

APPENDIX TWO

ERROR OF THE ESTIMATES

A2.1. We have already stated in chapter 2 that the overall margin of uncertainty of the estimate of net domestic product is of the order of 10 p.c. This appendix is concerned with an explanation of the procedure adopted for deriving this margin. The type of data used for national income accounting is generally not suitable for estimation of a statistically valid margin of error; and we are compelled to use more or less arbitrary methods to get some dimensional idea of the uncertainties of the sector totals and the national aggregate.

A2.2. An idea of sectoral errors can be formed in different ways:—

(i) Occasionally the basic statistics used may give some idea of the sampling error involved. Thus, the figures of earnings used in the sector of small enterprises showed a coefficient of variation of the order of 50 p.c. This may give an approximate idea of the margin of uncertainty even when the data used are by no means a random sample over the universe. The estimate of working force also is subject to error an estimate of which can be made on subjective grounds. The two errors then can be combined on certain statistical assumptions. The resulting margin of uncertainty will not be entirely subjective but the subjective element will form a large component. A similar procedure is applicable in respect of the yield rates of certain crops for which proper sampling errors are available.

(ii) Subjective estimates of a number of estimators may be averaged in order to eliminate (individual) personal bias; and the difference between the different estimates would supply some information on the margin of uncertainty.

(iii) Where the estimates are prepared by two independent methods, the difference between the two estimates gives an idea of sectoral error. This procedure was followed for all sectors where two independent estimates were available.

(iv) The estimate of net value in a sector may be regarded as a function of a number of variables. Thus, the net value of agriculture depends among other things on the production of bajra, seed requirement of ragi, cost of repairs of agricultural implements, price of wheat in Madhya Pradesh, etc. For a large number of the variables we have to use the figures given by official sources. Here one can form an approximate idea of the error involved from our knowledge of the source material and also of the quality of the reporting agency. But for a number of items, we may have some discretionary latitude. Thus we can adopt one or other of two figures for depreciation. Or, for example, we can adopt different rates of deduction for seed requirement. It is possible to segregate all the items of the type in which discretion has its play. We next use different figures for a particular item and watch the effect on the aggregate net value. Usually, even where the largest variation

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is assumed in the most important single constituent, the percentage change in the aggregate is small. However, when all constituents vary and assumed variations are all in the same direction, there can be an appreciable percentage change in the aggregate. By assigning the maximum variation (within reason) to all constituents we arrive at the largest margin of uncertainty of the aggregate net value. To the margins thus obtained can be added the errors ascribed to that part of the estimates over which we have no discretionary control; this part of the error is necessarily subjective. The method outlined above has been used to estimate the margins of uncertainty of sectors like agriculture, animal husbandry, etc.

(v) Where completely independent State estimates are available (e.g., for Bombay), the NIC estimates are split up and rough estimates are arrived at for the States. The difference between the NIC and the State estimates gives an idea of the margin or error involved in our computation.

A2.3. Making use of the methods indicated in the previous section we have the following margins of uncertainty for our sector estimates relating to 1948-49.

TABLE A2.1 : SECTOR MARGINS OF ERROR : 1948-49

	per cent
1. agriculture, animal husbandry and ancillary activities	20.0
2. forestry	25.0
3. fishery	25.0
4. mining	10.0
5. factory establishments	10.0
6. small enterprises.	33.3
7. communications (post, telegraph and telephone)	10.0
8. railways	10.0
9. organised banking and insurance	10.0
10. other commerce and transport	33.3
11. professions and liberal arts	33.3
12. government services (administration)	10.0
13. domestic service	33.3
14. house property	33.3

A2.4. The above margins of error are then combined (on the assumption of complete independence of the errors of the sector estimates) leading to an overall percentage of about 10 for the aggregate domestic product. A positive correlation between sector errors, if any, may however, increase the margin of error of the aggregate.