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Note 1

ON THE PRESENT ESTIMATES OF GROSS NATIONAL PRODUCT

The estimates of gross national product used in this paper are a modification of Kuznets' basic concepts. Kuznets' peacetime concept of national product omits all war output of a nondurable character and "all nonwar expenditures of governments except those representing final products . . . or gross additions to government construction." (*National Product since 1869*, p. 23). For comparison with total labor input we wish to include the full defense output in national product; we therefore add to Kuznets' figures estimates of total war and defense expenditures. (These are unpublished estimates of M. Slade Kendrick for the period 1891-1938, estimates of the Department of Commerce for the years 1939-1950.) This addition would lead to a duplicate count of war durables, which do enter into Kuznets' estimates (peacetime concept) as elements of gross capital formation. To correct for this we deduct the equivalent of the war durables in Kuznets' series for the years 1917-21 and 1939-50, when such duplication would be considerable. We thus derive a series which differs somewhat from those of both Kuznets and Commerce — from Kuznets in that nondurable defense goods are included in our national product estimates in years of war and of peace, from Commerce in that the contribution of government to our estimates is more restricted. Kuznets' concept, which we employ except in respect to nondurable war goods, is narrower than that of Commerce in treating the contribution of government. Kuznets' present estimates extend only to 1949. We have projected his series to 1950 on the basis of a splice with the Department of Commerce series.

We have built up estimates of gross national product in constant dollars as the sum of its three deflated components. The deflators

used for consumer expenditures and for nonwar capital formation were Kuznets' imputed price indexes for the period 1891-1949, extended to 1950 by splicing with Commerce's deflators. The series on military expenditures was deflated by Kuznets' imputed price index for gross national product for the period 1891-1939; for 1940 an average of Kuznets' price index for war output and Commerce's price index for federal expenditures was used; for 1941-43 Kuznets' price index for war output was used; for 1943-50 we employed Commerce's price index for federal expenditures, spliced to Kuznets' price index for war output at 1943.

I should point out that the margin of error in the deflation process is inevitably wide for the war period. The accurate measurement of the prices of civilian goods is more difficult under wartime conditions than it is in peacetime, and these difficulties are compounded in dealing with the prices of munitions. The deflated measures doubtless provide a better approximation to real product than do the undeflated measures, but fairly large errors of estimate are clearly present.

Note 2

ESTIMATES OF PRODUCTIVITY

Index numbers of productivity and estimates of productivity increments can be highly useful measures of economic change, but they are far from unambiguous. All the difficulties involved in the measurement of production changes attach to them, plus others that arise when the ratio of output to effort input is computed. Here I note some of these difficulties and certain limitations of the specific measures used in this paper.

General considerations. Index numbers derived from ratios of physical output to effort input $\frac{Q}{E}$ are accurate measures of changes in the average unit effectiveness of work done when physical output is constant in quality and composition, when the scope of the measures of effort input is constant over time, and when available measures of effort input are identical in coverage with the meas-