the Crops Statistics for Yugoslavia, 1920–28'). For the quantities of crop production on the present territory of Yugoslavia in the period prior to the First World War Dr. Stipetić kindly supplied data from his unpublished manuscript. For the period 1956–58, which is not covered by Dr. Stipetić's studies, I applied indices of agricultural output prepared by the Statistical Office (*Yugoslav Statistical Yearbook*, 1958, p. 112).

The volume of output for the non-agricultural branches of production was estimated from various sources, especially from a detailed national income study (valued at 1938 prices), prepared by Stevan Stajić, 'Realni nacionalni dohodak Jugoslavije u periodima 1926–39 i 1947–56' ('The Real National Income of Yugoslavia in the periods 1926–39 and 1947–56'), published by the Federal Economic Institute (Beograd, 1957). As Stajić's estimates for the inter-war period cover only the inter-war territory of Yugoslavia, I adjusted these figures for production in Istria, the Slovenian Littoral, etc., on the basis of Italian sources quoted in the preceding section.

For a crude estimate of the volume of non-agricultural branches of activity in the present Yugoslav territory prior to the First World War I used various sources: for the territory of Kosovo and Metohiya, Sandžak and Macedonia, which until 1912 formed part of the Ottoman Empire, I used data kindly supplied by L. Sokolov, which are based on Turkish statistical sources; for the Kingdom of Serbia the study on national income and wealth prepared during the First World War by a group of Serbian economists in Geneva (Comité Central Serbe, *La Serbie économique, 1914–18*, Genève, 1918); for Voyvodina, Croatia, Dalmatia, Istria, and Slovenia Fellner's and Waizner's studies on the Apportionment of the national income of the Austro-Hungarian Empire in 1910–12 among the various national states created after the First World War (*Metron*, Vol. III, No. 2, and *Metron*, Vol. VII, No. 4); for Bosnia and Herzegovina, which province is not covered by the above estimate of Fellner nor of

Waizner, I used data from reports of the various trade organizations in the period 1909–13.

I am aware of the fact that in the procedure for the construction of national product series in real terms, as outlined above, a number of shortcomings are inherent. First, by this method changes in the quality of products and services are not taken adequately into account. Second, changes in the relation between inputs and outputs are neglected; consequently, this national product series reflects the growth (or decay) of the aggregate volume of production rather than growth (or decay) of the value added aggregates. For the time being, however, it does not seem feasible to produce long-term product series in real terms for the present territory of Yugoslavia by more refined methods.

### 3. *Depreciation*

In Tables XIII and XVI are presented the depreciation totals for the period 1910–59, valued at 1953 prices. Depreciation is calculated on a straight-line basis. These depreciation estimates cover productive assets and imputed depreciation for unproductive assets as well (such as dwellings, schools, hospitals, etc.). These estimates are based on the economic rather than on the accounting concept of depreciation. The depreciation totals include allowances for the replacement of fixed assets, but exclude allowances for major repairs, etc. Since the latter are included in my above-quoted national wealth study there arises a difference between the depreciation total for 1953 given in that study and the corresponding items presented in Tables XIII and XVI in this paper. I introduced this narrower definition of depreciation to facilitate international comparisons. With this definition of depreciation gross investment excludes all kinds of repairs and maintenance.

### 4. *Fixed assets and investment*

Table XIV presents series for the undepreciated stock of fixed assets in the period 1910–59 and for the depreciated stock of fixed assets as well. Fixed assets in both series are valued on a replacement-cost basis at 1953 prices. A description of the valuation procedure is given in my study *National Wealth of Yugoslavia at the End of 1953.*

The starting-point for these series was the detailed national wealth estimates of Yugoslavia at the end of 1953, presented in the above-mentioned study. It must be emphasized, however, that there is a difference between the end-year figures of fixed assets for 1953, given in Tables XIV and XVII in this paper, and the fixed assets totals presented in my previous national wealth study. This difference is attributable to the fact that standing timber is excluded from the fixed assets totals presented in this paper; in addition to this, some

minor adjustments are introduced into my previous fixed assets estimates. It should be noted that uncompleted projects are included in the fixed assets totals given in this paper.

Thus, in constructing the fixed assets series, I started from the end-year totals for 1953, amounting to 7,483 billion dinars for the undepreciated stock of fixed assets and 4,377 billion dinars for the depreciated stock, respectively. Fixed assets totals for other years were derived by adding or subtracting from the 1953 end-year fixed assets totals investment in subsequent or prior years. For this purpose all investment figures were converted to the 1953 price level. I applied, in fact, the procedure of the perpetual-inventory method set out by Dr. Raymond Goldsmith in his long-term national wealth estimates for the United States.

Details of the estimates of undepreciated stock of fixed assets series are presented in Table XV; the corresponding figures for the depreciated stock of fixed assets series are in Table XVI.

The undepreciated stock of fixed assets series were obtained by cumulation of new investment in fixed assets. New investment is defined in this context as gross annual investment in fixed assets (net of repairs and maintenance) minus the gross replacement value of fixed assets actually scrapped during the given year.

The depreciated stock of fixed assets was found by cumulating net investment in fixed assets. Net investment is defined as gross investment in fixed assets in a given year minus depreciation. (The depreciation concept is defined in the preceding section.)

Data on gross investment in fixed assets (including major repairs and intangible assets) of the socialized sector in the post-war period are available in a special survey published by the Yugoslav Investment Bank in 1958 *Investicije u razdoblju 1947–56* (*Investments in the Period 1947–56*); for the period 1957–59 in current statistics of the Yugoslav Investment Bank. From these totals I subtracted major repairs and investment in intangible assets. I then converted these totals to a 1953 price basis by means of price indices for capital goods published in the Yugoslav Investment Bank study mentioned above.

As corresponding official estimates of the private sector in the post-war period are not available, I prepared estimates for these items both directly from current statistics and by various indirect methods set out in my above-mentioned national expenditure study.

For investment in Yugoslavia in the inter-war period rather detailed information is available in the study by Drago Potočnik 'Investicijska delavnost v naši državi' ('Investment in our State') published in the periodical *Tehnika in Gospodarstvo* (Ljubljana, No. 7–8, 1939) as well as in my study *Investicije na području Hrvatske u*

*razdoblju izmedju dva svjetska rata* (*Investments in Croatia in the Inter-war Period*) published by the Federal Economic Institute (Beograd, 1955). As these estimates are computed at pre-war prices, I converted them into 1953 prices by price indices for various groups of capital goods given on p. 28 in my extensive study in Serbo-Croat *Nacionalno bogatstvo Jugoslavije* (*National Wealth of Yugoslavia*) published in 1957 by the Institute of Economics in Zagreb.

I calculated the volume of scrapped assets by indirect means, as current information about scrapped assets is scarce. In estimating these items I started from available data about the age composition of various groups of assets, applying a given time span as useful length of life to each group in accordance with experience in the past. By this procedure I arrived at some crude indicators for the volume of scrapped assets in the period under consideration. The results obtained in this way were checked by setting up the ratio between replacement and depreciation ($R/D$) on the basis of Professor Evsey Domar's model ('Depreciation, Replacement and Growth', *Economic Journal*, Vol. 63, 1953) and applying this ratio to the depreciation figures for the corresponding years. The latter procedure was applied, however, to a limited extent because of the various assumptions underlying Professor Domar's model.

The year-to-year continuity of the fixed assets series shows two breaks caused by the incidence of the Balkan Wars, the First World War, and the Second World War. In order to bridge these intervals allowance was made for war destruction and dismantlement of fixed assets, on the one hand, and investments and aging of the stock of fixed assets in these periods, on the other. For the purposes of this estimate I departed from the assumption that in the age composition of the various groups of fixed assets destroyed in war identical proportions prevailed as for total stock of the corresponding groups of fixed assets. The volume of damage caused to the stock of fixed assets in the Second World War was calculated on the basis of war damage estimates and from data given in the study by M. Filipović *Obnova naše industrije* (*The Renewal of our Industry*) published by the Trade Unions Library (Beograd, 1946). Damages caused to the stock of fixed assets in the First World War were computed on the basis of various estimates, given in the study mentioned above, *La Serbie économique, 1914–1918*.

Thus, the fixed assets series 1910–59 are constructed by cumulating investments, starting from direct estimates of the 1953 end-year stock of Yugoslavia's fixed assets. In order to check these figures I attempted to make comparisons with direct estimates of certain groups of fixed assets in some other years within the period under consideration. This attempt has been confined, however, to some groups of fixed assets due to lack of information.

*5. Population*

The population figures for 1921, 1931, 1948, and 1953 are based on census data (*Yugoslav Statistical Yearbook*, 1958). The figures for all other years in the period 1920–59 are estimated. The population numbers for the present territory of Yugoslavia in 1910 are based on population census data for all national regions with the exception of Macedonia and Montenegro. For Macedonia L. Sokolov kindly supplied census data for 1908 derived from Ottoman statistics; I adjusted this item for the estimated population increase from 1908 to 1910 according to the rate of growth in Kosovo and Metohiya. For the population numbers of Montenegro in 1910 I applied 1921 census data, which I adjusted for the decrease in population due to the Balkan Wars and the First World War, in accordance with the rate of population decrease in Serbia in that period.

The distribution of the labour force between industries in 1910, 1931, and 1953, given in Table XVIII, is based on population census data for the corresponding years.