

Gross Output to Capital Ratio of Non-SOUs

The third method used to derive non-SOU fixed asset values in the cumulative investment approach, using real growth rates of non-SOU industrial gross output value to trace effective investment values backward starting from the official 1986 non-SOU effective investment value, makes two assumptions. These are that (i) effective investment (newly increased fixed assets) of non-SOUs grows at the same rate, relative to output, in non-industry sectors as in industry, and (ii) fixed assets increase at the same rate as the corresponding gross output value (a constant gross output to capital ratio).

There is no obvious reason why newly increased fixed assets of non-SOUs should grow at a different rate, relative to output, in non-industry sectors than in industry.

As regards the second assumption, the average gross output to capital ratio of *industrial SOEs* has been rather stable between 1953 and 1992, except for a wide fluctuation in 1958-61 (Figure 1). The fluctuation is due to the gross output value series, which, in nominal terms, almost triples in 1958, and then falls by one-half in 1961. The tripling is probably in part due to the inclusion of joint public-private and private enterprise output in the SOU output value starting in 1958 (the series on joint public-private and private enterprises ceases in 1957). The industrial SOE fixed asset series during 1952-57 explicitly includes these enterprises in the SOU values. This would possibly explain the rise in the gross output to capital ratio in 1958 but not the drastic fall in this ratio in 1961; a more gradual decline would be plausible.

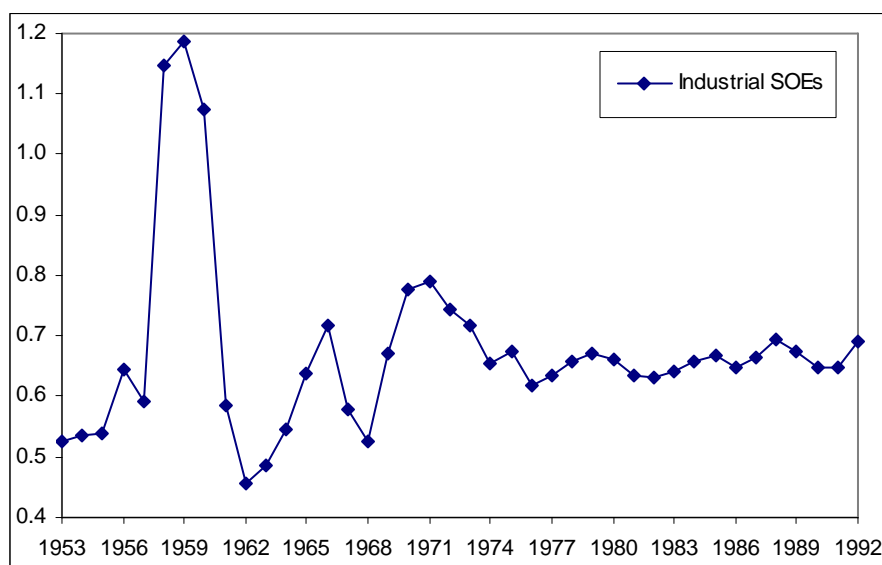
In as far as division of labor among industrial SOEs may have increased over time, gross output value increases more than value-added (on which no data are available for these years). A ratio of value-added to capital, thus, given the rather stable ratio of gross output value to capital, may have trended downwards. Overall, the rather stable trend of the gross output to capital ratio in the case of industrial SOEs (using gross output value as a measure of output) justifies the procedure adopted in the paper to obtain non-SOU fixed asset values by using non-SOU industrial gross output value real growth rates to determine non-SOU effective investment values.

An alternative to the assumption of a constant ratio of gross output value to capital would have been that the ratio of non-SOUs is the same as that of SOUs; this assumption appears grossly unjustified when one considers that non-SOUs tend to be small and that industrial data according to enterprise size suggest a ten-fold difference in the ratios of large and small enterprises.

The output growth method is further validated by the results obtained when the identical procedure is applied to SOUs using industrial SOE gross output value real growth rates. Assuming a zero scrap rate and applying the output growth method to SOUs yields a cumulative 1992 value of 3028.170b yuan RMB, 10.67% higher than the SOU value based on the sum of newly increased fixed assets (using effective investment data for all years), of 2736.093b yuan RMB (see table in the paper). When depreciation-based scrap rates are included in the output growth method applied to SOUs, the result is a nominal value of 2990.557b yuan RMB, 20.44% higher than the SOU value based on the sum of effective investment, of 2483.093b yuan RMB. When investment-based scrap rates are included in the output growth method applied to SOUs, the result is a nominal value of 3045.519b yuan

RMB, 5.87% higher than the SOU value based on the sum of effective investment, of 2876.617b yuan RMB. In comparison to the SOU benchmark value of 3076.845b yuan RMB, the three SOU series obtained using the output growth method are 1.58%, 2.80%, and 1.02% lower.

Overall, with investment-based scrap rates, the third method used to derive non-SOU fixed asset values, if applied to the case of SOUs, is only 5.87% (or 1.02%) off target. This suggests that the third method is an exceedingly reliable method to calculate non-SOU fixed assets.



The chart shows the ratio of industrial SOE gross output value (in 1992 prices) to the original value of fixed assets of industrial SOEs (in 1992 prices, taking into consideration depreciation-based scrap rates of industrial SOEs).

The deflator for gross output value is the implicit gross output value of industry deflator (total industry) and the deflator for fixed assets is the implicit gross fixed capital formation deflator through 1990, and the investment in fixed assets price index since 1991. In the derivation of the original value of fixed asset series, scrap values are deflated using the current-period deflator (which is roughly stable through the mid-1980s).

Sources: Nominal gross output value and real growth in gross output value of all industry: *Industrial Yearbook 1993*, pp. 34f. Fixed asset values of industrial SOEs: official original and net fixed asset series from *Industrial Yearbook 1993*, p. 66, adjusted using a depreciation-based scrap rate, where the depreciation rate is that of budgetary industrial SOEs reported in the *Fiscal Yearbook 1993*, p. 685 (1952-57 values explicitly include joint public-private enterprises and private enterprises).

Figure 1. Gross Output Value Per Original Value of Fixed Assets (Approximated for non-SOEs)

References

- Fiscal Yearbook. Zhongguo caizheng nianjian* (China Fiscal Yearbook). Beijing: Zhongguo caizheng zazhishe, various years.
- Industrial Yearbook. Zhongguo gongye jingji tongji nianjian* (China Industrial Economy Statistical Yearbook). Beijing: Zhongguo tongji chubanshe, various years. (Early issues were titled *Zhongguo gongye jingji tongji ziliao*, China Industrial Economy Statistical Material.)