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PHYSICIAN MANPOWER ALLOCATION AND THE RISING COST OF HEALTH CARE

—A COMPARATIVE STUDY OF THREE COUNTRIES:
THE UNITED STATES, THE UNITED
KINGDOM, AND JAPAN—

By Shuzo NISHIMURA*

I

Introduction

The rising cost of health care is one of the most important policy issues among developed countries. During 1970s almost all countries experienced more rapid increase of the national health expenditure as compared with the increase of GNP. Furthermore, the rate of increase of the public expenditure on health was higher than increase of the national health expenditure.

Since rapid rise of the public expenditure on health was a heavy burden for fiscal soundness of each government, many efforts have been done in order to reduce the increase of it.

In the first half of 1970s, however, policies seem to be mainly oriented to 'cap' the increase without considering the 'supplier-induced-demand' nature of health care. In other words, demand factors such as the extension of the insurance coverage have been emphasized.

Demand factors certainly play important roles for the increase of it. In the United States, for instance, the introduction of Medicare was an important factor of the rapid increase of the public health expenditure. Another important factor in the United States was the favorable tax policy which made people easy to purchase the private health insurance, as was pointed out by Feldstein [1981], chap. 7.

As far as we are confined the scope to the case of the United States, demand factors seem to be dominant for the rising health care cost.

If, however, we enlarge the scope of the analysis to the cross-national perspective, situation is quite different. Though most countries except the United States have the comprehensive health insurance system or comprehensive health service system, relative increase of the public health expenditure is much higher in the United States than in

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other countries.

One might presume that this is because of the rapid progress of the quality of health care in the United States. Although I refrain from comparing the quality of health care among different countries, one may wonder if health and the quality of health care are correlated each other in the cross-national perspective. In fact, several health indicators concerning mortality and morbidity suggest the U. S. people are less healthier than European and Japanese people.

Therefore, at least from the viewpoint of cross-national study, the difference of the demand factors is not a key to understand the cause of the rising health care cost. Much study should be concentrated on understanding the supplying factors as causes of rising costs.

The purpose of this paper is to inquire the difference of physician manpower allocations and the difference of the hospital administration in the United States, the United Kingdom, and Japan, and then to relate them to the rising cost of health care. Though this paper is not enough to show and to contrast the cause of the rising cost in three countries, I believe the study in this paper is a first step to compare the different phases of the rising health care cost in three countries.

Moreover, I believe that this study will provide the information for the possible institutional change of the supplying system in three countries. By learning the institutional difference of other countries, each country will be able to get the wider view for reducing the health cost.

The course of this paper is as follows. In section II, one hypothesis is proposed in order to characterize the difference of the allocation of physicians between primary care and specialty care in three countries. The difference of *the life-time career structure* of physicians will be emphasized.

Since I compare only three countries, the statistical test of the hypothesis is impossible. Instead, several descriptive statistics are shown.

Section III is devoted to describe the difference of hospital administration in three countries. The comprehensive explanation of the institutional background will not be shown. Rather, following topics are mainly discussed: the incentives for the physician (1) to practice cost-effectively, and (2) to enhance his/her ability in his/her life-time career.

Section IV concludes the paper with a few remarks and research topics which should be done as further research.

As an appendix, several statistical comparisons are attached for the understanding of the health care in three countries.

II

The Difference of the Career Structure of Physicians in Three Countries

In this section I want to show the difference of the allocation of physicians between primary care and specialty care. Especially this difference during the physicians' life-time career is emphasized.

The reason why the life-time career structure is emphasized, can be derived from

Becker [1966]'s human capital theory. For instance, incentives for the physician to practice cost-effectively and/or to enhance his/her competency would not only be affected by his/her present interests but be affected by future prospects of his/her income, and status. And these factors seem to influence the total national health expenditure.

In order to explain how the rising cost of health care is related to physician manpower allocation, it would be helpful to survey the recent discussion of physician manpower policy in the United States.

The imbalance of physicians among specialties in the United States has been frequently noted. Since highly specialized physicians often entail high technology equipments, and since relative scarceness of primary care physicians causes the delay of care for patients, maldistribution of specialty has been considered to be one of the most important factors of the rising cost of health care. (And specialty maldistribution necessarily causes geographical maldistribution.)

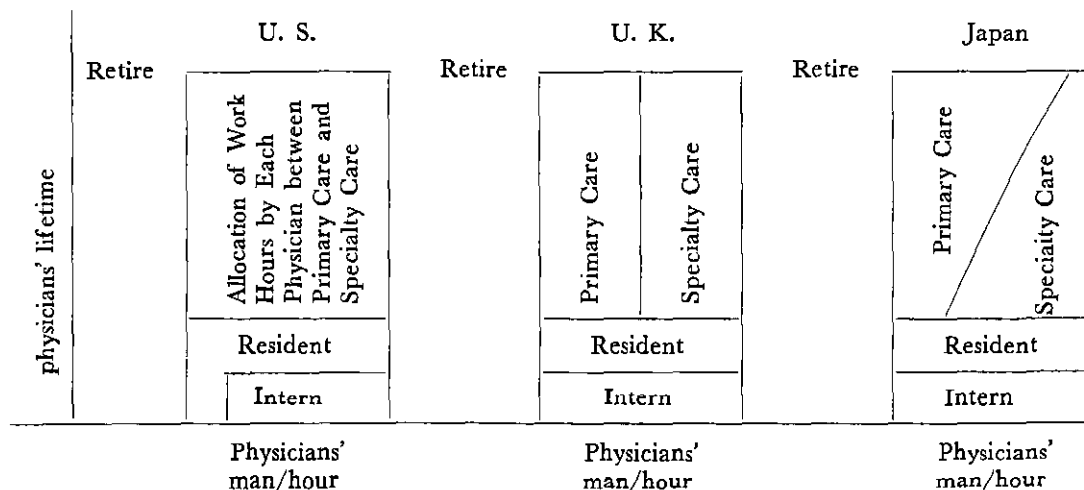
Therefore the excessive prevalence of this phenomenon urged the Congress to take legislative steps to repair it.

The most recent health-manpower legislation (PL 94-484) has mandated that, by 1979, at least 59 percent of medical-school graduates must enter training in the primary care specialties of family practice, general internal medicine, and general pediatrics.¹⁾

As was pointed out by Petersdorf [1978] etc., however, this legislation seems unlikely to correct specialty maldistribution.

The reason of the possible failure of this legislation is this: studies by Wechsler *et al.* [1978] and Levit *et al.* [1978] showed that many of residents who have completed the primary care residency program, continued to study more specialized subspecialty programs. Such an effort as to change educational programs does not seem to be sufficient to

Fig. 1 Hypothesis about the Allocation of Physicians between Primary Care and Specialty Care in three Countries: the United States, the United Kingdom, and Japan.¹⁾



1) For more details, see Fig. 2.

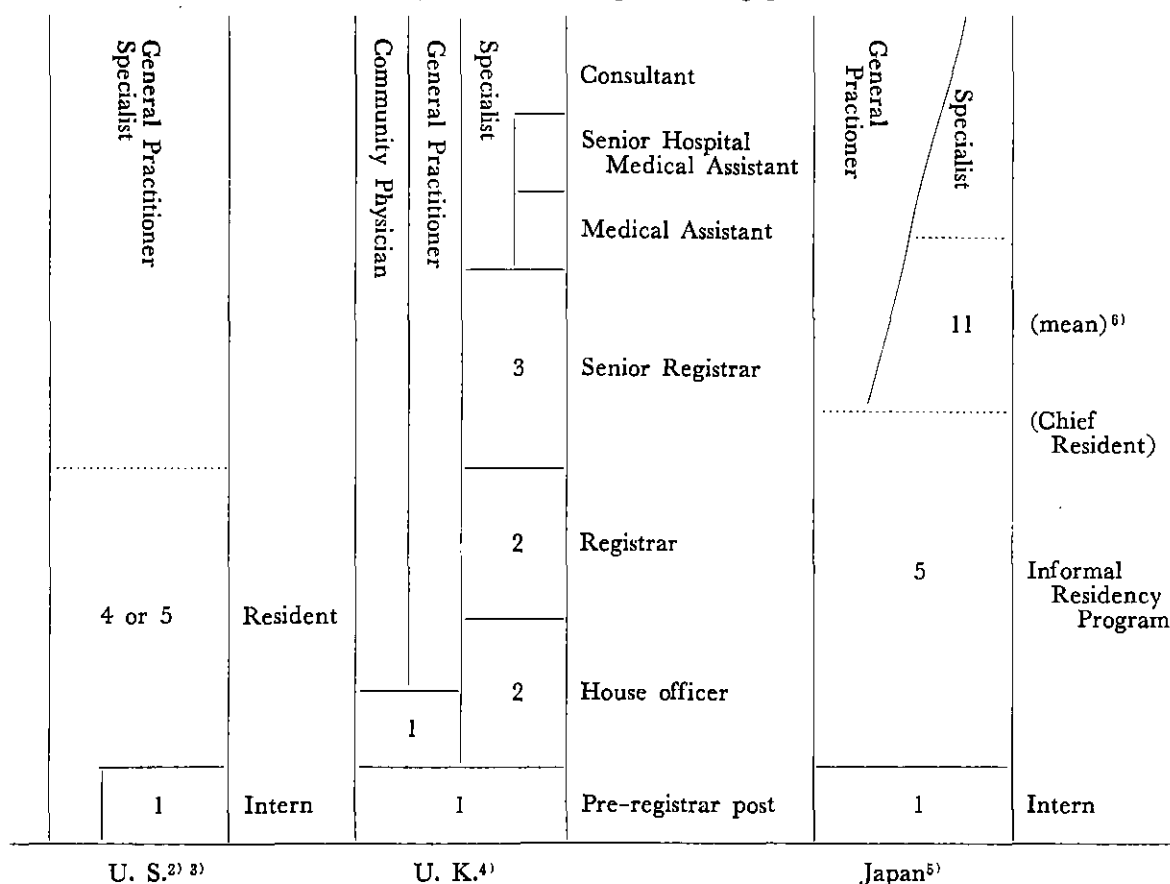
1) The condensed records of the hearing on this health manpower legislation-Health Professionals Educational Act of 1976-is found in LeRoy & Lee [1977].

increase the primary care practice, though it will probably enhance the quality of primary care.

The institutional factors which influence the future prospects of physicians should be taken into account. This task could be done by comparing the difference of the institutional framework of the physician manpower allocation in three countries: the United States, the United Kingdom, and Japan.

Another study has to be mentioned for the following discussion. Recent comprehensive physicians' time studies which were published by Girard *et al.* [1979] and by Mendenhall *et al.* [1979] show that most of subspecialists not only practice subspecialty care, but devote

Fig. 2 Post-Graduate Medical Education and the Career Structure of Physicians: the United States, the United Kingdom, and Japan.¹⁾



Note 1) The number in the box denotes the length of years.

2) The length of residency program in the U. S. ranges from 3 years to 5 years according to different specialties. For more detailed explanation, see Elzinga & Jacoby [1977].

3) The distinction between specialist and general practitioner in the U. S. is explained in the text.

4) The career of specialist below senior registrar is the limited-tenure.

5) The residency program in Japan is not mandated. However, most of physicians who completed the internship enter this program.

6) After completing informal residency program, specialists who are salaried physicians in the hospital open their clinics and become general practitioners. The mean length of stay as a specialist is 11 years. see also Fig. 3.

their practice time to the primary care.

In fact, in order to know the total volume of the primary care, we should inquire the allocation of physicians' time between these two cares.

This, however, seems to be a rather specific problem for United States. In the United Kingdom and in Japan, these two cares are more clearly divided by each individual physician, though in Japan the extent of division is less clear. (This will be discussed later.)

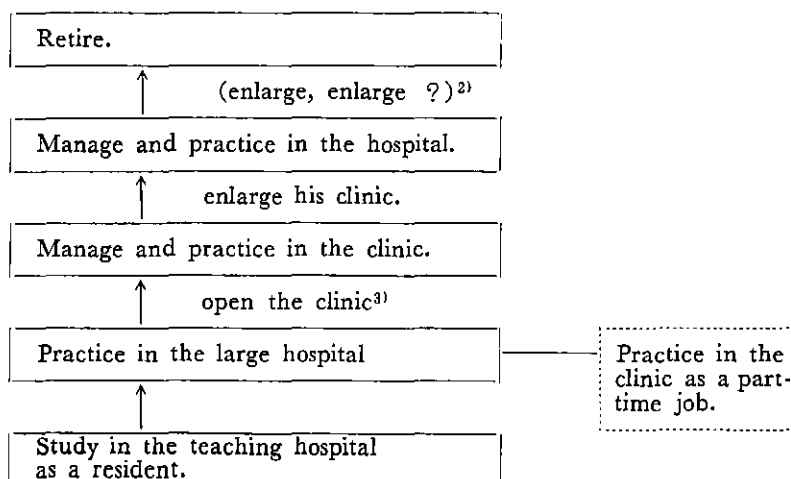
Now the hypothesis is proposed in Figure 1. (This figure is simplified for the sake of explanation. For more details, see Figure 2.) In Figure 1, total volume of physicians' man/hour in each country is shown at the horizontal axis. At the vertical axis climbs up the physicians' life-time career.

The case for the United Kingdom is simple to understand and is also helpful to know the difference in three countries. In the U. K., physicians are personally divided into the general practitioner and the hospital specialist at the time when they are house officers (equivalent to interns). They seldom change their careers one to the other during their life-times.

In the United States, the allocation between specialty care and primary care in terms of the volume of man/hour cannot be judged personally. As was referred above, most of specialists devote their practice time to the primary care. In other words, each physician, to some extent, can intentionally allocate his/her practice time between two cares.

As long as we compare the difference between two countries, we can safely say that the total amount of physicians' man/hour is much motivated to specialty care in the United States.

Fig. 3 The Typical Life-time Career of the Physician in Japan¹⁾



Note: The clinic is defined as the place of practice which has no more than 20 beds.

- 1 The situation is gradually changing nowadays because of the physicians' specialization and the financial difficulty of the clinic. The median age of opening clinic is becoming higher.
- 2 Physicians who have much monetary incentive, become just managers.
- 3 The average age of opening clinic is 44 years old as of 1976. The median might be about the same.

Several explanations need for the case of Japan. The typical career of the Japanese physicians are shown in Figure 3. When they are younger, they are employed in the large hospital. Since large hospitals can provide facilities for the specialized care, most of them practice specialty care.

When they grow older, most of them exit the hospital and open the clinic. The reason of this can be explained by their own organizational nature of the hospital. Since the Japanese hospital has the closed staff system as well as the British hospital, there should be the hierarchical structure within physicians. Most of them cannot become the top of the hospital and cannot even become the top of each department such as internal medicine and surgery. Thus most of them cannot climb the ladder up to the top, and want to open the clinic.

This can be contrasted with the situation in the U. S. hospital. Since most of U. S. physicians are not employed in the hospital, (the system of which can be called as the open staff system,) there is no hierarchical structure within physicians. Tradition of egalitarianism among physicians also might be related to this situation.²⁾

This characteristics of physicians' career in Japan is observed by the statistics in Table 1. At the age of 35-39, more than 70 percent of physicians practice in the hospital, while more than 70 percent of them practice in the clinic at the age of 50-54.

One might presume that this is just due to the different degrees of physicians' specialization. In fact, in the United States, family physicians or general practice physicians

Table 1 Age Distribution of Active Physicians (M. D.'s) According to Major Activity: Japan, 1976

Age	Total	Patient Care				Other ²⁾
		Physicians who manage the hospital and practice there.	Physicians who manage the clinic and practice there.	Physicians who are employed at the hospital and practice there. ¹⁾	Physicians who are employed at the clinic and practice there.	
Total	134,934	3,299	59,605	39,606	8,460	23,964
-29	14,566	9	72	6,580	154	7,751
30-34	11,788	40	473	5,900	415	4,960
35-39	12,241	151	2,324	6,113	626	3,027
40-44	14,720	394	5,998	5,537	727	2,064
45-49	20,525	739	11,932	4,961	1,195	1,698
50-54	22,137	750	14,173	4,292	1,396	1,706
55-59	11,312	410	7,221	1,999	815	867
60-64	10,284	287	6,732	1,589	891	785
65-	17,300	519	10,663	2,605	2,204	1,309

1) excludes physicians who work in the teaching hospital.

2) includes physicians who work in the teaching hospital.

Source: Ministry of Health and Welfare, *Ishi, Shikaishi, Yakuzaishi Chosa*, (Census of Manpower of Physicians, Dentists, and Pharmacists.) 1976.

2) Historical tradition of egalitarianism among U. S. physicians is explained in Stevens [1971].

consist of older physicians than any other specialty. (See, for instance, the sample survey by GMENAC staff papers [1978].)

However, the effect of specialization in Japan is slightly different from that in the United States. We should not confuse the specialization of physicians' competency with the fact that specialized care is practiced.³⁾

We can show this difference by illustrating the case of internal medicine. Whatever specialized field they have practiced in the hospital, they face any type of patients who need the internal medicine care in the clinic.

Though many physicians stay longer in the hospital nowadays than in the past, and though many clinic manager-physicians enlarge their clinics to hospitals, the clinic itself still takes charge of primary care.⁴⁾

Now I want to make several comments on how the difference of the allocative mechanism affects the cost of health care.

i) the incentive for the primary care physician

Several researches such as Mechanic [1972] and Marsh *et al.* [1976] show that British general practitioner (the primary care physician) makes referrals to the specialist more often than the U. S. physician. The difference of this behavior can partly be explained by their income-earning method. Since U. S. physician is under the fee-for-service system, he may have much incentive to practice intensively.⁵⁾

Although this explanation is persuasive, we should go into more details. The fee-for-service system itself does not secure higher income to the physician. Rather, less incentive for the general practitioner in the United Kingdom can be explained in a different way.

Comparison of the life-time income between the general practitioner and the specialist are reported in Review Body on Doctors' and Dentists' Remuneration [1974]. Though general practitioner's income is higher than the specialist's income when he starts to practice, his *life-time* income is reversed. Their status also seems to be different, while there is no reliable study for this.⁶⁾ It is easier for medical students to become the general practitioner than to become the specialist. The difference of the life-time income and the status seems to affect the behavior of the general practitioner.

Japanese primary care physicians, who are under the fee-for-service system, have much incentive to practice intensively. Since they are more or less specialists as well as the U. S. physician, they want to entail much equipments such as X-rays.⁷⁾

ii) the incentive for the specialist.

In order to know the incentive for the British hospital specialist, we cannot ignore the

-
- 3) Statistics in Table 1 are as of 1976. However, this situation is unchanged at least during recent ten years.
 - 4) In Japan, law prohibits the non-physician to be a head manager both in the hospital and in the clinic.
 - 5) We can find an evidence which physicians tend to practice excessively under the fee-for-service system in Schroeder & Showatack [1978].
 - 6) Todd report [1968] finds the difference of their status as a result of the way to choose them at the registrar level. And historical difference of their status also might be important. On this aspect, see Honigsbaum [1979].
 - 7) Kikkawa [1980] is helpful to understand the competency of Japanese primary care physician.

role of senior registrars and registrars which correspond to U. S. residents.

Formally, so-called consultants are only specialists and registrars are only trainees for specialists. In reality, however, registrars take full clinical responsibility. And the number of registrars amounts to about half of that of consultants. (See Table 2.)

Age distribution of senior registrars and registrars in Table 2 shows how long they stay as 'trainees'.

Many reports such as so-called Todd Report [1968] and Royal Commission on the National Health Service [1979] mention this situation and point out it as the inefficient allocation of physician manpower. (See also British Medical Association, Executive Committee Council, Report of Council Working Party [1979] and Elston [1977].)

One senior registrar, McFarlane [1979] expresses his opinion as follows:

Another and hoary argument for the perpetuation of excessive numbers of registrars (and even of senior registrars) is that fierce competition is the only means of selecting the best and honing them to that perfection needed for consultant status. Like most spurious arguments, this has some truth but many superimposed layers of fallacy, nonsense, and even mischief. A degree of competition is essential to allow selection, for the medical student's aspiration may exceed his potential and exposure to real tasks is the definitive test. Excessive competition and competition protracted over many training years are likely counterproductive. If numbers are too large selection will no longer be on the basis of suitability-only the competent will survive the shortlisting stage. Final selection will then be arbitrary or whimsical

Though we cannot conclude from this opinion that the British specialist has less incentive to practice effectively, this opinion suggests the inefficient misallocation of physician manpower.

If, however, there is the general tendency for the younger physician to prefer to practice excessively with excessive equipments or with overutilization of laboratory tests etc., McFarlane's expression of dissatisfaction can be interpreted as follows: the virtual entry barrier to the consultant prevents excessive rising cost of health care in the United Kingdom.⁸⁾

This conjecture is plausible when we compare the situation with the U. S. physician's way of promotion. In the United States, historical egalitarianism among physicians has been prevailing. Physicians, only if they obtain the board of certificate, can earn higher fees and their status seems to become higher. Physicians who have the board of certificate can more freely access to the hospital with much equipments.

Another important factor which might be related to the rising cost of health care is the difference of the hospital administration-especially the role of the physician in the hospital administration-. This will be inquired in the following section.

8) Registrars' opinion is not at least formally reflected in the hospital management. For instance, they cannot participate in the Medical Executive Committee which is expected to play the important role for the hospital management after the reorganized NHS. See also Brown [1979].

III

The Role of Physicians in the Hospital Administration

One of the common and distinctive organational problems in the hospital is the dilemma of two lines of authority: the physician and the administrator. Though the administrator takes responsibility for the financial conditons of the hospital, he cannot intervene physician's clinical decision making. Thus, in some cases, inefficient management of the hospital occurs.

Although literatures of sociology and organization theory have been inquiring this issue, they have not related it to the hospital cost clearly.⁹⁾ Recently Harris [1977] and Harris [1979], by describing the hospital management in more details, pointed out the inefficiency of the internal cost control system in the U. S. hospital. He characterized the administration departments as 'cost centers' and the patient care departents as 'revenue centers' and concluded that the medical staff, which is organizationally and functionally separate, was divorced from cost allocation scheme.

While what Harris pointed out is important, it can only be applied to the U. S. hospital which has so-called open-staff system. In the United States, most of physicians have not directly taken part in the hospital administration. As of 1976, about 70 percent of phycisians are office-based physicians. (See Table 4.) Most of office-based physicians who are under the open staff system have less incentive to participate in the hospital management, because their fees do not depend on the hospital's financial conditions.

Contrary to the U. S. case, Japanese hospital physicians are salaried physicians in principle. However, the way to determine the earnings of Japanese hospital physicians is worthy of special mention. Their earnings are determined both at the individual base and at the collective base. In the determination of their earnings, the amount of profits for the

Table 2 Age Distribution according to Activity and Grade: the U. K. (England only), 1977

Activity Grade	All ages	Under 30	30-34	35-39	40-49	50-59	60-64	65-	Unknown
Hospital medical staff	30,520	8,859	6,393	4,121	5,349	4,059	1,591	138	13
Consultant	11,372	4	495	1,717	4,060	3,539	1,453	104	-
Senior hospital medical officer and medical assistant	1,055	17	67	393	425	125	27	1	-
Senior registrar	2,495 (100)	216 (8.7)	1,372 (55.5)	637 (25.5)	240 (9.6)	28 (1.1)	-	2	-
Registrar	5,124 (100)	1,656 (32.3)	2,154 (42.0)	896 (17.5)	379 (7.4)	29 (0.6)	6	-	4
Other	10,474	6,966	2,305	478	245	338	105	31	7
Hospital practitioner	160	1	6	20	58	55	17	3	-
General practitioner	22,327	1,612	2,875	2,671	6,101	5,870	7,828	1,411	-

Source: Department of Health and Social Services, *Health and Personal Social Services Statistics for England, 1978*.

9) On two lines of authority in the hospital, see, for example, Smith [1955].

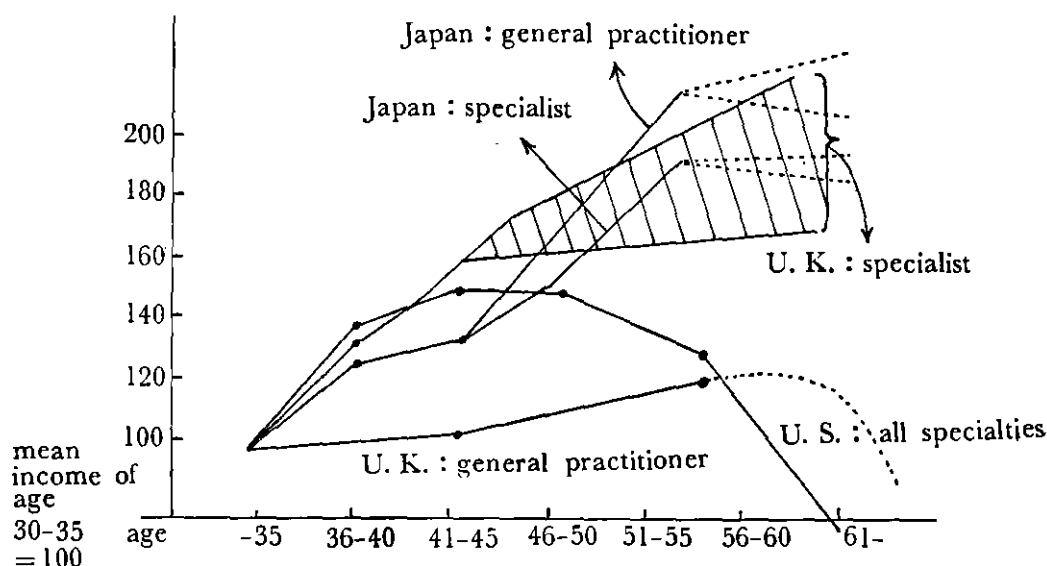
hospital is taken into account as well as individual factors such as grade, age, and hours of work. When the hospital earns much profit, special allowances and special premiums for moonlightings are paid to member physicians.¹⁰⁾

Since the distribution of these special allowances is determined by informal negotiations rather than by predetermined rule or by contractual base, most of physicians have much incentive to participate in the hospital management. This does not necessarily imply that physicians practice cost-effectively. For the revenue for the hospital in Japan does not necessarily reflect the quality of care properly.

The salary of the British hospital physician is controlled by the external review body. Though, after the reorganized NHS, the institutional change expects the physicians participation in the hospital management, financial condition of the hospital is not still related to the salary.¹¹⁾

Until now, we have related physicians' incentive only to their short-sighted earnings. However, we should also consider how their life-time earnings affect their incentive to

Fig. 4 Physicians' income according to Career and Age (Income-Profile according to Age : age 30-5=100)



Source : the U. S. : American Medical Association, *Profiles on Medical Practice*, 1978.

the U. K. : *Review Body on the Doctors' and Dentists' Remuneration, Fifth Report*, 1975. (HMSO)

Japan : Jinjiin, *Shokushu-Betsu Minkan Kyuyo No Jittai*. (Survey on Salaries and Allowance according to Occupation)

Note : For the U. S. and Japan, the data refer to 1977. For the U. K., the data refer to 1975, since the income according to age cannot be known for the later year.

10) The evidence on this can be seen in Nishimura [1977]. This paper, however, treats the problem from the different viewpoint.

11) The difference of the physician participation in the hospital management between the United States and the United Kingdom is summarized in Schultz *et al.* [1976] and Fox [1978].

practice. In order to discuss this, Figure 4 gives interesting information. In Figure 4 the age-income profiles of physicians in three countries are shown.

It is clear that only U. S. physicians' income starts to decrease at the earlier age. This difference is probably due to the fee-for-service system, under which physicians' hours of work immediately result in the decreasing income for the elder physicians. More profound implication, however, can be read from this profile.

When we compare the behavior of the U. S. physician with those in other countries, it may be the common characteristics for the U. S. physician to be eager for enhancing their competency and for getting the board of certificate. This characteristics may be interpreted as the behavior of which they want to compensate their lower income after the middle age.

Therefore, in spite of the evidence that physicians' career choice does not depend on their life-time income, specialization of physician in the United States seems to be related to the fee-for-service in the above way.¹²⁾

IV

Concluding Remarks

So far I have discussed the physician manpower allocation and have related it to the health care cost. Though I believe that I could have characterized the difference of the physician manpower allocation in three countries, the relation of it to the health care cost seems to be less clear.

The reason why I could not propose any definitive hypothesis about the effect of the physician manpower allocation on the health care cost lies in the difficulty in evaluating the effectiveness of the health care in three countries.

Though many studies show the health care in the United States is more capital-equipped and more costly than that in the United Kingdom, the difference of the effectiveness of health care in general is not easy to compare. Though considerable amounts of studies are attempting to show the cost-effectiveness of several specific diagnoses and treatments, those provide no decisive evaluation to estimate the cost-effectiveness as a whole.

Therefore, the study in this paper only suggested the probable inefficiency due to the misallocation of physician manpower in three countries. I believe, however, that further studies on line of this study will be helpful to understand the different phases of increasing health cost in three countries.

As final remarks, I want to summarize several future researches which should be proceeded.

Firstly, it is clear that the amount of health care cost heavily depends on the behavior of physicians as a whole. Though direct economic incentive for the physician to practice plays an important role in the determination of health cost, allocation of physicians among different specialties also plays a significant role.

12) Surveys on the relationship between physicians' career choice and their income in the United States are found in Institute of Medicine [1976] and Cotterill [1978].

Obviously, it would be desirable to allocate physician manpower depending on physicians' competency. However, this statement tells us almost nothing, because the term 'competency' is quite ambiguous. Since competency is embodied with the physician himself, there always exists uncertainty with respect to the behavior of the physician and with respect to the future competency.

In terms of the economics of information, this can be interpreted in the following way. When there exists uncertainty and there exists imperfect information, Arrow-Debreu type state-contingent market fails to allocate resources efficiently. In this case, as Akerlof [1976] pointed out, some signals or indices are used to allocate resources.

In case of physician manpower allocation, signals such as the Board of Certificate and indices such as grade, age, etc. represent as measures of competency. In the United Kingdom, grades such as 'Consultant' represent the competency and influence the total volume of health care. In Japan, age is a key factor to allocate physicians between specialty care and primary care.

In the United States, the Board of Certificate plays an important role for the allocation of physicians among specialties. Though the Board of Certificate represents the competency to some extent, it has some demerit, too. As Freedman [1962] has once criticized and as White [1979] tried to show this in case of clinical laboratory personnel, the licensure system or the board certifying system has its demerits.

Therefore, our tasks for further researches should be to know how these indices and signals play a limited role in allocating physicians efficiently and to know how the combination of these can attain efficient manpower allocation.

Secondly, the difference of the physician manpower allocation is closely connected with the difference of the hospital amnagement in three countries. Hospital management in each country reflects her own social and cultural background. For instance, we can find the similarity of the difference of the division of labor and way of promotion between British and Japanese hospitals with British and Japanese factories.¹³⁾

Since comparative studies on the difference and the efficiency of the management of the private enterprise are prevalent in recent years, these studies will be helpful to understand the difference of the efficiency of health care systems.

Finally, although considerable volumes of comparative studies on health care systems in different countries have been done, these are still at the stage of comparing the institutional difference alone or comparing the quantitative data alone. It seems to me tha we should try to relate the quantitative data to the institutional difference in future studies.

13) Comparative studies on the British and Japanese factories can be found in Dore [1973] and Clark [1979].

An Appendix

Table A-1 National Health Expenditure and Related Statistics:
the U. S., the U. K., and Japan

	year	U. S.	U. K.	Japan
National health expenditure % of GNP	1966	5.8%	4.2%	3.4%
	1971	7.6	4.7	3.3
	1976	8.5	5.8	4.5
Percentage increase of national health expenditure (in real term)	1966-1971	35%	25%	60%
	1971-1976	30	34	59

Source: the U. S.: Health Care Financing Administration *Health Care Financing Review*, Summer, 1980.

the U. K.: Department of Health and Social Security, *Health and Personal Services Statistics for England*, 1978.

Japan: Ministry of Health and Welfare, *Kokumin Iryohi Suikei (Estimates on National Health Expenditure)*, 1978.

Table A-2 Selected Hospital Statistics

	U. S. (1977)	U. K. (1976)	Japan (1976)
No. of hospitals	7,099	2,657	8,379
No. of total beds (thousand)	1,407	489	1,185
No. of total beds per population (per 1,000)	6.7	8.6	10.4
Average No. of beds per hospital	198	184	141
Bed size distribution (%)			
—49	23.5%	36.9%	32.1%
50—99	23.6		23.7
100—199	22.4	41.6	19.8
200—249	11.4	11.4	11.9
250—299			
300—499	10.8	10.0	8.5
500—	8.4		4.0
Outpatient visit	263,775	58,218	392,717
Outpatient visit per hospital	37,157	21,911	46,869
Average length of stay	7.6	21.7	35.3
	(community hospital)		(general hospital)

Source: the U. S.: American Hospital Association, *Hospital Statistics 1977*. Chicago.

the U. K.: Office of Health Economics, *Compendium of Health Statistics, 1977*, London.

Japan: Ministry of Health and Welfare, *Iryo Shisetsu Chosa*, and *Byoin Hokoku*, (*Census on the Facilities of Hospital and Clinic, and Hospitals Report*) 1976.

Table A-3 Cost Component of Health Care: the U. S., the U. K. and Japan, 1975
(Rough estimates)

	U. S. (%)	U. K. (%)	Japan (%)
Net income of physicians	22.3	5.5 (general practitioners) 8.2 (specialists)	12.4 (clinic physician) 8.9 (hospital physician)
Hospital cost			
personnel (except physicians)	34.9	49.1	22.4
nonpersonnel	24.9	24.7	24.5
Clinic cost (Office cost)			
personnel (except physicians)	16.0	12.5	8.2
nonpersonnel			23.5
Total	100.0	100.0	100.0

Notes: the U. S. gross income for physicians are from DHEW, *National Health expenditures, 1977*, Expenses for physicians are from American Medical Association, *Profile of Medical Practice, 1975*. the component of hospital costs is from American Hospital Association, *Hospital Statistics, 1975*.

the U. K. Office of Health Economics, *Compendium of Health Statistics, 1977*.

Japan, Ministry of Health and Welfare, *Kokumin Iryohi Shukei, (Estimates on National Health Expenditures), 1975*.

Table A-4 Doctors' Income in Relation to GDP per Head and Earned Income (percentage)

	Ratio of doctors' income to	
	GDP per head	Compensation of employees/per employee
U. S. Physicians (1974)	6.7	4.5
Dentists (1972)	4.6	3.3
U. K. (1973)	4.5	3.3
Japan (1975)	6.2	3.8

Sources: OECD, *Public Expenditure on Health*, OECD, July, 1977. For Japan, Physicians' income was estimated by the author.

References

- 1) Akerlof, G. N. [1976], "The Economics of Caste, and of the Rat Race and Other Woeful Tales," *Quarterly Journal of Economics*, Vol. 90, Nov. pp. 599-617.
- 2) Becker, G. S. [1975], *Human Capital-A Theoretical and Empirical Analysis, with Special Reference to Education*, Columbia University Press.
- 3) British Medical Association, Report of Council Working Party [1979] "Medical Manpower, Staffing, and Training Requirement," *British Medical Journal*, 1, pp. 1365-1376.
- 4) Brown, R. G. S. [1979], *Reorganising the National Health Service-A Case Study of Administrative Change*, Oxford, Basil Blackwell.

- 5) Clark, R. [1979], *The Japanese Company*, New Heaven & London, Yale University Press.
- 6) Cotterill, P. G. [1978], "The Physician-Induced Demand and Target-Income Models: A Survey of the Issues," in American Medical Association, *Profile of Medical Practice, 1978*, Chicago, AMA.
- 7) Dore, R. [1973], *British Factory, Japanese Factory-The Origins of National Diversity in Industrial Relations*, Berkeley & Los Angeles, University of California Press.
- 8) Elston, A. E. [1977], "Medical Autonomy: Challenge and Response," in Barnard K. & Lee, K. (eds.), *Conflicts in the National Health Service*, London, Croom Helm.
- 9) Elzinga, J. & Jacoby, I. [1977], "A Preliminary Model of Graduate Medical Education," in U. S. Dept. of H. E. W., *Policy Analysis for Physician Manpower Planning*, Pub. No. (HRA) 78-2.
- 10) Feldstein M. S. [1981], *Hospital Costs and Health Insurance*, Harvard University Press.
- 11) Fox, P. D. [1978], "Managing Health Resources: English Style," in McLachlan, G. (ed.) *By Guess or By What? - Information without Design in the NHS*, Published for the Nuffield Provincial Hospital Trust by the Oxford University Press.
- 12) Freedman, M. [1962], *Capitalism and Freedom*, Chicago, University of Chicago Press.
- 13) Girard, R. A. *et al.* [1979], "A National Study of Internal Medicine and Its Specialties: I. An Overview of the Practice of Internal Medicine," *Annals of Internal Medicine*, Vol. 90, pp. 965-75.
- 14) GMENAC Staff Papers [1978], *Supply and Distribution of Physicians and Physician Extenders*, DHEW Pub. No. (HRA) 78-11.
- 15) Harris, J. E. [1977], "The Internal Organization of Hospitals: Some Economic Implications," *The Bell Journal of Economics*, Vol. 8, pp. 467-82.
- 16) Harris, J. E. [1979], "Regulation and Internal Control in Hospitals," *Bulletin of the New York Academy of Medicine*, Vol. 55, No. 1, pp. 88-103.
- 17) Honigsbaum, F. [1979], *The Division in British Medicine*, London, Kogan Page.
- 18) Institute of Medicine [1976], *Medicare-Medicaid Reimbursement Policies*, Washington, D.C., National Academy of Sciences.
- 19) Kikkawa, A. [1980], "Postgraduate Education of General Practitioner," *World Medical Journal*, Feb., p. 13.
- 20) LeRoy, L. & Lee, P. R. [1977], *Deliberations and Compromise: The Health Professions Educational Act of 1976*, Cambridge, Ballinger Publishing Co..
- 21) Levit, E. J. *et al.* [1978], "Specialty Board Certification Rates- A Longitudinal Tracking Study of U. S. Medical School Graduate," *Journal of American Medical Association*, Vol. 239, pp. 407-12.
- 22) Marsh, G. N. *et al.* [1976], "Anglo-American Contrasts in General Practice," *British Medical Journal*, 1, pp. 1321-5.
- 23) McFarlane, T. [1979], "Grades, Status, and Titles," *British Medical Journal*, 2, pp. 1527-28. (8 Dec.).
- 24) Mechanic, D. [1972], *Public Expectations and Health Care*, New York, Wiley-Interscience.
- 25) Mendenhall, R. C. *et al.* [1979], "A National Study of Internal Medicine and Its Specialties: II. Primary Care in Internal Medicine," *Annals of Internal Medicine*, Vol. 91, pp. 275-87.
- 26) Nishimura, S. [1976], "An Economic Model of Nonprofit Hospital in Japan," (mimeo.)
- 27) Petersdorf, R. G. [1978], "The Doctors' Dilemma," *New England Journal of Medicine*, Vol. 299, No. 12, pp. 628-34.
- 28) Review Body on Doctors' and Dentists' Remuneration [1974], *Fourth Report*, London, HMSO, Cmnd. 5644.
- 29) Royal Commission on the National Health Service [1979], *Report*, London, HMSO, Cmnd. 7615.
- 30) Schroder, S. A. & Showatack, J. A. [1978], "Financial Incentives to Perform Medical Procedures and Laboratory Tests: Illustrative Models of Office Practice," *Medical Care*, Vol. 16, No. 4, pp. 289-298.
- 31) Schulz, R. *et al.* [1976], "Physician Participation in Health Service Management: Expectations in the United States and Experience in England," *Health and Society, HMFQ*, pp. 107-28.
- 32) Smith, H. L. [1955], "Two Lines of Authority: The Hospital's Dilemma," *Modern Health Care*, in Schwartz, H. D. & Kart, C. S. (eds.) *Dominant Issues in Medical Sociology*, 1978, Addison-Wesley Publishing Co..
- 33) Stevens, R. [1971], *American Medicine and the Public Interest*, New Heaven, Yale University Press.

- 34) Todd Report [1968], *Report of the Royal Commission on Medical Education*, London, HMSO, Cmnd. 3569.
- 35) Wechsler, H. *et al.* [1978], "A Follow-up Study of Residents in Internal-Medicine, Pediatrics, and Obstetrics-Gynecology Training Programs in Massachusetts," *New England Journal Medicine*, Vol. 298, pp. 15-21.
- 36) White, W. D. [1979], *Public Health and Private Gain-The Economics of Licensing Clinical Laboratory Personnell-*, Maarouta Press, Chicago.