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## ECONOMIC DEVELOPMENT AND PLANNING IN INDIA\*

I hesitate to speak before this learned gathering of statisticians, because I am not a statistician. All the same, in the complex world in which we live today, it is difficult to do without statistics. Whether you are dealing with economics, or banking, or industry, to the meat of general theory, there must be the bone of statistics. In my country, India, at the moment we have a glut of statistics. For years together, we have been raised on nationalism; on our glories of yesterday, and on the wonderful future that awaits us when we are independent tomorrow. But now, there is a complete change. We seem to live in a sea of statistics, of plans and programmes and blueprints. If it is irrigation, it is in terms of so many cusecs of water; if it is electricity, so many kilowatts; if it is industry, so many hours of man-power; if it is finance, so many millions at such and such rate of repayment. The picture of the country is seen no longer in terms of politics, but of statistics. As the subject of my talk today is "India's Development Plans," I shall give you certain amount of statistics, but you will excuse me if I do not give you enough.

Economic development in free India is deliberately and elaborately planned. Beginning with 1951, we envisage a 25-year period of planned development, through a series of Five Year Plans, each bigger than the last one. At the end of the period, the per capita income will be doubled. This will, in itself, mean quite a good deal for our people, who are mostly poor. They will eat a little better, live in slightly better houses, have medicine when they are ill, and go to school when they are young. We shall still remain very poor. Our per capita income in India is at present 60 U.S. dollars as against 150 U.S. dollars in the Philippines. In 1976, it is expected to rise (even allowing for the heavy increase of population of about 2.1% per annum) to 120 U.S. dollars. But there will be a great increase in national wealth. While we welcome a better deal for the individual, our aim is more fundamental. What

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\* Talk given by Ambassador Maitra before the Philippine Statistical Association, Manila, at its luncheon meeting on 26th August 1961.

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we aim to is a complete change over of our ancient peasant economy to a modern technological one. There would be tractors and fertilizers, iron and steel, machine tools, coal, electricity and, let us hope, petroleum. The change will be root and branch. We hope to achieve in 25 years what Europe and America achieved in two centuries. Even now, our rate of growth is fairly high. The Third Plan, for the years 1961-1966, which we have just taken up, is the critical one. If all goes through, we shall get over the hump. At the end of it, we shall be making most of the machines that make machines, and have laid the foundations of a self-sustaining growth. In 1966, the rate of industrial growth in India, mark you the rate and not the volume, would exceed that of the United Kingdom or the United States, and would be nearly as high as that of the two fastest growing economies in the world, namely, France and Soviet Russia. Our volume would still be comparatively modest. For instance, we shall be making ten million tons of steel as against twenty eight millions which Japan is making today. But our steel production would have jumped ten times in fifteen years.

It might strike some of you that development may be a good thing, but is planning necessary? From the Indian experience the answer is overwhelmingly in the affirmative. When the British left India, we had liberal education, a fine set of laws, a trained civil service, and the apparatus of democracy, but the economy was stagnant. Even under the stimulus of war, when so many under-developed countries like Australia or South Africa branched out in new industrial fields, little happened in India. It became quite clear to Indian thinkers that unless a concentrated effort was made by pooling all our resources, raising money by taxation and borrowing from abroad, fixing priorities, and heavily investing in essential projects, India would never be able to come out of the rut. Even before Independence, tentative blue-prints of such national effort were put out. The person who took the greatest interest in these tentative plans was Mr. Jawaharlal Nehru, who became the Prime Minister of Independent India. He is still the main driving force behind these gigantic plans.

You may say that Western Europe or North America went through agricultural and industrial revolutions without any centralised planning. But, as I said before it took 200 years of trial and error to achieve the end. We cannot wait so long. Then again, these western countries could draw upon the resources of their colonies to pay for new plants and equipment. Their surplus population could be shipped off to America or Australia. We cannot do that. And, lastly, during the time when these economic changes were taking place, those countries neither had universal franchise nor labour laws. It was comparatively easy to amass wealth and invest the savings. In a regime of political liberty and universal vote, not to speak of raising expectations, such performance cannot be repeated. In the conditions of India, we have found planning essential. Planning for rapid development had been carried out in Russia. But, in the case of India, the process is very different. We are determined to work out through democratic means. The formulation of each Plan is itself an elaborate process. It starts out at least two to three years before the Plan is due to begin. Discussions are held at village level—through panchayats, go to districts and constituent States of the Union of India. Working parties are set up both by the Central and State governments to work out details of Plans. These are supervised and co-ordinated by the permanent body called the Planning Commission. The Planning Commission itself is advised by panels of economists and scientists, and, above all, by the Central Statistical Organization and the Indian Statistical Institute, of which you must have heard. Mr. Prasanta Mahalanobis, head of the Indian Statistical Institute, is closely associated with all the planning. With experience, the scope and virtuosity of planning has greatly improved, particularly in the collection and use of statistics, although there are still many gaps and imponderables. The detailed information, the sense of direction, the economic and administrative controls are clearer and much more substantial now than the first Plan drawn up ten years ago. An assessment of needs and resources is made in what is known as "Plan frame." A year before the Plan is due to begin, a detailed draft outline is produced. This is discussed

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and argued with the State governments, and put up before the National Development Council. With Parliament's approval, the Plan becomes the law of the land. From henceforth, the entire energies of the government and the people of India are bent to realize it. The Third Five Year Plan which will be as large as the first two Plans combined, will involve a total expenditure of approximately 102,000 million rupees (or 21,700 million U.S. dollars). Today I shall not dwell upon the 3rd plan which is just beginning, but give you the picture of development in India as it stands at the final stages of the 2nd Plan which is just over.

The core of the development effort is industrialization although great effort is also made in the fields of agriculture and social services. As funds are limited, specially foreign exchange, priorities are to be worked out carefully, so that those industries which are most important from the national point of view, come first. There are five grades of priority:—

- 1) The first priority includes increase of production of iron and steel, heavy chemicals (including nitrogenous fertilizers), heavy engineering, and machine-building industries.
- 2) The second priority relates to expansion of aluminium, cement, chemicals, dye-stuffs, essential drugs and phosphatic fertilizers.
- 3) The third priority aims at modernizing existing industries like jute, cotton and sugar.
- 4) The fourth priority is to use all existing plant capacity to the full.
- 5) The fifth priority is for consumer goods in medium and small-scale factories as well as cottage industry.

According to these priorities, the total investment in the Second Plan for industry, both in the public and private sectors, comes to Rs. 1,465 crores, or approximately 3,000 million U.S. dollars. At the rate of Rs.4.7 to one U.S. dollar, rupees one crore is about 2.1 million dollars. I would like to give you the main targets of the Second Five Year Plan for large-scale industry:—

A 64 per cent rise in all industrial production.

A 150 per cent rise in production of capital goods, with strong emphasis on heavy and basic industries.

Three new steel plants, with 231 per cent more steel production, including doubled private steel capacity.

Three new fertilizer plants, and 300 per cent more fertilizer.

Expanded machine-tool factories, and 200 per cent rise in machine-tool production.

One hundred per cent rise in the production of electrical equipment — electric motors, transformers, cables, etc.

Expanded production of atomic energy materials, and stepped-up atomic research for peaceful uses.

I am happy to say that most of these targets have mostly been achieved.

Establishing a heavy industrial base is costly. A country might attempt it by trying to tighten its belt, but the average Indian is so poor that there is no question of any tightening on his part. In fact, our national government is as deeply committed to raise individual standard of living as to increase the total national wealth. To do the two things together means that there can be no cutting down on consumer goods. Fortunately, however, cars, radios, or television sets, are not common consumer goods in India as they



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are in some other countries. They do not, therefore, compete for scarce steel, and even scarcer foreign exchange. Many of our consumer goods are, or can be, made in cottage or small-scale industries which require comparatively little by way of capital or machinery. One of the cardinal decisions of the Second Five Year Plan was to develop these village and small-scale industries to meet the rising demand for consumer goods. For example, handlooms are to provide about two-thirds of the additional cloth required during the second Plan period. The decision has a three-fold merit: it provides for more consumer goods at a low capital cost; give employment to a large rural population; and keep up traditional skills. Even now, handicrafts have such a firm hold in India that they employ no less than 11-1/2 million people, or 29% of those working outside agriculture.

The Second Plan aimed at a 30 per cent increase in the production of small and cottage industries, at a cost of Rs.200 crores, or 420 million U.S. dollars. It was estimated that this would be sufficient to meet the increased demand for consumer goods during the Plan period. Here again, I am glad to say that, by and large, the target has been reached.

I have been talking of public sectors, or Plans, and government agencies, and you might be wondering about the role private industry is to play. Although there is government direction in overall planning, and government is establishing a number of heavy industries, at the end of the Second Plan, 90% of all production is in private hands. It is as well to remember that the greatest of all industries, viz., agriculture, remains entirely under private ownership and management. During the first Five Year Plan, there was a rise of 22% in industrial production, largely due to the performance of the private industry. In the Second Plan, the total investment in the public and private sectors in industry, large and small, was Rs.1,465 crores, or 3,000 million U.S. dollars. Out of this, not far short of half — i.e., Rs.625 crores, or 1,312 million U.S. dollars — was in the private sector. Consumer items which were all in the private sector, such as cotton textile,

paper board, vegetable oil, sugar, plastics and drugs — shared in the steep rise of production. For instance, sugar has already increased its production by 35%, to a total of 2.4 million tons a year. In the field of producer and heavy industries, private industry has a significant part. For instance, they make more and more of the machinery for textile, jute and sugar mills, as well as for cement. The increase is from four to forty times under the different categories. In heavy engineering automobiles and trucks are being built by private firms, and they have been expanded greatly. In the heaviest field i.e., of iron and steel, the two old privately-owned companies, viz., the TATA IRON & STEEL COMPANY and the INDIAN STEEL COMPANY, have, with the aid of American capital and technical help, increased their production from 1.25 million to 2.3 million tons. I wish to repeat what I have said before that the whole system is inter-locking, and there is no watertight division between public and private sectors. The whole concept is based on the wealth of the nation, and not of any particular individual group.

The second development plan has cost Rs.7,200 crores, or about 15,000 million U. S. dollars, in the ratio of two to one for government and private enterprises. For a poor country like ours, it is a very large sum of money. We raise funds in the country by means of taxes, loans, savings, etc. But much of the heavy equipment for new industries has to be purchased from abroad with foreign currency. Also some of the raw material for the new industries have to be imported. India's foreign exchange earning through export of traditional items like tea, jute, or cotton, cannot expand so fast as to pay for these heavy new demands. To conserve our foreign exchange, we have reduced imports to the minimum, and almost completely banned luxury items. For instance, no Indian can travel abroad for pleasure. But, even then, with the practising of austerities, there was a big gap. Approximately, one-fourth of the cost of the Plan, i.e., Rs.1,700 crores, or 3,500 million U. S. dollars, was in foreign exchange. How was this met? Almost all the aid that India has received came directly from foreign governments — United States, Russia, West Germany,

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United Kingdom, Canada, and Japan, or from international lending agencies like the World Bank and the International Monetary Fund. Loans cover more than half the total, while the balance was made up by grants or deferred payments in local currency. By far the biggest amount has come from the United States — approximately 2,000 million dollars.

The new steel mills had to be financed by foreign loans. For instance, the steel plant at Bhilai has been put up by the Russians. It cost Rs.110 crores, or 231 million U. S. dollars, of which Rs.63 crores, or 132 million U. S. dollars, is in rouble credits arranged with the Soviet Union. The steel plant at Durgapur has been erected by a British consortium. It has cost Rs.115 crores, or 241 million U. S. dollars, of which Rs.35 crores, or 73 million U. S. dollars, is raised in pound sterling jointly by the British Government and some British bankers. The steel plant at Rourkela has been put up by the West German combine of KRUPP & DEMAG. Its cost is Rs. 128 crores, or 268 million U. S. dollars. The foreign exchange component of Rs. 75 crores, or 157 million U. S. dollars, is financed out of a loan arrangement made with the west German Government. So far, the inflow of foreign private investment has been small, but it may be noted that the total foreign investment in India is now in the region of 1,200 million U. S. dollars — about double of what it was before independence. About 80% of this is British, and much of the increase is by re-investment. But recently a considerable volume of private American capital has started to flow in. This reflects the increasingly favourable view taken by American businessmen of business prospects in India. I quote here from a recently published brochure of the First National City Bank of New York: "There are tangible indications of a growing interest by U. S. businessmen in India's investment opportunities. They are impressed by the long-run potential of the Indian market and encouraged by signs that the Indian government is now

more receptive to foreign capital. In recent months, a number of American corporations have announced plans for extensive new investments in India."

I have tried to give you an outline of India's Development Plans. It is difficult to deal with such a large subject in such a short time, and hope you will overlook my deficiencies. I thank you for giving me such a patient hearing.



## COMPARISON AND EVALUATION OF DIFFERENT METHODS OF RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION

By Benjamin P. Tienzo \*

During the last session of the Congress of the Philippines, a bill was passed increasing the number of members of the Lower House of Congress from the present 104 to the maximum of 120 based on the preliminary census count of the population of the Philippines taken on February 15, 1960. This bill was passed in pursuance to Article VI, Sec. 5 of the Philippine Constitution which provides that "The House of Representatives shall be composed of not more than one hundred and twenty Members who shall be apportioned among the several provinces as nearly as may be according to the number of their respective inhabitants but each province shall have at least one Member. The Congress shall by law make an apportionment within three years after the return of every enumeration and not otherwise . . ."

In the re-apportionment bill the provinces of Camarines Sur, Cavite, Isabela, Misamis Oriental, Negros Occidental, Nueva Ecija, Pampanga, Quezon, Samar and Zamboanga del Sur were each given an additional seat while Cotabato, Davao and Rizal were each given two additional seats to make the total membership of the House of Representatives equal 120.

Tables 1 and 2 show the distribution of Congressional representation among the provinces according to the present set-up, as proposed in the re-apportionment act which was declared null and void by the Supreme Court, and as determined by three different methods of computing re-apportionment.

In one method which might be called the largest remainder method, re-apportionment is determined by dividing the total population by the number of Members to be re-apportioned.

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\* Senior Statistician, Joint Legislative-Executive Tax Commission.

All provinces with a population less than the result of this division are automatically given one representative. The total population of all the provinces that were not automatically given one seat is then divided by the difference between the total number of seats to be re-apportioned (120) and the total number of provinces that were automatically given one seat. The quotient is then used to divide the population of each of the provinces that were not yet given a seat, the result of which is either a whole number or a mixed number. Adding all the whole numbers and the number of provinces that are automatically given one seat, the result will always be less than the total number of seats to be re-apportioned. The difference can be made up by adding one seat to each province having the largest fractions until the desired number of seat is reached.

In apportionment by major fraction, the population of each province is divided by the arithmetic mean of two consecutive numbers starting with one and two, then two and three and so on until you reach a number which is less than the quotient obtained by dividing the total population and the total number of seats to be re-apportioned. The result of those divisions are known to be the priority values. These are arranged from the highest to the lowest composing what is called the priority list. The first 57 seats are automatically given to each province and the 58th seat to the province with the second highest value and so on until the desired total number of seats to be re-apportioned is reached.

A third method called the equal proportion method is similar to the major fraction method except that instead of the arithmetic mean the geometric mean of two consecutive numbers starting also with one and two then two and three and so on is used as divisor in computing the priority values.

It has been found that the largest remainder method is defective in that the result depends so much on the size of the remainder. The fractional component of the quotient tends to increase more rapidly in the case of provinces with large populations so that it sometimes occur that by increasing the

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total number of congressional seats some provinces may decrease in the number of their representatives. An example is that which happened in the United States in the re-apportionment based on the Census of 1880. When the number of representatives was 299, Alabama had eight representatives while when it was increased to 300, it had only seven. At this juncture the idea of the priority list was thought of to get away with the ill-effect of the remainder.

It may be mentioned here that the major fraction and the equal proportion methods are now being more extensively used with the latter more favored between the last two.

A look at the distribution of the congressmen as proposed shows that representation as nearly as may be possible according to the number of their respective inhabitants is hardly satisfied. Referring to Table 2, for example, Rizal province with a population of 1,463,530 was allocated 4 representatives while Cebu with a population of 1,340,439, which is less than that of Rizal, was given seven representatives. Cebu and Negros Occidental with a difference of only 8,422 in population have a difference of three in the number of representatives while Cotabato and Negros Occidental with 179,543 population difference have only one seat difference. Iloilo and Davao have a difference of only 62,921 in population while they have a difference of two in the number of representatives. Again, Lanao del Sur with a greater population than Albay by 15,308 has lesser representation by two members.

The results obtained by the three methods including the largest remainder method seem to reflect better pro-rata representation than what has been proposed. However, since the largest remainder method can lead to a paradox as has already been pointed out earlier, choice is actually left to only two methods namely the major fraction and equal proportion.

Incidentally, the largest remainder method yield the same results as the major fraction method. Cebu and Negros Occidental each has six representatives according to these two me-

thods while in the equal proportion method, each is allotted only five. Bohol, likewise, has two representatives while Sorsogon has one representative in accordance with both the largest remainder and major fraction methods but the representation of these two provinces increase to three and two, respectively, in the equal proportion method. It now remains to establish the merits of each of the two methods only.

To be able assess the advantages of each of these two methods, four measures may be computed for any two provinces. One is the difference between the average population per district in absolute value and another is in terms of the relative value which is computed by taking the ratio of the absolute difference and the smaller of the average population per district. The third is the absolute difference of the individual share in a representative of the provinces and the last is again the relative difference of the individual shares. These four measures are computed from the data obtained by the major fraction and the equal proportion methods.

Table 3 shows these values taking Bohol and Cebu on one hand and Negros Occidental and Sorsogon on the other. While the examples presented seem to show that the absolute difference in average population per district is bigger in major fraction than in equal proportion method, such relation can be found not to be true everytime. Only the three measures are found to be consistent everytime. It can be shown that the absolute difference in the individual share in a representative is always smallest in major fraction method while in terms of the relative difference for both average population per district and individual share, they are smallest in the equal proportion method.

As to which of the two methods is the more satisfactory for our particular situation merits further study, especially because the subject is of far-reaching importance and significance in a democracy like ours. The author however, would tend to endorse the equal proportion method.



## REFERENCES

- Bureau of the Census and Statistics. **Special Bulletin No. 1.**
- Capt. J. C. (1943). **Estadística**, Vol. I, No. 2, p. 94.
- Schmeckebier, L. F. (1941). **Congressional Apportionment.**
- Virata, E. T. (1954). **The Philippine Statistician**, Vol. III, No. 1,  
p. 21.

**Table 1 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS AND AS PROPOSED BY CONGRESS**

(Provinces arranged alphabetically)

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
<b>PHILIPPINES</b>	<u>27,455,799</u>	<u>104</u>	<u>120</u>	<u>120</u>	<u>120</u>	<u>120</u>
1. Abra	116,700	1	1	1	1	1 /
2. Agusan	271,973	1	1	1	1	1 /
3. Aklan	226,516	1	1	1	1	1 /
4. Albay	515,961	3	3	2	2	2 /
5. Antique	239,164	1	1	1	1	1 /
6. Bataan	145,922	1	1	1	1	1 /
7. Batanes	10,335	1	1	1	1	1 /
8. Batangas	682,855	3	3	3	3	3 /
9. Bohol	602,497	3	3	2	2	3 /
10. Bukidnon	195,630	1	1	1	1	1 /
11. Bulacan	557,691	2	2	2	2	2 /
12. Cagayan	445,697	2	2	2	2	2 /

**Table 1 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY  
PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS  
AND AS PROPOSED BY CONGRESS**

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
13. Camarines Norte	188,569	1	1	1	1	1 /
14. Camarines Sur	826,640	2	3	3	3	3 /
15. Capiz	314,834	2	2	1	1	1 /
16. Catanduanes	156,640	1	1	1	1	1 /
17. Cavite	379,904	1	2	2	2	2 /
18. Cebu	1,340,439	7	7	6	6	5 /
19. Catabato	1,152,474	1	3	5	5	5 /
20. Davao	903,224	1	3	4	4	4 /
21. Ilocos Norte	287,029	2	2	1	1	1 /
22. Ilocos Sur	338,570	2	2	1	1	1 /
23. Iloilo	966,145	5	5	4	4	4 /
24. Isabela	442,821	1	2	2	2	2 /
25. La Union	295,164	2	2	1	1	1 /
26. Laguna	472,215	2	2	2	2	2 /
27. Lanao del Norte	280,461	1	1	1	1	1 /

**Table 1 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS AND AS PROPOSED BY CONGRESS**

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
28. Lanao del Sur	531,269	1	1	2	2	2 /
29. Leyte del Norte	967,323	4	4	4	4	4 /
30. Leyte del Sur	210,084	1	1	1	1	1 /
31. Manila	1,145,723	4	4	5	5	5 /
32. Marinduque	114,892	1	1	1	1	1 /
33. Masbate	336,709	1	1	1	1	1 /
34. Misamis Occidental	251,104	1	1	1	1	1 /
35. Misamis Oriental	387,839	1	2	2	2	2 /
36. Mountain Province	436,204	3	3	2	2	2 /
37. Negros Occidental	1,332,017	3	4	6	6	5 /
38. Negros Oriental	598,783	2	2	2	2	2 /
39. Nueva Ecija	608,736	2	3	3	3	3 /
40. Nueva Vizcaya	137,996	1	1	1	1	1 /
41. Occidental Mindoro	84,321	1	1	1	1	1 /
42. Oriental Mindoro	227,119	1	1	1	1	1 /

**Table 1 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS AND AS PROPOSED BY CONGRESS**

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
43. Palawan	162,918	1	1	1	1	1 /
44. Pampanga	615,823	2	3	3	3	3 /
45. Pangasinan	1,124,842	5	5	5	5	5 /
46. Quezon	656,892	2	3	3	3	3 /
47. Rizal	1,463,530	2	4	6	6	6 /
48. Romblon	132,012	1	1	1	1	1 /
49. Samar	871,857	3	4	4	4	4 /
50. Sorsogon	348,708	2	2	1	1	2 /
51. Sulu	327,050	1	1	1	1	1 /
52. Surigao del Norte	195,006	1	1	1	1	1 /
53. Surigao del Sur	165,137	1	1	1	1	1 /
54. Tarlac	427,348	2	2	2	2	2 /
55. Zambales	213,618	1	1	1	1	1 /
56. Zamboanga del Norte	280,391	1	1	1	1	1 /
57. Zamboanga del Sur	744,469	1	2	3	3	3 /

**Table 2 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS AND AS PROPOSED BY CONGRESS**

(Provinces arranged according to population size)

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
PHILIPPINES	27,465,799	104	120	120	120	120
1. Rizal	1,463,530	2	4	6	6	6
2. Cebu	1,340,439	7	7	6	6	5
3. Negros Occidental	1,332,017	3	4	6	6	5
4. Cotabato	1,152,474	1	3	5	5	5
5. Manila	1,145,723	4	4	5	5	5
6. Pangasinan	1,124,842	5	5	5	5	5
7. Leyte del Norte	967,323	4	4	4	4	4
8. Iloilo	966,145	5	5	4	4	4
9. Davao	903,224	1	3	4	4	4
10. Samar	871,857	3	4	4	4	4
11. Camarines Sur	826,640	2	3	3	3	3
12. Zamboanga del Sur	744,469	1	2	3	3	3

**Table 2 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHOD AND AS PROPOSED BY CONGRESS—Continued**

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
13. Batangas	682,855	3	3	3	3	3
14. Quezon	656,892	2	3	3	3	3
15. Pampanga	615,823	2	3	3	3	3
16. Nueva Ecija	608,736	2	3	3	3	3
17. Bohol	602,497	3	3	2	2	3
18. Negros Oriental	598,783	2	2	2	2	2
19. Bulacan	557,691	2	2	2	2	2
20. Lanao del Sur	531,269	1	1	2	2	2
21. Albay	515,961	3	3	2	2	2
22. Laguna	472,215	2	2	2	2	2
23. Cagayan	445,697	2	2	2	2	2
24. Isabela	442,821	1	2	2	2	2
25. Mountain Province	436,204	3	3	2	2	2
26. Tarlac	427,348	2	2	2	2	2
27. Misamis Oriental	387,839	1	2	2	2	2

**Table 2. — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS AND AS PROPOSED BY CONGRESS—Continued**

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
28. Cavite	179,904	1	2	2	2	2
29. Sorsogon	348,708	2	2	1	1	2
30. Ilocos Sur	338,579	2	2	1	1	1
31. Masbate	336,709	1	1	1	1	1
32. Sulu	327,050	1	1	1	1	1
33. Capi	314,834	2	2	1	1	1
34. La Union	296,164	2	2	1	1	1
35. Ilocos Norte	287,029	2	2	1	1	1
36. Lanao del Norte	280,461	1	1	1	1	1
37. Zamboanga del Norte	280,391	1	1	1	1	1
38. Agusan	271,973	1	1	1	1	1
39. Misamis Occidental	251,104	1	1	1	1	1
40. Antique	239,164	1	1	1	1	1
41. Oriental Mindoro	227,119	1	1	1	1	1
42. Aklan	226,516	1	1	1	1	1



**Table 2 — RE-APPORTIONMENT OF CONGRESSIONAL REPRESENTATION BY PROVINCES AS DETERMINED BY THREE DIFFERENT METHODS AND AS PROPOSED BY CONGRESS—Continued**

Province	Population (1960)	Actual number of congressmen	Number of congressmen as proposed by Congress	Number of congressmen by the largest remainder method	Number of congressmen by major fraction method	Number of congressmen by the equal proportion method
43. Zambales	213,618	1	1	1	1	1
44. Leyte del Sur	210,084	1	1	1	1	1
45. Bukidnon	195,630	1	1	1	1	1
46. Surigao del Norte	195,006	1	1	1	1	1
47. Camarines Norte	188,569	1	1	1	1	1
48. Surigao del Sur	165,137	1	1	1	1	1
49. Palawan	162,918	1	1	1	1	1
50. Catanduanes	156,640	1	1	1	1	1
51. Bataan	145,922	1	1	1	1	1
52. Nueva Vizcaya	137,996	1	1	1	1	1
53. Romblon	132,012	1	1	1	1	1
54. Abra	116,700	1	1	1	1	1
55. Marinduque	114,892	1	1	1	1	1
56. Occidental Mindoro	84,321	1	1	1	1	1
57. Batanes	10,335	1	1	1	1	1

**Table 3 — AVERAGE POPULATION PER DISTRICT AND INDIVIDUAL  
SHARE OF REPRESENTATIVE BY METHODS OF  
MAJOR FRACTION AND EQUAL PROPORTION**

Province	Population	Major fraction			Equal proportion		
		Number of representative	Average population per district	Individual share	Number of representative	Average population per district	Individual share
Bohol	602,497	2	301,248	.000,003,319,519	3	200,832	.000,004,979278
Cebu	1,340,439	6	<u>223,406</u>	<u>.000,004,476,146</u>	5	<u>268,088</u>	<u>.000,003,730121</u>
Absolute difference			77,842	.000,001,156,627		67,256	.000,001,249157
Relative difference			34.8%	34.8%		33.5%	33.5%
Negros Occidental	1,332,017	6	222,003	.000,004,504,447	5	266,403	.000,003,753706
Sorsogon	348,708	1	<u>348,708</u>	<u>.000,002,867,729</u>	2	<u>174,354</u>	<u>.000,005,735458</u>
Absolute difference			126,705	.000,001,636,718		92,047	.000,001,981762
Relative difference			57.1%	57.1%		52.8%	52.8%

# COORDINATING AND IMPROVING STATE STATISTICS

## The Pennsylvania Experience

by

Dr. Kenneth W. Masters \*

### Part I. Efforts by a Centralized Staff Agency

#### 1. Statistics in Disfavor

In 1955 statistical activities in Pennsylvania state government were held in poor repute. A statistical review committee appointed by the Governor five years earlier had gotten no place beyond recommending reforms. Such adjectives as "obsolete," "out-of-date," "duplicated," "useless," and "unreliable" were used to describe the statistical output from the over forty government statistical units with general-purpose, analytical and research, and subsidiary statistical programs.<sup>1/</sup> The statistical units with civil service traditions adapted a "holier-than-thou" attitude towards other agencies; the offices with strongest political strength maintained an attitude of immunity to outside influence; the smaller agencies ignored the larger ones and each went its own way.

#### 2. A New Administration Makes a Beginning

Against this background of bureaucratic rivalries, lack of professional standards, and wasteful collections of useless statistics, a new administration took office. The newly appointed

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<sup>1/</sup> For a description of the statistical organization of Pennsylvania state government, see Kenneth W. Masters, "The Role of Statistics in Pennsylvania State Government," *State Government*, Spring 1961, pp. 189-148.

\* (Dr. Masters taught statistics and related subjects at the University of Pennsylvania and Bryn Mawr College and was the Director of the Pennsylvania Bureau of Statistics from 1955 to 1961. He is presently on assignment by the United Nations to the Statistical Center of the University of the Philippines.)

Secretary of Administration, a professor of political science and public administration, attacked the problem with vigor and dispatch. Every agency was required to assemble exhibits of their statistical output. After these materials were collected they were displayed, several feet deep, on two large conference tables in a small room where representatives from each of the agencies were assembled. The Secretary of Administration gave a short lecture on statistical releases which became dust collectors and statistical volumes which were used as door stops. He proceeded to divide the statistics into areas — industrial, health, extractive and natural resources, and several others and assigned the departmental representatives to committees for each area.

### 3. Attempts to Winnow Statistics

These committees became known as the "winnowing" committees — their purpose being to winnow the statistical grain of state government from the chaff. The Winnowing Committees met in an atmosphere of suspicion and confusion. There was an overlap in the subject areas and the scope of inquiry was further confused by an absence of the basic statistical materials which had been piled on the conference tables at the first meeting. Most of the department representatives were defensive about their own statistics and would laud them in rather subjective terms ("some like them, some don't," "they are well received") or would fall back on their legal "mandate" to collect and publish statistics. Others, either intentionally or unintentionally, tended to obscure their statistical programs or the objectives served by them.

### 4. The Governor's Committee

When it became apparent that Winnowing Committees would not effect improvements a new committee, called the Governor's Committee on Statistics, was called into being.

Selection of the 50 or so members for the Governor's Committee was largely on a basis geographic and institutional con-

## COORDINATING AND IMPROVING STATE STATISTICS

siderations. Manufacturing companies, utilities, labor unions, universities, chambers of commerce, and planning groups were all represented. Only a few of the members were state statisticians.

The first meeting of the Governor's Committee followed the unstructured pattern set by the previous meetings. The Secretary of Administration gave a short lecture and sub-committees paralleling the original subject matter Winnowing Committees were appointed. An index to all statistical publications was distributed at the meeting. The most common reaction of most persons attending the meeting was amazement at the tremendous amount and diversity of statistics collected and compiled by the state.

### 5. A Final Report

Subsequent meetings of the new sub-committees (the Winnowing Committees were absorbed into the sub-committees) were mostly spent in familiarizing the members of the committees with existing programs and in discussing approaches to improving the statistics. Six of the more knowledgeable representatives prepared critiques on labor, health, local government, and welfare statistics. Finally, a consolidated committee of about fifteen persons prepared a final report of about 150 pages which recommended creating a small office for setting standards and coordinating statistics and establishing a centralized data processing center for state government. The larger Governor's Committee group endorsed the report and the recommendations were sent to the Governor. Unfortunately, money was never found to create an office for standards and coordination. A data processing center was later created, but not because of the Statistical Committee's recommendations.

### 6. Silver Threads Among the Gray

Despite the difficulties of this approach and the lack of success in having the recommendations implemented, there were some achievements stemming from the efforts of over

100 persons investing time in 25 or so meetings. A good deal of information about statistical programs and availability of data was disseminated. The state statisticians and potential users of statistics did get to know each other and inter-personal relationships among the government statisticians improved.

## **Part II. Efforts by a Statistical Line Agency**

### **7. A Different Kind of Advisory Committee**

Pennsylvania is unique among the states in having a centralized Bureau of Statistics with constitutional status and with extremely comprehensive mandate for collecting and publishing statistics and related information. Furthermore, the Bureau is in a Department, — the Department of Internal Affairs — which is independent of the Governor's jurisdiction. When the Secretary of Internal Affairs took office in May 1955 she created her own advisory committee, but with several notable differences. In advance of each meeting of the committee progress reports and detailed agenda were prepared. The Bureau of Statistics was committed to doing all staff work for the Advisory Committee. The Committee itself was smaller which meant that the point of view of each member could be heard. The Committee acted as a sounding board for developing the programs of the Bureau. The group had the same sort of geographic-institutional representation as the Governor's Committee but the degree of concern about statistics was generally higher.

Another significant difference in the Internal Affairs Committee was representation from the Federal Government and from groups representing city and local government. This meant that the focus was not exclusively on state government statistical programs but extended to federal and local government programs — an important consideration when coordination is involved.

### **8. No Bureau an Island**

As the Bureau began improving its programs — annual censuses of manufacturing, mining, public utilities, and muni-

## COORDINATING AND IMPROVING STATE STATISTICS

cipal authorities — it became apparent that a high level of program achievement depended upon successfully relating these programs to the statistical and administrative programs of a number of other agencies.

For example, take developing mailing lists of industrial establishments and keeping them up-to-date. At least three federal agencies — Internal Revenue, Social Security, and the Bureau of the Census — and three state agencies — the Department of Labor, the Public Utility Commission, and the Department of State — were potentially in a position to supply information on business names, addresses, and employment size to the Bureau. Furthermore, most of these agencies compiled statistics related to the annual census data. The first steps necessary to coordinate efforts were to investigate how the programs operated, what data were compiled, and what data could be made available. Stringent confidentiality regulations prohibited using information for individual establishments from most of the federal agencies. Assuming there were no legal or bureaucratic barriers to obtaining the information, the next step was the detailed and exacting matching of names and addresses, and the preparation of special tabulations of statistics for comparison purposes.

There are frequently advantages for the programs of both offices which cooperate in such interchanges of data. For example, the Pennsylvania Bureau of Employment Security (BES) is required by law to collect quarterly reports on employment and payrolls from most employers in the state. But they do not collect sufficient information to assign industrial classification codes with the same degree of accuracy as can be accomplished by a census program which collects product data and which maintains a field force for investigation and follow-up. While the BES was in an excellent position to supply information to improve the completeness of coverage of the industrial censuses, the Bureau of Statistics was in a position to help them improve their establishment industrial classification. Equally important, the process of checking coverage and classification brought forth a discussion and review of the concepts

and principles underlying classification, and a friendly competition between the Bureaus in improving procedures.

Another significant development was that what had begun as a one-shot exchange developed into a process of continued cooperation. Statisticians at the same technical level developed working relationships and procedures necessary for a sustained effort.

#### 9. Another Example of Cooperation

One of the most effective steps in improving the Industrial Census was the technical assistance of two experts in industrial classification from the U.S. Bureau of the Census. These experts advised on developing product lists and classification procedures. Although these services were paid for through a contract with the Census Bureau, the value to the program, and the friendships which developed, were invaluable.

#### 10. The Value of a Statistical Abstract

The Bureau of Statistics continued to publish and up-date the **Index to State Sources of Statistics** which had been initially prepared for the first meeting of the Governor's Advisory Committee. A complete file of statistical publications was kept in the Bureau. When the idea of a statistical abstract for Pennsylvania was suggested by the Internal Affairs Committee, the initial contacts with other agencies had already been made. The other statistical units were happy to see their statistics publicized in such a publication. The purposes of the **Statistical Abstract** were to present a comprehensive and integrated, although by no means an exhaustive, statistical portrait of the state. Explanatory notes with definitions of concepts, descriptions of collecting and estimating procedures, and statements of limitations of statistical series were prepared for each of the 30 sections of the Abstract. Preparing the explanatory notes brought forth some healthy reflection and introspection by several of the state agencies.



## COORDINATING AND IMPROVING STATE STATISTICS

### Part. III. Further Efforts

#### 11. One Achievement But Rules Ignored

From time to time the Governor's Office of Administration would resurrect the idea of doing something about improving state statistics. A lack of statistical staff services weakened these attempts. However, one achievement of a group meeting in the Governor's Office was the adoption of a statement of standards for publishing statistics. These rules, mostly emphasizing the need for clear and accurate descriptions of statistical series, encompassed the following considerations:

1. General explanatory statement of methods of collection and definitions.
2. Detailed technical descriptions sufficient to appraise the appropriateness of the data for any intended use.
3. Detailed descriptions of sampling plans.
4. Need for written procedures and instructions for processing data.
5. Review of press releases presenting statistical data.
6. Inferences and interpretations of statistical data used in economic analyses.
7. Conditions and assumptions for forecasts and projections.
8. Discrepancies with other reports.
9. Rules for tabular and graphic presentation.

Although these rules were unanimously adopted by representatives from each of the major statistical agencies, they were largely ignored. To get results, the need for high quality sta-

tistics should be understood by the top administrative levels. Confused statistical organization and irresponsible and underdeveloped statistical programs can often be traced directly to the departmental secretary's office. The lack of sustained intelligent and imaginative concern by the Governor's Office is another important reason why standards are not met.

#### 12. An Inter-Departmental Committee on Population Estimates

As an example of how a statistical coordinating committee can achieve improvements, an inter-departmental committee on population estimates was formed in 1957. Each of three offices preparing estimates explained why they needed estimates and how their estimates were prepared. The BES needed estimates for labor analyses. The Department of Health needed quick estimates for computing vital rates. The State Planning Board, as an aid to planning, had developed a special estimation method for Pennsylvania.<sup>2/</sup> After discussing the various methods of estimation, the group decided to use the Planning Board estimates for all official releases, and to test several methods against the up-coming 1960 Census of Population results. Liaison with the federal and local government groups preparing estimates was provided for and it was agreed to publish a written description of the estimation procedures along with the estimates.

After the 1960 Census results were released we were pleased to learn that the Pennsylvania method of estimating county population had an average error of less than five per cent and was as accurate and easy to use a method as available in any of the states.

#### 13. The Role of the Statistical Association

Another concomitant of statistical progress in Pennsylvania was the creation of a statistical association in Harrisburg in 1959. The group voted to affiliate with the American Statis-

<sup>2/</sup>See the Department of Internal Affairs, Bureau of Statistics, "County and City Population Estimates for Pennsylvania" and "County Population Estimates — Note on Methodology" (Harrisburg 1958).

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tical Association and with its help, outstanding guest speakers visited Harrisburg during 1960 and 1961. Membership soon grew to over 200 persons and it was not uncommon to have over 50 persons attend luncheon meetings. Cabinet members and departmental secretaries were invited to introduce the guest speakers and to be guests of honor with the hope that such participation would increase their interest in statistics.

When problems relating to classification and pay range for state statisticians arose the association was asked to appoint a committee to study the matter and report to the Governor's Office and to the Civil Service Commission. Such a group was appointed, made a report, and discussed the matter with the appropriate personnel officials.

As another means of promoting state statistics, a special committee was provided for in the Chapter's Constitution to plan and sponsor annual conferences on the use of state statistics.

### 14. Conclusion

Government is dependent upon people. It is also dependent upon statistics and has become the major producer of statistical data. The quality of statistical output — an output which can save millions through more effective evaluation and planning — is dependent upon well qualified statisticians placed in positions of responsibility and working in an environment which is satisfying in terms of intellectual rewards and just salary structure.

In a government setting where qualified statisticians are matched with appropriate responsibilities, there still remains the problem of coordinating the part of the statistical systems into an effective whole. It is a responsibility of each statistical unit to look beyond its own immediate program and to recognize the greater importance of an integrated statistical system for the state or the nation as a whole. It is the responsibility of the statistical leadership of the government to find ways for the statisticians in individual offices to become acquainted with related programs, and to foster an appreciation for the common goals of the larger statistical systems.

## THE ROLE OF STATISTICS IN SCIENTIFIC MANAGEMENT<sup>1</sup>

By Professor Cesar M. Lorenzo

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### Abstract

Scientific management is thought of as a process by which an executive or a manager in an organization combines skillfully the human and material resources at his command in efficiently achieving given ends or goals. The British mathematician Charles R. Babbage, early in the 19th century, thought that the methods of science and mathematics could be applied to the operation of factories, and recommended the substitution of accurate observations, exact measurements, and precise knowledge for guess-work, hunches, intuition, and opinion in reaching decision in business enterprises.

In scientific management, the manager solving a management problem must perceive and define the problem, state hypothetical explanation, gather statistics and information, analyze and test the hypothesis, and must form conclusions and reach decisions. This management behavior enhances the success of scientific management to the extent that it is intelligently applied and the methodology developed to fit management needs.

It is clear that statistics and statistical techniques are indispensable to scientific management problem-solving behavior, and that this discipline is necessary in the major management functions of planning and controlling. Planning in scientific

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<sup>1</sup> First Seminar subject delivered before the graduate students of the Statistical Center of the University of the Philippines on Friday, September 23, 1960

## THE ROLE OF STATISTICS IN SCIENTIFIC MANAGEMENT

management includes forecasting, which is necessary in setting up of objectives or goals, in stating policies, in establishing programs, schedules, and procedures, and in formulating budgets. Controlling involves the establishments of standards, the appraisal of actual performance against these standards, and the correction of deviations or errors.

Planning in scientific management is fundamental because our modern society is dynamic in nature, and the elements composing business are in a constant state of change. The success of management largely depends upon the ability of top executive to adapt the direction and the operations of an enterprise to changes in the social, economic, and political climate.

Major long-range changes and short-run changes take place in our economy. These changes are recorded by statistics and their subsidiary information. Long-run social changes include population growth, migration, education, health and welfare; economic changes compose of total incomes, total output, income distribution, technological changes, individual productivity, etc.; and political changes include nature and amount of government expenditures, public spending for economic development; government in business, social security, minimum wage, low-cost housing, etc.

Short-run changes are more sensitive than long-range changes. More periodic short-run statistics and information are essential to short-run planning. In short-run planning of general business conditions, the statistics to consider are those of industrial production, prices, bank loans, employment, construction, foreign trade, retail trade, and other relevant facts, each reflecting only part of the total frame.

An important and difficult factor to forecast for planning purposes is political change; such as, changes in the structure of government expenditures, new government philosophy, and government policies effecting businesses. Changes in government regulations implementing economic controls of any type make is difficult for an executive of a business enterprise to

forecast future objectives or to formulate long or short-run plans. This difficulty is not conducive to an efficient economic growth even though statistics are complete for wise planning by management.

In management control, statistics are essential to establishing standards, making an appraisal of performance, and in correcting deviations or errors. Standards are established criteria against which actual results can be evaluated for discrepancies. An analysis of the statistics of measurements will improve planning, coordination of activities, and facilitates control.

Statistical control devices are perhaps the most common and most successful means of management control. Statistical analysis of the innumerable aspects of a business operation and the clear presentation of statistical data are significant tools of control.

Other control devices that make use of statistical analysis are control over product line, production control, and inventory control, control of labor costs, quality control, and budgetary control. All these control tools of management in its scientific approach to efficient operation are heavily dependent upon statistics and statistical techniques.

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