Rejoinder to Henry Rosovsky

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I agree with most of Dr. Rosovsky's comments on my Paper "Notes on an Alternative Method of Estimating National Income," published July 1957 in this Journal. I find particularly interesting his remarks on the item, *eizen-hi*, in the budget which was most puzzling to me. If data are available, his suggestion for the direct computation of private, domestic capital formation seems worth trying. It may be useful, however, to discuss one point which seems to me of major importance. (As to the explanation for the choice of 1881 as the benchmark year, I don't at the moment recall all the reasons and unfortunately all my worksheets are in California at the present time but one reason I recall was the 1881 was the first year for which extensive wage data were available.)

The point under discussion is Dr. Rosovsky's remark that my "non-agricultural per capita income is three times the size of agricultural, and that seems like a very large difference. Prof. Ohkawa's ratio of 2 : 1 appears more believable." This point was taken up in my paper, as originally sent to *Keizai Kenky* and to Dr. Rosovsky, but the need to cut this paper to appropriate lengths for the magazine forced me to delete it from the published version. Since I still hold to the original position, let me quote from it, p. 48—49 :

INCOME PER PFRSON OCCUPIED : Yen

	Total	*Agri-culture*	*Non-Agriculture*	*Ratio*
Prof. Ohkawa	39	32	60	1/2
Our Estimates	45	33	91	1/3

These per capita figures were obtained by dividing labor force as shown in Table 1 with income originating. Prof. Ohkawa's ratio of per capita (labor force) income in agriculture is closer to that of the Asian ratio (one-half) as worked out in another paper than ours. Is our non-agriculture per capita too high or is the agricultural per capita too low ?

We do not believe that the former is the case. As the discussion on daily wages and number of days worked per year indicates, an average around 91 yen seems on the low side. The main difficulty, we believe, lies with the agricultural sector. Nowhere in our estimates have we included the non-agricultural output of the farm population. This omission is partly offset by the duplication produced by the assumption that the non-agricultural labor force worked a full year (i. e. 300 days) at their trade. Since a significant part of the non-agricultural labor force does spend some part of the year in agricultural operation, this part of their activity is double-counted in the agricultural output statistics. But this duplication only partly compensates for the larger omission of farm output of non-agricultural production. The proportion of the labor force engaged in agriculture is three times that of non-agriculture. The amount of time spent by the typical peasant in producing non-agricultural products is considerable in Japan, especially in the 1800's. Our failure to take into account this part of peasant output may exceed many times the duplication inhering in our approach. This is a major shortcoming of our calculations.

Pending further research into this problem, a hasty guess may be made of this omission. Assume that the true figure of peasant income is one-half that of the rest of society, as indicated in the Asian average, or 45 yen per person occupied. This implies that the omission of non-agricultural output is 15 yen. Multiplied by the farm labor force, we get a rounded total of about 250 million yen for the omission. (The duplication may be ignored as the Asian ratio of 1 to 2 for agriculture with respect to non-agriculture also omits a certain portion of non-agricultural output of peasants.)

This estimate seems large although it has been asserted that the peasant spends half the year in work off the farm.* If this crude total is added to our national income, national income rises to a sum of 1, 200 million yen for 1881.

In addition, I would like to summarize another point deleted from my published version. The official production data underlying Professor Ohkawa's agricultural estimates seem to me on the low side. I urged that these figures be examined for their coverge and suggested that perhaps various techniques now utilized by agricultural statisticians in the West (e. g. food balance sheets) be utilized for the revision.

Dr. Roscvsky feels that the upward bias in my industrial figures may be partly due to the use mainly of "salaries of skilled workers." But the labor force in industry for this period was mainly skilled workers. It was predominantly a preindustrial economy. Handicrafts dominated the manufacturing scene and it was only with the coming of machinery and industrialization that a large, unskilled labor force was recruited. (See the scatterd prefectural distribution of occupations in the *Ishin Igo Teikoku Tokei Zairyo Isan*, part 2, cited in my article; the weights I ured to derive an average were approximately based on the Aomori Prefecture's distribution, which showed that 60 % of the male workers in industry were skilled craftsmen: (i. e., carpenters, plasterers, thatchers, roofers, masons, blacksmith, mat and cabinet makers, etc.) Japan in 1881 could not have had the occupational structure of an industralized community.

However, I do not exclude the possibility that Dr. Rosovsky's position on this point may turn to be more correct than mine. My figures are not that firm, and it will defeat the main purpose of my paper—which was to stimulate discussion such as that of Dr. Rosovsky—to take such a strong stand. (There may be many large errors unknown to me in the statistics of wage, agricultural price, etc. Further discussion on this and other aspects will be welcomed.)

I would like to call the attention of the readers to the recently held Conference on Income and Wealth in the United States where economists, statisticians, government specialists, and historians took part in an effort to construct estimates of national product and its composition for the United States in the 19th Century. If such a conference is possible in Japan, a more rapid advance in its historacal statistics seems to me indicated.

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* See *Japan in the Beginning of the 20th Century*, published by the Department of Agriculture and Commerce, p. 204. The types of goods produced by farmers are listed as: manufacture of diverse food products (starch, noodles, macaroni, rice and bean curd, jam, pickles, etc.); weaving, spinning, paper-making, basket-work; making of mats, straw-plaids, matches, cord, nets, head-gear, straw-raincoats, ropes, bags, slippers; extraction of oil, salt-making, charcal-burning, lime-making. etc.