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INSTITUTE OF GEOGRAPHY AND SPATIAL ORGANIZATION
POLISH ACADEMY OF SCIENCES

CONFERENCE PAPERS 16

GEOGRAPHICAL ISSUES OF SOCIAL
AND ECONOMIC TRANSFORMATION
OF CONTEMPORARY JAPAN AND POLAND

Proceedings of the Second Japanese-Polish
Geographical Seminar
Maðralin, Poland, September 1991

Edited by

ZBIGNIEW TAYLOR



WARSZAWA

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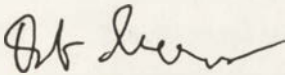
R E S O L U T I O N

The second Poland-Japan Geographical Seminar was held at Mađralin near Warsaw, Poland on 8th to 15th September, 1991. The participants of the Seminar discussed a number of geographical issues of social and economic transformation of contemporary Japan and Poland.

Nine geographers from Japan and 13 from Poland took part in the Seminar. Nine papers by Japanese scholars (including one in-absentia) and seven papers by Polish scholars were presented at the Seminar (including one in-absentia).

The Seminar resolved as follows:

1. The exchange of research experiences on the topics covered by the program was stimulating and very useful: thus, it forms a basis for a continuation of the scientific collaboration between the economic geographers of both countries in the future.
2. The participants acknowledge the proposal of the Organizing Committee for Japan-Poland Economic Geography Seminar — as presented by the Head of the Japanese delegation — to hold the next seminar in Japan in the year 1993/94.
3. The reports on the Seminar will be published in the scientific journals of both countries. The Polish side will endeavour to publish the main papers of the Seminar in the form to be decided.
4. The participants of the Seminar express their thanks to the Institute of Geography and Spatial Organization, Polish Academy of Science for the efficient organization of the meeting. Thanks are also expressed to the Institute of Geography of the Jagiellonian University for its help in organization of the Seminar.



Professor Piotr Korcelli



Professor Takashi Matsuda

Mađralin, 11th September 1991

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The fourth part of the report...
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Preface

The present volume contains a selection of eleven papers prepared for the second Japanese-Polish Geographical Seminar, organized by the Institute of Geography and Spatial Organization, Polish Academy of Sciences. The Seminar was held at Małdralin near Warsaw, Poland on 8th to 11th September 1991, and was followed by three days excursion to Częstochowa, Upper Silesia, Cracow, Wieliczka, Old-Polish Industrial Region, and back to Warsaw. Nine geographers from various universities and colleges in Japan and 13 from Poland discussed a number of geographical issues concerning the social and economic transformation of contemporary Japan and Poland.

The following papers may be roughly classified into social (mainly demographic) and economic (first of all, industrial) studies. Some papers are based on intensive empirical studies of small spatial units while others emphasize an historical aspect. The first paper, however, is purely methodological in its character. Z. Chojnicki presents the nature of change in the paradigm of Poland's space economy.

The following papers reflect changing societies in both countries: N. Fujita presents the spatial implications of demographic and economic processes in Japan, and P. Korcelli — implications of both processes for the largest Polish cities. T. Taniuchi analyzes various aspects of metropolitan concentration in Japan. Much more detailed is S. Nakagawa's study on residential segregation in Tokyo. A quite different approach to such segregation, as presented in the example of housing conditions in Polish largest cities, is shown in A. & G. Weławowicz's paper.

The rapid post-war reconstruction and growth of the Japanese economy give rise to various problems of social and regional disparities. S. Yamamoto & T. Fukuda attempt to compare various aspects of regional disparities in Japan with those in Poland.

The changing character of manufacturing industries in Japan has greatly stimulated new studies in industrial geography — as can be seen in the example of the shipbuilding industry (M. Murakami). On the other hand, spatial changes in the organization of Polish industry in the last decade are reflected by S. Misz-

tal, while Poland's recent geopolitical and geoeconomic transformations are viewed within a wider background in the next paper by B. Kortus. Last but not least, S. Nakajima investigates the differences in industrialization processes and their consequences as seen in the examples of South Korea and Taiwan.

The weight of interest which Japanese geographers give to different topics of geography displays different characteristics compared to the Polish field of interest. Most of the research in human geography in Japan is focused on economic, and particularly on industrial geography. On the other hand, Polish geography seems much more concentrated on spatial problems of population and settlement distribution.

Zbigniew Taylor

THE GROUNDS FOR CHANGE IN THE PARADIGM OF POLAND'S SPACE ECONOMY

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It is a fairly widespread opinion that the character and mechanisms of Poland's space economy must change (Kukliński 1989). This opinion is justified by both, far-reaching changes in the socio-economic system and the democratisation of the country, as well as the need to reconstruct the economic structure on the basis of new organisational and technological trends.

Like in the other spheres of activity, the mechanisms of a centrally directed economy had a negative impact on the actual state of Poland's space economy and have brought things to a crisis. Its manifestations are: an increasingly chaotic spatial development of the country, its regions and localities, a rapidly advancing deterioration of the environment, a colossal waste of natural resources, and an insufficient development of the technical infrastructure. The necessity to change this state of affairs means treating these problems as threats to the very being of society and hence as issues of much social significance (Chojnicki 1990b: 203).

What this situation calls for is a change in the paradigm of the space economy, i.e. in the conception of its character and operation.

The aim of this paper is to present two issues related with this problem: (1) new determinants shaping the space economy, and (2) the main elements forming it. What I shall not go into are issues concerning the very nature of the space economy. I would only like to stress that what distinguishes the space economy is its principal target, namely the achievement of spatial order. It is the theoretical-normative core of an activist conception of the space economy.

Spatial, or better spatial-ecological, order is the spatial organisation of a socio-economic system and its performance in spatial-ecological terms meeting the criteria of social rationality. We should distinguish between:

(1) a model of spatial order, i. e. a postulated state of spatial organisation and way of the system's performance and

(2) a concrete spatial order, i. e. the actual state of the system.

The criteria of social rationality underlying the model of spatial order are functional, i. e. they express some social values and aspirations, as well as multi-

dimensional, i. e. they are not limited to the economic aspect only, but must also take into account the ecological, cultural, political, aesthetic and other aspects. The criteria should optimise certain functions, e. g. the quality of life, economic performance, etc.; they should also lessen disfunctions, e. g. spatial and ecological conflicts.

Thus, the nature of the space economy consists in the proper spatial and ecological organisation. It is not a separate system, for example in the form of an "economic spatial system".

1. NEW DETERMINANTS OF THE SPACE ECONOMY

My reflections on the new determinants of Poland's space economy will be restricted to three sets of factors:

- 1) changes in the economic system, viz. the transition to a market economy,
- 2) changes in the political system, especially the introduction of territorial self-government, and
- 3) the formation of new organisational and technological trends in the world economy.

Naturally, they do not exhaust the system of factors acting on the space economy, but they are of cardinal significance at present and in the nearest future.

1.1. CHANGES IN THE ECONOMIC SYSTEM

Changes in the economic system, especially the transition to a market economy, play a fundamental role in the transformation of the character and functioning of the space economy, because they alter mechanisms shaping spatial order. It is the central problem of an activist model of the space economy.

The building of the system of a market economy is extremely difficult because it takes place in the conditions of a social and economic crisis brought about by the Communist system. Moreover, there are no social experiences or theoretical and practical solutions to rely on in effecting this type of systemic change (Chojnicki 1990a, Krawczyk 1990, Kacprzyński 1991).

When considering this transformation a distinction should be made between changes in regulation by law and actual ones. Of course it is difficult to characterise them in a few words.

Regulations by law in the form of parliamentary acts have done away with institutions and mechanisms of the command economy and central planning, and have introduced the principles of a market economy. However, the list of issues still awaiting regulation by law is quite a long one. Of fundamental importance is the regulation of the privatisation of stateowned enterprises, which is crucial especially for industrial production where state property predominates.

Realistically speaking, the system of a market economy has not developed yet and is still in the making.

Other real factors obstructing the correct performance of the market economy include: system inertia, lack of managerial personnel, lack of a number of well-functioning institutions, especially a capital market, the huge state-owned sector in industry and difficulties with its privatisation and restructuring, and finally the economic crisis manifesting itself in a decline in industrial output, rising unemployment, a fall in national income, and an unbalanced state budget.

The question that comes to mind at this point is, what is the influence of these changes on the space economy? It seems that due to its specific properties it does not automatically benefit from the transition to a market economy; rather, the transition defines the necessary, though not sufficient, conditions of its change (Wróbel 1990). R. Domański (1990: 5) claims that these conditions include:

- (1) the freedom to undertake economic activity,
- (2) re-organisation of large enterprises and the establishment in business of their former member plants,
- (3) privatisation of state property,
- (4) new principles of price and tariff formation, including land prices, charges for using the environment, and transport fares,
- (5) the creation of two government systems: local and central, interdependent but not hierarchical, and
- (6) liberalisation of foreign economic relations.

The experience of countries with efficient market economies shows that they do not automatically lead to a harmonious spatial development. These countries have not avoided spatial conflicts engendered by such factors as the growing deficit of space, wrong land-use patterns, wide differences in land rent, glaring inequalities in regional development, and others.

Thus, market mechanisms alone will not lead to spatial order in Poland, especially so that they do not operate fully yet. This situation calls for specific regulations by law encouraging steps towards establishing spatial order, particularly in spatial planning, and the elimination of potential conflicts. Hence, it is necessary to:

- (1) provide theoretical foundations of controlling spatial order in the new conditions,
- (2) provide principles of spatial planning (at the regional and local scales,
- (3) establish the foundations of shaping economic development at the regional and local scales, and
- (4) work out the principles of solving spatial conflicts. This situation also requires the central and regional governments and local authorities to carry out an active spatial policy, protective and reconstruction-oriented.

1.2. CHANGES IN THE POLITICAL SYSTEM

Changes in the political system are also an important set of determinants of changes taking place in the functioning of the space economy. A special role is played by newly created, or rather reconstructed, territorial self-government (local governments). A territorial self-government act has been passed which has made towns and communes independent. Local governments serve primarily to democratise public life through the decentralisation of the power of the State; they also open up possibilities of promoting the interests of local and regional communities.

Although there is a marked tendency to extend the competence of local governments, a sharp controversy has arisen over the scope of their authority, especially in the fields of finance and taxes, and over their level — local only, or also regional. It is also postulated that a new level should be created between the State and local governments, namely an autonomous region that would take over some authority from the former and some from the latter.

It is assumed that the performance of territorial self-government will have a great impact on the formation and functioning of the space economy and may lead to a change in the spatial economic structure, especially in the fields of location, environmental protection and harmonising local interest (Domański 1990: 6). It depends, however, on the final model of operation of local governments: on their fuller financial independence, greater authority in spatial planning, and competent staff (Kołodziejcki 1990).

1.3. THE FORMATION OF NEW ORGANISATIONAL AND TECHNOLOGICAL TRENDS

When looking for new determinants changing the space economy, attention should also be given to the formation in the economies of highly developed countries of a new organisational-technological production model named post-Fordism. Its development is connected with the introduction of high technology and highly diversified products and ways of manufacturing them, which leads to transformations in the organisation of production and the labour market.

While it is fairly difficult to give an unequivocal definition of the very essence of post-Fordism, it seems correct to see it in a new concept of control. According to A. J. M. Roobeck (1990: 140, 154):

In the transformation process the new core technologies can be seen as the main catalysts that hasten the conceptualization of a post-Fordist regulation. (...) The new core technologies are partly dependent on each other, but at the same time reinforce each other. Common characteristics of the new core technologies are a higher degree of control of the production and labour process by management, more flexibility, higher productivity and cost reduction. Their combined application will have a kind of multiplier effect for the labour process, the production process, (inter)industrial relations, the national economic structure and the related political power relations as established in the institutional structure, as well as for the international trade

in energy, commodities and raw materials and the international division of labour. (...) In contrast to the massproduction concept which was so characteristic of Fordism, other features are now appearing: flexibility, deregulation, dualization and polarization and segmentation.

The realisation of this model is expected to exert a strong influence on the character of the space economy; hence, analyses are made of the directions of forthcoming changes (Jałowiecki 1991). It may be assumed that the influence will manifest itself in:

1) changes in the criteria of location and the rebuilding of location theory that will accommodate such factors as: the natural, social and technological environments, the life cycle of a commodity, and the innovative environment;

2) changes in the structure and character of areas of economic activity, especially the creation of centres of technological activity (technopolis);

3) the growing importance of local and regional economic centres following from their high innovativeness; and

4) the creation of new economic organisations of regional and local development like regional development corporations or industrial incubators (Kukliński 1991).

In order to break out of the crisis and ensure a further effective development of the Polish economy, it is necessary to scrutinise these conceptions and work out their applications.

2. THE CHARACTER OF THE MAIN ELEMENTS OF THE SPACE ECONOMY

Let me now briefly characterise the main elements of the space economy in the activistic approach. They are:

1) subjects of the space economy,

2) its targets,

3) objects, and

4) ways and means of operation.

Thus, what we are looking for are answers to the questions of

(1) who runs the space economy,

(2) what for,

(3) what is being shaped, and

(4) how.

Naturally, the answers to some questions determine the answers to others (Dziewoński 1988).

It should be emphasised that what we deal with here is not the actual state of affairs, but what is socially desirable considering the general drift of things in Poland towards the restoration of society to its subjectivity and the adaptation of the space economy to the new conditions.

2.1. SUBJECTS OF THE SPACE ECONOMY

We should start with answering the question of who should shape the space economy. According to K. Dziewoński (1988: 25), the simplest answer is: "the space economy in each area (irrespective of its level) should be run by the resident community". Hence, in principle, this should be the task of the whole of society. The answer should be enlarged. We know that in the systems with a command economy and highly centralised planning there was also a high concentration of decisions in the form of the so-called central planner. However, when making decisions concerning large-scale industrial enterprises, the central planner often disregarded social and natural conditions, or the costs of such activities, which made them utopian and ineffective.

In the conditions of a free-market economy decisions shaping the space economy will be made by economic units on the one hand, and by various central, regional and local authorities on the other. The former strive for individual effectiveness, while the latter for social effectiveness whose manifestation is spatial order. In the period of transition to the market economy the former might be feared to dominate over latter. In order to ensure the society a full and competent share in decision — and policy making in the domain of the space economy, it is necessary to decentralise these processes and shift them from the central authorities onto local governments. That is why it is also important to establish their rights in such a way as to considerably increase the share of the society in the shaping of the space economy.

The scope of activity of a local government should cover not only everything that directly affects the level and quality of life of the residents of its area, viz. providing and maintaining broadly understood services for these residents (the local economy, education, culture, health care), an ecologically oriented conversion of industrial production, and the approval of the location of new industrial plants. This scope should also include promoting economic development, e. g. in the form of regional development corporations and active participation in economic restructuring. For a local government to function properly, it must be independent of the state authorities in its performance, and socialised through endowing them not only with certain rights, but also giving them the possibility of enforcing their decisions through independent sources of financing, access to information, and competent executive bodies.

What is of great significance for an effective space economy at the local and regional levels, apart from these institutional elements, is the need for spatial order and the understanding of its role in determining the standards of living and the quality of life that are connected with specific local and regional patriotism.

2.2. TARGETS OF THE SPACE ECONOMY

The second question is about the targets of the space economy. The adoption of spatial order as a basic conception defining the spatial organisation of an

economic system does not directly determine the intermediate goals that are supposed to lead to this order.

Thus, the definition of these targets is not unequivocal and gives rise to disputes. Their fullest description is that of Malisz (1984: 90), who presented them as follows:

- 1) protection against all aggression to secure the biological development of society,
- 2) the creation of conditions for socially rational management, and
- 3) the effort to equalise the standards of living of the population in all the regions and localities of the country.

The concept of spatial order cannot imply merely protection and conservation, but also creation and development. Hence the necessity to give this concept a new activist definition and ascribe it a consistent set of targets to attain.

Fundamental difficulties in attaining this or the other set of goals arise from three sources:

- (1) obviating spatial conflicts,
- (2) social acceptance of the goals, and
- (3) including them in socio-economic mechanisms.

When talking of spatial conflicts we do not mean the inconsistency of principles, but a conflict of interests, of course in a broad sense of the word. Spatial conflicts are manifestations of spatial disorder; they reveal themselves when particular subjects, or their complex systems, try to fulfil their different functions and attain their different goals.

At a macro-scale, these are conflicts between the economy and the natural environment; settlement and industry; the town and the countryside; industry and agriculture; advanced regions and poorly developed ones, etc. Such conflicts cannot be solved to promote the interests of a single economic subsystem, e. g. the urban economy, but the solution must accommodate general social criteria.

Another difficulty is the social acceptance of specific goals and ways of attaining them. Of course I mean conscious acceptance, not just verbal. This may also be connected with the fact that we can hardly anticipate the consequences of achieving or abandoning certain goals. At the same time historical experience shows that both some principles and their implementation can be wrong and irrational.

What is important, then, is a proper formulation of goals and winning social acceptance for their implementation. One of the examples is the issue of the building of nuclear power plants, another — environmental protection in underdeveloped countries where it is treated as a tendency to restrict industrialisation.

The most difficult matter, however, is the incorporation of the realisation of the targets of spatial order into the mechanisms of an economic system. But this is part of the answer to the fourth question concerning ways and means of arranging the spatial organisation of the economy.

2.3. OBJECTS BEING SHAPED

The third question, about what or what objects are shaped in the space economy, can be answered generally: all those components of an economic system that yield themselves to spatial organisation.

Recently, these objects are often described as geographical space, or the space of the country. Without going into a critique of this conception, let us note that:

(1) this approach assumes a substantial nature of space as a layer or set of objects, which does not accord with the generally accepted understanding of space, and

(2) it is hard to talk of a spatial structure or spatial organisation of space.

However, other definitions are not accurate, either. The components concerned are first of all those that make up the natural and the artificial environments, the latter including technical infrastructure. This formulation is too narrow and refers to the field of spatial planning which cannot be identified with the space economy.

Other difficulties arise with the determination of what is to be the object of the space economy at particular levels. The solution of this issue depends on solving the problem of who is to be the decision-making subjects of the space economy. I think that a still valid answer to this question is supplied by K. Dziewoński (1988: 26), who says:

Without doubt, almost every issue in the space economy has aspects corresponding to different levels: local, regional, or national. However, the weight of decision-making should rest with the lowest level at which key decisions should and can be made. This statement allows the determination of objects of the space economy and spatial planning specific to particular levels. What seems to be an object specific to the local level is housing estate management (including land management); at the regional level — all those problems of regional development that are capable of autonomous solution under the present circumstances, and the co-ordination of interstate matters; and finally, at the national level — problems in the development of the whole of the country plus the co-ordination of inter-regional actions and links.

2.4. WAYS AND MEANS OF SHAPING THE SPACE ECONOMY

The most difficult answer is one to question four, about how to implement the established and accepted targets of the space economy. This implementation requires specified ways and means of their accomplishment to be built into the socio-economic system.

The means can be divided into theoretical and actual. The former include theories and models for the solution of problems in the spatial organisation of an economic system. They describe the state of this system, tendencies in the change of natural and social regularities determining its operation, diagnoses and forecasts, and optimising solutions. From the practical point of view, what is most important is their usefulness in solving real problems.

Actual (which does not mean effective) means, in turn, are tools of practical

activity helping to attain specific goals. Their effectiveness is not complete and rather limited because they involve the whole complexity and richness of socio-economic life with its states of uncertainty and indeterminacy and a changing degree of variability. In achieving spatial-economic targets, this kind of means can be divided into:

— means of direct impact: coercive means, means of the material shaping of spatial structure, means of control, and spatial planning (Malisz 1984: 154);

— means of indirect impact: economic incentives encouraging certain enterprises or discouraging from them, and information means.

Here are short explanations.

Coercive means are established in the form of legal norms restricting the freedom of decision of all economic subjects to the extent that they may influence spatial development, the condition of the environment and living conditions. These norms have the form of prohibitions (e. g. waste discharge) and precepts, and fall under sanctions (e. g. financial). It is generally believed, however, that these sanctions are unsatisfactory in our country, e. g. fines are too low.

The means of the material shaping of the structure of space include a previous preparation of land and the installation of technical and social infrastructure (e. g. a road network, communal facilities, parks, etc.). In our country they are used too moderately.

The means of control are based on observations of the state and changes in (especially) the natural environment, and on suitable sanctions.

Finally, spatial planning, which used to be a synthetic tool for the shaping of the space economy at all the three levels: of the national plan, regional plans, and local plans.

It should be noted, however, that under the centralised command economy it was not spatial plans that had a decisive influence on the space economy, but socio-economic plans, which did not aim at spatial-economic targets but at the so-called branch goals. These plans were the principal tool of shaping the country's space economy, because they were obligatory for socialised economic units. They were directly obliged to fulfil directives from above, and financial means were distributed centrally. Hence, the influence of economic plans on the space economy was mainly at the national level. The poor efficiency of these means, especially of exacting fines, requires them to be restructured and made more realistic. This refers to the role of spatial planning in particular.

The means of indirect impact have a significant role: they encourage economic subjects, through an economic policy and economic incentives, to engage in certain activities in the domain of the space economy, and discourage them from some others. They must be components of economic mechanisms, but their operation is effective only under a moneyed market economy. They include: a spatial diversification of taxes, financial help with investments or change in the interest on credits, a spatial diversification of transport tariffs, and others. Thus far, such measures have been used very sparingly in our country.

In this connection, there arises a fundamental problem of setting in motion

self-regulatory mechanisms of the space economy analogous to certain parametric methods. Such mechanisms, however, must be part of an efficient economy, which is hard to realise in the present conditions. Still, attempts to solve this problem should be made, although they should be based on a holistic model of the space economy, still awaiting to be worked out.

This model should comprise spatial planning as its integral element which, despite the elimination of directive planning from economic life, remains an irreplaceable tool in the space economy, as proved by its importance in Western Europe. However, it, too, requires remodelling and efficient performance, especially at the local level.

It is impossible, of course, to present the complexity of the issue in a few sentences. I would like to close, however, with some reflections on the role of planning in the shaping of the space economy.

Planning, especially economic planning in the command economy, was the main tool for changing social reality on a large scale. The authorities used planning to introduce overall changes by transforming social mechanisms, often disregarding natural and social regularities, or even going against them. Hence, these plans were utopian in character, involved huge social and economic costs, and were mostly unsuccessful.

Such planning was a component of a totalitarian social engineering which tried to radically transform the whole of social reality on the basis of social utopias. Planning, however, can have a different function, not decision-making but anticipatory, showing the effects of intended enterprises, and corrective. This type of planning must be incorporated into the mechanisms of a moneyed market economy, and must express social interest at least consistent with people's aspirations. The damages that the space economy has suffered are the result of inefficient, social engineering being applied to it. Changes in this respect are only possible on condition that such a model is abandoned altogether.

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SPATIAL IMPLICATION OF DEMOGRAPHIC AND ECONOMIC PROCESSES IN JAPAN

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1. INTRODUCTION

After the Second World War the Japanese economy had achieved the phenomenal growth in relatively short period of time. In this process the Japanese way of looking at things and their sense of value changed to a considerable degree. This was deeply related to the disorganization of traditional social and economic systems built upon traditional ideas and with bringing about a highly capital oriented systems that led to a functionally and rationally unified spatial order in Japan.

The overwhelming concentration of population and economic activities in the major metropolitan regions, especially in the Capital Region, caused the serious urban problems. On the contrary, the rural areas occupying the most part of the national land lost their economic importance and were abandoned to the mercy of national development projects. "Kaso", the socio-economic phenomenon resulted from excessive outmigration, is another extreme example of regional problems in Japan.

Though these processes apparently took on a chaotic aspect on the individual regional level, these were the extreme processes in a larger sense to incorporate individual regions rationally, based on their economic functions and importance, into a national spatial system. As a result of this, a well-organized and consolidated spatial system of national economy came to the fore. But it still left, therein almost all of the contradictions and severe confrontations unsettled until today.

In this paper, the actual condition of the changing spatial system of the national economy will be clarified by analyzing demographic and economic processes.

2. PROCESSES OF DEMOGRAPHIC CHANGE IN JAPAN

Present-day Japan can be placed in the fourth phase of the transition model proposed by P. Haggett in 1975. The low stationary phase with birth and death rates has stabilized at a low level, population growth is very slow or even decreasing, and the birth rate is more likely to fluctuate rather than the death rate (Fig. 1).

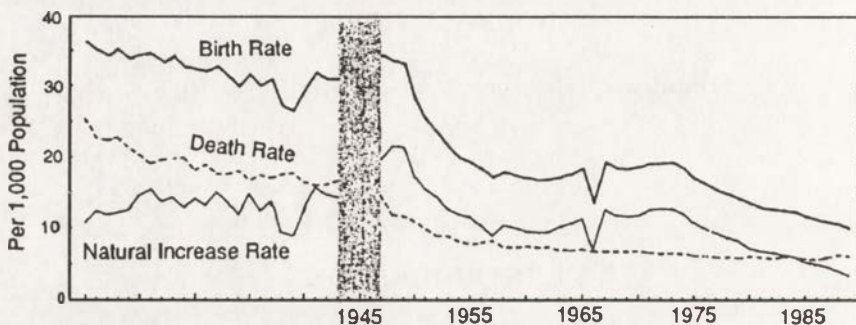


Fig. 1. Changing characteristics of population in Japan

Source: Statistics on population dynamics. The Ministry of Health and Welfare.

The population growth of Japan had been maintained at a relatively higher rate than among developed countries until around 1980. However, in the past five years, the growth rate decreased to 2.1 per cent, which is far less than the 2.7 per cent of the average of developed countries. Under these circumstances, the interregional adjustment of population distribution substantially became even more important.

Major trends of demographic processes in a spatial dimension are as follows:

By comparing the demographic situations of 1960-65, when rapid economic growth had just started, with that of 1985-90, when economic growth entered a stable period, the general trends become clear (Fig. 2).

1) All prefectures show a positive value in the natural increase of population in both periods. However the size of fluctuation in population change became much smaller in the latter period than in the former.

2) There were 37 prefectures with a negative value, which indicates larger outmigration than immigration in the former period, as opposed to 33 in the latter period.

3) Change in population distribution became less prominent in the latter period. But a basic pattern of population movement, namely from rural to major metropolitan areas, especially towards the Capital Region, has still been found in the latter period.

4) The number of prefectures with a positive value which indicates larger immigration than outmigration, increased from 10 to 14 in the period analyzed. These mainly comprise the prefectures surrounding Tokyo, but also Osaka and Nagoya to a smaller extent.

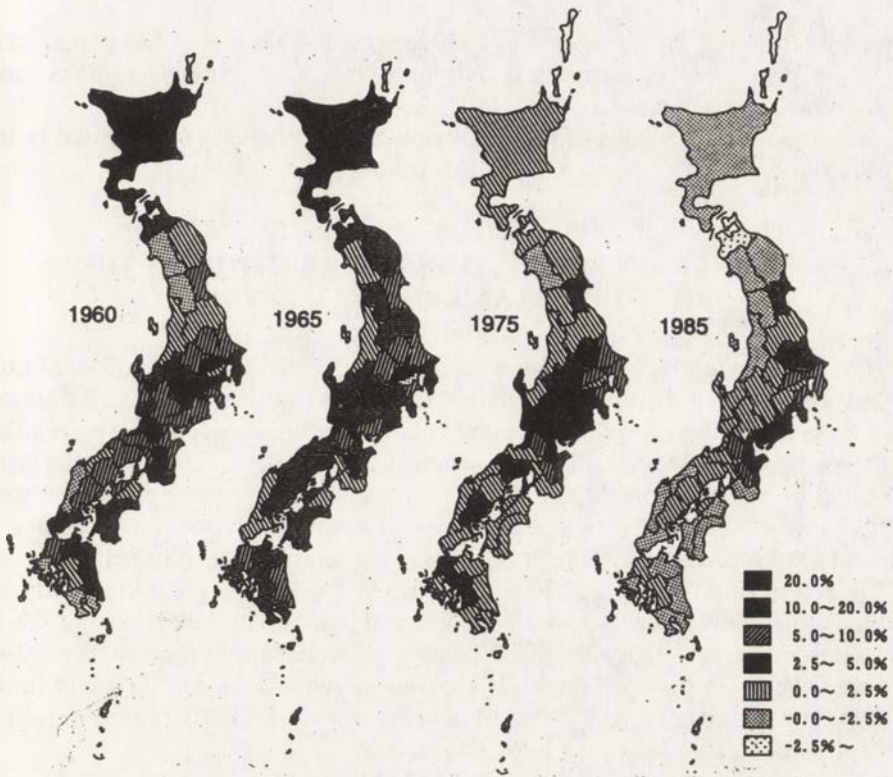


Fig. 2 Population changes by prefectures

3. CHANGING URBAN AND RURAL POPULATION

Japan is a highly urbanized nation where 77.4 per cent of national population live in the areas of 27.8 per cent of national area in 1990. The component ratio of urban population has especially increased: from 37.3 per cent in 1950, immediately after the Second World War, to 63.3 per cent in 1960, when the country as a whole achieved remarkable economic growth (72.1 per cent in 1970 and 76.2 per cent in 1980). It can be seen from this trend that Japan is now in a transitional phase when "from rural to urban" migration is drawing to its close. A slight increase of urban population has taken place during the last decade.

Under these conditions, such major metropolitan regions as Tokyo, Osaka and Nagoya have shown continuous increase of population. The rate of change had shown constant decline until 1980, whereupon began to increase again.

The Tokyo metropolitan region had about 22 million population in 1970, 26 million in 1980 and 29 million in 1990. It is almost equal to one fourth of the national population. The Osaka metropolitan region had 14 million population in 1970. It became 15 million in 1980 and 16 million in 1988. It occupied 10 per cent level of the total country area. The Nagoya metropolitan region had 7 mil-

lion population in 1970, 8 million in 1980 and 1988. This region has remained at the 6 per cent level of national population. Osaka and Nagoya regions have shown almost the same trends.

Thus, about 42 per cent of national population has been concentrated in the three regions.

4. CHANGES IN POPULATION DISTRIBUTION ON THE METROPOLITAN REGIONAL LEVEL

In this analysis, the metropolitan regions are divided for convenience, into 5 concentric zones of 10 kilometer wide (Table 1). The inner-most 10 kilometer zone from the center of city has begun to show an absolute decline in population in the earlier stage. Especially, it appeared first in Tokyo, next in Osaka from 1970 and in Nagoya from 1975. On the contrary, the most striking increase zone shifted outward gradually. In Tokyo, it moved from the 20-30 kilometer zone in the first half of the 1960s to the 30-40 kilometer zone in latter half and to the 40-50 kilometer zone in late 1970s and 1980s. In Osaka, the most eminently increased zone moved from the 10-20 kilometer zone in 1960s to the 20-30 kilometer zone in 1970s. In the 1980s, it moved further out to the 30-40 kilometer zone. In Nagoya, the most striking increase zone can be found in the 10-20 kilometer zone in the 1960s and the first half of the 1970s. But it moved to the 20-30 kilometer zone in the following periods.

Table 1. Spatial characteristics of the major metropolitan regions

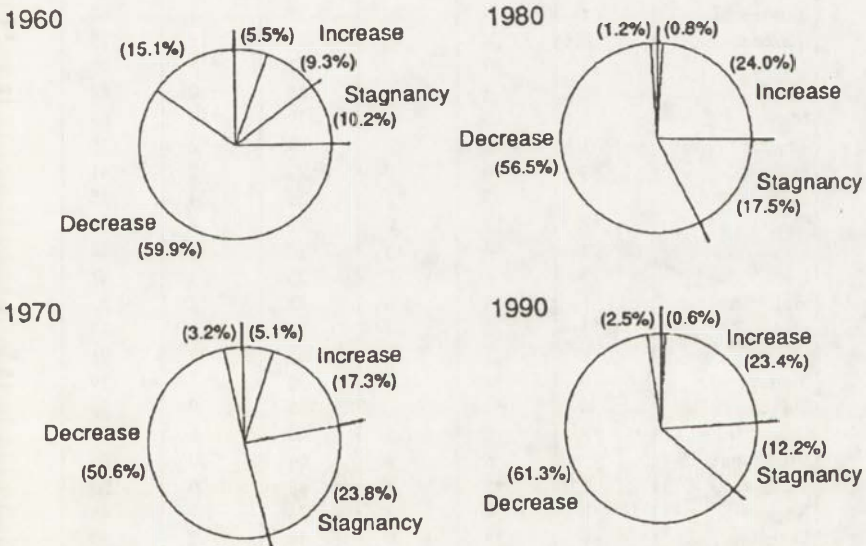
	Population (thousand)				Change Rate			
	1960	1970	1980	1990	1960-70	1970-80	1980-90	
Tokyo	0-10 km	4651	4284	3752	3399	-7.9	-12.4	-9.4
	10-20 km	5169	7248	7860	8227	40.2	8.4	4.7
	20-30 km	2175	4018	5377	6182	84.7	33.8	15.0
	30-40 km	1975	3885	5754	6664	96.7	48.1	15.8
	40-50 km	1880	2537	3596	4355	34.9	41.7	21.1
	Total	15850	21972	26339	28827	38.6	19.9	9.4
Osaka	0-10 km	4119	4728	4401	4219	14.8	-6.9	-4.1
	10-20 km	1522	2860	3664	3779	87.9	28.1	3.1
	20-30 km	1165	1767	2341	2541	51.7	32.5	8.5
	30-40 km	1806	2363	2702	2953	30.8	14.3	9.3
	40-50 km	1737	1922	2307	2394	10.7	20.0	3.8
	Total	10349	13640	15415	15886	31.8	13.0	3.1
Nagoya	0-10 km	1738	2108	2155	2146	21.3	2.2	-0.4
	10-20 km	927	1394	1821	1976	50.4	30.6	8.5
	20-30 km	794	1078	1385	1568	35.8	28.5	13.2
	30-40 km	1402	1634	1840	1960	16.5	12.6	12.6
	40-50 km	536	561	626	662	4.7	11.6	5.8
	Total	5397	6774	7828	8313	25.5	15.6	6.2

Source: Japanese Fact Book 1991 (NIHON KOKUSEI ZUE 1991)

Thus, outmigration from the central part of large cities became common phenomena. This was closely related to the formation of a tremendously extensive urban areas. Together with other factors, such city problems as the traffic congestion and long-distance commuting problem, the land problem, housing problem, air pollution and public nuisance problem, and so on, became very serious in these areas.

5. ANALYSIS OF CITY, TOWN AND VILLAGE LEVEL

All cities, towns and villages can be classified into three groups. The cities, towns and villages with a population increase rate higher than the national average belong to group 1. Those which have an increase rate between zero per cent and less than the national population increase rate belong to group 2. And those with the increase rate below zero belong to group 3 (Fig. 3).



3,191 cities, towns and villages, excluding those in Okinawa prefecture and a few others in Honshu, will be taken up here (Table 2). The number of cities, towns and villages belonging to group 1 increased from 471 in 1960s to 714 in 1970s and to 793 in 1980s. The number of cities, towns and villages in group 2 showed more pattern fluctuations. From the 1960s to the 1970s, its number increased from 325 to 760. But its number decreased to 557 in the 1980s. As for group 3, the number of cities, towns and villages belonging to this group were 2,395 in 1960s, 1,717 in 1970s and 1,841 in 1980s. This group has occupied the largest part of two thirds or three fourth of all cities, towns and villages. The trends of this group were just opposite to that of group 2.

Table 2. The distribution of cities, towns and villages (by increase and decrease types)

Prefecture	Type I	Type II	Type III	Type IV	Type V	Total
Hokkaido	*7	6	13	180	6	212
Aomori	0	2	*3	60	2	67
Iwate	1	5	*1	54	1	62
Miyagi	*5	8	2	53	3	71
Akita	0	2	*1	64	1	68
Yamagata	0	3	0	40	*1	44
Fukushima	1	*11	1	74	3	90
Ibaraki	*14	28	3	34	9	88
Tochigi	*7	19	1	20	2	49
Gumma	*5	18	1	38	8	70
Saitama	*49	22	2	13	6	92
Chiba	*21	20	0	31	8	80
Tokyo	25	2	1	*8	5	41
Kanagawa	*20	4	6	2	5	37
Niigata	*2	9	0	91	10	112
Nagano	*2	20	0	87	12	121
Yamanashi	4	0	20	33	*7	64
Sizuoka	13	18	*1	31	12	75
Gifu	14	10	1	61	*13	99
Aichi	32	6	14	26	*10	88
Mic	6	10	1	39	*13	69
Toyama	1	3	0	29	*2	35
Ishikawa	*4	6	0	29	2	41
Fukui	0	5	*1	25	4	35
Shiga	*7	12	0	27	4	50
Kyoto	7	4	3	*26	4	44
Nara	*12	6	3	23	3	47
Wakayama	1	5	0	42	*2	50
Osaka	14	2	14	*3	11	44
Hyogo	8	11	3	61	*8	91
Tottori	0	*4	0	32	3	39
Shimane	0	*4	0	55	0	59
Okayama	*1	8	1	60	8	78
Hiroshima	*3	6	3	64	10	86
Yamaguchi	0	*3	1	43	9	56
Kagawa	2	4	*2	28	7	43
Tokushima	1	*3	0	44	2	50
Kochi	1	1	*1	49	2	53
Ehime	*1	4	0	61	4	70
Fukuoka	*14	13	1	58	11	97
Saga	0	8	1	35	*5	49
Nagasaki	2	7	0	*68	2	79
Kumamoto	*1	12	0	81	4	98
Oita	*1	1	0	54	2	58
Miyazaki	*1	3	1	34	5	44
Kagoshima	0	10	*1	84	1	96
Total	133	343	97	2049	191	3191
Type	Increase Increase	Decrease Increase	Increase Decrease	Decrease Decrease	Other Pattern	Total

Note: *shows to which each prefectural capital city belongs

Source: Population census of Japan

The characteristic of cities, towns and villages belonging to these groups by size will be analyzed later on (Fig. 4).

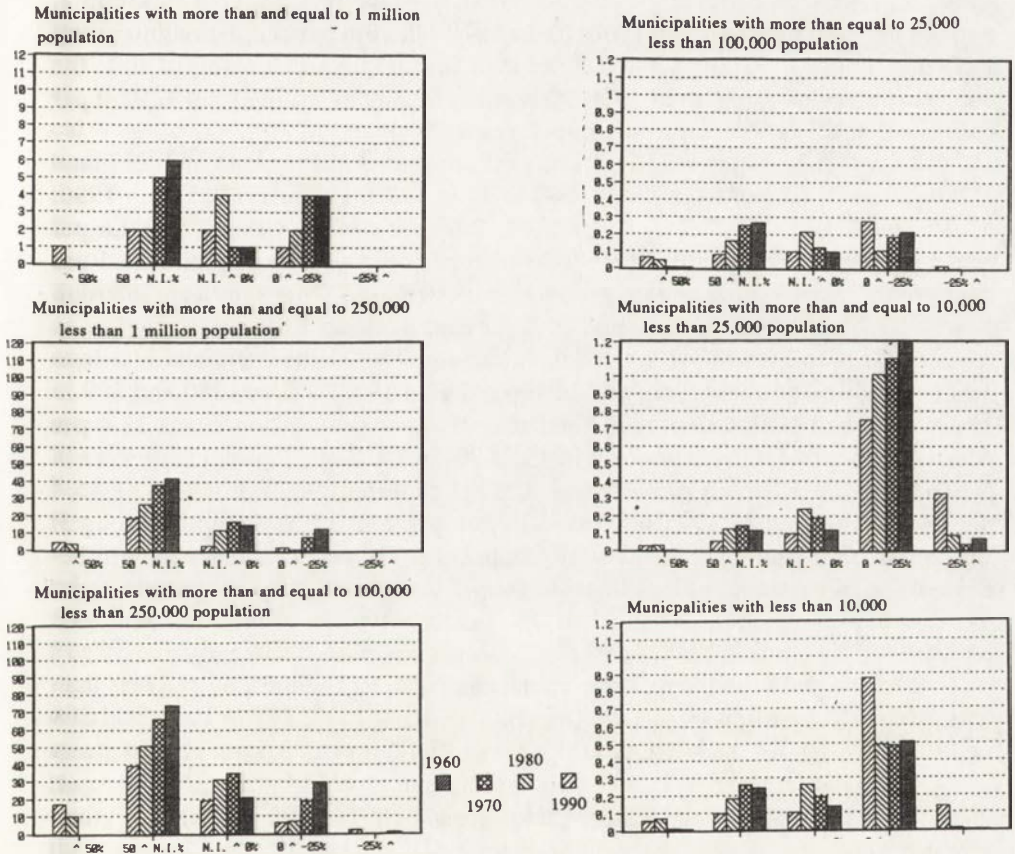


Fig. 4. The number of cities, towns and villages in each change rate by population size

Source: Population Census of Japan

As for the million cities, their number increased from 6 in 1960, to 8 in 1970, 10 in 1980 and to 11 in 1990. Their population increase tended to be rather slow. Some of them showed even decrease. Now the question is how to comprehend the meaning of an absolute decline of population in this regional level, as it has a specific logic that must be distinguished essentially from lower ranking cities, towns and villages that experienced similar conditions.

The number of major cities with equal to or more than 250 thousand and less than one million population were 29 in 1960, 44 in 1970, 63 in 1980 and 70 in 1990. 82.7 per cent of them belong to group 1, while 10.3 per cent to group 2, and 6.9 per cent to group 3 in 1960-70. In 1970-80, 70.5 per cent belong to group 1, 27.3 per cent to group 2 and 2.3 per cent to group 3. As a result of this, the composition of each group in 1980-90 became 60.3 per cent in group 1, 27.0 per cent in group 2, 12.7 per cent in group 3, respectively.

The number of cities with equal to or more than 100 thousand and less than 250 thousand changed from 83 in 1960 to 99 in 1970, 120 in 1980, 126 in 1990. 67.5 per cent of them, belong to group 1, 22.9 per cent to group 2 and 9.6 per cent to group 3 in 1960-70. In 1970-80 61.6 per cent were in group 1, 31.3 per cent group 2, and 7.1 per cent in group 3. In 1980-90, 55.0 per cent were in group 1, with 29.2 per cent in group 2 and 15.8 per cent in group 3.

The cities and towns with more than and equal to 25 thousand and less than 100 thousand population were 554 in 1960, 538 in 1970, 572 in 1980 and 589 in 1990. The composition rate of group 1 was 27.6 per cent, group 2 was 18.4 per cent and group 3 was 54.0 per cent in 1960-70. In 1970-80, 39.4 per cent were in group 1, 40.0 per cent in group 2 and 20.6 per cent in group 3. In 1980-90, 45.4 per cent were in group 1, 21.5 per cent in group 2, and 33.0 per cent in group 3. In the past five years, the number in group 1 that showed a increase pattern became only 14 per cent, while those in group 2 that took a stagnant pattern came to occupy 48.2 per cent, and those of decreasing pattern in group 3 became 36.8 per cent.

The towns and villages with more than and equal to 10 thousand and less than 25 thousand population were 1,269 in 1960, 1,010 in 1970, 948 in 1980, and 898 in 1990. In 1960-70, the share of group 1 was 12.4 per cent, 8.1 per cent in group 2, 79.5 per cent in group 3. In 1970-80, the share of group 1 became 25.0 percent, 25.8 per cent in group 2 and 49.2 per cent in group 3. In 1980-90, the share of group 1 became 28.9 per cent, 19.9 per cent in group 2, 51.2 per cent in group 3.

The villages with less than 10 thousand population were 1,250 in 1960, 1,492 in 1970, 1,478 in 1980, and 1,497 in 1990. This class has held the largest portion, encompassing nearly half of the total number of cities, towns and villages since 1970. 6.2 per cent of them came under group 1, 7.7 per cent under group 2 and 86.1 per cent under group 3 in 1960-70. In 1970-80, 10.5 per cent came under group 1, 15.9 per cent under group 2 and 73.7 per cent under group 3. In 1980-90, 10.1 per cent came under group 1, 9.8 per cent under group 2 and 76.8 per cent under group 3.

In the past 5 years, the number of cities, towns and villages came under ex-

treme increase, while those decreasing groups diminished. At the same time, the number of cities, towns and villages under a relatively slow decrease group has grown rapidly.

Thus, the smaller cities, towns and villages in size, the more serious the decrease in population. It is also an interesting trend that of the two poles, one is the villages of the smallest class in size and another is the cities of the largest class as Tokyo and Osaka. Both tend to show a very similar pattern in population change, as mentioned above.

The areal differentials in population change will be examined next. Five patterns are to be proposed here for explaining about those, as shown in Table 2.

Type I indicates the "Continuous Increase Pattern". This type grows in a cluster mainly around a relatively large city. The Tokyo Capital Region is a typical example of this. The component ratio of Type I in the total number of cities, towns and villages is 37.1 per cent. Today Tokyo has expanded areally beyond the 4 neighboring prefectures to the Kita-kanto Region. Together with this Region, the component ratio of the Tokyo Region in Type I reached 45.5 per cent. Also the areas with a relatively high component ratio in Type I were the Tokai Region (Shizuoka, Aichi and Gifu), the Kansai Region (Nara and Osaka), as well as others such as Fukuoka in the Kyushu Region. As for the prefectural capital cities, 20 out of 46 belong to this Type.

Type II indicates the "Decrease-Increase Pattern". This Type tends to show more extensive and dispersive distribution. But main areas are to be found around Tokyo, Nagoya and Osaka, and the Kita-kanto Region, Fukushima, Nagano, Fukuoka and Kumamoto. Five prefectural capital cities, of which 2 in the Sanin Region, belong to this Type.

Type III indicates "Increase-Decrease Pattern". The number of this type is relatively small and takes more dispersive pattern than the types mentioned above. Eight prefectural capital cities, of which 3 in Tohoku, 2 in Shikoku Region and so on, belong to this type.

Type IV indicates the "Continuous Decrease Pattern". It takes an ubiquitous distribution throughout the country with a fewer number in and around major metropolitan regions. Such prefectural capital cities as Tokyo, Osaka, Kyoto, and Nagasaki, belong to this type.

Type V indicates that the cities, towns and villages that are not classified into the types above mentioned. This type shows more changeable trends. Nine prefectural capital cities, of which 3 in the Tokai Region, 2 in the Kansai and so on, belong to this.

Thus, the analysis here made clear the basic pattern of population movement in Japan in the post-war period. That is, the most prominent concentration of population are in the surrounding regions of Tokyo. Relatively high concentrations of population can be recognized in the regions surrounding Nagoya and Osaka. Conversely, more than 70 per cent of cities, towns and villages, located mainly in rural areas and occupying most of the country have been facing an absolute decline in population.

6. ECONOMIC PROCESSES AND POPULATION CHANGE

In terms of the population decrease rate, smaller town and villages tend to occupy the highest rank. Those are mainly in Hokkaido and Kyushu regions. However, in the change in the absolute number, several characteristic on population change in relation to economic processes can be found.

The cities, towns and villages with the most striking decrease in population were firstly Bibai followed by Yubari, Tagawa, Osaka, Omuta, Iizuka, Ashibetsu, Miyata-cho, Akabira, and Inatsuki. In 1970-80, Tokyo showed the largest decrease. And Osaka, Yubari, Kure, Otaru, Hakodate, Kamaishi, Omuta, Kyoto, and Tonosho-cho followed. In 1980-90, the largest absolute decline in population was Tokyo, and Osaka, Amagasaki, Yubari, Moriguchi, Mikasa, Haboro-cho, Omuta, Muroran and Otaru come next.

Conversely, the cities, towns and villages with the most striking population increase were Yokohama, Tokyo, Sapporo, Kawasaki, Nagoya, Chiba, Sakai, Hiroshima, Funabashi and Fukuoka in 1960-70. In 1970-80, these became Yokohama, Sapporo, Chiba, Fukuoka, Sakai, Hiroshima, Sendai, Sagamihara, Funabashi, and Matsudo in order. In 1980-90, this order became Yokohama, Sapporo, Fukuoka, Kawasaki, Sendai, Kobe, Hiroshima, Sagamihara, Chiba, and Hachioji.

From the trends, some characteristics of population change in relation to economic processes can be presented:

(1) In the earlier stage, mining cities, towns and villages showed the most eminent decline. Thus, parallel with metropolitanization, the New Industrial Cities designated in the Comprehensive National Development Plan of 1962 and Special Areas for Industrial development in 1964 showed a relatively high increase in population as the growth poles.

(2) In the course of development, the economic structure shifted to more non-productive sectors as represented by service industry. In productive sectors, a key portion of industry changed from heavy-chemical to high-technology industry. This brought about the death of the old industrial cities, especially with heavy and chemical and shipbuilding industries and so forth, and made a gigantic metropolis on the one hand, and regional capital cities, on the other. This was also related to the formation of technopolises and high-technology towns.

This constituted the spatial specialization of the Japanese economy, or one could say that the spatial division of labor has developed a more and more sophisticated mechanism. The key role has been played by the large corporations. We could recognize this point from papers which have already been published. The head offices have been concentrated in the central part of Tokyo only. R & D section and market and information oriented manufacturing are mainly located in Tokyo and its vicinities and the Osaka region. More than 40 per cent of R & D centers in Japan are located in Tokyo and Kanagawa. Branch plants and subsidiaries and many of their subcontract factories, which usually have low productivities, are scattered widely in the rural regions out of the Tokaido Megalopolis.



LEGEND

- ☆ refers to rapid population growth
- Δ refers to show stagnancy
- refers to relatively small decrease
- refers to eminent decrease
- Large mark is the prefectural capital city.
- Black mark refers to the recent increase.

Figure 5. Spatial dynamics of population redistribution in Japan

Moreover, some of the large corporations' factories or subsidiaries are scattered further out in those regions.

The vertical interregional specialization of corporate spatial systems contributes to the formation of the hierarchical regional structure. Population movement among regions became more clearly outlined by corporate spatial systems.

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POLISH URBAN SYSTEM IN 1990s: DEMOGRAPHIC AND ECONOMIC ASPECTS

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1. INTRODUCTION

Economic change, demographic processes, and evolving urban policies have all contributed to a rather unstable nature of urban change patterns in Poland over the past forty five years. Each consecutive decade, in fact, was characterized by markedly new trends. The planning target of a "uniform spatial development", formulated in the 1950s, was modified in the early 1960s so as to provide for the development of some 80 middle-size towns. In the mid-1960s the emphasis shifted to "deglomeration policies", which were subsequently carried on with respect to the large cities including Warsaw, Cracow, Łódź, Poznań, Wrocław, and Gdańsk.

The 1970s brought a recognition of the role of agglomeration economies. Consequently, a bulk of the massive industrial investments of that decade went to the large cities, such as Warsaw, Gdańsk, and the Upper Silesian conurbation. These policies, accompanied by an extensive housing construction programme, stimulated internal migrations which, on the supply-side, were reinforced by changes in the age composition of the population. Namely, the large cohort of those born during the 1950s was just entering the labour market. As to migration patterns, the rural areas lost some 2 million migrants for urban areas in net terms over the decade; inter-urban migrations were distinctively hierarchical in nature.

The social, political and economic crisis of the 1980s resulted, among others, in a contraction of the size of industrial employment, a rapid fall in the volume of housing units built, and in the decrease in the number of internal migrations by some one-third: from over 950 thousand to some 650 thousand a year. Instead, foreign emigration increased from some 30 thousand to over 100 thousand a year. Spatial policies have again become reoriented so as to focus on ecological issues as well as on basic technical infrastructure. Patterns of population change among urban places have become more diversified; a sheer population size ceased to guarantee a sustained urban growth (Korcelli 1990).

The transition from a "centrally-planned" to a market economy, that started in Poland in 1989, carries a number of implications for future urban change. These will be discussed throughout the paper. The section to follow will focus on demographic determinants of urban growth. It introduces a series of population projections and presents assumptions concerning the likely patterns of fertility, mortality, and internal migrations during the 1990s. In the next section an attempt is made to identify prospects for growth and/or decline at the level of individual large cities as well as of basic city-size categories. This is done by referring to such factors as industrial composition, geographical location, and the urban milieu.

2. ALTERNATIVE POPULATION PROJECTIONS

Table 1 and Figures 1-5 contain selected results of three series of multi-regional demographic projections (Willekens, Rogers 1978) based upon data for: 1978, 1983, and 1988. One notes quite considerable differences between the alternative trajectories of population change in each of the five urban regions for which data are presented. These differences have their origin in observed temporal variations in the level as well as structure of fertility, mortality and internal migrations, as observed over the 1978-1988 period.

Table 1. Population projections for the major urban regions in Poland ('000)

Year	Urban region				
	Warsaw	Łódź	Gdańsk	Katowice	Cracow
Base year 1978					
1978	2266	1112	1297	3616	1142
1983	2419	1170	1409	3929	1206
1988	2543	1213	1510	4215	1261
1993	2641	1245	1597	4466	1305
1998	2729	1273	1679	4702	1346
2003	2814	1301	1760	4945	1385
2008	2908	1330	1845	5193	1428
Base year 1983					
1983	2382	1147	1373	3854	1197
1988	2469	1170	1459	4105	1249
1993	2524	1182	1531	4317	1289
1998	2568	1190	1599	4520	1325
2003	2614	1199	1669	4736	1359
2008	2672	1214	1745	4972	1398
Base year 1988					
1988	2442	1150	1430	3999	1266
1993	2477	1150	1485	4156	1253
1998	2496	1145	1535	4301	1273
2003	2512	1140	1585	4452	1290
2008	2534	1138	1663	4609	1309

Note: Urban regions are identified with individual voivodships (administrative regions). Katowice voivodship serves as an approximation of the Upper Silesian conurbation.

Source: Korcelli and Kupiszewski (1990).

The 1970s was a period of relatively high natural increase; the net reproduction rate for Poland as a whole amounted to 1.035 in 1978. This, however, was attributable to a very high population fertility in rural areas (1.425), since the natural reproduction of the urban population was clearly below zero-growth point (0.845). At that time it was generally anticipated that fertility would soon start to decrease, following the trends in other European countries. What occurred instead, however, was a sharp rise in fertility in the urban areas. By 1983 the net reproduction rate of the urban population climbed up to 1.010, bringing the respective national figure to 1.141 (the rural areas actually witnessed a slight drop in fertility, down to 1.372). This upward shift, however, proved to be a transitional phenomenon. From 1984 on the fertility rates have been decreasing rapidly; in 1988 the NNR amounted to 1.009 (1.224 in the rural areas and 0.883 in the urban areas), and by 1989 it was down to 0.982 for Poland as a whole.

Unlike in the case of population fertility rates, the rates of internal migration have been on a continuous decline since the late 1970s. While in 1978 there were 27.7 migrations per 1000 population, the corresponding figure decreased to 19.7 in 1983, and to 16.8 in 1988 (15.6 in 1989). In absolute figures this represents a drop from 964 thousand moves a year in 1978 to 722.5 thousand in 1983, and 699.5 thousand in 1988 (596.5 thousand in 1989).

As a result of the interplay of fertility and internal migration change (mor-

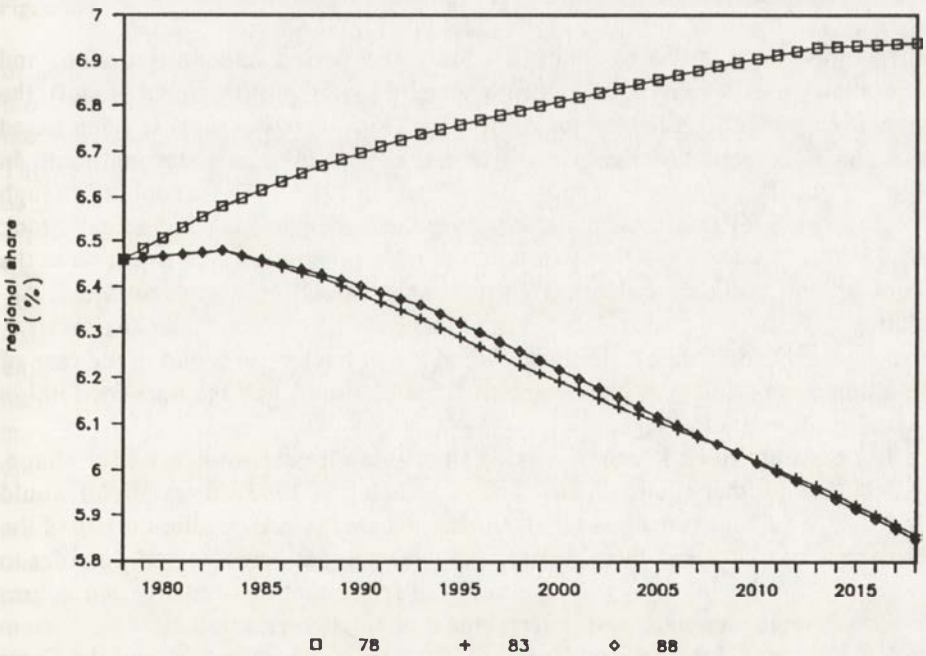


Fig. 1. Alternative population projections. Warsaw, the 13 region study

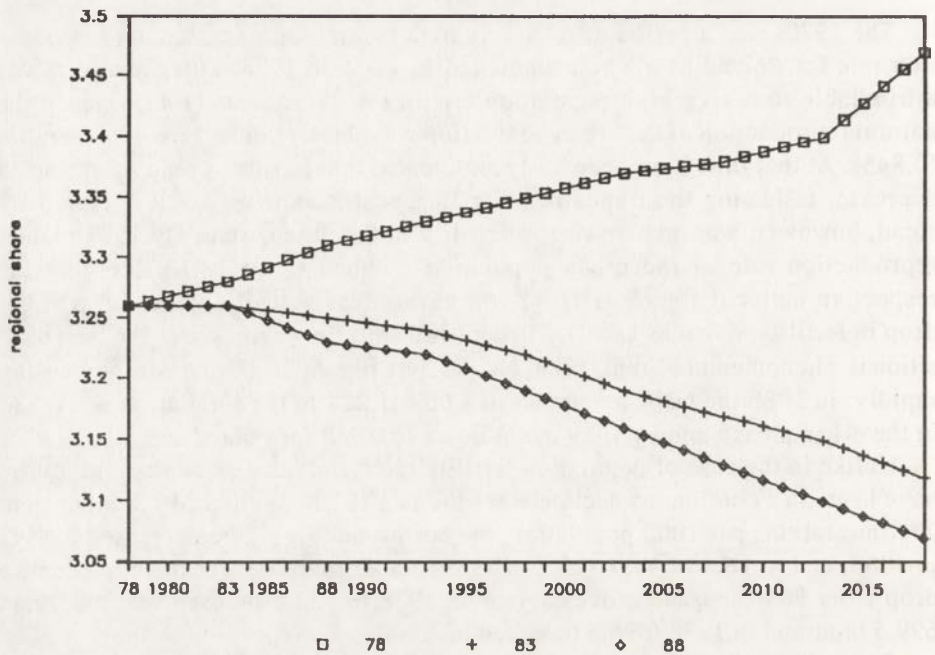


Fig. 2. Alternative population projections. Cracow, the 13 region study

tality rates did not change markedly over the period under discussion, and foreign migrations were not taken into account by the multiregional model), the population projections for the major urban regions were the highest when based upon the 1978 data, and the lowest when 1988 was used as a starting point. In other words, the increase in fertility rates between 1978-1983 was not big enough to compensate for the immigration loss over the same period. What actually took place between 1978-1988 was a turnaround from population concentration in the major urban regions in Poland, to progressing population deconcentration. According to Figures 1-5, this shift occurred in 3 out of 5 regions under analysis, i.e. Warsaw, Łódź and Cracow. The same trend might have been found in the case of the Katowice region (the Upper Silesian conurbation), had the data for foreign migrations been included.

The question to be posed now is whether these trends are likely to continue, i.e. whether another round of projections (starting in 1993, for example) would make further downward adjustments of the expected future population size of the urban regions as well as their share in the total population of Poland. In order to attempt to answer this question one needs to focus again on fertility and migration as the main components of interregional population change.

J. Z. Holzer (1990) reports on the results of a study undertaken by the Committee on Demographic Sciences of the Polish Academy of Sciences, in which a series of five aggregate population projections for Poland were generated by a set

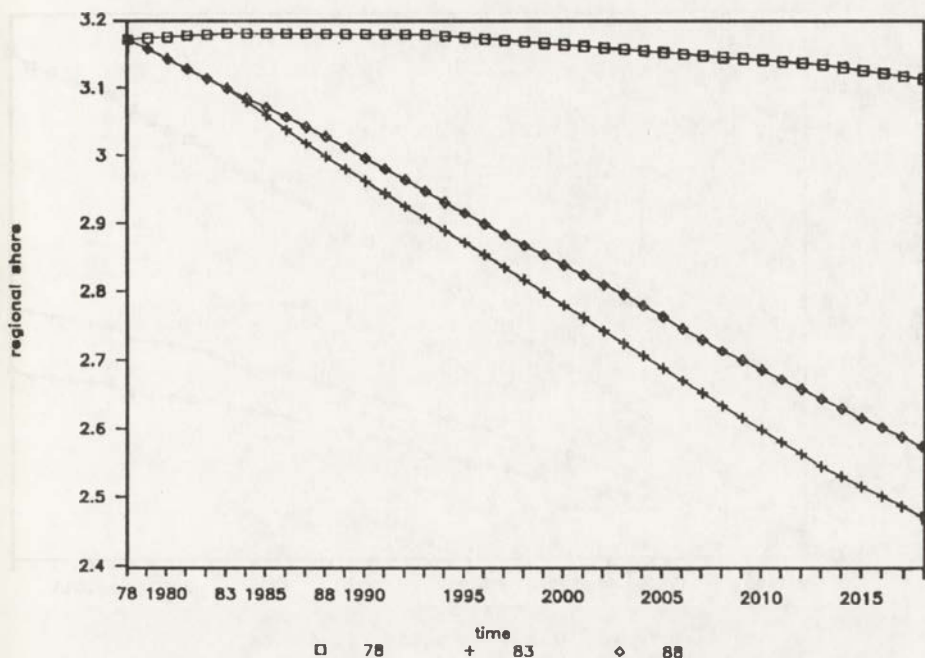


Fig. 3. Alternative population projections. Łódź, the 13 region study

of scenarios describing various fertility and mortality patterns. Only in one of those scenarios a rapid decrease of fertility rates is assumed to take place over the next decades, down to the level typical of Western Europe during the 1980s. The other basic scenarios provide for either a slow and moderate fertility decline, or a continuation of the NNR values at the level above 1. However, to an observer of current social and cultural processes, the declining fertility trend seems likely to continue over the next several years, although one may readily find arguments to support a radically opposing view. The large urban regions, one may risk to say, will in any case continue to feature the NNR values well below 1 until the end of the decade. Even assuming some decrease of mortality rates, and taking account of changes in the age composition of the population, such regions may look to immigration as the main potential source of their population growth during the 1990s.

The rapid decrease in the volume of internal migrations in Poland, as observed during 1980s, being largely explained by economic factors, is in about one-third attributable to age-composition effects, i.e. a contraction, when compared to the 1970s, of the size and share within the total population of the most mobile age group, namely those between 20-29 years. Owing to high fertility rates during the 1970s and the early 1980s, this age category will begin to grow in both absolute and relative terms during the 1990s, in particular in the second half of the decade. This will create a mobility momentum, i.e. a large pool of poten-

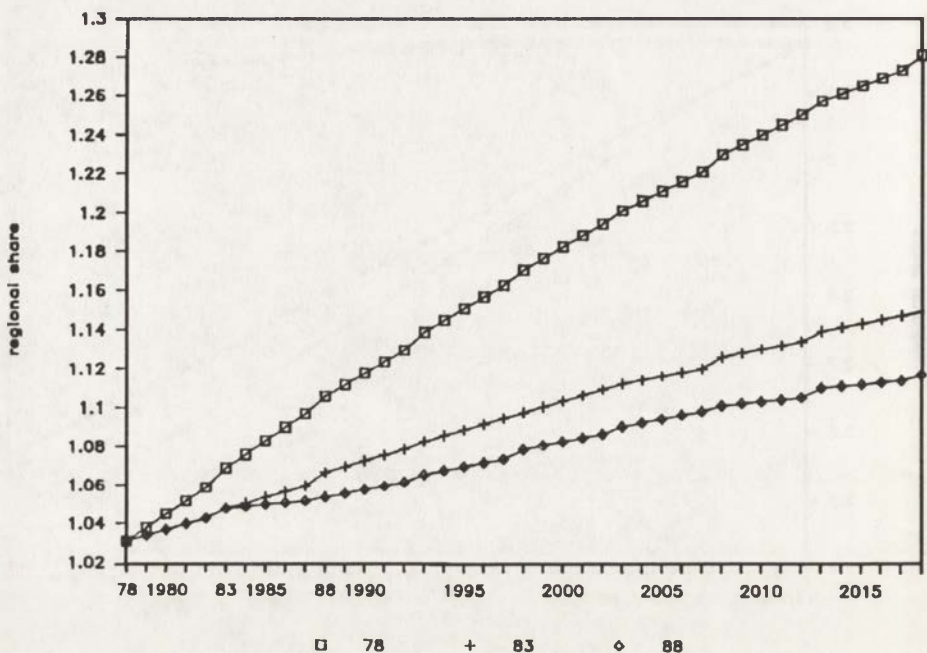


Fig. 4. Alternative population projections. Katowice, the 13 region study

tial migrants, since, especially for those brought up in rural areas and smaller towns, the entrance into the labour market, or the higher education system is typically associated with a physical move (Witkowski 1991 — for an analysis of interdependence between social and geographical mobility). In other words, the fertility bulge which occurred in Poland during 1975-1985, will most probably find a reflection in a spatial mobility bulge during the 1995-2005 period.

Which areas and regions are likely to become destinations for such increased migration flows, no longer depends on the central planner (to the extent it still did during the 1980s), although governmental fiscal, industrial or environmental policies will continue to exert some impact upon individual migration decisions.

3. PATTERNS OF POPULATION GROWTH AND DECLINE

When considering possible migration patterns during the 1990s, it seems appropriate to start with a brief discussion of the outmigration potential of rural areas. Despite a gradual decline in the share of the rural population (from 63 to 39 percent between 1950-1989), the rural-urban migrations have continued to account for about 30 percent of the total volume of internal migrations in Poland over the recent decades. The fraction of agriculture within the total employment

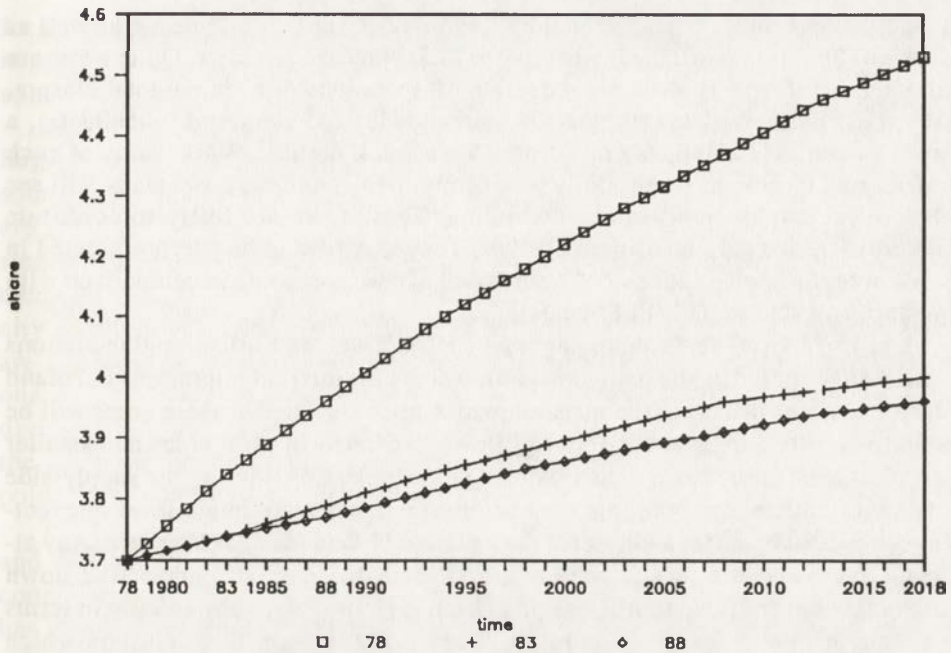


Fig. 5. Alternative population projections. Gdańsk, the 13 region study

is still quite high (17.7% in 1989) when compared with corresponding indices for other European countries, and the average size of private farms is below 7 hectares. Any substantial increase in agricultural productivity (and in rural incomes) in Poland is conditioned upon a substitution of capital for labour, and upon a concentration of land ownership. This process, although inevitable in the long run, will probably not really start before the mid-1990s owing to a number of social, economic and institutional barriers.

Generally, one can anticipate some increase in the propensity to migrate among the rural population over the next few years, and a more rapid increase in the late 1990s. In fact, demographic and economic processes will reinforce each other in generating a considerable outmigration potential in the farming areas of Poland. Hopefully, a substantial proportion of the redundant labour will be absorbed in agriculture-related services and local industries. This would entail a short-distance migration, or a change of occupation without changing the place of residence. Still, a large share of the rural youth may wish to, or may be forced to search for opportunities in more distant places.

In the case of small and medium-size towns one can also envisage an increase of the outmigration potential during the 1990s. This may at least apply to the majority of members of this category. A number of such towns are heavily dependent on single, large industrial establishments which provide both jobs and social overhead for the local population. Many of these, state-owned industrial

plants have recently been affected by a rapid contraction of domestic as well as foreign (Soviet in particular) markets for their standard products. Quite a few are already threatened by a drastic reduction of operations or even the total closure. The most publicized case is that of Starachowice (55 thousand inhabitants), a town in central Poland, the home of a huge truck factory. While some of such towns may be able to successfully restructure their economic base, many will see their local employment figures dwindling. These towns are likely to constitute major migration origin during the 1990s. They may tend to be overrepresented in eastern regions where industrial traditions have weaker roots in comparison with western and central parts of Poland.

Let us now move to the category of large cities and urban agglomerations which have served as the main destination areas for internal migrations in Poland during the past decades. The question which arises is whether these areas will be able to continue to absorb migration flows generated in rural areas and smaller towns at least at the scale they did during the 1980s. Considering the supply-side of the migration equation, this may be interpreted as a minimum level, preventing a major imbalance, and sizeable emigration abroad from taking place. Any attempt to answer this question will require a more disaggregate perspective, down to the level of individual urban region. Such regions differ substantially in terms of their prospects for the near future. They actually form three clusters which shall be briefly discussed below.

The first cluster is represented by the agglomerations of Warsaw, Poznań, and Gdańsk. These areas are in the most advantageous position as compared to the rest of the Polish urban system. This is confirmed by the pattern of foreign investments flows. At the end of 1990 the Warsaw and Poznań regions accounted jointly for about 50% of all office and production units of foreign and joint-venture establishments operating in Poland. A number of locational factors seems to favour the three cities assuring their expansion in the near future. Warsaw will certainly benefit from the undergoing expansion of its international airport facilities, and Poznań may be positively influenced by the proximity of Berlin (the distance of some 200 km), once visa-free movement across the Polish-German boundary has been introduced.

The Gdańsk-Gdynia agglomeration seems also to be in a position to take advantage of its location on the Baltic coast, its local amenities, and its past and current political role as well as local entrepreneurship. However, unlike in the case of Warsaw and Poznań which are characterized by diversified economic base, the Gdańsk region is heavily dependent upon shipbuilding industry with its typical phases of expansion and contraction. This has so far had a limited effect on the labour market. The continuing labour shortage in the three urban regions contrasts with the national unemployment rate of 7.2% (May 1991).

In addition to being related to such general characteristics as location and industrial composition, the development prospects for individual cities and urban regions are strongly connected with a number of "internal" factors, including the management of the urban land, organization of community services, incentives

for local as well as other, domestic and foreign business. All these conditions are in turn related to the performance of the local government and its ability to built upon local human resources.

When seen from this perspective, Warsaw's assets include the existence of large tracts of vacant or semi-vacant land close to the city centre. However, a sound city planning system together with a smooth operation of the land market are required in order to put this resource to use. Unfortunately, Warsaw is besieged by serious local administrative conflicts, the origin of which is its fragmented political structure as well as the unsolved question of property rights. The city status is that of a mandatory association of seven urban communities which are self-government units. It is also a core of the capital voivodship of Warsaw, one of 49 administrative regions of the central Government. No wonder that the division of competence between the voivodship governor, the city president, and the mayor of the central borough of Warsaw has become a real issue in the city politics during the last two years.

Two other large urban regions, namely those of Cracow and Wrocław, form and intermediate category so far as their chances to grow in the near future are concerned. In the case of Cracow, the local political and intellectual leadership has created a viable business and social climate. The city competes against Warsaw for the role of the cultural and scientific capital of Poland; it also aspires to perform major international functions in this domain. However, the image of Cracow is also one of a city with extremely high air pollution, due to the local steel industry as well as the proximity to, and the situation in the wind corridor from the heavy emission sources in the Upper Silesia. Another problem of Cracow is an excessive reliance of its labour market (the Nowa Huta district in particular) on the contracting steel industry.

In the case of Wrocław, the industrial and employment structure is more balanced than that of Cracow. The city is also a major university and research centre which may act as a magnet for new economic activities. When considering its proximity to both Leipzig, Dresden and Prague, Wrocław's location may turn out to be quite advantageous in a longer-term perspective. At present, however, the city is the main centre of a peripheral region characterized by the presence of a number of declining industries, including coal-mining and textiles, as well as by a worn-out technical infrastructure.

The third cluster of large urban regions includes the Upper Silesian Conurbation and Łódź. These are real problem areas, the typical cases of the 19th century industrialization. Unlike their counterparts in Britain, northeastern France or western Germany, these regions were until the most recent years kept in the largely old form as they performed an important role in the inefficient and short-sighted "centrally-planned" economy. The two regions feature a very high dependence upon traditional industries: coal mining and primary iron and steel in the Upper Silesia, textiles in the Łódź region, as well as a very poor physical environment. Past attempts at modernization and diversification of the industrial

structure consisted mainly in the implantation of new industries (machinery, automobiles) rather than in more comprehensive redevelopment programmes.

Environmental pollution is an especially grave problem in the Upper Silesia which, in spite of this, has been the largest recipient of migrants from other regions of Poland over several decades. This period is now coming to an end. Now, once the Polish industry has been exposed to the world market competition, industrial decline and a loss of jobs are looming large. The process of industrial restructuring will probably take more than one decade and is likely to involve a major contraction of coal mining, as well as of iron and steel together with the related secondary industries.

The situation of Łódź is to a certain degree similar to that of the Upper Silesian cities, although prospects for its textile industries seem somewhat better. The most valuable potential asset that the two regions hold is their skilled industrial labour. However, this labour will have to prove its versatility in order to meet the new requirements.

Aside from the seven large urban regions, ranging in size from well above half a million (Wrocław — 642 thousand; Poznań — 589 thousand within city boundaries in 1989) to about 3.5 million inhabitants (the Upper Silesian conurbation), there are more than 20 urban centres in Poland, each having between 100 and 500 thousand inhabitants, which deserve some discussion on the city-by-city basis within the present context. Such a disaggregate approach, however, would have to be based on a broader empirical evidence, yet to be assembled. Therefore, in the present paper one can offer just a few general remarks relating to this important layer of the Polish urban system.

Except for several highly specialized centres, such as the port city of Szczecin (412 thousand inhabitants in 1989), or the industrial centres of Radom (226 thousand inhabitants) and Wałbrzych (141 thousand inhabitants in 1989), cities in the middle-to-large population size category typically perform a mix of centralplace and industrial functions and do not tend to be overly dependent upon a single type of economic activity. Their chances to grow or decline are often strongly related, as in the case of Lublin (350 thousand inhabitants in 1989), a major regional centre of eastern Poland, to economic and demographic transformations in the surrounding regions. A few places, including Elbląg (125 thousand inhabitants) and Płock (122 thousand inhabitants) have recently attracted direct foreign industrial investments.

In general, the middle-to-large urban centres now referred to, seem to be in a more competitive position when compared with the smaller towns, and also when considered vis-a-vis the two old industrial agglomerations of Łódź and the Upper Silesia. On balance, they will continue to attract migrants during the 1990s, as they did over the previous decades.

4. CONCLUSIONS

Demographic, as well as economic processes, including agricultural and industrial restructuring, will lead to an increase in the volume of internal migrations in Poland during the 1990s in comparison with the 1980s. Migrations towards large urban regions and selected other urban centres are projected to expand, in particular after 1995. Large cities will increasingly differ in terms of their rates of population change. The regions of Warsaw, Poznań and Gdańsk are likely to exhibit growth rates higher than those of the total population of Poland, while the opposite is true of the other major urban regions, especially of Łódź and the Upper Silesian conurbation.

With respect to migration origins, the net outmigration areas will probably become enlarged, and cover a number of small and middle-size towns, as well as some larger cities, in addition to the traditional sources in rural areas. The projected increase in spatial mobility of population in Poland requires an assumption to be made, according to which the production of housing would adjust to the pattern of labour market demand. In the past it was housing (a scarce resource, though cheap to the user) rather than jobs (which were readily available) that constituted the main migration incentive. The present issue is also the affordability of housing for new occupants, including prospective migrants. Costs of standard dwelling units in Polish cities (both purchasing prices and new rental costs) are now basically beyond the reach of middle-income families. In the case of the city of Warsaw this applies to the upper-middle income group as well.

The absorptive capacity of large cities and urban regions will have some impact upon the volume and balance of foreign migrations during the 1990s. Obviously, such factors, as international income differentials, the political stability in Eastern Europe, and rules of admission in the traditional immigration countries, will continue to play the main part in determining the size of emigration from as well as immigration to Poland over the present decade. Further perspectives in this and other questions are strongly related to the success or failure of Poland's access to the European Economic Community.

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RECENT TRENDS IN METROPOLITAN CONCENTRATION IN JAPAN

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1. POPULATION GROWTH

Metropolitan dominance is one of the most important features of the Japanese urban system. Although the "counterurbanization" process has been identified in many western countries since the 1970s, as discussed by B.J.L. Berry (1976), P. Hall (1984) and many other geographers, this does not seem to be the case in Japan (Morikawa 1989; Taniuchi 1991a).

Any statement related to counterurbanization requires appropriate geographical definition of metropolitan areas. If we try to identify counterurbanization by applying a relatively smaller spatial definition, this would tend to underestimate substantial growth in outer suburbs, so that we should apply a larger spatial definitions to cover the daily urban systems as a whole.

Table 1 shows population growth between the three levels of urban agglomerations in the Japanese urban system: three metropolitan areas, other five metropolitan areas, and 48 major centres (Fig. 1, 2, 3).

Table 1. Population in Metropolitan Areas

Population ('000)	1970	1975	1980	1985	1990
	Metropolitan Areas				
TOKYO MA	21,971	24,761	26,343	27,824	29,167
OSAKA MA	13,640	14,880	15,422	15,891	16,154
NAGOYA MA	6,213	6,831	7,202	7,492	7,780
Total 3 MAs	41,824	46,472	48,967	51,206	53,102
SAPPORO MA	1,286	1,541	1,737	1,888	2,027
SENDAI MA	846	982	1,089	1,170	1,253
HIROSHIMA MA	936	1,087	1,170	1,244	1,300
KITAKYUSHU MA	1,221	1,259	1,292	1,297	1,268
FUKUOKA MA	1,310	1,552	1,706	1,894	2,040
Total 5 MAs	5,598	6,421	6,994	7,494	7,888

Population ('000)	1970	1975	1980	1985	1990
48 Major Centres	17,122	18,726	19,964	20,778	21,222
Other Areas	40,121	40,321	41,135	41,571	41,400
National Total	104,665	111,940	117,060	121,049	123,612
% of National Total	1970	1975	1980	1985	1990
Metropolitan Areas					
TOKYO MA	21.0	22.1	22.5	23.0	23.6
OSAKA MA	13.0	13.3	13.2	13.1	13.1
NAGOYA MA	5.9	6.1	6.2	6.2	6.3
Total 3 MAs	40.0	41.5	41.8	42.3	43.0
Total 5 MAs	5.3	5.7	6.0	6.2	6.4
48 Major Centres	16.4	16.7	17.1	17.2	17.2
Other Areas	38.3	36.0	35.1	34.3	33.5
Annual Growth Rate (%)	1970-75	1975-80	1980-85	1985-90	
Metropolitan Areas					
TOKYO MA	2.42	1.25	1.10	0.95	
OSAKA MA	1.76	0.72	0.60	0.33	
NAGOYA MA	1.91	1.06	0.79	0.76	
Total 3 MAs	2.13	1.05	0.90	0.73	
Total 5 MAs	2.78	1.72	1.39	1.03	
48 Major Centres	1.81	1.29	0.80	0.42	
Other Areas	0.10	0.40	0.21	-0.08	
National Total	1.35	0.90	0.67	0.42	

Source: Population Census (also for Tables 2, 3 and 5).

Each of the three metropolitan areas (MAs) of TOKYO, OSAKA and NAGOYA is defined as a set of local government areas which are located within 50 km radius from the centre of Tokyo or Osaka, or 40km radius from the centre of Nagoya, respectively. Each of the other five metropolitan areas with population over 1 million (SAPPORO, SENDAI, HIROSHIMA, KITAKYUSHU and FUKUOKA) is defined by the author to include local government areas within each daily urban system. The 48 major centres are cities with population over 200,000 including surrounding local government areas within daily urban system each. Most of the provincial capitals outside the metropolitan areas are included, as well as other major regional, service or industrial centres (Table 2).

Table 2. Population in 48 Major Centres

('000)	1970	1975	1980	1985	1990
Hokkaido					
Hakodate	334	353	371	373	362
Asahikawa	305	328	360	371	366
Kushiro	199	217	228	230	225
Northern Honshu					
Aomori	240	264	288	294	288
Hachinohe	218	234	248	253	254

('000)	1970	1975	1980	1985	1990
Morioka	225	254	284	305	317
Akita	281	306	332	345	351
Yamagata	314	332	354	365	372
Fukushima	252	271	288	296	306
Koriyama	262	284	306	321	334
Iwaki	327	330	342	351	356
Central Honshu					
Mito	302	342	376	403	417
Hitachi	232	244	248	252	250
Utsunomiya	361	410	448	481	509
Maebashi	266	286	305	319	331
Takasaki	242	266	283	297	305
Niigata	530	581	628	654	670
Toyama	446	474	498	510	518
Kanazawa	461	521	566	597	623
Fukui	293	313	327	340	345
Kofu	228	252	273	291	300
Nagano	386	412	434	450	460
Matsumoto	282	301	319	331	337
Shizuoka-Shimizu	852	915	951	977	992
Hamamatsu	639	698	745	785	817
Numazu	379	421	442	463	480
Fuji	295	326	341	354	367
Toyohashi	390	433	461	485	507
Western Honshu					
Himeji	541	583	604	621	626
Kakogawa	222	280	324	349	364
Wakayama	429	453	466	468	462
Okayama	523	587	629	660	682
Kurashiki	401	447	464	476	477
Kure	282	292	289	285	277
Fukuyama	326	377	398	414	419
Shimonoseki	278	287	291	291	284
Shikoku					
Tokushima	317	342	364	378	389
Takamatsu	365	397	425	441	449
Matsuyama	438	492	535	565	583
Kochi	303	338	360	375	379
Kyushu					
Kurume	233	245	261	269	277
Nagasaki	477	511	528	540	543
Sasebo	259	262	263	263	257
Kumamoto	568	615	677	722	756
Oita	443	512	555	584	597
Miyazaki	246	281	319	338	354
Kagoshima	470	526	584	616	627
Naha	459	538	584	632	665

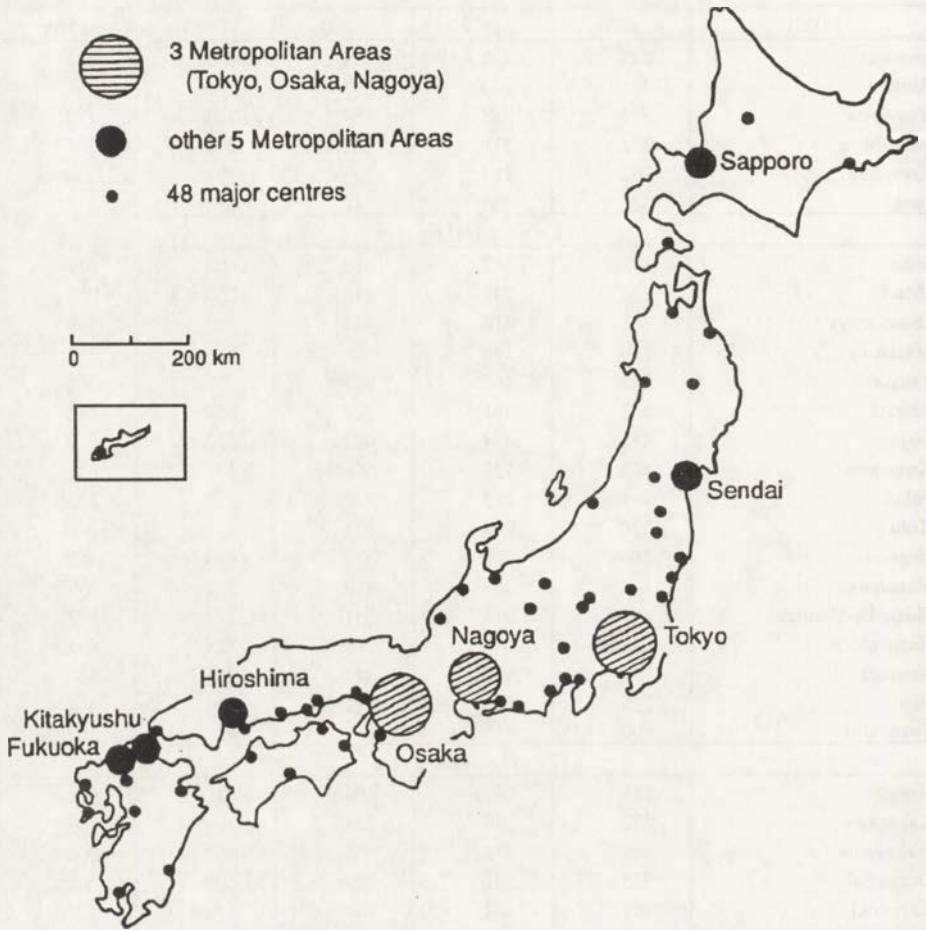


Fig. 1. Location map

TOKYO MA and the "other five MAs" have shown relatively higher and steady population growth rates, followed by the "48 major centres". Although the growth in the latter two categories and the slower growth in OSAKA and NAGOYA MAs apparently show a sign of deconcentration, especially in the 1970s, a trend of so-called "single pole concentration", in the sense that a large portion of national population growth has been absorbed by TOKYO MA, is most important trend from the national viewpoint.

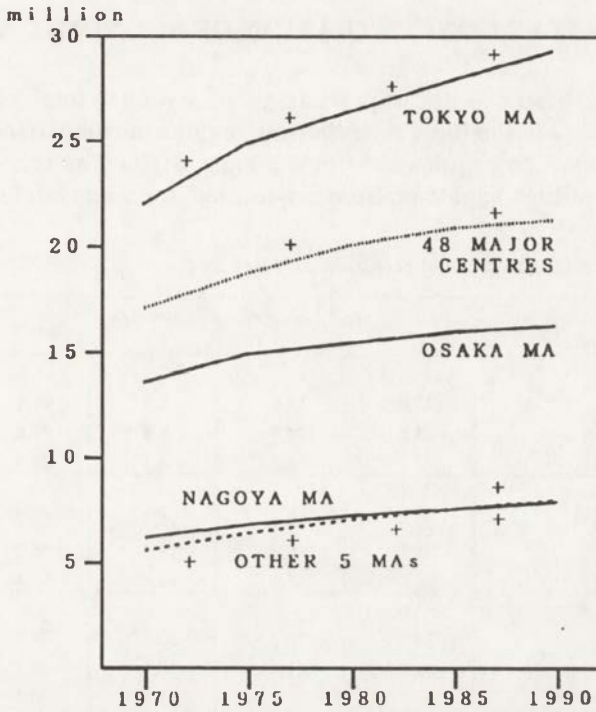


Fig. 2. Population growth

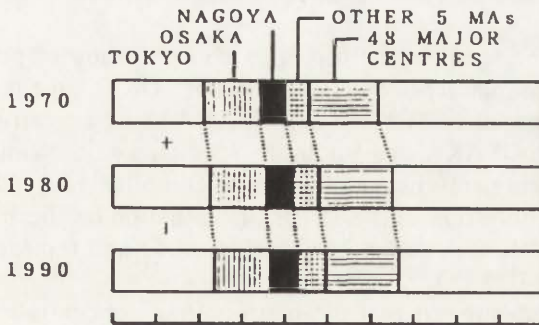


Fig. 3. Percentage of national population in Metropolitan Areas and major centres

2. METROPOLITAN CONCENTRATION OF ECONOMIC ACTIVITIES

Table 3 and Figure 4 show percentage of national total of the selected economic activities in the three metropolitan regions in comparison with population. The metropolitan regions are conveniently defined as relevant provinces where the metropolitan agglomerations are located, for a quick reference.

Table 3. Metropolitan concentration of economic activities

Percentage of National Total	Metropolitan Regions(a)				Other Regions
Population					
1970	23.0	14.8	8.3	46.1	53.9
1980	24.5	14.8	8.4	47.8	52.2
1990	25.7	14.7	8.5	48.9	51.1
Manufacturing Output					
1970	29.6	20.4	12.7	62.7	37.3
1980	26.5	16.4	13.3	56.2	43.8
1988	24.8	15.0	14.4	53.4	46.6
Wholesale Sales					
1970	38.9	25.1	10.9	74.9	25.1
1979	37.7	21.4	10.1	69.1	30.9
1988	39.7	19.4	11.1	70.2	29.8
Bank Loans					
1970	47.7	21.9	6.9	76.5	23.5
1980	46.2	19.3	6.3	71.7	28.3
1989	53.1	17.8	5.6	76.5	23.5

(a) Simply defined here as a group of provinces: TOKYO: Tokyo, Saitama, Chiba and Kanagawa, OSAKA: Osaka, Kyoto, Hyogo and Nara, NAGOYA: Aichi, Gifu and Mie.

Sources: Population Census, Manufacturing Census, Commercial Census and Bank of Japan.

In contrast to the trend of metropolitan concentration of population in the metropolitan regions, mainly due to the growth of TOKYO, the percentage losses of manufacturing output in TOKYO and OSAKA show a trend of deconcentration: TOKYO and OSAKA are no more specialized in manufacturing. The wholesale and banking activities show a more complicated trend. In contrast to the trend of deconcentration in the 1970s, the situation has been reversed in the 1980s: the trend of concentration has been resumed and reinforced, due to the percentage gains in TOKYO.

The recent trends suggest that the metropolitan concentration have entered into a new post-industrial phase, characterized by the concentration in TOKYO.

3. METROPOLITAN POPULATION BY ZONE

Table 4 and Figure 5 show population growth in the three metropolitan areas by zone. A "core" area is defined by the author as the central part of each central

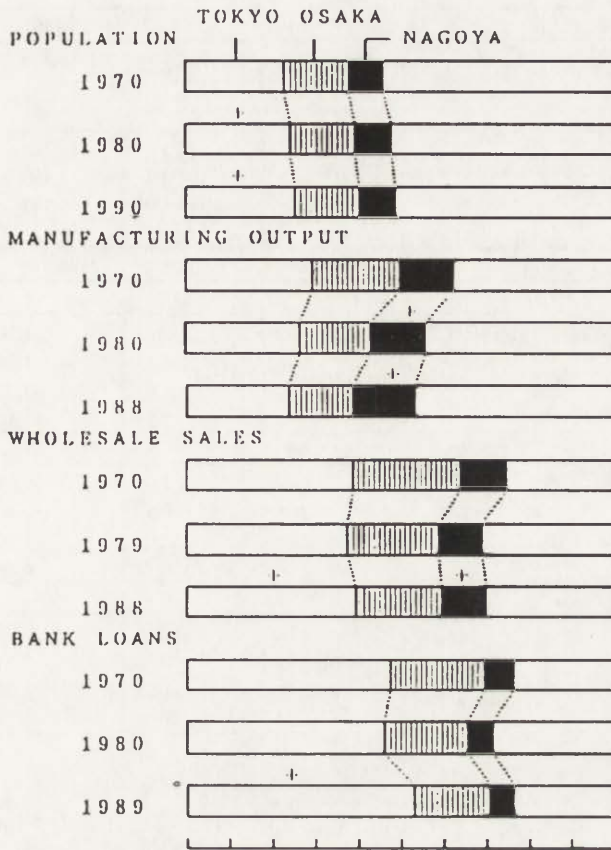


Fig. 4. Metropolitan concentration of economic activities

city: Tokyo and Yokohama in TOKYO MA, Osaka, Kyoto and Kobe in OSAKA MA, and Nagoya in NAGOYA MA. These core areas represent long-established urban areas which had already been urbanized as the "six metropolitan cities" in the pre-war days.

Table 4. Metropolitan population by zone

Population ('000)	1970	1975	1980	1985	1990
TOKYO MA					
Core	5,335	5,001	4,919	4,653	4,415
Inner Zone	6,891	7,378	7,331	7,776	8,071
Outer Zone	9,745	12,383	14,093	15,395	16,682
Total	21,971	24,761	26,343	27,824	29,167
OSAKA MA					
Core	3,504	3,184	2,959	2,878	2,806
Inner Zone	5,533	6,125	6,309	6,447	6,484

Population ('000)	1970	1975	1980	1985	1990
Outer Zone	4,603	5,570	6,154	6,566	6,864
Total	13,640	14,880	15,422	15,891	16,154
NAGOYA MA					
Core	881	813	751	725	707
Inner Zone	1,227	1,348	1,404	1,450	1,493
Outer Zone	4,105	4,670	5,046	5,317	5,581
Total	6,213	6,831	7,202	7,492	7,780
Annual Growth Rate (%)		1970-75	1975-80	1980-85	1985-90
TOKYO MA					
Core		-1.29	-0.33	-1.10	-1.05
Inner Zone		1.37	-0.13	1.18	0.75
Outer Zone		4.91	2.62	1.78	1.62
Total		2.42	1.25	1.10	0.95
OSAKA MA					
Core		-1.89	-1.46	-0.55	-0.50
Inner Zone		2.05	0.59	0.43	0.11
Outer Zone		3.89	2.01	1.30	0.89
Total		1.76	0.72	0.60	0.33
NAGOYA MA					
Core		-1.60	-1.58	-0.72	-0.50
Inner Zone		1.91	0.82	0.64	0.58
Outer Zone		2.61	1.56	1.05	0.97
Total		1.91	1.06	0.79	0.76

For definitions of zones, see text.

The metropolitan areas excluding the core areas are divided into two zones. Inner zones in TOKYO and OSAKA MAs are defined as local government areas within 20km radius excluding the core areas of Tokyo and Osaka, and 10 km radius excluding the Nagoya core area in NAGOYA MA, representing almost fully built-up and densely populated urban areas. Outer zones in TOKYO and OSAKA MAs are 20-50 km rings (excluding the core areas of Yokohama, Kyoto and Kobe), and 10-40 km ring in NAGOYA MA.

The core areas show a declining trend in common with central parts of many western metropolises. This is not, however, because people hate to live in the core areas, but mainly because residential land uses are being taken over by business and commercial land uses resulting in expensive land prices. In other words, the demographic decline in the core areas reflect more active economic activities and higher-order functions.

The inner zones have been almost saturated and show very low population growth rates. It should be noted, however, the population growth rate in the inner zone in TOKYO MA has risen again in the 1980s after the slight decline in the late 1970s.

It is clear that most of the metropolitan population growth occurred in the outer zones, especially in TOKYO MA. The contrast between the depopulating core areas and the growing outer zones means large-scale of long-distance commuting. In TOKYO MA, for example, apparent net outflow of commuters from

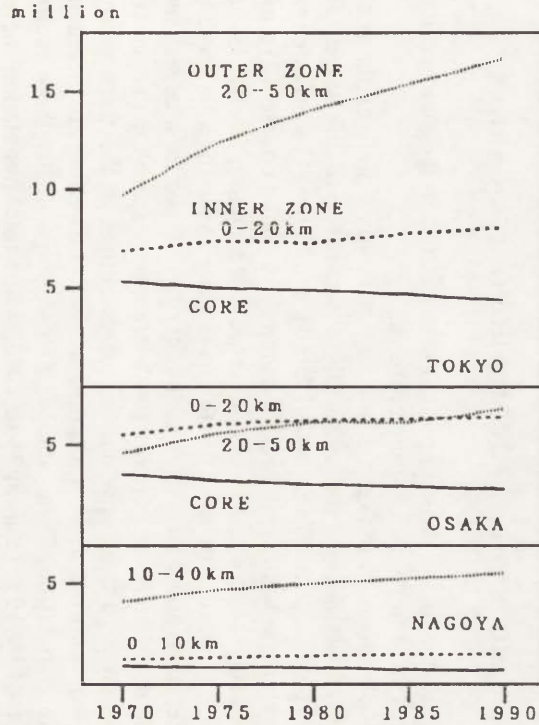


Fig. 5. Population growth by zone

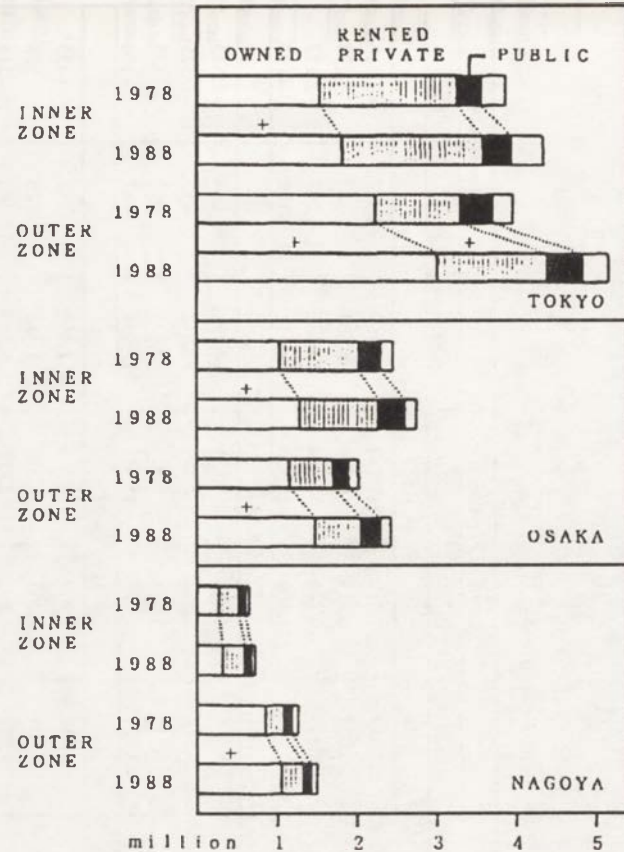


Fig. 6. Number of dwellings by tenure

the outer zone is more than 2 million, followed by more than 1 million from the inner zone resulting in apparent net inflow of more than 3 million into the core area (Table 5).

Table 5. Daytime population by zone

('000)	Daytime Population				Apparent Flow	
	1970	1975	1980	1985	1970	1985
TOKYO MA						
Core	7,713	7,882	7,797	8,169	+2,378	+3,516
Inner Zone	6,088	6,374	6,496	6,604	-803	-1,173
Outer Zone	8,348	10,714	12,234	13,238	-1,397	-2,157
Total	22,149	24,969	26,526	28,011	+178	+187
OSAKA MA						
Core	4,568	4,612	4,431	4,391	+1,064	+1,513
Inner Zone	5,118	5,532	5,759	5,872	-415	-575
Outer Zone	4,041	4,835	5,325	5,731	-562	-835
Total	13,727	14,979	15,515	15,995	+87	+104
NAGOYA MA						
Core	1,262	1,200	1,165	1,160	+381	+435
Inner Zone	1,101	1,265	1,316	1,352	-126	-98
Outer Zone	3,937	4,462	4,818	5,103	-168	-214
Total	6,300	6,926	7,298	7,614	+87	+123

Data for 1990 are not yet available.

4. HOUSING IN THE METROPOLITAN AREAS

Housing is one of the most important urban issues in the metropolitan areas, and closely related to the commuting problem.

A life-cycle model based on age and size of family mainly explains changing size, tenure and building type of dwelling according to life-stage (Taniuchi, 1991b). A typical scenario for a model family would be: (1) a private rented flat (wooden, 2 storeys) with smaller floor space for a young couple; (2) a private or public rented flat (concrete, 4 storeys or more) for a smaller family; (3) an owned flat (concrete, 4 storeys or more) with larger floor space for a larger family; (4) an owned detached house (wooden) with larger floor space for a larger family; and (5) an owned detached house (wooden) with larger floor space for an aged couple.

Table 6 and Figure 6 show number of dwellings in the three metropolitan areas. It is worth noting, first of all, that number of dwellings is increasing more rapidly than population. Total number of dwellings in the three metropolitan areas increased by 19% from 1978 to 1988, while total population increased by only 10%. Even in the inner zones (including the core areas, hereafter) where population growth rate was very low, number of dwellings increased by more than 10%.

Table 6. Number of dwellings by zone

('000)	Dwellings		Population		Ratio 88/78	
	1978	1988	1978	1988	Dwel.	Pop.
TOKYO MA						
Inner Zone	3,841	4,319	11,193	11,555	1.12	1.03
Outer Zone	3,961	5,149	13,644	16,364	1.30	1.20
Total	7,802	9,469	24,837	27,919	1.21	1.12
OSAKA MA						
Inner Zone	2,443	2,743	7,801	8,026	1.12	1.03
Outer Zone	2,013	2,422	6,921	7,722	1.20	1.12
Total	4,456	5,165	14,722	15,748	1.16	1.07
NAGOYA MA						
Inner Zone	637	732	2,062	2,158	1.15	1.05
Outer Zone	1,257	1,505	4,749	5,328	1.20	1.12
Total	1,894	2,238	6,811	7,486	1.18	1.10
Total 3 MAs	14,152	16,872	46,371	51,153	1.19	1.10

Each zone includes relevant core area(s).

Source: Housing Survey (through to Table 12).

Table 7 and Figure 7 show number of dwellings classified by tenure. The total dwellings mainly consist of owned houses and privately rented houses, while public housing plays a very minor role. The increase of total dwellings are mainly due to the increase in owned houses, even in the inner zones (Tables 8 and 9). Both the owned and rented houses are mainly supplied through the market system, and the main roles played by public sectors have not been those as suppliers but as controllers or regulators. Although the market system is blamed to have involved serious problems of higher prices of land and houses, it should be noted that any other alternatives such as stronger government intervention would have involved other kind of problems and would have been much less efficient to catch up with the rapidly growing demand of housing.

Table 7. Number of dwellings by tenure

('000)	Owned Houses	Rented Houses				Total (c)
		Total	Private	Public (a)	Issued (b)	
TOKYO MA						
Inner Zone						
1978	1,526	2,278	1,720	297	261	3,841
1988	1,788	2,346	1,793	339	213	4,319
Outer Zone						
1978	2,231	1,719	1,074	389	256	3,961
1988	2,991	2,083	1,395	434	254	5,149
Total						
1978	3,757	3,997	2,794	687	516	7,802
1988	4,779	4,429	3,188	773	467	9,469

('000)	Owned Houses	Rented Houses				Total (c)
		Total	Private	Public (a)	Issued (b)	
OSAKA MA						
Inner Zone						
1978	1,018	1,420	1,006	280	133	2,443
1988	1,287	1,407	991	322	94	2,743
Outer Zone						
1978	1,140	868	555	207	106	2,013
1988	1,472	905	587	244	74	2,422
Total						
1978	2,158	2,287	1,561	488	239	4,456
1988	2,759	2,312	1,578	566	168	5,165
NAGOYA MA						
Inner Zone						
1978	275	362	249	69	44	637
1988	335	380	255	89	36	732
Outer Zone						
1978	841	416	239	100	77	1,257
1988	1,046	455	287	105	63	1,505
Total						
1978	1,116	777	487	169	122	1,894
1988	1,381	836	543	194	99	2,238
Total 3 MAs						
1978	7,030	7,061	4,842	1,343	877	14,152
1988	8,919	7,577	5,309	1,533	735	16,872

(a) Owned by municipalities and semi-governmental housing corporations.

(b) Owned or administered by employers (companies, etc.) and rented to their employees.

(c) Includes other status and not specified.

Table 8. Increase of dwellings by tenure

Increase 1978-88 ('000)	Owned Houses	Rented Houses				Total
		Total	Private	Public	Issued	
TOKYO MA						
Inner Zone	263	68	73	42	- 47	478
Outer Zone	760	364	321	45	- 2	1,188
Total	1,023	432	395	87	- 49	1,666
OSAKA MA						
Inner Zone	169	- 13	- 15	42	- 39	300
Outer Zone	332	37	32	37	- 32	410
Total	601	25	17	78	- 71	709
NAGOYA MA						
Inner Zone	61	19	7	20	- 8	95
Outer Zone	204	40	49	5	- 14	248
Total	265	58	56	25	- 22	343
Total 3 MAs	1,888	515	467	190	-142	2,719

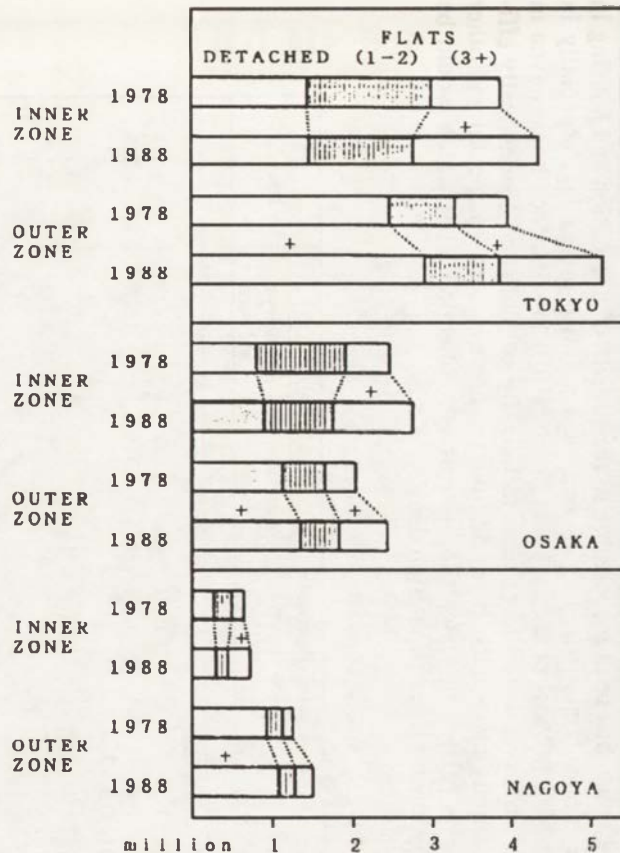


Fig. 7. Number of dwellings by building type

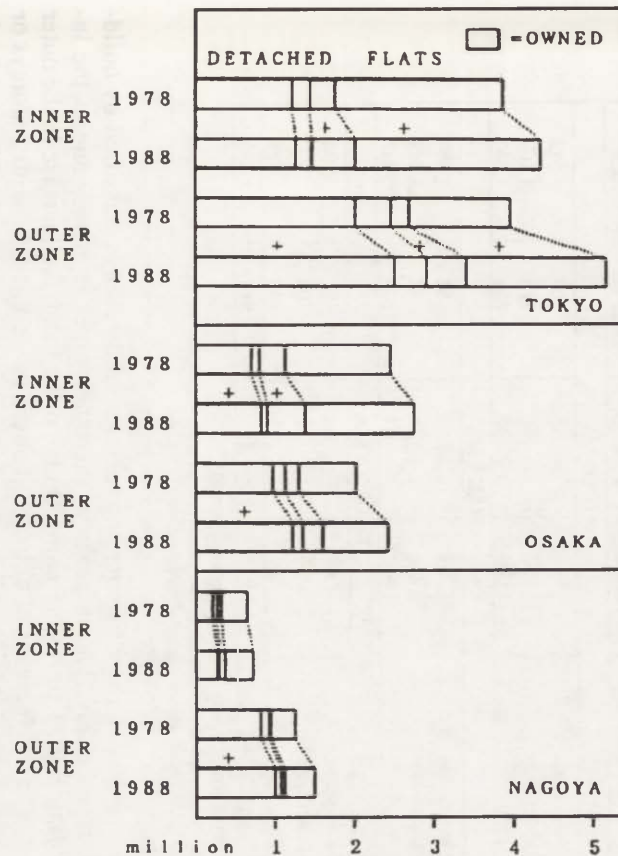


Fig. 8. Number of dwellings by building type nad tenore

Table 9. Number of owned houses constructed in 1979-1988 by means of obtaining

('000)	Private(a)	Public(b)	Other (c)	Total
TOKYO MA				
Inner Zone	349	15	224	588
Outer Zone	737	80	284	1,102
Total	1,086	95	509	1,690
OSAKA MA				
Inner Zone	281	17	32	389
Outer Zone	321	28	87	448
Total	602	44	120	837
NAGOYA MA				
Inner Zone	68	4	91	104
Outer Zone	221	11	99	320
Total	289	15	190	423
Total 3 MAs	1,977	155	819	2,950

(a) Newly built houses ordered or purchased privately.

(b) Newly built houses purchased from municipalities or semi-governmental housing corporations.

(c) Rebuilt, used houses purchased, inherited, etc.

Tables 10 and 11 show number and increase of dwellings classified by building type, respectively. The increase in the inner zones is mainly due to the increase of flats with 3 storeys or more. On the other hand, the increase in the outer zones is due to the increase of detached houses as well as flats with 3 storeys or more. As shown in Table 11 and Figure 8, the increase of detached houses is almost exclusively due to that of owned ones, and the increase of flats is also contributed by owned ones. Although the long established aspiration to own a detached house has been responsible to the growth of population and housing in the outer zones, flats including owned ones are also increasing, especially in TOKYO MA. In view of the fact that there exist many detached houses even in the inner zones, it would be at least technically possible and economically efficient to supply more flats. It would involve, however, environmental and other social costs related to water supply, garbage collection, etc., which would be caused by much higher population density.

Table 10. Number of dwellings by building type

('000)	Detached Houses	Flats		Total (b)
		1 or 2 storeys (a)	3 storeys and over	
TOKYO MA				
Inner Zone				
1978	1,431	1,543	823	3,841
1988	1,443	1,316	1,520	4,319
Outer Zone				
1978	2,454	818	675	3,961
1988	2,890	965	1,273	5,149
Total				
1978	3,886	2,361	1,498	7,802
1988	4,333	2,281	2,793	9,469

('000)	Detached Houses	Flats		Total (b)
		1 or 2 storeys (a)	3 storeys and over	
OSAKA MA				
Inner Zone				
1978	802	1,092	534	2,443
1988	910	835	981	2,743
Outer Zone				
1978	1,116	539	350	2,013
1988	1,343	481	588	2,422
Total				
1978	1,918	1,631	884	4,456
1988	2,253	1,316	1,569	5,165
NAGOYA MA				
Inner Zone				
1978	286	213	134	637
1988	300	159	269	732
Outer Zone				
1978	916	204	132	1,257
1988	1,083	197	220	1,505
Total				
1978	1,203	417	266	1,894
1988	1,383	356	489	2,238
Total 3 MAs				
1978	7,007	4,409	2,648	14,152
1988	7,969	3,952	4,851	16,872

(a) Includes townhouses and other semi-detached types.

(b) Includes other types and not specified.

Table 11. Increase of dwellings by building type

Increase 1978-88 ('000)	Detached Houses	Flats		Total
		1 or 2 storeys	3 storeys and over	
TOKYO MA				
Inner Zone	12	- 227	697	478
Outer Zone	436	147	598	1,188
Total	447	- 80	1,295	1,666
OSAKA MA				
Inner Zone	108	- 257	447	300
Outer Zone	226	- 58	238	410
Total	335	- 315	686	709
NAGOYA MA				
Inner Zone	14	- 54	135	95
Outer Zone	167	- 7	88	248
Total	181	- 61	223	343
Total 3 MAs	963	- 457	2,203	2,719

Table 12. Number of owned houses by building type

('000)	Number 1988			Increase 1978-88		Total
	Detached Houses	Flats	Total	Detached Houses	Flats	
TOKYO MA						
Inner Zone	1,248	541	1,788	56	207	263
Outer Zone	2,497	493	2,991	491	269	760
Total	3,745	1,034	4,779	547	476	1,023
OSAKA MA						
Inner Zone	819	469	1,287	121	148	269
Outer Zone	1,214	258	1,472	240	92	332
Total	2,032	726	2,759	361	240	601
NAGOYA MA						
Inner Zone	265	71	335	28	32	61
Outer Zone	996	49	1,046	181	24	204
Total	1,261	120	1,381	209	56	265
Total 3 MAs	7,038	1,880	8,918	1,117	772	1,888

5. CONCLUDING REMARKS

The metropolitan concentration in terms of population, housing and higher-order functions has been maintained, and rather reinforced by the single-pole concentration in TOKYO MA, and the growth of population and housing in the metropolitan areas have been contributed by the growth in the outer zones, causing related urban problems.

Many people argue that the single-pole concentration in TOKYO should be discouraged and deconcentration to other areas should be encouraged through stronger government policies. Whenever we discuss deconcentration, however, we have to identify what kind of activities or functions should be deconcentrated. Although it could be technically possible for the central government to decentralize its powers and functions, it would be politically and practically difficult. Moreover, much stronger and direct government intervention to the private sectors and individual families or persons would not be effective and would involve political conflicts and economic inefficiency.

Finally, it should be noted that there seems to be some confusion as to why the metropolitan concentration, especially the so-called "single-pole concentration" in TOKYO MA, has to be discouraged. Some may argue that other metropolises and other non-metropolitan urban centres should be developed to catch up with TOKYO, assuming that TOKYO enjoys monopoly of "good things", and insist that other centres should also share and enjoy them. Others may argue that too much large size of TOKYO should be reduced, assuming that TOKYO is suffering from "bad things", and expect that the situation in TOKYO

would be much more improved with reasonable size of population and economy, so that the residents and institutions could enjoy lower land prices, less congested traffic, etc. Although both of these two aspects actually exist and interrelated, it would not be easy to find a stone to kill two birds.

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RESIDENTIAL SEGREGATION BY AGE IN TOKYO (FROM A COHORT-BY-COHORT VIEWPOINT)

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1. INTRODUCTION

1. FACTORIAL ECOLOGY AND THE LIFE CYCLE MODEL

Japanese geographers have adopted factorial ecology in comparing urban structures of Japanese cities with those of Western cities¹. According to these studies, family status and socio-economic status are the two main factors of spatial segregation in Japanese cities; as in the case of Western cities, the spatial pattern of family status is zonal and that of socio-economic status is sectoral. However, these studies also show that family status is the first component and socio-economic status is the second component in Japanese cities, which is the reverse situation of Western cities. Accordingly, family status is as important factor for Japanese cities in differentiating residential areas as socio-economic status is for Western cities. Age is one of the principal indices of family status, hence residential segregation by age is selected as the subject of this study.

It has been suggested that residential segregation by age is primarily attributed to the role of selectivity of residential mobility, and that segregation patterns are inevitably related to the spatial distribution of housing variables. The life-cycle model has been often adopted as a theoretical concept which links age segregation, residential mobility and housing. The logic of this model is that "at different stages of its life cycle a household has very different needs in terms of space and other facilities" (Robson 1975). Although many restrictions of this model have been pointed out, residential segregation by age is a very real phenomenon, and this model does provide a useful framework for comparing segregation patterns. According to P. White (1984), it is possible to state that in

¹ For example, Hiroshima and Fukuoka (Morikawa 1976), Sapporo (Yamaguchi 1976) and Tokyo (Nihon Jutaku Sogo Center 1983)

West European cities young adults (about 15-29 years old) and older population (60 and over) congregate at the center, while young families (0-14 and 30-44) tend to be located in the periphery.

Because of the changing family structure in Western countries, some recent works have attempted to reconsider the utility of the life cycle model in studying of residential segregation by age (Stapleton 1980, Dangschat 1985). J. Dangschat has mentioned four points: (1) recent studies of life cycles reveal that individual stages within these cycles cannot be clearly observed; (2) in Western cities, life cycle stages no longer correspond to age. For example, it is not necessary now for a thirty-year-old man to be a family-father; (3) not all households can afford their ideal residence which corresponds to their stage in the life cycle; (4) changes in the life cycle do not always lead to increased mobility. Many older households remain in their original dwellings even after their children have left home.

The purpose of this study is, therefore, to discuss the residential segregation by age group in the Tokyo metropolitan area considering White's general statement and Dangschat's questions. By applying a cohort-by-cohort viewpoint, a longitudinal aspect of residential segregation will be discussed here — an aspect which has been mostly neglected in previous studies.

2. STUDY AREA AND STUDY PERIOD

The study area (Tokyo metropolitan area) was selected on the basis of the 1980 Population Census of Japan (Fig. 1). This area consists of the central city and its surrounding area. The central city corresponds to the ward area, which consists of 23 municipalities (Wards or Ku) in central Tokyo (No. 77-79 in Fig. 2); while the surrounding area consists of 131 suburban municipalities². Thus, the Tokyo metropolitan area discussed in this study consists of 154 municipalities; it corresponds to the circle of 40-50 kilometers range from Tokyo Metropolitan Government³.

Tanabe (1988) has defined the existence of three stages in Tokyo's urban growth: the period of Edo, the first half of the 20th century, and the period of rapid economic growth after the Second World War, especially after about 1960. Moreover, he distinguishes three concentric zones in the Tokyo metropolitan area: old zone, new zone and extended zone, which correspond to his three stages. He asserts that it was after about 1960 that Tokyo entered into the process of metropolitanization. Accordingly, the period after 1960 will be discussed in this study.

² The surrounding area consists of those municipalities, which satisfy the following two conditions: (i) the number of resident workers commuting to the central city is 10% or more of its total resident workers, and (ii) the area is contiguous to the central city or to one municipality defined as surrounding municipalities. If a municipality where under 10% of the resident workers commute to the central city is entirely enclosed by areas defined as surrounding municipalities, it is also regarded as a surrounding municipality.

³ Tokyo Metropolitan Government was located in Marunouchi, Chiyoda-ku at that time.

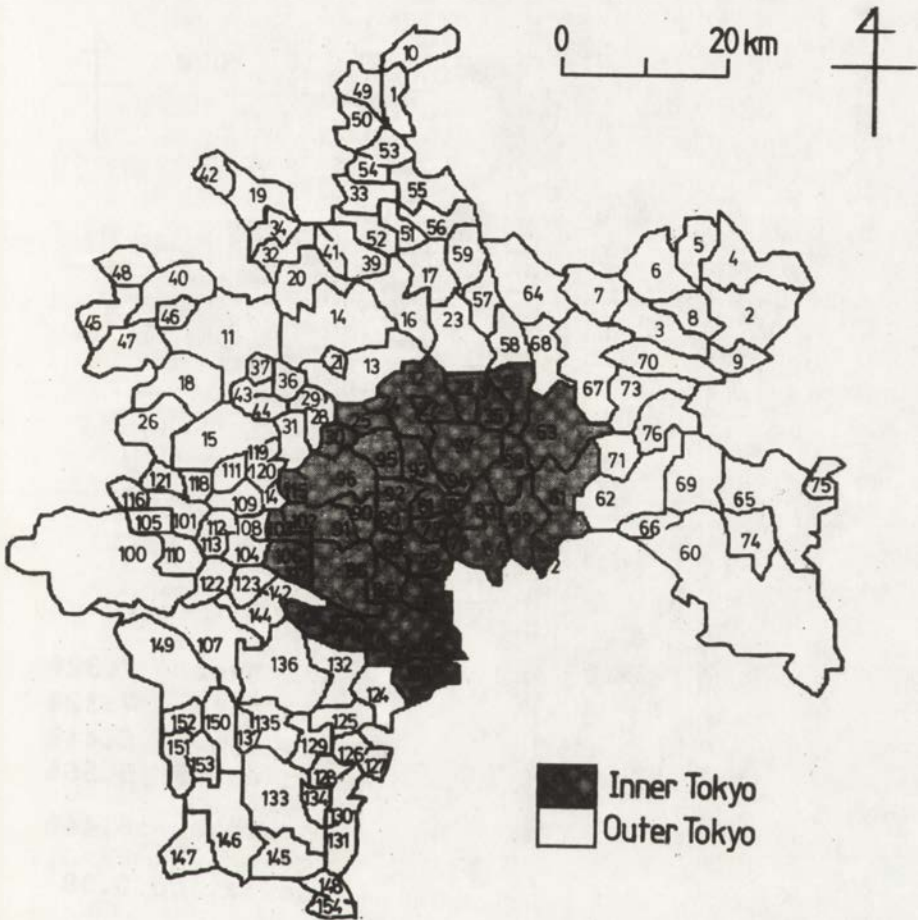


Fig. 1. Study area and two concentric zones

2. SEGREGATION PATTERNS BY AGE GROUP

1. SEGREGATION AT MUNICIPALITY LEVEL

Segregation is defined in this study as "the residential separation of sub-groups within a wider population. A group is completely unsegregated when its members are distributed uniformly relative to the remainder of the population" (Ogden, 1986 in "The Dictionary of Human Geography").

The following procedure was adopted to demonstrate the segregation patterns by age group: (1) calculating the ratio of one age group population to the total population in every municipality; (2) mapping the results; and (3) repeating this procedure for all 14 five-year age groups (0-4, 5-9, 10-14, 15-19, 20-24, 25-29,

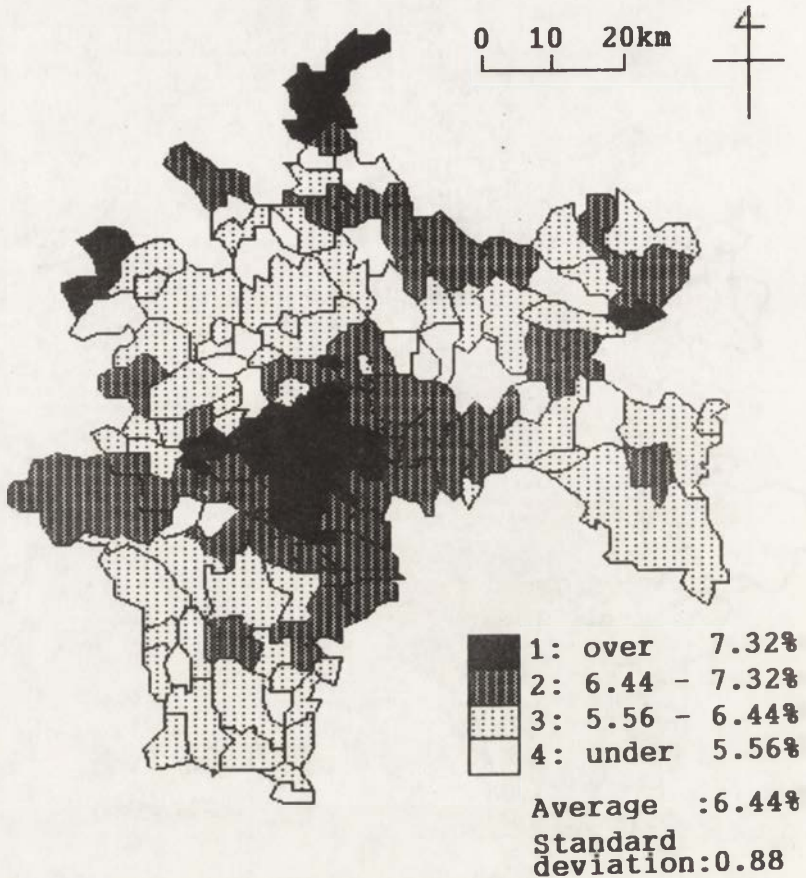


Fig. 2. Segregation pattern of the 15-19 age group (1975)
 Source: Population Census of Japan, 1975.

30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65 and over) and for all six census years (1960, 1965, 1970, 1975, 1980, 1985).

As a result, 84 maps have been obtained which illustrate the residential segregation patterns by age group at municipality level. Figure 2 and Figure 3 are examples of these 84 segregation maps. Figure 2 shows that in 1975 the 15-19 age group was distributed more densely in the central part of the metropolitan area than in the suburbs. However, the segregation pattern of the same age group in 1985 (Fig. 3) shows the reverse of that 10 years before. Most of the 84 segregation maps at municipality level have an obvious concentric pattern, as the previous factorial ecology studies showed, and these concentric patterns can be broken down into two groups: one distributed more densely in the center and one concentrated in the suburbs.

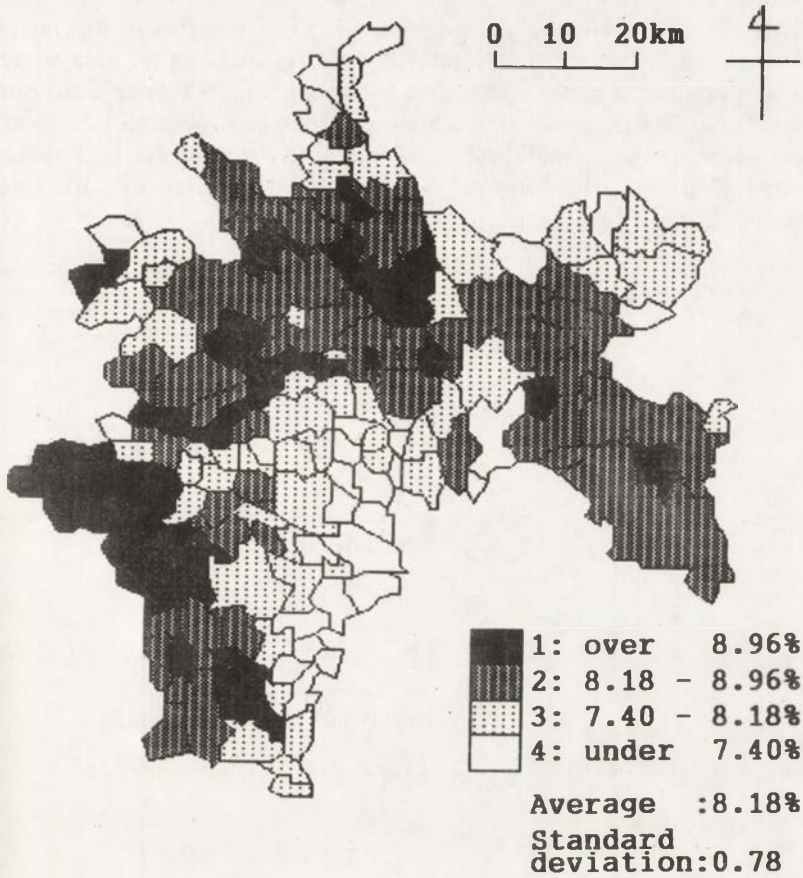


Fig. 3. Segregation pattern of the 15-19 age group (1985)

Source: Population Census of Japan, 1985.

2. SEGREGATION BY TWO CONCENTRIC ZONES

Having considered the above-mentioned 84 maps at municipality level by 10 kilometers range concentric zonal areas, the characteristics of the age segregation patterns are demonstrated most clearly and easily when the municipalities are classified into two concentric areas: one up to 20 km from Tokyo Metropolitan Government, the other beyond 20 km. These two concentric zonal areas are called in this study "Inner Tokyo" and "Outer Tokyo". Inner Tokyo consists of the 23-wards area of Tokyo and 21 municipalities in the surrounding area, and Outer Tokyo consists of the remaining 110 municipalities of the Tokyo metropolitan area (Fig. 1).

As shown in Figure 4, the population in Inner Tokyo has not increased remarkably since the 1960s while the population in Outer Tokyo has rapidly increased since 1960. Inner Tokyo is accordingly regarded as an area which had been already urbanized in the 1960s, thus corresponding to Tanabe's old zone and new zone. Outer Tokyo is the area which has been incorporated into the Tokyo metropolitan area since about 1960, and this area corresponds to Tanabe's extended area. Consequently, 154 municipalities are simplified into the two concentric zonal areas.

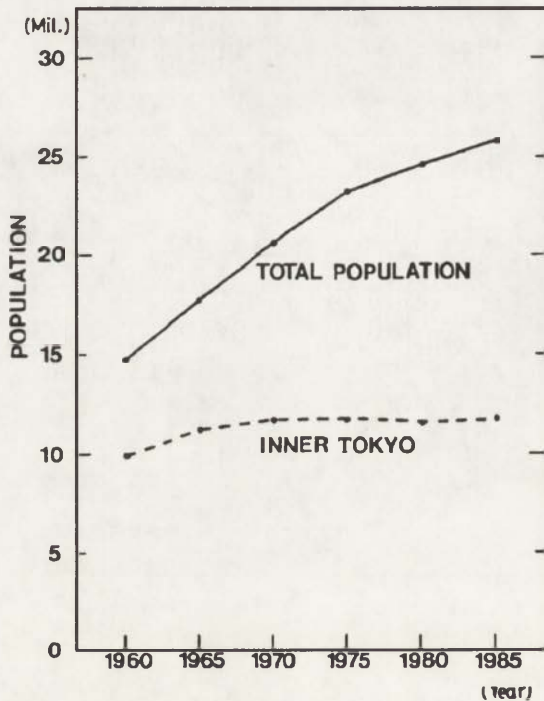


Fig. 4. Population development of the Tokyo metropolitan area

Source: Population Census of Japan, 1960-1985.

The next step is the calculation of a residential location quotient to illustrate the spatial patterns and the degree of segregation by age group at the level of Inner and Outer Tokyo. For the 14 age groups and for the six data-years residential location quotients of Inner Tokyo⁴ are calculated as follows:

$$\text{residential location quotient (RLQ)} = \frac{a/b}{A/B} \times 100$$

⁴ Here only two areas, Inner Tokyo and Outer Tokyo, are in question, thus it is sufficient to show only the results of Inner Tokyo. The results of Outer Tokyo are just the reverse of those of Inner Tokyo.

where: a — population of age group P in Inner Tokyo

A — the total population of age group P in the Tokyo metropolitan area

b — the total population in Inner Tokyo

B — the total population in the Tokyo metropolitan area

The results are shown in Table 1, in which the content of the 84 segregation maps has been simplified using the above procedure. When the residential location quotient (RLQ) of Inner Tokyo is more than 100, that age group is distributed more densely in Inner Tokyo than Outer Tokyo in that year. On the other hand, when the RLQ is less than 100, that age group is distributed more densely in Outer Tokyo. Moreover, the difference between the value of RLQ and 100 indicates the degree of segregation. Table 1 shows, for example, that the RLQ of the 15-19 age group in 1975 is 106, which corresponds to the age group shown in Figure 2, and the RLQ of the same age group in 1985 corresponding to Fig. 3 is 95.

Table 1

Age Group	1960	1965	1970	1975	1980	1985	Cohort
0-4	95	94	90	87	89	93	
5-9	91	92	92	88	85	86	←1976-80
10-14	94	92	95	94	89	86	
15-19	107	104	104	106	102	95	←1966-70
20-24	110	110	112	116	118	114	
25-29	105	104	102	104	108	112	←1956-60
30-34	99	98	95	94	98	102	
35-39	99	97	96	93	93	96	↑1946-50
40-44	98	99	99	98	95	93	
45-49	98	100	103	102	101	96	←1936-40
50-54	98	100	103	107	105	103	
55-59	98	100	103	108	110	107	←1926-30
60-64	96	100	104	108	111	110	
65+	91	97	104	111	113	113	
Standard deviation	5.5	4.8	6.0	9.0	10.1	9.6	

Source: Population Census of Japan, 1960-1985

Viewed year by year, the principal characteristics of segregation patterns in the Tokyo metropolitan area are as follows (Table 1); first, fourteen 5-year age groups can be combined into four larger groups (0-14, 15-29, 30-44, 45 and over); second, each group has its own spatial tendency to segregate. The 0-14 age group and the 30-44 age group are distributed more densely in Outer Tokyo, while the 15-29 age group and the 45 and over age group are distributed more densely in Inner Tokyo; third, the degree of age segregation, which is substituted by the value of standard deviation in each year, shows its maximum value in 1980 and it is declining now; fourth, the age groups of 15-19 and 45-49 shifted their segregation patterns from Inner Tokyo to Outer Tokyo after 1980, while the 30-34 age group shifted from Outer Tokyo to Inner Tokyo. These segregation shifts will be discussed later on from a cohort perspective.

3. CHANGING SEGREGATION PATTERNS

1. COHORT-BY-COHORT VIEWPOINT

Table 1 has also been broken down into cohorts. Cohort refers in this study to groups of individuals born within specific time periods. Members of 1956-1960 cohort were, for example, born in the period between 1956 and 1960; this cohort was 0-4 years old in 1960, 5-9 in 1965, 10-14 in 1970 and 15-19 in 1975, hence this cohort corresponds to the age group in Figure 2. Figure 5 is drawn from this perspective. The RLQ values of 1956-1960 cohort in 1960, 1965, 1970, 1975, 1980 and 1985 are 95 at ages 0-4, 92 (5-9), 95 (10-14), 106 (15-19; Fig. 2), 118 (20-24) and 112 (25-29), as shown in Table 1, and the RLQ line of the 1956-60 cohort in Fig. 5 links these RLQ values.

The outline of Figure 5 can be illustrated as follows. The RLQ lines change their slopes drastically three times (at the ages of 5-9, 20-24 and 35-39) and, as such, have three limit values. Thus, each cohort can be assumed to experience three turning points in its segregation pattern in the course of its life cycle. Furthermore, its life cycle course is divided into four phases by these three turning points (Fig. 5). In the first phase the quotients fall to their minimum value at the age of 5-9, that is, the degree of cohort segregation in Outer Tokyo increases during this phase. In the second phase the quotients turn up to their maximum value at the age of 20-24, and the cohorts shift their segregation pattern to Inner Tokyo. The quotients decline again to their other minimum value at the age of 35-39 in the third phase and the cohorts shift their segregation pattern from Inner

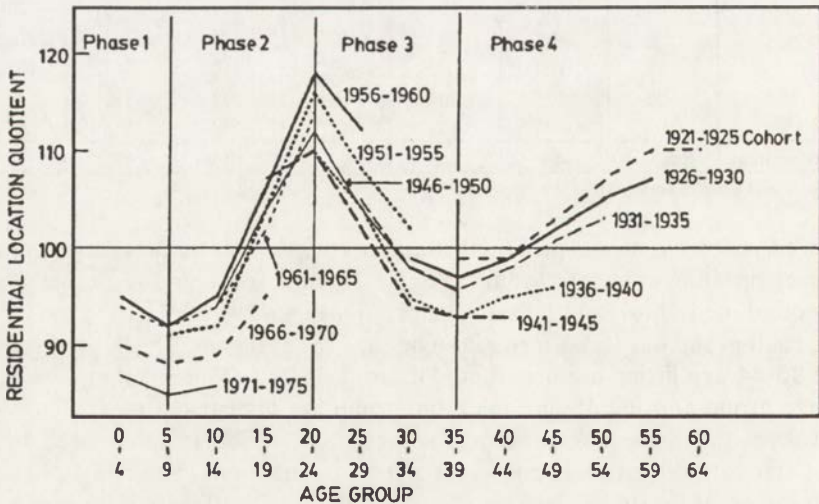


Fig. 5. Residential location quotients of Inner Tokyo — cohort analysis

Source: Population Census of Japan, 1960-1985.

Tokyo to Outer Tokyo. In the last phase quotient values increase again and cohorts slowly shift their segregation pattern again to Inner Tokyo.

Thus, it can be seen not only from a year-by-year lateral aspect but also from a cohort-by-cohort longitudinal aspect that in the Tokyo metropolitan area young families (ages of 0-14 and 30-44) tend to be distributed in suburban areas and young adults (ages of 15-29) and older population (45 over) congregate in more central locations.

2. MIGRATION AND HOUSING STOCK

Two main migration flows are recognized concerning age group in the Tokyo metropolitan area (Nakagawa 1990). The first flow is interregional, which generates from areas outside of the Tokyo metropolitan area and consists mainly of in-migrants aged between 15 and 24, moving primarily into Inner Tokyo. The second flow, which is intrametropolitan and from central Tokyo to suburban areas, is mostly made up of the 0-9 and 25-34 age groups. Figure 6 illustrates the transition of these two migration flows from 1954)⁵. Both of the flows show the highest values between 1970 and 1975.

On the other hand, Table 2 illustrates the housing stock in connection with distance ranges within the Tokyo metropolitan area. Floor space per dwelling and household members per dwelling rise obviously with distance from the center. Moreover, older dwellings and privately rented dwellings are located in the inner city, while dwellings in suburban areas are newer and more frequently owner-occupied.

Table 2

Zone (km)	Area of floor space per dwelling	Household members per dwelling	Year of construction			Tenure of dwelling		
			Before 1970	1970-1980	1980-	Owned	Publicly rented	Privately rented
0-10	55.3m ²	2.61	55.7%	37.0%	7.3%	41.7%	7.5%	50.8%
10-20	58.3	2.91	46.5	45.0	8.5	45.4	8.3	46.3
20-30	67.2	3.22	41.8	48.7	9.5	55.9	7.7	36.4
30-40	71.7	3.38	40.2	50.9	8.9	59.7	11.6	28.7
40-50	80.7	3.51	39.5	50.3	10.2	67.4	7.3	25.3
Total	65.1	3.09	45.0	46.3	8.7	52.5	8.7	38.8

Source: Housing Survey of Japan, 1983

Considering two migration flows and the distribution of housing stock, it is possible to explain the principal characteristics of segregation patterns mentioned

⁵ Because of the restriction of the data source, only interprefectural migration is shown in Figure 6. The Tokyo metropolitan area is substituted by four prefectures here:: Tokyo, Saitama Chiba and Kanagawa. Tokyo prefecture can be regarded to substitute for Inner Tokyo, and three surrounding prefectures are the substitution of Outer Tokyo.

above as follows. A 15-24 year-old young population migrate from out of the metropolitan area, in particular into Inner Tokyo where many small privately-rented dwellings are located; this migration raises the RLQ values to the maximum at the age of 20-24. Young couples or families with small children move from Inner Tokyo to Outer Tokyo for larger and/or owner-occupied dwellings; the RLQ values decline to the minimum at the ages of 35-39 and 5-9 because of this migration. The RLQ values raise up again after the age of 40 has been reached, but a corresponding migration flow is not observed. Thereby, the higher proportions of older population in Inner Tokyo is caused by the out-migration of younger families which leave the older population behind in Inner Tokyo.

3. RECENT CHANGES IN SEGREGATION

As mentioned above, three remarkable changes of segregation patterns are found between 1980 and 1986 in Table 1. In 1985 the 15-19 age group (1966-70 cohort) and the 45-49 age group (1936-40 cohort) are no longer concentrated in Inner Tokyo, while the 30-34 age group (1951-55 cohort) is still concentrated in Inner Tokyo. From the viewpoint of cohorts, these phenomena are not a drastic change but a continuous modification.

Figure 5 shows that relative to earlier cohorts, the 1966-70 and the 1936-40 cohorts have lower minimum RLQ values at the age of 5-9 and of 35-39, respectively. The 1966-70 cohort corresponds mostly to the offspring of the 1936-40 cohort. The 1936-40 cohort and the following 1941-45 cohort were aged about 30 in the first half of the 1970s, when out-migration to suburban areas was the most intense (Fig. 6). Thereby, these two cohorts and the cohorts which correspond to their children are estimated to be the most suburbanized. It follows that the 1936-40 and 1966-70 cohorts remained concentrated in Outer Tokyo in 1985 when they were in the 45-49 and 15-19 age groups.

The 1951-55 cohort and the following 1956-60 cohort have, on the other hand, higher RLQ values at the age of 20-24 than other cohorts. Distributions at the age of 20-24 are dependent on the migration of young population from out of the Tokyo metropolitan area, and on the distribution of their parents' generation in the Tokyo metropolitan area. The 1921-25 and 1926-30 cohorts seem to correspond to the parents cohorts of the 1951-55 and 1956-60 cohorts. As shown in Fig. 6, the volume of the in-migrants to the Tokyo metropolitan area was the largest about 1970. On the other hand, Figure 5 shows that the 1921-25 and the 1926-30 cohorts have congregated relative strongly in Inner Tokyo; it is because most members of this generation seem to have purchased their dwellings in Inner Tokyo before the metropolitanization of Tokyo began around 1960. Accordingly, the 1951-55 and the 1956-60 cohorts had high RLQ values when they were 20-24 years old, resulting in their continued concentration in Inner Tokyo in 1985.

From a cohort-by-cohort viewpoint, the three recent segregation changes were attributed to the high mobility in the first half of the 1970s. This high mobility

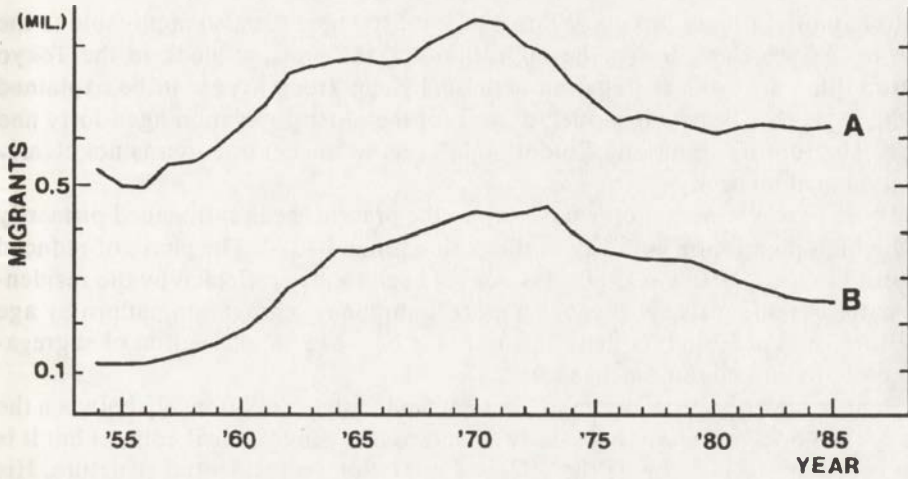


Fig. 6. Two main migration flows in the Tokyo metropolitan area — at the interprefectural level

A: Into the Tokyo metropolitan area ; B: Inner Tokyo → Outer Tokyo

Source: Annual report on the internal migration in Japan derived from the basic resident registers, 1954-1985.

brought about the typical and obvious age segregation patterns in 1970-1980; young families in suburbs and young adults and older population in the center. After that, the two main migration flows have declined, causing an aging process or a maturing process in both Inner and Outer Tokyo, instead of a highly population turnover by migration. If high mobility would have continued further, the three segregation changes would not be observed now. Hence, the recent decline of mobility is very important to build or rebuild the residential pattern by age in the Tokyo metropolitan area. The three segregation changes between 1980 and 1985 are supposed to be the signs of the structural change of the metropolitan area. The peak of the degrees of segregation by age came in 1980, which was about 10 years later than the peak of migration, and it is expected from Table 1 that the degree of age segregation will decrease further in future. The principal characteristics of segregation patterns mentioned above seem to be the outputs of the period when suburban areas were developing rapidly and the volume of migration was large in the metropolitan area. The degree of segregation by age will become smaller if residential areas cease to extend and migration decreases.

4. CONCLUSION

In the Tokyo metropolitan area, both laterally and longitudinally, the age groups of 0-14 and 30-44 tend to be distributed more densely in Outer Tokyo than in Inner Tokyo, and the age groups of 15-29 and 45 and over tend con-

centrate more in Inner Tokyo. White's general statement is also applicable to the case of Tokyo. Considering the migration and the housing stock in the Tokyo metropolitan area, the segregation patterns by age group appear to be explained by the logic of a life cycle model, except for the older population aged forty and more. The return-migration of older population to the central area is not clearly observable at present.

These segregation patterns have, up to the present, been influenced primarily by the high population mobility in the period around 1970. The phase of reduced mobility in the 1970s and 1980s has not yet been clearly reflected by the residential patterns; this phase will cause a more ambiguous segregation pattern by age in future. It is notable that there is a time lag between an alternation of segregation patterns and migration change.

Dangschat's questions are mainly connected with the relationship between the life cycle model and changing family structure in a geographical context but it is also necessary to investigate the effect of migration on residential structure. His questions appear to be related to the phase of reduced mobility and they can thus be applied also to the case of the recent Tokyo — the second generation in the suburbs will probably stay longer in their parents' house; marriage ages rose steadily in the 1980s; land prices have gone up extraordinarily in recent years, making owner-occupied dwellings scarcely affordable. These three phenomena, which have been already observed in the 1980s in Tokyo, may be regarded as important subjects for further research on residential segregation by age in Tokyo.

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THE HOUSING CONDITIONS IN THE LARGE POLISH CITIES

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1. INTRODUCTION

Poland has the most severe housing problem among of the countries of Eastern Europe. Within Poland, urban areas suffer most from housing shortage. Additionally the permanent crisis in the construction of housing units in relation to demand has worsened during the last decade, as a part of the general economic crisis.

In spite of a centrally imposed housing policy for all the post-war period, a private sector together with a very limited housing market has existed, however the legal system has greatly limited market transactions and housing mobility. The very high demand for new housing units which could never be fulfilled by the state sector caused the housing policy to be liberalized. According to the principle of socialist economies the housing sector of the national economy is a "non-productive" sector, which has resulted in discrimination in investment policy in favor of industrial and ideological priorities against housing.

Housing management has been strongly subsidized in all post-war period particularly the so-called socialized sector of housing (co-operative, state owned, council). State housing policy, while evolving according to political and ideological priorities imposed by the ruling élites, to a large degree eliminated the housing market. Allocation of the limited housing resources has been governed by centralized decision concerned with both the value of the labour force and many other criteria (Węclawowicz, 1979, 1988). One of the results of a non-market, centrally planned housing policy has been in widening the gap between basic housing needs and housing construction. The improvement in housing conditions which can be observed by comparing the results of the National Censuses of 1978 and 1988 has mainly been a result of the slowing down of natural increase, particularly in large cities, together with a decrease of in-migration to urban places and emigration. Nevertheless both, quality and size of dwell-

ing built since 1978 were higher. Under the pressure of high housing demand during the last two decades nearly the whole national investment effort has been concentrated on the construction of new dwellings. Very little money has been spent on renovation, so Poland is facing a growing crisis as a result of the poor condition of the housing stock.

1.1. THE SCALE OF THE HOUSING CRISIS

The highest annual production of dwelling in Poland was 283,600 dwellings per year (in 1978), of which 209,300 were in the socialized sector and 74,300 in the private sector. But last year (1990) only 132,500 dwellings were built (84.6 thousand in the socialized sector and 47.9 thousand in the private sector). New construction in urban areas declined more than by half between 1978 and 1989 — from 226.2 thousand to 106.4.

In urban places, the scale of the housing deficit to the year 2000, however estimated is greater than 3,000,000 dwellings. The actual deficit of dwellings, measured as a difference between the number of households and the number of housing units is 1.3 million. An extra 1.1 million of dwellings is needed to cope with projected population growth, and 0.2-0.7 million to replace housing that will need to be demolished. The situation in large urban agglomerations is much worse: these are the areas mostly affected by the dramatic fall in housing construction as well as registering the greatest demand. For example, in large agglomerations only 48% of newly married couples have their own flats.

2. THE SIZE OF THE CITY AND ITS HOUSING CONDITION

2.1. CITIES BIGGER THAN 100,000 INHABITANTS

The last National Census of 1988 provided valuable information about housing conditions. The most striking data concern the proportion of inhabitants in: very good, good, adequate, bad, and very bad housing conditions (Ludność... 1990). Taking into consideration only the extremes - statistical criteria for very good conditions are, a density of occupation of less than one person per room, together with all amenities including piped water supply, water closet, bathroom, central heating and gas supply. Bad housing conditions are dwellings with 2.0 to 2.99 person per room and/or dwellings equipped with piped water only. Very bad housing conditions are defined as dwellings when there are more than 3 persons per room, and/or lack of all basic amenities apart from electricity.

In 1988, 14.4% of all urban dwellers were defined as living in very bad housing conditions. This included 10% (2.254.000 inhabitants) living in overcrowded conditions, a further 1.8% (405,000 inhabitants) in overcrowded conditions and no piped water; 2.6% (584,000 inhabitants) with no basic amenities — no even

piped water. One can assume that a similar proportions of the worse housing conditions exist in all towns. However, analysis of individual indicators shows large regional differences. Generally housing in small and medium size towns of central and eastern Poland is much more badly equipped with basic amenities compared with those towns of western regions and the largest cities.

So after 40 years of a housing policy in socialist country based officially on egalitarian principles the absolute number of people living in bad and very bad housing conditions in towns is six times greater than the number of people living in very good conditions (Table 1). The percentage of the population living in very good conditions by the size of the city does not differ much, but the percentage of those living in bad conditions varies considerably according to the size of the city. Generally the percentage of the population living in bad and very bad conditions decreases with the increase in the size of the city.

Table 1. Housing conditions in Polish cities, 1988

Cities		Total no of dwellers	Dwellers in housing conditions:					
			very good		bad		very bad	
category	no	thous.	thous.	%	thous.	%	thous.	%
all cities	822	22531.9	1473.2	6.5	6127.6	27.2	3243.5	14.4
cities of less than 20.0 thous.	606	4410.7	288.3	6.5	1260.8	28.6	828.3	18.8
cities of 20.0-99.9 thous.	175	6970.4	432.6	6.2	1909.1	27.4	976.8	14.0
cities of more than 100 thous.	41	11150.8	752.3	6.7	2957.7	26.5	1438.4	12.9

Source: A. Muzioł-Węclawowicz, 1992.

The regional disparities show that the highest percentage of inhabitants living in bad and very bad housing conditions is in the cities of central and eastern Poland. The spatial disparities are more apparent than those by size of the city.

In cities bigger than 100,000 inhabitants (Fig. 1) the percentage of the population living in very good conditions varies from 9.9% at Olsztyn to 3.0% at Ruda Śląska; in bad conditions from 34.7% at Legnica to 22.0% at Rybnik; in very bad from 24.8% at Radom to 6.3% at Opole (Table 2). It is worth mentioning the strong disparities in Upper Silesian (Katowice voivodship) cities. Only in the new towns constructed mostly during the post-war period like Jastrzębie Zdrój, Rybnik, Tychy and partly Katowice as a capital of the voivodship, are there relatively good housing conditions. The inhabitants of the rest of large Silesian towns were in very bad situation.

In cities larger than 100,000 the worst situation exists at Wałbrzych and Radom where more than 50.0% of the inhabitants live in bad and very bad conditions.

Table 2. Housing conditions in cities bigger than 100,000 inhabitants in 1988

	Dwellers in housing conditions			
	total no.	very good %	bad %	very bad %
Warszawa (Warsaw)	1613451	8.9	23.0	13.2
Łódź	838471	6.4	24.7	19.3
Kraków (Cracow)	702676	5.5	27.1	14.6
Wrocław	612776	8.9	26.5	11.4
Poznań	567219	8.2	25.2	10.0
Gdańsk	450873	5.7	31.0	13.0
Szczecin	395641	6.9	31.5	7.9
Bydgoszcz	366631	6.2	27.1	12.5
Katowice	349099	7.9	24.0	9.5
Lublin	322291	7.8	22.9	15.1
Białystok	256313	8.4	23.4	10.2
Sosnowiec	251403	4.7	24.7	10.6
Częstochowa	248812	4.6	30.7	17.1
Gdynia	245934	7.0	25.4	10.8
Bytom	223628	3.5	30.4	11.5
Radom	218455	4.2	28.1	24.8
Gliwice	215409	5.7	27.2	7.5
Kielce	201301	5.8	29.2	18.2
Zabrze	195766	3.9	32.0	15.6
Toruń	190462	6.5	27.6	11.9
Tychy	184141	4.1	28.9	9.2
Bielsko-Biała	174047	7.4	27.0	12.1
Ruda Śląska	163809	3.0	32.9	11.6
Olsztyn	149411	9.9	23.8	7.9
Rzeszów	140129	7.2	25.8	10.9
Wałbrzych	139176	5.0	32.7	21.3
Rybnik	137265	6.1	22.0	7.9
Dąbrowa Gór.	131273	4.3	25.0	10.6
Chorzów	130394	4.6	34.8	14.7
Elbląg	121129	5.2	33.0	11.2
Opole	120793	8.0	22.7	6.3
Wrocław	117622	6.1	26.6	15.1
Płock	117025	7.1	25.5	14.8
Gorzów Wlkp.	116918	6.8	23.9	8.0
Tamów	114772	6.1	28.4	16.2
Wodzisław Śl.	109223	4.8	24.7	8.0
Zielona Góra	107545	8.1	26.1	10.6
Kalisz	104113	6.0	29.0	19.6
Koszalin	102535	8.2	27.1	9.1
Legnica	101497	5.9	34.7	9.6
Jastrzębie Zdr.	101406	6.0	22.7	7.8

Source: A. Muzioł-Węclawowicz, 1992.



Fig. 1. Distribution of cities bigger than 100 000 inhabitants

All large towns with a significant percentage of the population living in bad conditions in 1988 were in a similar situation in 1978. The fact that there has been no substantial improvement in the housing situation of those cities is partly the result of no renovation or maintenance of the housing stock in this period. The indicator which emerges as the most important characteristic of housing conditions is overcrowding, a result of the decline in the construction of housing units.

3. THE INTRA URBAN DISPARITIES OF HOUSING CONDITIONS IN THE CITIES LARGER THAN 500,000 INHABITANTS

We have taken the five largest cities over 0.5 million inhabitants which together contain 11.84% of the Polish population and 19.34% of the urban population (in 1988). Taken together the housing issues in these cities are typical of both the urban areas and Poland as a whole.

3.1. THE GENERAL EVOLUTION IN 1978-1988

In spite of a substantial acceleration of the housing crisis throughout Poland this process has had a different pattern in various cities. For example, the tenure structure varied according to the town. There was no substantial increase in the number of council flats except for a moderate increase in Cracow and Poznań, together with an increase of state owned flats at Poznań and Wrocław.

All the largest cities witnessed a substantial increase of the co-operative sector, particularly at Wrocław and Poznań. The only significant increase in the private sector was at Wrocław. As a result in 1988 more than 50% of flats belong to the co-operative sector in Warsaw, Cracow and Poznań while at Łódź and Wrocław housing is dominated by the council sector. The private sector is strongest at Poznań (more than a 1/4 of the total number of flats), and quite strong in Cracow.

There is much greater differentiation of the largest cities by age of housing stock. This is a result of historical development, the scale of war damages and the reconstruction of particular cities. Wrocław has the largest proportion of population living in housing stock built before 1919 while Warsaw has the lowest. Over all the national scale the number of people living in housing stock built before 1919 has fallen, although in Warsaw and Wrocław there have been slight increases and a significant increase at Łódź.

This surprising increase in the number of inhabitants living in old housing stock is only partly explained by the renovation process and it is more likely to be an indicator of the housing crisis. However, the number of inhabitants of housing stock built between 1918-1944 declined in all the largest towns to less than 20% of population. The largest percentage of housing built in the post-war reconstruction period 1945-1970 is found in Warsaw (over 45%) and the lowest proportion at Wrocław (20.5% inhabitants). More than 20% of city dwellers in all cities live in housing built in the most prosperous years, i.e. 1971-1978, in terms of numbers, are living in all cities.

There is a general crisis in housing construction in all the largest cities, although Cracow has most new housing. In spite of the crisis in the building industry, indicator in all cities, in the decade of 1978-1988 demonstrated that substantial progress has been made, particularly with respect to access to basic amenities, floor space per inhabitant, size of flats and rooms, and residential density.

3.2. SPATIAL STRUCTURE

3.2.1. WARSAW

The spatial distribution of particular types of property in Warsaw has a concentric pattern (Fig. 2). The central part of Warsaw is largely dominated by council flats, which constitute 38.7% of the housing stock. Co-operative housing is

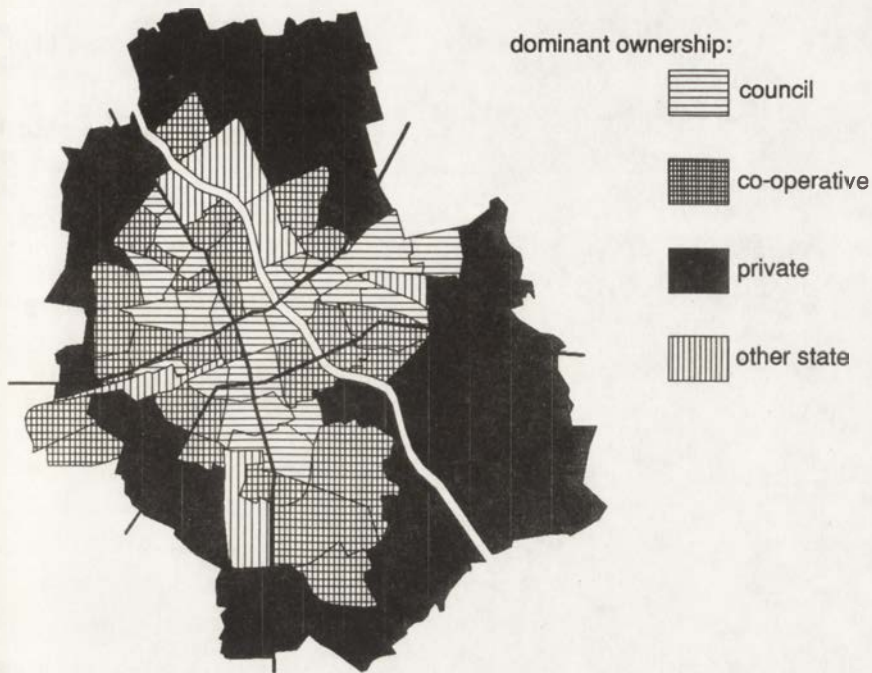


Fig. 2. The ownership structure of housing stock, Warsaw 1988

distributed around the central area in island-like areas surrounded by private housing. While housing owned by the state dominates the fringes of industrial, transport and warehouse areas.

A very specific type of tenure is private housing administered by local government. This type of tenure represents only 1.5% of Warsaw housing stock, though the presence of this particular type of tenure is an indirect indicator of housing poverty of the inhabitants of particular areas of the city.

Figure 3 demonstrates the historical development of Warsaw. Very few buildings dating from 1918 remain and they contain only 3.6% of the population. However, in many parts of the city more than 10%, and in some cases more than 30% of the inhabitants live in these oldest buildings. The buildings of the inter-war period contain only 12.1% of the inhabitants of Warsaw and are concentrated in the peripheral district of Ochota, Praga, Mokotów. The largest percentage of Warsaw's inhabitants (45.7%) live in housing built between 1945-1970 with the greatest concentration in areas of post-war reconstruction and development. 38% of inhabitants live in housing built after 1970 which are distributed in different co-operative housing estates completed between 1971-1978 and between 1979-1988.

The equipment of flats with basic amenities reflects the radial pattern of the technical infrastructure (Fig. 4). For large areas of Warsaw up to 60.0% of in-

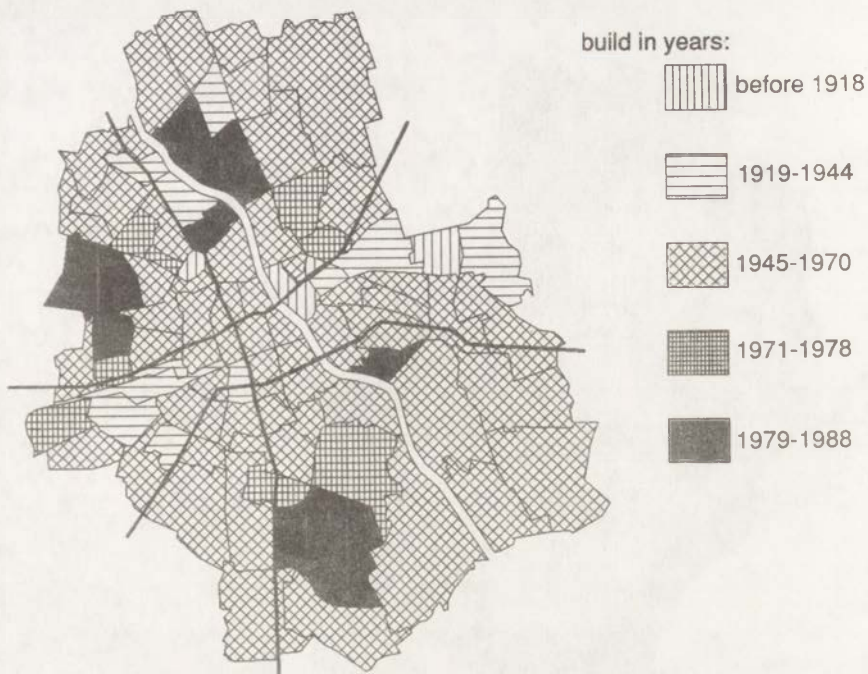


Fig. 3. Age of housing stock in Warsaw 1988 by dominant share of inhabitants living in building

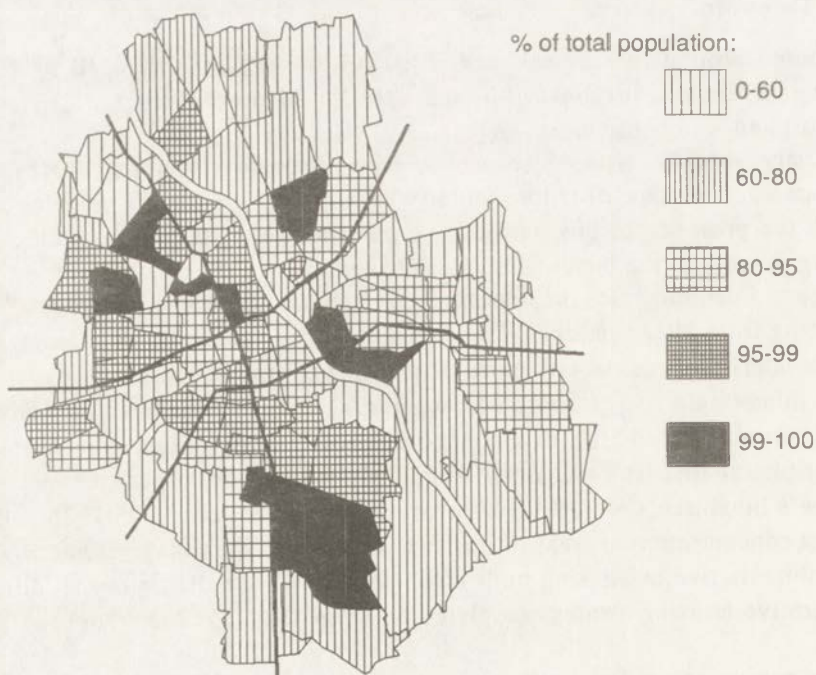


Fig. 4. Inhabitants in flats equipped with bathroom, Warsaw 1988

habitants may have no direct access to basic facilities in their flats, frequently such substandard flats are in low density areas located on the edge of Warsaw.

The concentric pattern of the distribution of size of flats by numbers of rooms is the result of past housing policy (Fig. 5). For the period 1945-1970 the preferred size was one or two room flats. The average size of rooms per flat has increased in the last two decades.



Fig. 5. Living areas in dwellings in square metres per person, Warsaw 1988

3.2.2. ŁÓDŹ

The central part of Łódź is dominated by council-owned flats (Fig. 6). Co-operative flats dominate in areas surrounding the center. Private flats are found on the periphery. So, at Łódź the general pattern of property distribution is very similar to that of Warsaw. Only the spatial pattern of private flats administered by the local authorities is specific to Łódź. The largest percentage of these forms of ownership are in the central part of the city.

Łódź was not heavily devastated during the Second World War and as a result shows a concentric pattern of spatial development (Fig. 7). The largest proportion of people living in flats built before 1918 resulted from the 19th century development of the city. 31% of the population live in housing completed before Second World War (only Wrocław has a larger proportion — 40%).

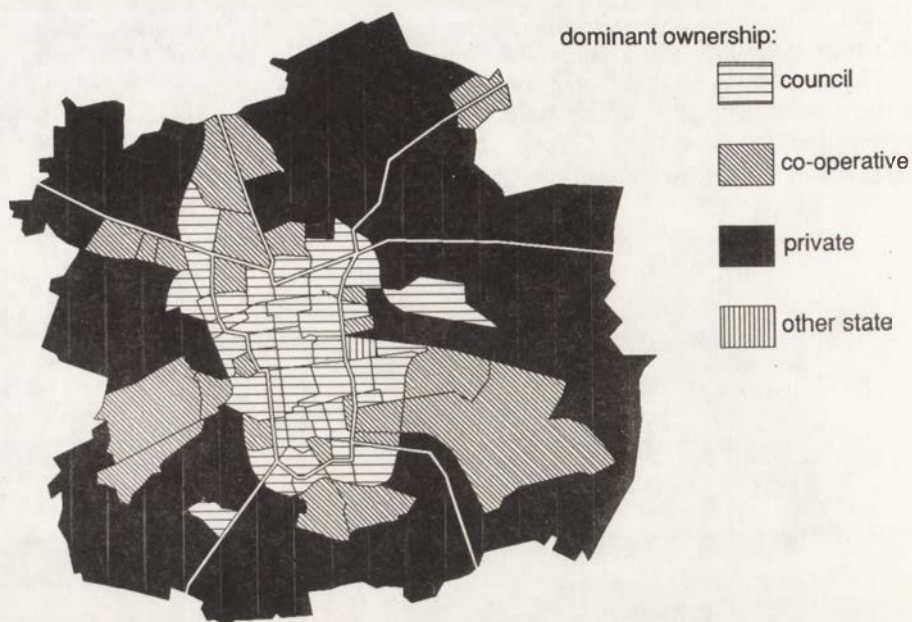


Fig. 6. The ownership structure of housing stock, Łódź 1988

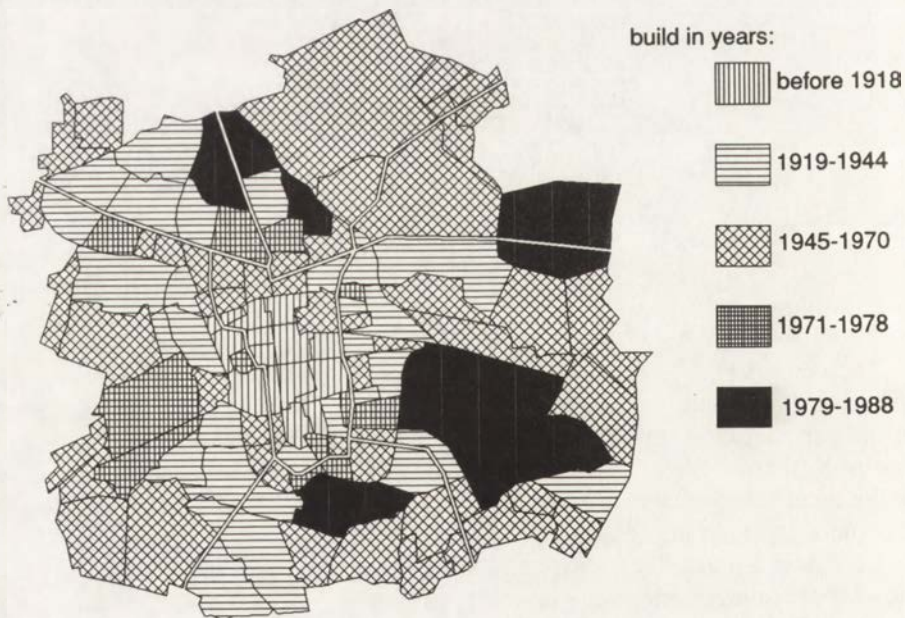


Fig. 7. Age of housing stock in Łódź by dominant share of inhabitants living in building

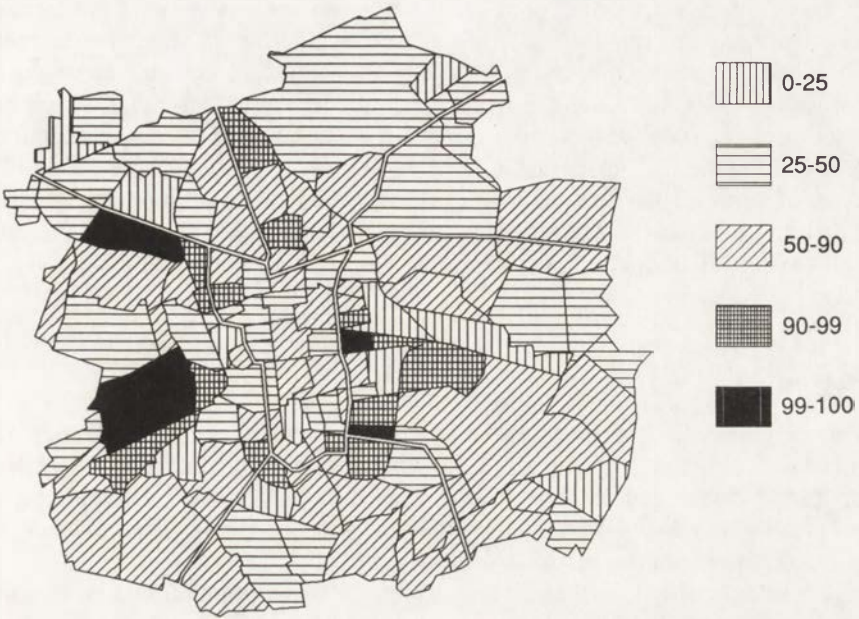


Fig. 8. Inhabitants in flats equipped with bathroom, Łódź 1988

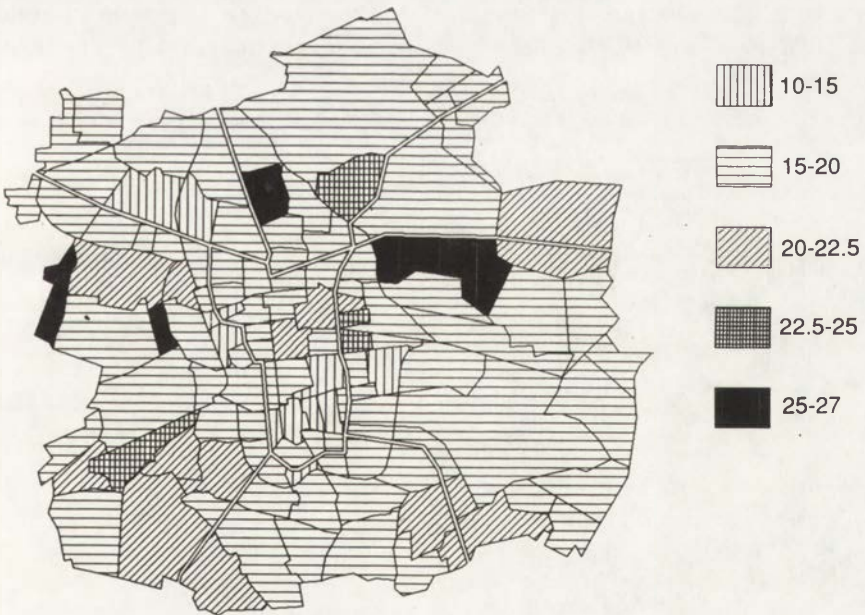


Fig. 9. Living areas in dwellings in square metres per person, Łódź 1988

In the case of Łódź there is no relation between the distribution of the technical infrastructure and the standard of facilities of the flats (Fig. 8). Even in the central part of Łódź there are large areas with very poor housing amenities. Among the largest Polish cities, Łódź has the worst housing condition. This situation has been constant throughout the post-war period, and if we compare the housing situation of Łódź in 1970 at the intra urban scale (as described by Dzieciuchowicz 1974, 1976) with that of 1988 we can observe a dramatic worsening of conditions. In the case of Łódź an important indicator of housing condition is floor space per inhabitant, showing in its extreme values areas of the best and the worst housing (Fig. 9).

3.2.3. CRACOW

This city has a distinctive pattern of housing tenure (Fig. 10). Council flats dominate in a few parts of the central area and in the oldest part of Nowa Huta. Co-operative housing dominates in the area between Nowa Huta and the Old Town, particularly in the north and in several parts of the Pogórze district. Private flats dominate on the periphery and in the centre.

In the historical part of the city more than 50% of population live in dwellings built-up before 1919 (Fig. 11). Altogether 21.4% of the total city population live in housing from the pre-war period.

The post-war period, particularly between 1945 and 1970 saw the development of Nowa Huta and several housing estates in other areas of the city. Co-operative housing estates contain the highest percentage of people in housing from 1971-1978 and 1979-1988. 41.2% of Cracovian citizens live in housing built after 1971.

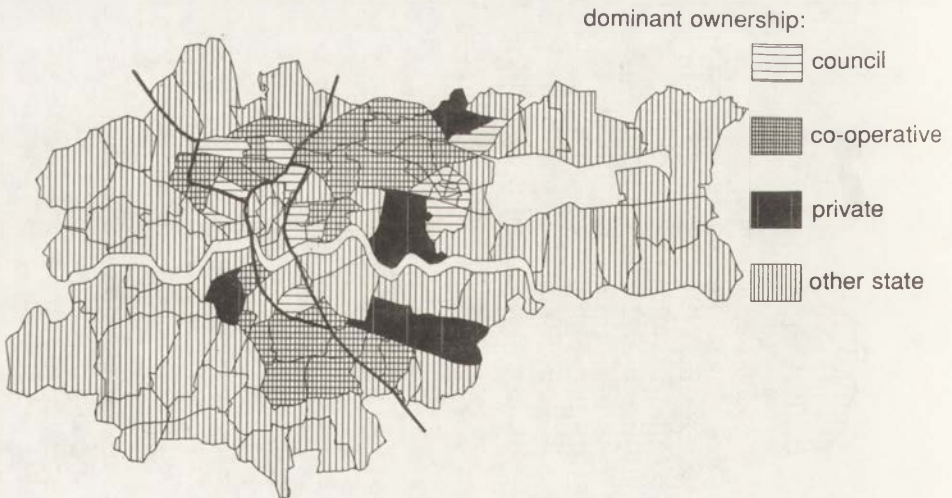


Fig. 10. The ownership structure of housing stock, Cracow 1988

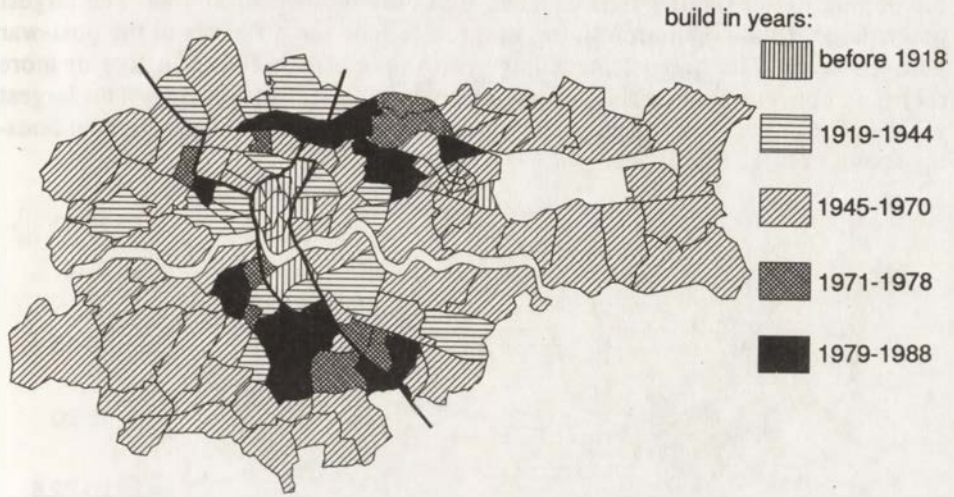


Fig. 11. Age of housing stock in Cracow 1988 by dominant share of inhabitants living in building

Inhabitants of all the post-war housing stock generally have access to all housing facilities (Fig. 12). In the pre-war areas on the other hand high proportions of people have no access to amenities such as central heating. This partly explains the high level of air pollution in Cracow.

There is a relatively low proportion of one room flats in Cracow. Generally

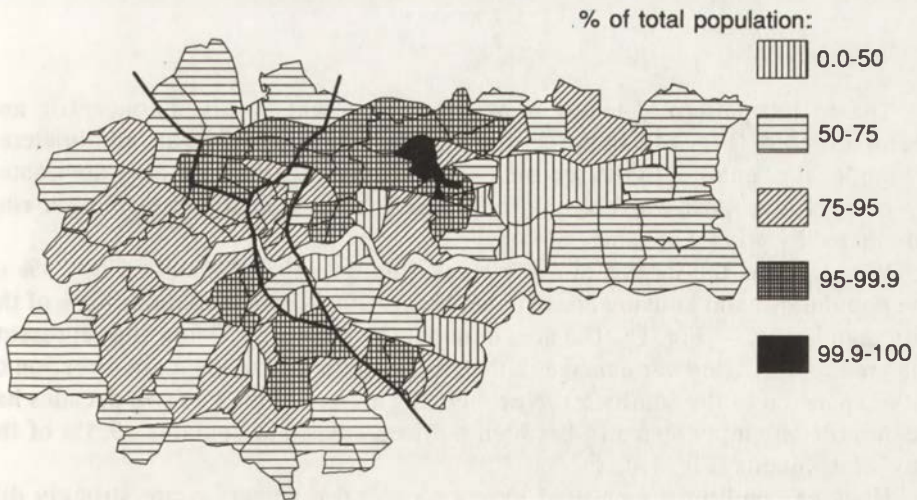


Fig. 12 Inhabitants in flats equipped with bathroom, Cracow 1988

the population in smaller flats exceeds 10% only in the central area. The largest percentage of the population living in three or four room flats is in the post-war built-up areas. The highest percentage of the population living in five or more rooms is concentrated in the peripheral areas in detached housing. The largest values of average floor space per inhabitants indicate areas of the highest housing standard (Fig. 13).

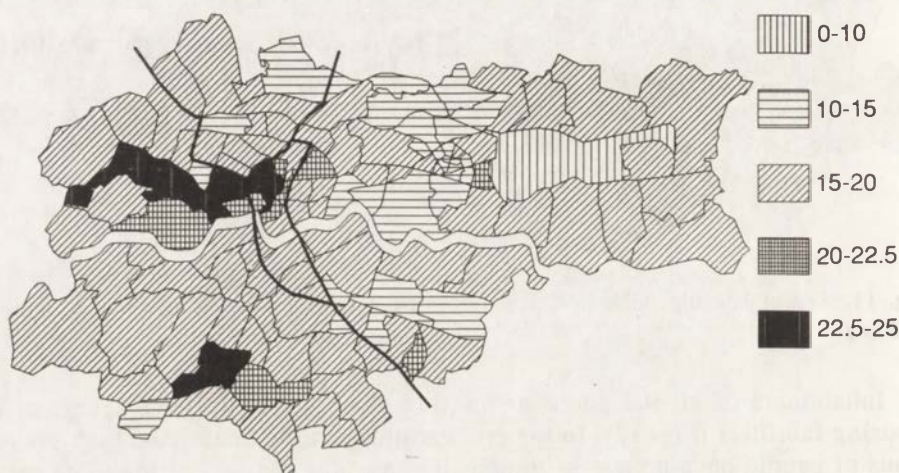


Fig. 13. Living areas in dwellings in square metres per person, Cracow 1988

3.2.4. WROCLAW

The spatial pattern of tenure at Wrocław represents a mixed concentric and sector structure (Fig. 14). In the central part the majority of flats are administered by the local council with the sectors extending towards the periphery dominated by co-operative post-war housing, while peripheral spatial units create a ring dominated by private housing.

Wrocław has the largest housing stock from pre-1918 (inhabited by 23% of the population) and housing constructed before 1945 (which contains 40% of the city population) — Fig. 15. The area dominated by 1945-1970 housing represents the area rebuilt after war damage in the city centre and also the main direction of city expansion to the southwest. New housing estates of the last two decades has been built on empty space in between built-up areas and contains 39.5% of the city's inhabitants (Fig. 15).

Housing conditions measured by access to basic amenities are strongly differentiated (Fig. 16). Generally as in other cities, better condition exist in the centre and decline towards the periphery, however in vast areas of Śródmieście

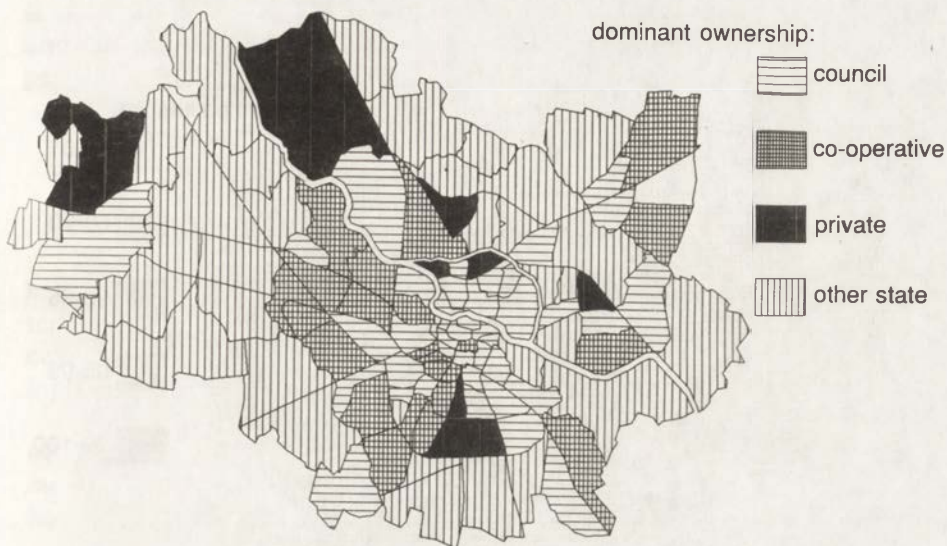


Fig. 14. The ownership structure of housing stock, Wrocław 1988

and the Old Town we can observe high percentage of dwellers without adequate amenities in their flats.

The size of flats shows that the highest percentage of people living in one or two rooms is in the central part of the city, in the areas of the oldest housing stock. Three or four rooms flats are characteristic of post-war development which

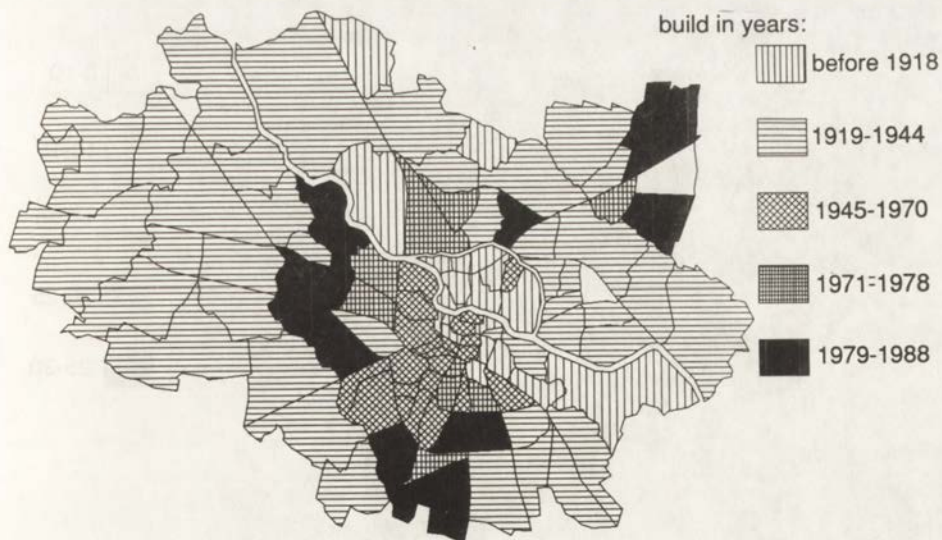


Fig. 15. Age of housing stock in Wrocław 1988 by dominant share of inhabitants living in building

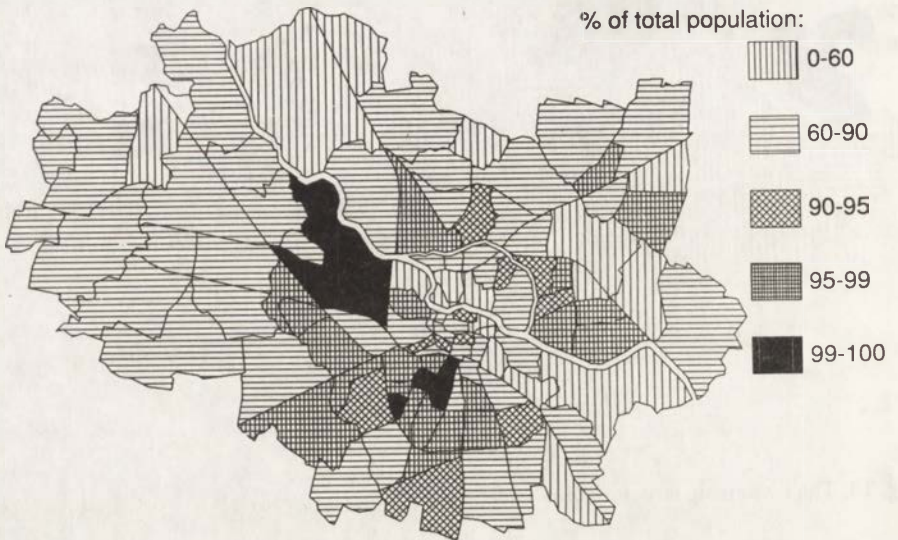


Fig. 16. Inhabitants in flats equipped with bathroom, Wrocław 1988



Fig. 17. Living areas in dwellings in square metres per person, Wrocław 1988

is mostly co-operative housing stock. Five-room and bigger flats dominate villa areas and on the periphery. The size of flat is strongly correlated with floor space per person (Fig. 17).

3.2.5. POZNAŃ

At Poznań the council sector represents only 19.9% of the housing stock (it has the lowest percentage among the largest towns). The spatial distribution of tenure structure shows the typical pattern of council flats dominating in the centre, a concentration of co-operative housing estates in several areas surrounding the centre and the private sector dominating on the periphery (Fig. 18).

The age structure of buildings reflects the harmonious historical development of the whole town. 29.1% of the inhabitants live in flats constructed before 1945, more than 44% in flats built in the last two decades. The age structure of the housing stock showed a sectoral pattern (Fig. 19).

In the terms of amenities, post-war housing is well equipped (Fig. 20) and only pre-war housing and housing in peripheral areas lack facilities, particularly central heating.

Poznań is characterized by the smallest percentage of small one or two rooms

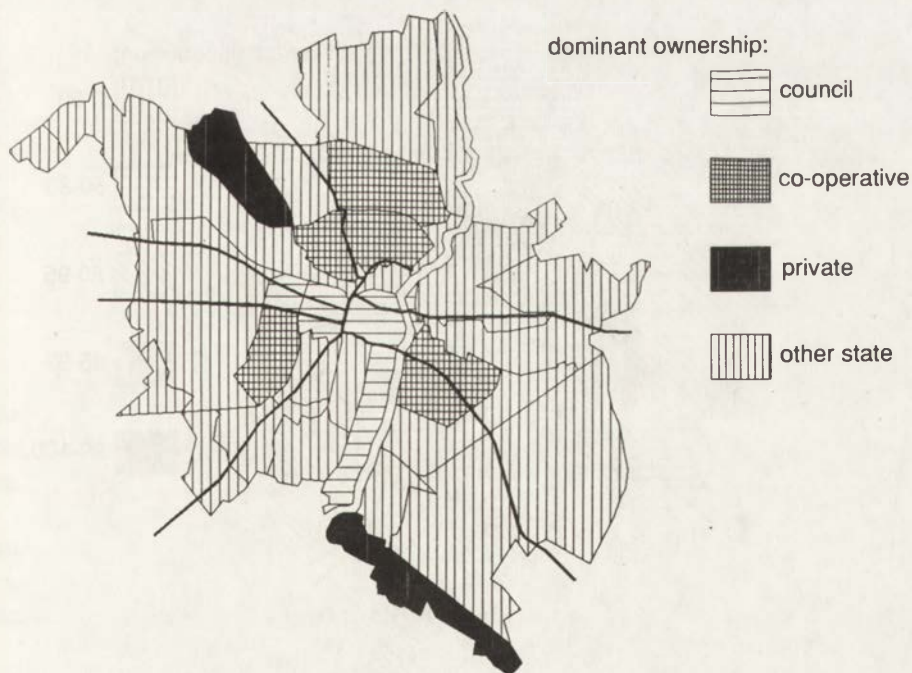


Fig. 18. The ownership structure of housing stock, Poznań 1988

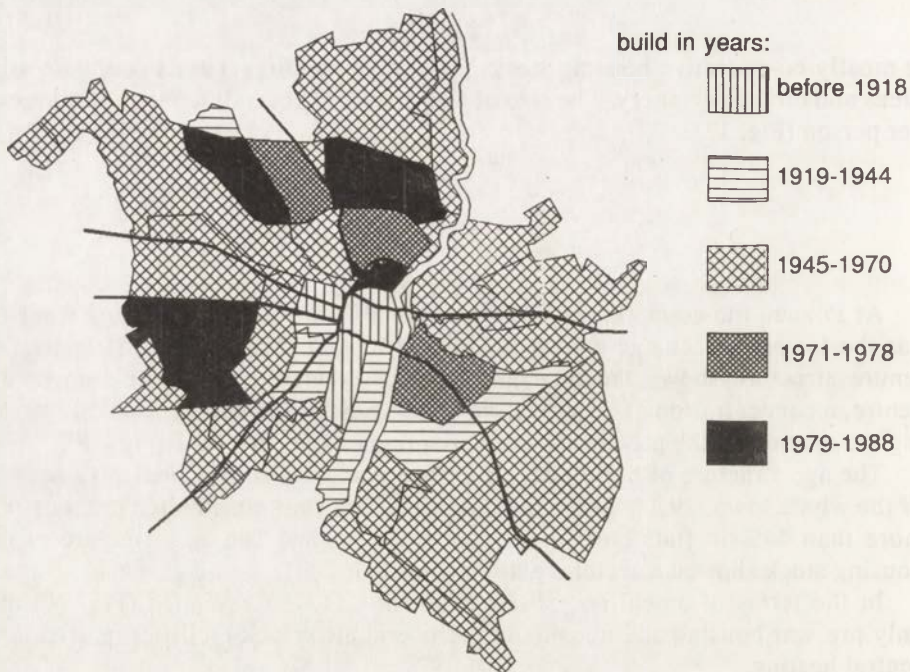


Fig. 19. Age of housing stock in Poznań 1988 by dominant share of inhabitants living in building

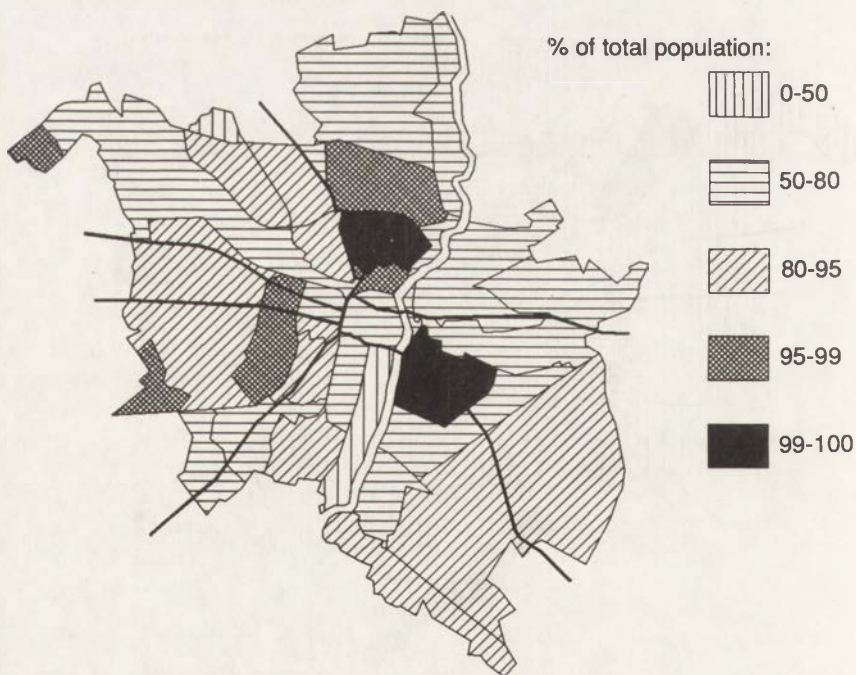


Fig. 20. Inhabitants in flats equipped with bathroom, Poznań 1988

flats. The spatial location of this type of flat shows a concentration in the belt along the Warta river. Population in three and four rooms have the highest percentages in the co-operative estates of Rataje, Grunwald and Winogrady. In the case of five rooms and bigger flats the largest percentage exists in the area of Plewiska on the edge of Poznań and Garbary close to the centre.

The size of flat is strongly correlated with floor space per person (Fig. 21).

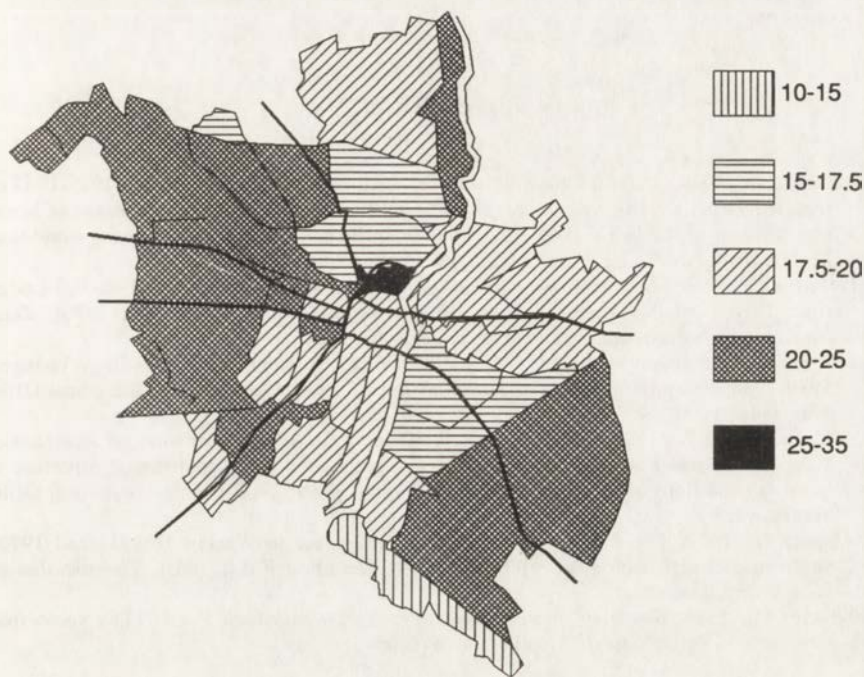


Fig. 21. Living areas in dwellings in square metres per person, Poznań 1988

4. THE FUTURE DEVELOPMENT

The spatial pattern of housing quality is highly correlated with the socio-spatial structure of the cities. Disparities described above are the accumulated outcome of all post-war economic development and particularly of the housing policy of the communist regime.

We treat the spatial pattern of 1988 as a starting point for tracing a number of processes and economic transformations and particularly the spatial consequences. The new housing policy in this transitional period to a market-oriented economy will bring numerous constraints and challenges.

The progressive impoverishment of the urban population raise immediate problems of both affordable housing and homelessness. The process of privatising the housing stock is already resulting in improved maintenance. However,

substantial part of both the state and the council sector will no longer be provided at a nominal charge. So an increase of rents in order to cover the costs of maintenance, together with possible implementation of the right to eviction, while necessary from an economic point of view, could cause political conflict. Whatever happens, we can observe the continuing process of cumulative socio-spatial disparities in Polish cities in the 1990s.

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ON THE REGIONAL DISPARITY PROBLEM IN REGIONAL DEVELOPMENT POLICY (WITH SPECIAL REFERENCE TO POLAND AND JAPAN)

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1. INTRODUCTION

As to the problems on regional economic development, many discussions have been organized in various fields of science including geography since the appearance of J. Williamson's paper (1965). In recent years, a special issue of *Geoforum* entitled "Regional development and regional policies" was published, and G. Krebs made an important contribution to the issue as a keynote paper. Some notable books have also been published during the last decade in this field of geography.

Studies have been made on the regional development of Japan's national economy connected with socio-economic systems, or especially in relation to the mechanism of capital accumulation in capitalist economic systems. Geographical studies on poverty, regional inequality, economic depression, environmental disruption and so on, were carried out mainly by the emerging current of radical geography.

In the field of economic geography in Japan, T. Kawashima (1978), M. Koga (1971, 1974), T. Yada (1978, 1982) and K. Yamamoto (1977) discussed theoretical aspects of the problems of regional inequality from the viewpoint of regional structure of national economy.

The authors of the paper try to discuss the relations of spatial inequality in really existing socialism through critical reconsideration of previous literature, and to propose some alternative ideas to elaborate the problems.

Three approaches were adopted in the present study; first, theoretical aspects of the problems are to be discussed. Second, through analysing the changing

regional policies in post-war socialist Poland, the authors attempt to make clear of whether there existed efficient and consistent regional policies in order to eliminate the spatial disparities. In the course of analysis, conflicts of different ideas between regional equalization and economic efficiency, the characteristics of so-called socialist laws of industrial location, problems of long-range stability in regional structure of national economy are examined. Third, the actual conditions of the regional disparities are measured and described in the latter part of the paper in order to learn to what extent regional policies under the socialist economic system succeeded to diminish the regional disparities.

At the same time, in this presentation the authors try to compare the level or degree of regional disparities in both countries, and also to examine to what extent the method adopted to the Polish case can be applied to interpret Japanese regional economy.

Finally, the authors present their interpretations of the inequalities under socialism in a spatial context, and propose to introduce some alternative ideas to elaborate the antecedent discussions of the theme.

2. REGIONAL EQUITY UNDER SOCIALIST ECONOMIC SYSTEM

Regional inequality is a part of social inequality. It is inevitably necessary to eliminate inequality of economic, political, social and cultural welfare at least among societal, occupational and ethno-national groups, so that social equality can be completely realized. It means of course, that each individual has an equal level of opportunity in his economic, political, socio-cultural life. In other words, each individual should have equal access to opportunities in comprehensive human welfare. It is also necessary that equality to all kinds of opportunities should be realized in spatial context.

The basic aims of regional policies are to minimize the gap between the economically advanced regions and the less-developed regions by levelling in regional disparities or regional equalization. The purpose of regional policies is to create conditions, by which regional inequality in national economy can be decreased or eliminated in a sense of spatial context.

The main approaches for realizing the regional policies under the socialist economic systems are characterized by social collective forms of ownership of production means and planned economy. Regional planning in the socialist countries is an organic part of comprehensive national development plans. The regional planning usually includes all aspects of socio-economical life of the people, and its plans are mainly put into practice by some levels of governmental sectors, namely central, regional and local governments. The object of regional policies is not limited to some areas in the country but to whole regions of the country.

Fuchs' and Demko's study on socialism and regional inequality is highly appreciated as a successful review article, in which the authors collected and

evaluated recent results of research activities in this field. The paper is also a very important work, in the sense that it demonstrated vividly the generally accepted theory or interpretation of socialism and regional inequality. The logical structure of their views are summarized as the following:

(1) As the socialist economy systems appeared in essence as the criticism against capitalist economic systems, economic basis itself had no fundamental mechanism to create and enlarge regional inequality. There does not exist material basis which generates regional disparity in the principle idea of socialist economy.

(2) Therefore, under the socialist regional policies and regional management system, the economic development, standard of living and welfare level of people between some regional economies should be levelled and equalized.

(3) While in the really existed socialist countries, there can be widely observed remarkable regional inequalities in various aspects of social life. The reason why regional inequality existed widely in socialist countries, is simply that regional policies are not faithful to the essential ideology of socialism. In those countries, economic development, productivity and economic efficiency are considered as extremely important factors in the selective environment of regional policies.

As a result of discussion of this kind, they concluded that regional economic policies in the socialist countries have not always had "socialist" characteristics. However, the very point of the paper is that the authors understand the essential characteristics of regional policies under the socialist economies for eliminating regional inequality and minimizing regional disparities, and they are convinced that socialist economic systems are incompatible with regional inequality. This interpretation is widely accepted by many scholars.

Fuchs and Demko have said "under Marxist forms of socialism such inequalities would not occur and that territorial or spatial justice would prevail instead" (1979, p. 304), and "the Marxist-Leninist form of socialism, as typified in the socialist states of Eastern Europe, shares with the other forms of socialism an ideological commitment to the elimination of major disparities in economic and social well-being. Within these ideological systems, equality is defined not only in terms of occupational, social and ethnic groups but is also given an explicit spatial context" (p. 305).

The goal of spatial equality is considered as including equalization of regional levels of economic development and per capita living standards and measures of welfare. In the theoretical works of Marxism-Leninism, in planning directives and documents, in the party programs, equalization of regional levels of economic development and living standards, and the elimination of social and economic differences between urban and rural areas, are repeatedly cited as goals.

The same assertions are found clearly in various writings by J. S. Koropecikij, (1972, 1976), F. E. I. Hamilton (1970, 1971a, 1971b, 1975, 1982), H. A. Zimon (1979), G. W. Hoffman, (1984), H. Gabor (1986). H. A. Zimon and F. E. I.

Hamilton pointed out that the idea of realizing social equity as the goal of regional policies originated deeply in socialist ideology (Zimon 1979, p. 242). According to J. S. Koropecikj (1976, p. 68), the equalization processes of economic development levelled among regions are important problems on economic policies in every country; however, in the case of socialist countries it is especially meaningful because of the following three reasons. First, owing to the socialist ideology, the construction of socialism is for the first time possible under such conditions of economically highly-developed countries where all regions can be equally developed. Second, every individual, wherever he is living, can realize high living standards and can receive the equal opportunities for the social development from the viewpoint of equality of socialist thought. Third, in case of multi-national states, economic equality among regions is a pre-requisite condition for political social and cultural equality.

Recent studies illustrated that political thought of socialism was seeking equalization of living conditions in different types of regions and settlements. This ideological confidence was the point of departure, social and economic goals for regional equalization were consistently pursued in regional policies (Gabor 1986).

Here socialism is considered as a decisive motive power for realizing regional equalization. In the first place, capitalist economic development is characterized not only in inequality among enterprises, industrial sectors and states but also inequality in spatial context. In this sense regional inequality is inevitably observed in capitalist development processes.

However, the above mentioned general opinions on regional development could have theoretically no special significance, because these analogous models would come from the following way of thinking; when the idea of "inequality on regional economic development" inevitably derived from the characteristics of capitalist development, was considered as a base, then the idea of regional equality would be characterized in socialist regional economy as negative to the former.

This kind of the regional equal development mode is derived and succeeded from one-sided summarising on the historical experiences of the Soviet development since 1930s. The Soviet regional policies, which were put into practice under the definite conditions of national land situation, geographic distribution of population and settlements, ethnic composition and so on, are generally formulated. And it is suspicious to what extent this model was profoundly examined from essential socialist ideology. This model should be examined in its origin and evolution including test critics of the founders of the socialist thoughts in the 19th century.

The authors once pointed out that it is unreasonable to discuss the idea of regional equal development as directly connected with socialism. Historical experiences of Soviet socialism illustrated honestly that the idea of regional equal development has not systematically pursued in the Soviet regional policies. It is necessary for us to cut off the relation between socialist economic systems and regional equalization for the present, then to consider how to unite both again in more flexible way.

3. TRENDS OF REGIONAL DISPARITIES IN POLAND AND JAPAN

(1) EXPLANATIONS OF SPATIAL PATTERNS

Table 1 and 2 illustrate the recent trends of regional development in Poland by 49 voivodships and in Japan by 47 prefectures as the largest administrative units. Table 1 and 2 show 32 indicators defined in Table 3 in order to examine regional differences of social and economic development in Poland and Japan.

For the compilation of the tables, regional disparities in each indicator to national average are illustrated in 7 classes according to its deviation from the average as follows: 50% and more (⊙), 25% and more (○), 10% and more (◇), within ± 10% to the average (●), 10% and less (◆), 25% and less (●), 50% and less (■). Table 4 also shows the unit, average to national mean, coefficient of deviation, the highest 5 and the lowest 5 voivodships/prefectures, the ratio of the highest 5 and the lowest 5 by each indicator.

To begin with, the first fact everyone can immediately recognize from Table 1 is that there exist three levels of economic development. Relatively advanced regions consist of South and South-West regions including GOP, Kraków and Wrocław (Table 1).

Northern and Central-West regions belong to the second level of development. These regions were long occupied by the Germans during the era of division of the country. In these regions many medium-sized local cities like Gdańsk, Toruń, Szczecin, Poznań, Bydgoszcz and so on, are well developed, controlling the surrounding wealthy rural areas.

The less developed regions are widely spread in Central, North-East, Central-East, South-East parts of the country. In these regions many indicators show level lower to the national average. Capital city, Warsaw looks like an island in the ocean. The environs of Warsaw are economically less developed areas, deeply dependent to the capital urban functions.

Second, these regional disparities in regional development originated from the antecedent regional structure formed long before the pre-war period. The origin of the regional differentiation started both from regional disparities under the German occupation territory and Russian and Austrian territories in the period of partitions in 18 and 19c. This problem has been generally recognized as under-development problem of Eastern regions to the Vistula River.

And the third, if we try to classify each indicator in Table 1 into three categories it is based on the degree of deviation from the national average in order to observe regional patterns. East-West contrast can be clearly distinguished even in the relatively less different indicators (G, H, K, L, N). White-coloured dominated indicator is nothing but the housing conditions. There are few regional differences in the housing conditions expressed by per capita floor space. As to the indicators on service, wage level, savings, investment, highschool student, TV sets etc., it looks that few regional disparities, for many voivodships are located in and around the national average in the table.

Table 3. Definition of symbols and criteria annex to tables 1 and 2 (Poland: Japan)

1. Definition of symbols in Table 1 and 2 (to the national average)

⊙: ≥ 50% ○: ≥ 25% ◊: ≥ 10% •: 10% > a ≥ -10% ◆: < -10% ●: < -25% ■: < -50%

2. Definition of Criteria

◊ Basic criteria

A	Area :	km ²	(312,683 km ² ;	377,835 km ²)
B	Area of agricultural land:	km ² ,	(188,683 km ² ;	53,170 km ²)
C	Population :	1,000 persons	(37,341 ;	123,255)
D	Population density :	Number of population in 1 km ² area	(119.4 ;	326.2)
E	Urban population ratio: Ratio of urban population to total population		(60.2% ;	77.3%)
F	Average population of total prefectural capital cities: 1,000 persons		(212.1 ;	781.9)

◊ Economic, productive criteria

G	Grain productivity: production of wheat, rye, barley and oat (rice) in 1 ha agricultural land: 100 kg
H	Meat production: Meat production in 1 ha agricultural land: 1 kg
I	Industrial production: Per capita production in socialized industry sector: 1,000 zl. ; 1,000 yen
J	Industrial employee: Number of industrial employees in socialized economy in 1,000 inhabitants:
K	Wages: Average monthly salary in all socialized sector in national economy (1 zl.)
L	Retails: Per capita commodity sales in socialized retail sector (1,000 zl.)
M	Service: Per capita sales in service industry (1,000 zl.)
N	Savings: Per capita deposit in saving-bank and cooperative bank (1 zl.)
O	Investment: Per capita total investment (1,000 zl.)
P	Productive capital: Per capita productive fixed assets (industrial, constructive, agricultural, transportation and tele-communication, commercial and communal economy); (1,000 zl.)

◊ Social cultural and living criteria

Q	House I: Per capita floor space; 1 m ²
R	House II: Per capita housing space; 1 m ²
S	Highschool student: Number of vocational high-school student in 1,000 inhabitants; 1 person.
T	University student: Number of university student in 1,000 inhabitants; 1 person
U	Doctor: Number of doctor in 10,000 inhabitants; 1 person
V	Sick-bed: Number of sick-bed in 10,000 inhabitants; 1 person
W	Newspaper & Journal: Per capita sales of newspaper and journals;
X	Books: Number of books in public library in 1,000 inhabitants;
Y	TV sets: Number of TV sets in 1,000 inhabitants;
Z	Railroad: Length of traffic service by Polish National Railroad (PKP) in 100 km ² area; 1 km
a	Road: Length of normal paved road in 100 km ² area; 1 km
b	Car: Number of passenger car in 1,000 inhabitants;
c	Telephone: Number of telephone in 1,000 inhabitants;
d	Non-productive capital: Per capita non-productive fixed assets (house, non-material service, education, health-care, social welfare, culture, sports, recreation);
e	Air pollution I: Emission of dust in 1 km ² area (1 ton)
f	Air pollution II: Emission of gas in 1 km ² area; (1 ton)

Finally, in relation of the former three levels of regional development, North-East, Central-East, and South-East are considered as the regions with less-developed economic conditions. In the five lowest voivodships of Table 4, often

there appears so called economically "weak regions" like Łomża, Ostrołęka, Biała Podlaska, Chełm, Siedlce, Zamość, Ciechanów, Nowy Sącz, and Przemyśl. The problem of economic development in the most backward regions seems to emerge suddenly at the mid-1970s when the administrative system was reorganized. In fact, this is a long time problem which has been situated in the base of Poland's regional problems and regional policies.

Table 4. Measuring spatial differences in Poland (1985)

	Criteria (National)	Unit	Ave. of volvd.	Variant co-ef.	a : 5 highest pref.					b : 5 lowest pref.					a / b ratio
					1	2	3	4	5	1	2	3	4	5	
A	Area (312,683)	km ²	6,381	0.3475	27	41	6	4	42	25	19	5	2	7	3.3
B	Agri. area (188,437)	km ²	3,846	0.3298	27	4	37	6	10	25	5	2	13	19	3.4
C	Population (37,341)	1,000	762	0.7719	15	2	11	33	19	7	3	24	22	29	2.9
D	Pop. density	1	119	1.0273	25	2	15	19	5	41	24	40	30	3, 12	9.6
E	Urban pop. ratio	%	60.2	0.3108	25	2	15	11	42	49	37	29	3	20	2.8
F	Av. pref. cap. city	1,000	212	1.3199	2	25	19	48	33	37	2	39	43	20	11.0
G	Grain productivity	100kg	28.9	0.1417	28	48	46	21	22	29	26	37	20	4	1.6
H	Meat production	kg	148.7	0.2231	22	33	45	14	28	35	7	13	20	16	2.1
I	Industrial prod.	1,000zł	324	0.4626	32	21	15	25	5	3	8	24	49	34	5.1
J	Industrial employee	1	119	0.3216	15	24	46	13	21	24	3	49	8	37	3.0
K	Wages	zł	20,005	0.0929	15	21	46	2	11	24	49	34	3	29	1.3
L	Retails	1,000zł	130.7	0.1455	2	48	25	33	42	29	37	34	44	20	1.6
M	Service	1,000zł	25.7	0.2249	2	33	11	24	18	29	43	31	34	20	2.0
N	Savings	1,000zł	39.3	0.2203	2	33	48	22	42	26	44	20	5	29	2.3
O	Investment	1,000zł	57.7	0.2076	31	42	21	15	47	26	46	25	5	9	2.0
P	Prod. capital	1 mil. zł	598	0.1924	21	32	42	31	15	26	37	34	20	8	2.0
Q	Housing I	m ²	16.4	0.0533	28	15	22	3	4	26	11	10	35	27	1.2
R	Housing II	m ²	54.9	0.0326	29	7	42	30	33	39	46	44	11	35	1.3
S	Highschool student	1	41.3	0.1016	23	36	27	14	26	24	43	31	3	47	1.4
T	University student	1	9.1	1.4019	19	48	23	33	2	7, 8, 17, 22, 24, 34	others				∞
U	Doctor	1	19.6	0.4023	2	25	48	19	23	37	29	49	8	17	3.0
V	Beds	1	56.4	0.2012	48	2	46	25	15	29	35	37	44	17	1.9
W	Newspaper	1	88	0.2270	2	33	25, 42		6	29	37	24	17	8	2.2
X	Books	1	3,207	0.1278	42	36	30	28	41	19	2	31	15	23	1.6
Y	TV sets	1	254	0.1274	25	2	15	46	33	26	36	20	34, 44		1.6
Z	Railroad	km	8.7	0.4549	15	13	46	2	21	24	20	7	3	29	4.2
a	Road	km	49.5	0.2168	19	44	16	5	22	41	40	4	30	7	2.0
b	Cars	1	97	0.2280	2	33	22	15	48	7	26	35	34	44	2.0
c	Telephone	1	66.4	0.3684	2	25	42	48	11	9, 29, 49		37	20		2.7
d	Non-economic cap.	1 mil. zł	521	0.1267	41	18	12	27	13	25	44	11	35	37	1.5
e	Pollution I (dust)	Ton	5.7	1.7520	22, 27, 37		30	34, 40		15	13	19	2	17	468
f	Pollution II (gas)	Ton	15.8	2.1697	8, 37		27	26, 30		15	19	21	13	24	516

(2) SOCIAL INDICATORS AND ECONOMIC INDICATORS

Through the examination on economic indicators, three types of regions with a higher level than the national average can be distinguished: metropolitan voivodships (2, 25, 33, 15, 48), regional central voivodships (11, 18, 33, 42, 45), and highly industrialized voivodships (5, 28, 21). On the whole the North, Central-West, South, and South-West regions exceed higher than the average, and on the contrary North-East, Central-East and South-East are in lower level. Naturally there can be clear East-West contrast which divide Poland into two parts.

However, regional patterns on the social indicators seem to be rather more complicated comparing with those on the economic criteria. Large metropolitan voivodships are basically on a higher level, but in other voivodships each indicator shows different results. Especially two indicators, namely air pollution and books in public libraries, reveal the large deviation from the general tendency.

Here is the important question to interpret the regional tendency. Would it be possible for us to consider that regional disparities in economic conditions are surely larger than those in social indicators which represent the living conditions and welfare level for the people? F. E. I. Hamilton (1982, pp. 126-126) once asserted that regional differences in consumption level of goods and services, and social criteria on the whole are smaller than in case of economic indicators, by comparing two examples with maximum and minimum levels.

As observed in Table 4, however, there seems to be no strong evidence to support his opinion. In the both indicators it is regretfully difficult to find meaningful differences. On the contrary, economic indicators except industrial production show more homogeneity rather than social ones. In the same group, the criteria close to distribution and consumption of wealth and income are more equal than those of the creation of income. In the social criteria, basic indicators for living conditions show the smaller difference in regional context. In the per capita fixed assets, there are no large disparities, and non-economic fixed assets are more homogeneous than the others.

Here we would like to change the line of discussion. When we compare the regional disparities in Poland and Japan measured by the same method adopted here as in the case of Poland.

Regional patterns of the disparities by the same criteria are shown in the diagrams (Table 5). The symbols and indicators in the tables are used in the same definitions as shown in Table 3. This means of course not exactly the same, but means most possible similarity.

Careful observations bring us many interesting facts in a geographic sense. As the basic indicators in Poland and Japan, these two countries have the similar conditions in the size of the country and number of the highest administrative units. Similarity in number and areal size of the regions is the first premise which we are able to compare regional disparities in the international context.

Table 5. Measuring spatial differences in Japan (± 1989)

	Criteria (National)	Unit	Ave. of volvd.	Variant co-ef.	a : 5 highest pref.					b : 5 lowest pref.					a / b ratio
					1	2	3	4	5	1	2	3	4	5	
A	Area	(377, 835) km ²	7.975	1.4516	01	03	07	20	15	27	37	13	47	14	13.0
B	Agri. land	(53, 170) km ²	1.131	1.4910	01	08	15	07	03	13	27	14	29	19	16.2
C	Population	(123, 255) 1,000	2.622	0.9092	13	27	14	23	11	31	32	18	39	19	10.6
D	Pop. density		619	1.7361	13	27	14	11	23	01	03	05	39	32	32.1
E	Urban pop. ratio	%	77.3	0.1747	13	27	14	26	12	19	36	40	05	03	1.7
F	Ave. pref. cap. city	(36, 749)	782	1.6222	13	14	27	23	01	35	31	32	24	41	24.1
G	Grain productivity	100kg	34.4	0.4158	15	18	05	16	25	47	13	01	14	19	7.3
H	Meat production	1kg	1.166	1.2299	13	27	45	46	36	18	01	25	05	29	23.5
I	Industrial prod.	1,000yen	82.263	0.4853	23	25	09	22	10	47	39	42	02	46	6.1
J	Industrial employee	1	94.1	0.3655	23	22	10	21	09	30	47	01	39	42	4.3
K	Wages	yen	336,648	0.1842	13	14	27	23	26	02	05	46	03	06	1.8
L	Retails	1,000yen	935	0.1156	13	27	01	37	26	47	29	46	42	30	1.5
M	Service	1,000yen	3,636	0.9069	13	27	23	04	40	29	25	30	39	12	7.2
N	Savings	1,000yen	3,003	0.2110	13	30	37	18	26	47	02	45	05	04	2.0
O	Investment														
P	Prod. capital														
Q	Housing I	1 mat	9.2	0.1193	16	17	05	20	15	47	27	13	14	11	1.5
R	Housing II														
S	Highschool student		45.8	0.0530	47	09	33	21	16	05	06	04	43	39	1.2
T	University student		20.5	0.6873	13	26	40	27	23	30	25	05	45	32	5.7
U	Doctor		16.4	0.1846	13	36	26	31	17	11	12	08	21	22	1.8
V	Beds		157	0.2792	39	43	36	46	42	14	12	11	29	25	2.4
W	Newspaper		414	0.1884	13	29	09	37	23	01	27	47	42	43	1.9
X	Books		1,313	0.3238	16	13	09	25	35	07	42	47	44	40	2.8
Y	TV sets				46	35	34	32	30	47	29	11	08	25	1.2
Z	Railway														
a	Road		62.1	1.0698	13	27	23	14	11	01	03	05	06	39	12.4
b	Cars		342	0.1438	10	20	19	24	09	13	27	14	28	11	1.6
c	Telephone		439	0.1202	13	27	26	01	39	06	08	41	07	05	1.4
d	Non-economic capital														
e	Pollution (dust)														
f	Pollution (gas)														

Notes: Blanks in column mean the equivalent data to Table 4 are not available

However, in spite of the elementary similarity of the countries, there seem to be the remarkable differences among regions in the basic indicators. For example, as to the indicator A (area), B (agricultural land), population, population density and so on, fairly large differences can be observed in Japan rather than in Poland. In the case of urban population there can be a common tendency in both countries. Actually it depends on the definition of the "city" or urban area in respective countries. In Japan "city" is recognized as the settlement with (1) more than 50 thousand inhabitants, and (2) more than 5,000 DID population. It means under the Japanese conditions that there can exist 656 cities in Japan in 1990.

As a whole, Poland is more homogenous than Japan. We should confirm this point before starting the detailed discussion.

Let's consider the economic aspect of the problems. Table 4 shows that regional disparities in the first sector of the economy represented by the symbols G and H, are extremely fewer in Poland than in Japan. In the background of this fact, there are different conditions surrounding the agricultural economy. In Japan the Government changed its agricultural policy in the late 1950s. After the 1950s, Japan started gradually to import main foodstuff from abroad. Now is the final stage to abandon the self-sufficiency policy of food supply, when the Government would adopt completely free trade policies of agri-products including rice as the most important food stable in Japan. Because of this deep dependance on foreign countries based upon the theory of international division of labour, self-sufficiency ratio of total food on calorie base, are decreasing to at the level of 70% in recent years.

In the second sector of economy represented by the industrial production and employees in industry, both countries indicate the similar numbers. But it is really difficult to compare the regional differences in the tertiary sector. Because the tertiary sector reflects most seriously on the differences of the economic system. Each criterion on the tertiary industry have its own peculiar meaning in different economic systems and they also reflect on the different statistical theory and practices. So we can only present very simple statements on the problems concerned.

Service industry (R) especially has a quite different definition in both countries. In spite of this, it is very important to say that those are tremendously similar as a result.

Nevertheless, the final stage of the consumption, or individual consumption, is the most important aspect in the discussion on the regional disparity problem. Here we want to mention, housing conditions, education, health service, and individual consumption.

As for as housing conditions, Poland is extremely homogeneous country. Japan is also uniform in this respect. But the meanings of the similarity may not be the same. In the case of education, both countries illustrate the similar result. In Japan, almost 95% of the junior-high school graduates (15 years grade) register their names in the senior-highschool. It is the reason that the regional difference is hardly observed.

In Poland, most part of high school students go to professional schools and fewer are registered in liceum, that is almost one third of total students. If we limit the data to liceum students only, the regional differences could be clearly observed also in Poland.

However, in higher education, there is a large contrast between the two countries. In Japan, there are almost 500 universities of 4 years system in 47 prefectures, and over 2 million student are regisitered every year, and 36% (1990) of the highschool graduates are studying in the universities. It means that in contemporary Japan the popularization of the higher education is very clear and at the same time university graduates are not always the selected elite of the society.

On the contrary, in Poland there are some voivodships where the higher education institutions do not exist, for example, Chełm, Ciechanów, Konin, Leszno, Łomża, Ostrołęka, Piła, Przemyśl, Skierniewice, Tarnów, and Zamość. In these voivodships the ratio of university students is much lower, and remarkable regional disparities are identified in Poland.

In health care services represented by the per capita number of doctors and beds in hospitals, no large differences are observed in both countries.

At the level of individual consumption, for example, per capita TV set, car, telephone and so on, they are very similar in regional context in both countries.

The most comprehensive indicator among the criteria which show the level of per capita individual social stock is the non-economic fixed asset. Unfortunately we cannot find the equivalent indicator in Japanese statistics, but regional disparities in Poland are smaller rather than in Japan.

As the negative incentive factor, regional differences in environmental conditions are extremely large in Poland. The airpollution caused by the industrial activities is much more serious than those of urban and communication-related emission in the country. Remarkably strong regional differences can be seen in these indicators (Tables 1 and 4). Large industrial and energy plants which are emitting large amount of pollutants, are located in some voivodships. It depends on the location of polluting factories whether environmental conditions are healthy for residents.

As a whole, in Poland and to some extent in Japan, equalization processes in the non-economic aspect of the society are relatively clearly observed. However, the processes can be more clearly seen in Poland than in Japan.

Finally, we would like to comment on the method of comparison of regional differences.

First, it is the premise to make comparative study on the regional disparities, that those countries concerned should have the similar conditions on per area, or on land use density. Moreover, in measuring the regional disparity, it is also the premise that both countries should have the common characteristics in the number of regional units concerned and the indicators to be compared. In the comparative study in Poland and Japan, these conditions are almost satisfactory.

Second, it is principally rather difficult to select the same indicators of regional disparity because of the different economic systems. Particularly regional differences in the development of tertiary sectors, the role of public sectors in economic activities and living conditions, and level of distribution in goods and services are distinguished. Statistical system is also different in respective country, so even the simple indicators like O, P, d, e, f, for which we could not collect equivalent data on Japan.

Third, as the economic relationship among regions is also quite different according to the character of economic systems, the meanings of vertical structure of the regions is also different. In the advanced economies, the hierarchical spatial systems are formed in the development of the national economy. Economic development can be possible by taking advantage of the relation between highly

advanced regions and economically backward regions. The existence of the backward regions in the national economy forms even an advantageous element for the capitalist economic development. However, in Poland regional systems of the national economy are not always fully developed, so the underdeveloped "weak" regions remain in the long term as the lagged regions in the process of economic development.

Here is the limit in the approach to examine the regional disparity problems in the comparative study. For further discussion a new approach is necessary. At the same time, more comprehensive methods are to be developed.

Generally speaking, the most important fact is that even where the indicators are on the economic or the social, regional disparities in Poland's socio-economic scene are considered not so remarkable and that the historical trends of regional disparities in Poland clearly illustrated to diminish (Yamamoto, 1988). Actually there exist firmly regional inequalities in industrial activities, while there also seems to be strong regional equalization process. It means the strong mechanism for spatial reallocation of wealth and income is functioning in order to realize regional equalization and social equity.

In spite of existing inequality in economic opportunities for people, it is properly estimated that mechanism to diminish the regional inequality in the living and welfare conditions is operating even if it is relatively weak.

This can be possible up to the level of antecedent discussions on socialism and regional equity to the higher stage. The traditional approaches on the theme should to contain the assertion that it is necessary to equalize the location of productive forces in order to realize regional equalization. In the early investigations they thought only distribution of productive forces is the most effective means to realize regional equalization, and also a necessity to distribute industrial activities evenly, is exaggerated.

While, it is also very clear that there exists widely spatial inequality in the distribution of natural endowment, settlement patterns, and population. Accordingly, so long as it is difficult to overwhelm the regional difference of economic distance which is formulated mathematically as a "function of transportation cost" in the location theory, the realization of regional equity in the process of creation of social wealth is substantially impossible. To be able to do at most is to diminish the regional inequality in the distribution of wealth within the tolerable limit, by promoting consistent socialist regional policies. It is very difficult to say both theoretically and practically what is the tolerable extent in regional inequality.

4. CONCLUDING REMARKS

The main points of the discussion are summarized as follows.

The idea of equal development of regional economy at national level is not always the premise for socialist regional policies. It is the premise of discussion

for the formation of regional policies to reach at the definite level of development in productive forces and highly intensive land use in national spaces in any economic systems.

Even development itself is not the goal of regional policies, but the means to realize the tasks of regional policies. The aims of the regional policies lie in the comprehensive development of productive forces, levelling of per capita national income, and equalization of individual living conditions, and through these processes to realize the equalization of multi-dimensional opportunities for all individuals.

Then the authors begin to analyze these problems as the starting points for examining the regional equality, by dividing them into two categories, namely location of productive (working) process and consumption (living) processes. At the present stage of contemporary development of productive forces, it is quite impossible to conquer economic disadvantages of distance. Therefore, the location of productive processes, creation process of wealth, is inevitably compelled to be unevenly distributed in regional context. Because the given conditions of land, natural endowment, distribution of population and cities at national scale, geographic distribution of the existing industries as the result of historical heritage are brought about by chance. Theoretically there should surely exist desirable spatial structure of the national economy by taking these elements fully into consideration. In spite of the fact that the socio-economic systems are different, they are defined by the tasks of national economy, and also firmly connected with total development of productive forces and principles of priority to economic rationality and efficiency. This is nothing less than the problem of so called "rational distribution of production forces", presented in the Soviet Union since its early days.

Under these circumstances, the location of production processes is geographically uneven, and the aim of regional policies does not directly go to the road to realize regional equalization. More important than the goals of regional policies is to realize the levelling of living conditions for all individuals as well as we can, and also to realize institutional and substantial systems in order to equalize the possibilities to access to various living facilities for the inhabitants.

One of the advantageous point in the management of socialist economic systems, is to be able to intervene in the relations among the creation of social gross income, the distribution of national income and every individual and social consumption.

The most important element to lead the more desirable national economy is simply to do the state intervention by a series of economic policies in order to separate these three aspects of national economy. Saying the same thing in other words, although there still exist strong tendencies of regional disparities in wealth and income creation mechanism, defined by geographic distribution of productive forces, it would be possible for the regional disparities in income level distributed for individuals and per capita final consumption level (including communal consumption) to make economical nonsense by the introduction of the

strong mechanism of wealth and income reallocation system. This is the direction to make mere shell of both disparities among industrial sectors, occupational groups and the other social groups, and regional economic disparities as the total expression.

It is also the premise for realizing the above mentioned tasks to distribute total demand of the people by each sector corresponding to the hierarchical regional systems. And through this process it is important to improve the conditions of regional community ensuring equal opportunities for each individual. Especially social infrastructure and social service sectors in proportion to population distribution should be evenly located according to each level of spatial systems. As to the negative element in the living conditions, for example living in airpolluted area, these conditions are also equally distributed or should be put in the trade-off relationship to the other advantageous elements.

Some of the antecedent discussions have keenly pointed out the appearances, different aspect and existing forms of regional inequality. However, most scholars have failed to grasp the essential nature of the problems concerned by ignoring the serious difference in equal opportunity between production conditions and living conditions of the people.

As a consequence, they are going in a blind alley and arguing in the following non-creative manner; that socialism ought to eliminate regional inequality, and the existence of regional inequality is the proof that existing socialism is not true socialism.

Finally, regional policies can be formulated as a set of policies which aim to realize the more rational distribution of production forces, to equalize the living conditions for the people, and to ensure the equal access to all kinds of opportunities for whole individuals.

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THE REDUCTION OF THE SPECIAL SHIPBUILDING INDUSTRY FACILITIES IN JAPAN

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The Japanese shipbuilding industry was comparatively stable for a long period, but it experienced serious structural depression after the oil panic of 1973, resulting in a decline in orders for oil-tankers. There exists a worldwide surplus of cargo capacity, particularly for oil. From 1980 to 1988, the facilities of the shipbuilding industry was reduced to about half. From 1973 to 1988, the number of employees was reduced a third.

So, it is necessary to compare the economic transformation of contemporary Japan with that of Poland. But in this paper, I would like to compare only their general economic system.

In Japan, the heavy machinery industries including iron and steel manufacturing were reduced to about 30-40% of facilities and employees. But, production of such industries does not so much decline, except aluminium manufacturing and petroleum refinery.

Many of Japanese big shipbuilding companies are collective heavy machinery industry. So, the large financial groups such as Mitsubishi, Mitui, Hitachi and others, where the economic slack and laid off workers can be absorbed by the other companies within the group which are prospering, such as the automobile companies.

As of April 1984, there are 34 major shipyards in Japan. Most of them are roughly concentrated in three areas; 4 are located in Keihin Industrial Region, 18 in the Seto Inland Sea Region, and 5 in the Northern Kyushu Region. From the major former concentrated region as Keihin, Chukyo and Hanshin have moved to Seto Inland Sea and Northern Kyushu Region.

In June 1986, the Council for Rationalization of Shipping and Shipbuilding Industries submitted a report to cut down 20% of the facilities of the Special Shipbuilding Industries for new ships of over 5,000 G.T. till the end of March 1988.

1. THE POSITION OF THE JAPANESE SHIPBUILDING INDUSTRY IN THE WORLD

Many of the Japanese shipbuilding companies are "collective heavy machinery industry" companies. This is an inheritance from the historical condition peculiar to the development of capitalism in Japan. So, the shipbuilding industry has promoted Japanese industrialization since the Meiji era and needs various subcontract factories around shipyards. It also constructs many company's houses for its employees around shipyards, thus forming industrial districts in Japan. So, its contribution and importance to increased regional specialization and industrial growth cannot be denied. In this context, the growth and technological innovation within the Japanese shipbuilding industry has been substantial. Thus, the shipbuilding industry districts are typically good research fields in economic geography.

Japan became the world's "Number One" shipbuilder in 1956, when its shipyards launched 2 million G.T. surpassing Great Britain. Since then she maintained that position till 1989. But, up to the present, the shipping market witnessed many fluctuations and Japanese industry experienced several ups and downs. Recently, the Republic of Korea and middle-developing countries are pressing hard and the position of Japanese shipbuilders is declining. In 1989, Japan launched 6.0 million G.T., it amounted to 46.2% of the world's tonnage launched (Table 1). In that year, the Republic of Korea was the second largest builder with 20.5% of the world's total, Taiwan ranked 3rd with 4.4%, and Great Britain had dropped down to 15th place, accounting for only 0.8% of the total. Yugoslavia was 5th, East Germany was 10th, Poland was 13th. Taiwan was 3rd, Brazil was 8 th, and thus middle-developing countries including Korea have grown up. In 1975, Korea launched only 0.4 million G.T. with 1.2% of the total, East Germany 0.9%, Brazil 1.1%, Taiwan 0.4%, and so on. In 1979, the number of world total tonnage decreased one third of the 1975 and especially the Japanese tonnage was only 24% of the 1975, but Korea was the 6th shipbuilder country with 4.1% of the world total. From 1980 Korea grew up to the second largest shipbuilding country and in 1988 she launched 3.4 million G.T. with 28.4% of the total.

After the second oil crisis however, oil trade showed a considerable decline and now there exists an excessive supply of tankers of approximately 100 million D.W.T. (Deadweight Tonnes). Therefore, virtually no new order was coming in except orders for small-sized tankers in that time.

2. THE REDUCTION OF SPECIAL SHIPBUILDING INDUSTRY FACILITIES IN JAPAN

Japan's and Western Europe's shipbuilding industries have been facing the same serious slump in ship orders, most noticeable in 1977-78, especially in

Table 1. The main shipbuilding countries: changes in new ships launched (unit: 100 G/T)

country \ year	1975			1980			1985			1987			1988			1989		
	NO	C/T	%	NO	C/T	%	NO	G/T	Q	NO	G/G	%	NO	G/G	%	NO	G/T	%
Japan	946	17,987	50.1	955	7,288	523	800	9,299	539	559	4,170	427	627	4,546	37.9	654	6,023	46.2
Korea	18	441	1.2	65	629	4.5	106	2,777	16.1	104	2,298	23.5	114	3,406	28.4	91	2,679	20.5
Taiwan	7	142	0.4	28	290	2.1	14	356	2.1	5	301	3.1	9	484	4.0	10	580	4.1
W.Germany	174	2,546	7.1	107	462	3.3	141	627	3.6	43	43	222	2.3	57	526	4.4	59	545
Yugoslavia	23	639	1.8	23	123	0.9	25	215	1.2	25	343	3.5	14	330	2.8	29	479	3.7
Denmark	60	961	2.7	49	227	1.6	45	430	2.5	33	270	2.8	45	315	2.6	26	314	2.4
Spain	220	1,638	4.6	75	509	3.6	42	104	0.6	106	127	1.3	128	141	1.2	124	276	2.1
Brazil	48	389	1.1	35	615	4.4	12	405	2.4	24	61	0.6	13	269	2.2	17	260	2.0
China							20	140	0.8	20	231	2.4	17	287	2.4	27	225	1.7
E.Germany	60	338	0.9	50	340	2.4	62	407	2.4	38	302	3.1	26	283	2.4	29	219	1.7
Italy	44	843	2.4	40	168	1.2	25	38	0.2	29	281	2.9	30	333	2.8	333	212	1.6
Finland	29	257	0.7	31		1.4	26	252	1.5	15	128	1.3	23	274	2.3	11	208	1.6
Poland	94	607	1.7	63	395	2.8	40	293	1.7	50	204	2.1	47	179	1.5	47	122	0.9
The Netherlands	143	951	2.6	85	125	0.9	80	190	1.1	66	50	0.5	76	68	0.6	49	108	0.8
Gr. Britain	128	1,304	3.6	45	244	1.8	36	145	0.8	30	46	0.5	38	91	0.8	28	100	0.8
World total	2632	35,898	100.0	2209	13,935	100.0	1,817	17,247	100.0	1,469	9,770	100.0	1,560	11,997	100.0	1,513	13,041	100.0

* Lloyd's Statistics Ships over 100 G/T.

Japan, and it has been reported more than ten medium-sized shipbuilders went into bankruptcy. So, the basic program for stabilization, mapped out by the Council for Rationalization of Shipping and Shipbuilding, and the Ministry of Transport made the Report to cut down 35% facilities of 61 Special Shipbuilding Industries (They have the facilities to make over 5.000 G.T. ships).

The reduction of the 61 special companies was divided into 4 groups (Table 2). Group A was 7 major companies such as Mitsubishi, Ishikawajima-Harima, Mitsui, Hitachi, Kawasaki, Nipponkohkan, and Sumitomo which were obliged to cut down 40% of their facilities. Group B was 17 medium companies such as Sasabo, Hakodate, Sanoyasu, Namura, Osaka, Oshima, Kanasashi, Nipponkai, Onomichi, Kasado, Hashihama, Hayashikane, Kurushima, Imabari, Kohyo, Usuki, and Tsuneishi which were obliged to cut down 30% of its facilities. Group C the other 16 medium companies such as Shinyamamoto, Narasaki, Tohhoku, Kanawa, Kanda, Shikoku, Uwajima, Watanabe, Kohchiken, Fukuoka, Mie, Kyokuyo, Minaminihon, Kohchi, Imai, and Naikai which were obliged to cut down 27% of them. Group D was the other 21 semi-medium builders such as Shimoda, Miho, Setouchi, Ohhhira, Higaki, Asakawa, Kagoshima, Ishikawajima Ship., Niigata, Kida, Hashimoto, Yamanishi, Nakamura, Shinhama, Ujina, Awanoura, Miyoshi, Tohwa, Ube, Geibi and Awazu which were obliged to cut down 15% of its facilities. The reduction was started in 1978 and completed by the end of March 1980. In 1978, 61 Special Builders had 138 building docks and berths with 9.77 million CGRT capacity and after the reduction they had 88 building docks and berths with 6.19 million CGRT. So, 50 building docks and berths have been cut down on, therefore 3.58 million CGRT facilities have been reduced. 7 major companies of group A cut down on 25 docks and berths with 2.25 million CGRT, and its figure was 63% of the total reduction.

Table 2. The reduction of the 61 special shipbuilding industry facilities

	Facilities before cut down		Target for reduction	Actual cut down volumes		Ratio of achievement	Facilities after cut down	
	No. Dock	10000 * CGRT		No. Dock	10000 CGRT		%	No. Dock
(A) Major 7 Builders (40% Cut Down)	55	569	228	25	225	99	30	343
(B) Medium 17 Builders (30%)	38	289	87	10	103	119	28	205
(C) Other 16 Medium Builders (27%)	23	79	21	9	25	119	14	45
(D) Other 17 Semi-Medium Builders (15%)	22	40	6	6	5	81	16	26
Total (average 35%)	138	977	342	50	358	105	88	619

Source: Statistics of Ministry of Transport; * CGRT (Compensated Gross Registered Tonnage)

(A) Group Major 7 Builders: *Mitsubishi Heavy Industries, LTD, *Ishikawajima-Harima Heavy Industries Co., LTD. *Mitsui Engineering & Shipbuilding Co., LTD. *Hitachi Zosen. *Kawasaki Heavy Industries, LTD. (Nippon Kohkan K.K. and *Sumitomo Heavy Industries, LTD.

(B) **Group Medium 17 Builders:** *Sasebo Heavy Industries Co., LTD. *The Hakodate Dock Co., LTD. *Sanoyasu Dockyard Co., LTD. *Namura Shipbuilding Co., LTD. *Osaka Shipbuilding Co., LTD. *Oshima Shipbuilding Co., LTD. *Kanasashi Shipbuilding Co., LTD. *Nipponkai Heavy Industries Co., LTD. *Onomichi Dockyard Co., LTD. *Kasado Dockyard Co., LTD. *Hayashikane Shipbuilding & Engineering Co., LTD. *Kurushima Dockyard Co., LTD. *Imabari Shipbuilding Co., LTD. *Koyho Dockyard Co., LTD. *Usuki Iron Works, LTD. *Hashihama Shipbuilding Co., LTD. and *Tsuneishi Shipbuilding Co., LTD.

(C) **Group Other 16 Medium Builders:** *Shin Yamamoto Shipbuilding & Engineering Co., LTD. *Narasaki Shipbuilding Co., LTD. *Tohoku Shipbuilding Co., LTD. *Naikai Shipbuilding & Engineering Co., LTD. *Imai Shipbuilding Co., LTD. *Kanawa Dockyard Co., LTD. *Kanada Shipbuilding Co., LTD. *Shikoku Dockyard Co., LTD. *Uwajima Shipbuilding Co., LTD. *Watanabe Shipbuilding Co., LTD. *Kohchikien Shipbuilding Co., LTD. *Fukuoka Shipbuilding Co., LTD. *Mie Shipyard Co., LTD. *Kyokuyo Shipbuilding & Iron Works Co., LTD. *Minaminihom Shipbuilding Co., LTD. and *Kohchri Heavy Industries Co., LTD.

(D) **Group Other 21 Semi-Medium Builders:** *Shimoda Dockyard Co., LTD. *Miho Shipyard Co., LTD. *Setouchi Shipbuilding Co., LTD. *Ohira Industries Co., LTD. *Higaki Shipbuilding Co., LTD. *Asakawa Shipbuilding Co., LTD. *Kagoshima Dockyard & Iron Works Co., LTD. *Ishikawajima Ship & Chemical Plant Co., LTD. *Niigata Engineering Co., LTD. *Kida Shipbuilding Co., LTD. *Hashimoto Shipbuilding Co. *Ymanishi Shipbuilding & Iron Works Co., LTD. *Nakamura Shipyard & Iron Works Co., LTD. *Shinhama Dockyard Co., LTD. *Ujina Dockyard Co., LTD. *Awanoura Dockyard Co., LTD. *Miyoshi Shipbuilding Co., LTD. *Tohwa Shipbuilding Co., LTD. *Ube Dockyard Co., LTD. *Geibi Shipbuilding Industries Co., LTD. and *Awazu Shipbuilding Co., LTD.

The reduction of 61 Special Builders made three patterns as follows.

Type 1: Making reduction within a company such as Mitsubishi, Kawasaki, Namura, Sanoyasu, Kanda and so on (11 companies).

Type 2: Making joint reduction in grouping companies such as Ishikawajimahirima, Hitachi, Mitsui, Nipponkohkan, Sumitomo, Kurushima, Tsuneishi and so on (11 groups and 40 companies).

Type 3: Making construction capacity within a company such as Kyokuyo, Awanoura, Tohwa, Nakamura, Yamanishi and so on (10 companies).

Many of the Japanese major shipbuilding companies are collective heavy machinery industries. So, the large financial groups such as Mitsubishi, Mitsui, Ishikawajima-Harima and others, where the economic slack and laid off workers can be absorbed by other enterprises within the group which are prospering, such as the automobile companies in 1980-82.

Ishikawajima-Harima Heavy Industries Co., Ltd. belongs to Type 2 and it has 6 shipyards. No. 1 Berth of Tokyo was cut down on and in Yokohama & Aichi, all building docks were cut down on, so they cannot build new big ships (Table 3). But during that time Aioi & Kure & Ishikawajima Ship Yard were not reduced, so fortunately all shipbuilding facilities remained. But in September 1986, head office of Ishikawajima-Harima announced: (1) closing Aioi shipbuilding industry; (2) cutting down one building dock in Kure Shipyard; (3) laying off total 7,000 employees. So, about 2,600 employees of Aioi Shipyard were laid off till the end of 1986.

Table 3. The reduction of Ishikawajima-Harima heavy industry facilities

Name of Shipyard	Facilities before Reduction			Facilities after Reduction	
	Dock & Berth No.	G.T.	*CGRT	G.T.	CGRT
Tokyo	No.1 Berth	15000	39460	-	-
	No. 5 Berth	45600	84498	15000	39460
Yokohama	Dock	120500	150554	-	-

Name of Shipyard	Facilities before Reduction			Facilities after Reduction	
	Dock & Berth No.	G.T.	*CGRT	G.T.	CGRT
Aich (Chita)	Dock	25000	226149	-	-
Aioi	No. 1 Dock	95000	131313	95000	131313
	No. 3 Berth	91000	128069	91000	128069
Kure	No. 2 Dock	180000	188697	180000	188697
	No. 3 Dock	251000	226643	251000	226643
Subtotal			1175378		714182
Ishikawajima Ship&Chem.	No. 3 Berth	5000	13862	5000	13862
Total			1189240		728044

Source: Statistics of Ministry of Transport *CGRT (Compensated Gross Registered Tonnage)

3. CHANGES OF MAJOR SHIPYARDS IN JAPAN COMPARING 1978 WITH 1983

As of March 1978, there were 34 major shipyards in Japan. As Figure 1 shows, most of them are roughly concentrated in 5 areas; 7 are located in the Keihin Industrial Region, 4 in the Chukyo Region, 7 in the Hanshin Region, 7 in the Seto Inland Sea Region and 6 in the Northern Kyusyu Region. The location of the major shipyards reflects, in part, climatic conditions, for much of the work in the construction of ship is still done outdoors. Thus, location on the Japan Sea side or in Tohoku is considered to be unfavorable due to heavy snow during the winter months. Whereas location in many inlets and bays of Seto Inland Sea or near the four major industrial regions of the Pacific Coast Manufacturing Belt, where the climate is warmer and sunnier, has been considered favorable.

The location of the more recent and very large shipyards of the 1970s shows a similar climatic reference. In addition, they require space for their large scale facilities to build the supersized vessels, named the super-tankers (very large crude oil carriers=VLCC and ultra large crude oil carriers=ULCC). These requirements could be met more easily on the southern inland of Japan, especially in Kyusyu, were 4 large shipyards such as Mitsubishi (Kohyagi), Hitachi (Ariake), Ohshima (Ohshima) and Namura (Imari) were constructed in 1973-75.

As Figure 1 shows, 34 major shipyards are grouped into 7 capital financial systems with a building capacity of more than 300 thousand G.T. shipyards which are located in the Seto Inland Sea and Northern Kyusyu. In 1980, the symbol mark + indicates such as Hakodate Dock, Mitsubishi (Yokohama), Ishihari (Yokohama), Ishihari (Chita), Sanoyasu (Osaka), Hitachi (Sakai), Mitsui (Fujinagata) and Mitsubishi (Hiroshima) were reduced and missed in major shipyards of 1983. And in 1980, the symbol mark # indicates such as Sumitomo (Op-pama) & (Uraga), Mitsubishi (Nagasaki) & (Kohyagi) combined into one shipyard.

As Figure 2 shows, there are 33 major shipyards in Japan in 1983 and roughly concentrated in 3 areas; 4 are located in the Keihin Industrial Region, 19 concentrated in Seto Inland Sea Region from Kobe to Shimonoseki and 5 in Northern Kyusyu Region. But Figure 2 shows that building capacities are almost all smaller in

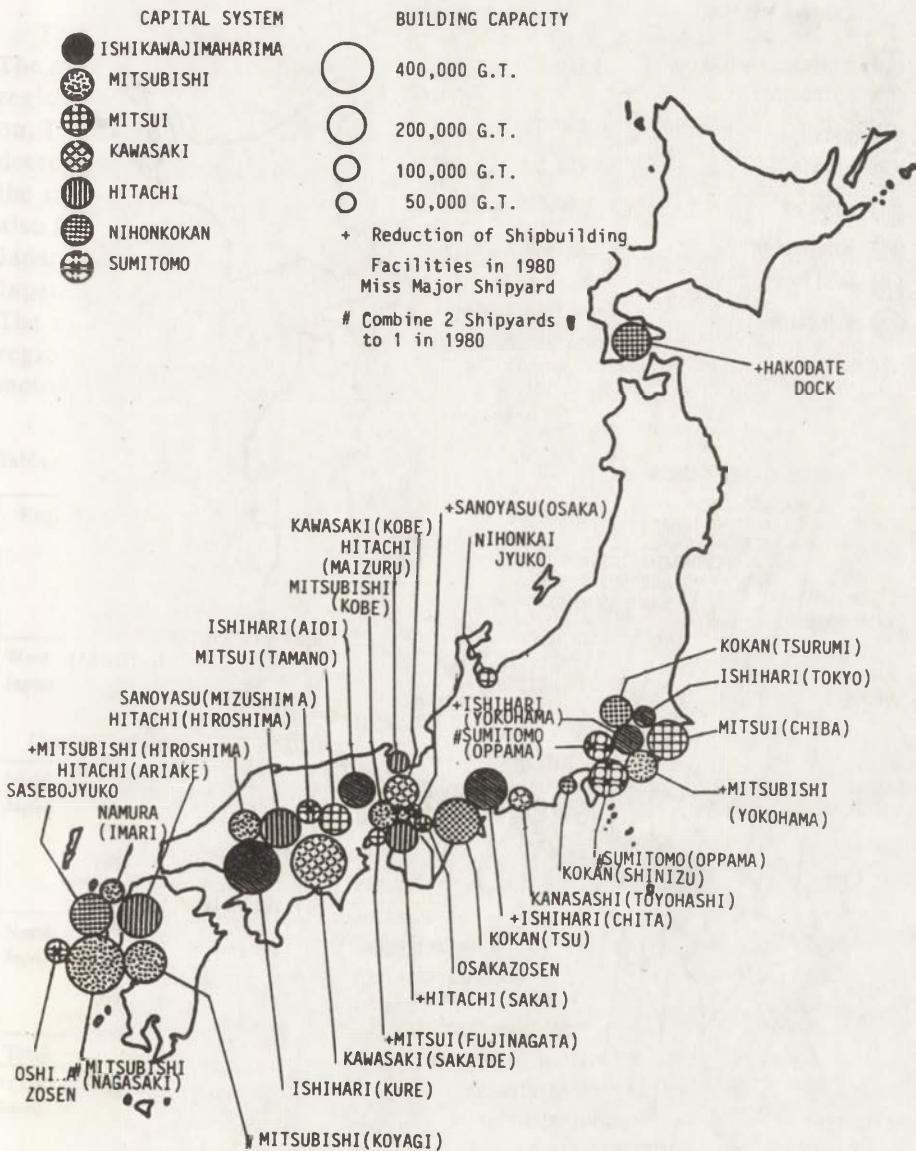


Fig. 1. 34 major shipyards in Japan (1978)

comparison with Figure 1. There are only 3 shipyards over the capacity of 200 thousand G.T., that is Kawasaki (Sakaide), Ishihari (Kure), Mitsubishi (Nagasaki). There are many under 100 thousand G.T. capacity especially in Seto Inland Sea Region. There have been joined to major shipyard since April 1, 1980. The symbol mark* indicates middle-sized shipyards. They are raised to major shipyard such as Tsuneishi, Onomichi, Kohyo, Imabari (Marugame), Hashihama (Tadotsu), Imabari

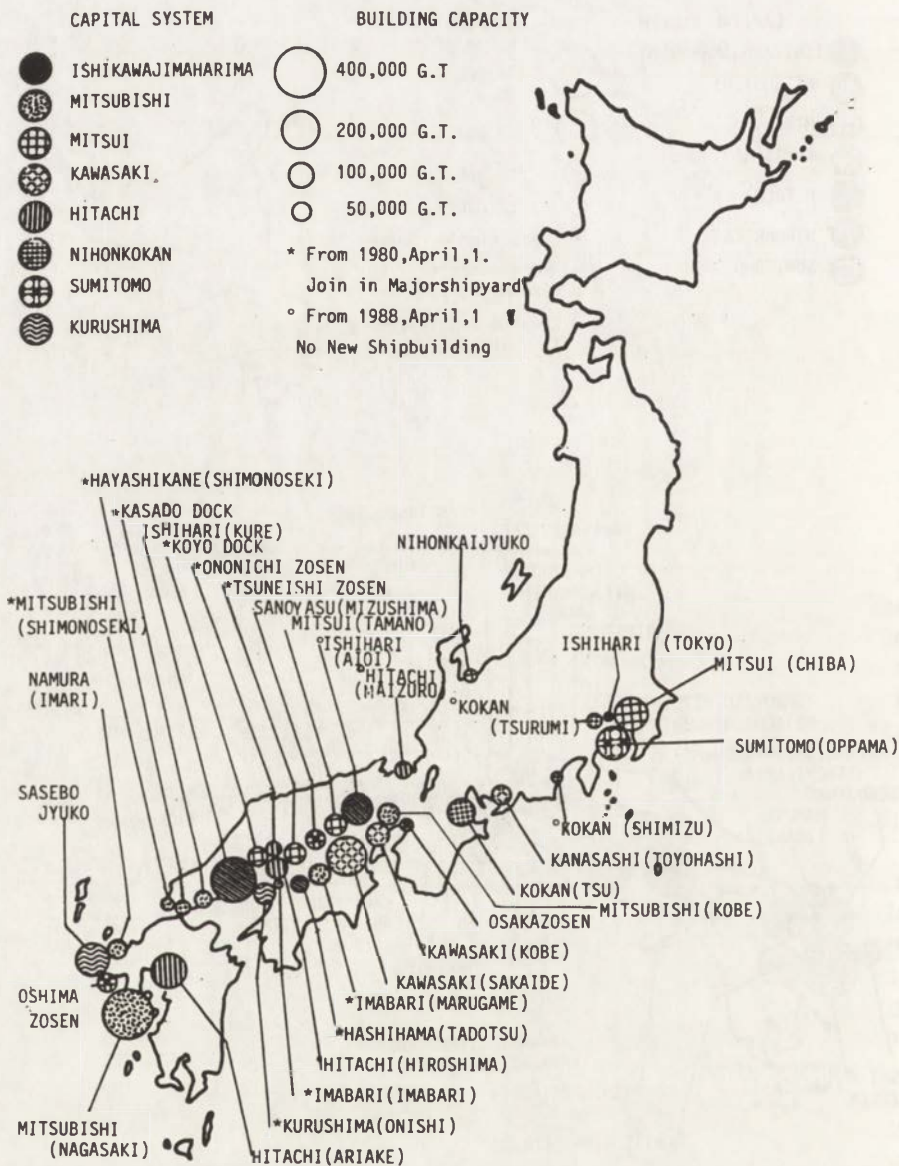


Fig. 2. 33 major shipyards in Japan (1983)

(Imabari), Kurushima (Ohnishi), Kasado and Hayashikane (Shimonoseki). All 10 new major shipyards are located in Seto Inland Sea. But during 1986 the Japanese shipbuilding industry has been facing more severe restrictions, the symbol mark ° indicates shipyard such as Kokan (Tsurumi), Kokan (Shimizu), Hitachi (Maizuru), Kawasaki (Kobe), Ishihari (Aioi) and Hitachi (Hiroshima=Inno-shima) which will close big new shipbuilding facilities before the end of March 1988.

The reduction of facilities in the regional marine groups is shown in Table 4. The reduction in the Kanto region was 22.6% of the Japanese total, next Chugoku region with 18.9%, Tohkai region with 11.6%, Kinki region with 11.4%, and so on. The ratio of the facilities of Kanto decreased from 14.4% to 9.7%, Kinki also decreased from 6.1% to 3.1% and Tokai from 9.5% to 8.4%. On the other hand, the ratio of the facilities of Chugoku increased from 22.9% to 25.2%. Shikoku also increased from 13.9% to 15.4% and Kyushu from 20.6% to 26.0%. So, west Japan's ratio increased from 57.4% to 66.6%, while middle Japan and north Japan decreased its ratio from 37.9% to 31.1% and 3.9% to 1.1%, respectively. The shipbuilding facilities of Japan were reduced especially in major industrial regions such as Kanto, Kinki, Tohkai, so the shipbuilding industry is no longer a metropolitan industry.

Table 4. The reduction of facilities in the regional marine groups

Region	Regional Marine Group	Before Reduction		After Reduction		Reduction Volumes		Reduction Ratio(C/A)
		*CGRT (A)	%	CGRT (B)	%	CGRT (C)	%	%
West Japan	Chugoku	2235466	22.9	1559186	25.2	676280	18.9	30.3
	Shikoku	1358540	13.9	954438	15.4	404102	11.3	29.7
	Kyushu	2013965	20.6	1610859	26.0	403106	11.2	20.0
	(Subtotal)	(5607971)	(57.4)	(4124483)	(66.6)	(1483488)	(41.4)	(26.5)
Middle Japan	Kanto	1406268	14.4	597299	9.7	808969	22.5	57.5
	Tohkai	932353	9.5	516998	8.4	415355	11.6	44.5
	Kinki	597851	6.1	189746	3.1	408105	11.4	44.5
	Kobe	768302	7.9	614407	9.9	153895	4.3	20.0
	(Subtotal)	(1918450)	(37.9)	(1918450)	(31.1)	(1786324)	(49.8)	(48.2)
North Japan	Hokkaido	377401	3.9	65562	1.1	311839	8.7	82.6
	Tohoku	67242	0.7	64379	1.0	2839	0.1	4.3
	Niigata	13862	0.1	13859	0.2	3	-	-
	(Subtotal)	(458505)	(4.7)	(143800)	(2.3)	(314705)	(8.8)	(68.6)
Total	JAPAN	9771250	100.0	6186733	100.0	3584517	100.0	36.7

* CGRT (Compensated Gross Registered Tonnage)

Source: Ministry of Transport, Ship Bureau Statistics.

4. RECENT REGIONAL CHANGES: THE CASE OF AIOI CITY, HYOGO PREFECTURE

In June 1986, the Council for Rationalization of Shipping and Shipbuilding Industries submitted a report to cut down 20% facilities of the special shipbuilding industries for ship of over 5,000 G.T. before the end of March 1988. Already, 61 special shipbuilding industries' facilities for ships of over 5,000 G.T. have been reduced 35% before the end of March 1980 as reported formerly. So, in this

time more severe conditions comparing with 1978 exist regarding the change rate in favor of yen. In September 1986, the head office of Ishikawajima-Harima decided to close the new shipbuilding industry in Aioi shipyard. As I reported earlier (Fig. 2), it is the same situation in Hitachi (Hiroshima=Innoshima), Kawasaki (Kobe) and so on, where they were obliged not to build new ships. These are old traditional shipyards in the Seto Inland Sea and also single shipbuilding industry in the city; its closure reflects big influences on the regional economy.

In 1907 a new shipyard was founded in Aioi district and it was only a repairing shipyard. In 1916 it grew into a new shipbuilder of oil-tankers Harima. In 1960, Ishikawajima Heavy Industries Co., Ltd. with 20% ships and 80% machines, combined with Harima Shipyard Co., Ltd. with 90% ships and 10% machines named Ishikawajima-Harima Heavy Industries Co., Ltd. Now, there are 3 factories in Aioi Operation Department ; the first factory is new shipbuilding and repairing plant the second produces diesel engines and boilers for ships and chemicals, and the third boilers for power stations and for other industries.

Figure 3 shows the changes of 3 factories production indexes (1976=100). In 1989 especially the first factory declined by 38% when compared with in 1976. The first and the second factories continued to decline; on the other hand the

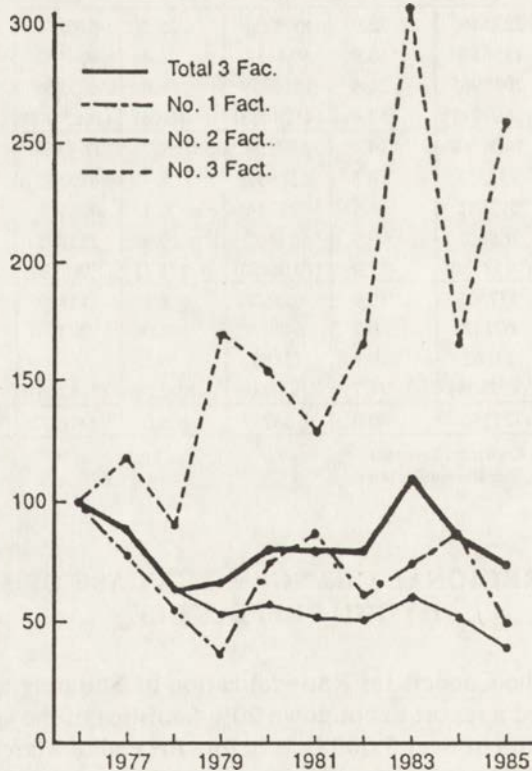


Fig. 3. The changes of 3 factories production index (1976=100)

third factory's production keeps 80% of 1976, but it doesn't indicate effective price index increase.

Figure 4 shows the corporation tax changes of Aioi City. It changed from between 200 million yen to 720 million yen. The corporation tax of 3 factories also changed from 520 million yen to only 6 million yen, thus it fluctuated very much between prosperous conditions and slump conditions. So, the corporation tax ratio of 3 factories changed from 71% in 1976 to only 3% in 1980 and it reflects mainly the production of the shipbuilding industry. After 1987, it is very difficult to estimate the city budget.

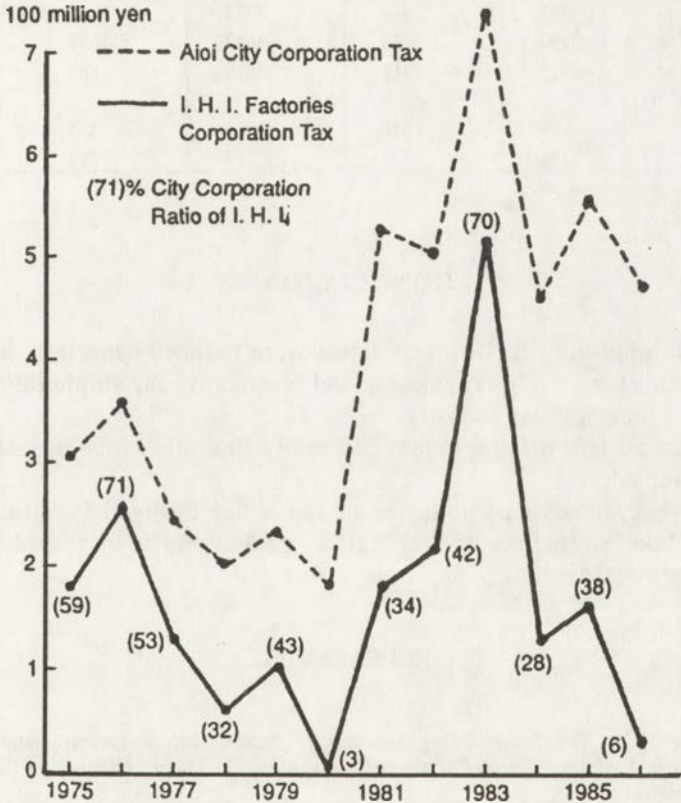


Fig. 4. The changes of city corporation tax

Table 5 shows the changes in the number of employees in Aioi Factories. From 1975 to 1987, total employees decreased from 8,137 to 2,158, actually down 5,979 employees, about one fourth of employees working now. The first and second factories' employees decreased from 4,687 in 1975 to 777 on 1987 and from 1,637 to 392, therefore its total decreasing number is 5,114 (86% of all down). So, in this case, it especially reflects the shipbuilding department. But,

Aioi General Office and the third factory also decreased from 636 to 231 and from 1,180 to 758, respectively. Before the end of 1986, about 2,600 employees almost all over 45 years old retired together with a special retirement lump sum grant.

Table 5. Changes in the number of employees in Aioi Factories of Ishikawajima-Harima Heavy Industries Co., LTD.

	Total	Aioi General Office	Aioi No. 1 Factory	Aioi No. 2 Factory	Aioi No. 3 Factory
1965. Sep.	6638	1290	3441	1907	
1970. Apr.	7995	679	4734	2582	
1975. Apr.	8137	636	4687	1637	1180
1980. May	5417	913	3619	885	Be include No. 1 Fact.
1985. May	5298	646	2586	855	1211
1987. Feb.	2158	231	777	392	758

Source: Statistics of Aioi General Office

CONCLUSIONS

1. The shipbuilding facilities of Japan were reduced especially in major industrial regions such as Tokyo, Osaka, and Nagoya, so the shipbuilding industry is no longer a metropolitan industry.

2. Almost all laid-off employees can easily find other jobs in such places as automobile industry.

3. The heavy machinery industry in Japan has changed its structure using computer robots, so its high technological production has increased while number of workers decrease.

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SPATIAL PROBLEMS OF INDUSTRIAL RESTRUCTURING IN POLAND

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1. INTRODUCTORY REMARKS

The aim of the paper is to present some spatial problems of the restructuring of industry in Poland.

In geographical and economic literature the term restructuring refers to conscious actions taken by state, self-government, co-operative of large industrial organizations with a view to fundamentally transforming the structure of the national economy or its individual branches or firms on a national, regional or local scale. This term has become popular since the time of the oil crisis in the mid-1970s. The repeated growth of the prices of oil, a fundamental source of energy, since 1974 has forced the state authorities, various organizations and corporations in capitalist countries to urgently change branch and technological structures of industry in order to decrease their energy consumption, and, thus, increase economic effectiveness.

In European socialist countries, where communist parties were in power, crisis elements accumulating in the late 1970s had led in the 1980s to the bankruptcy of not only very inefficient command-and-distribution economic systems but also dictatorial political systems. In the past decade, post-communist European countries initiated reforms aimed at introducing a market economy and a democratic socio-political system. The reforms were started first in Poland and Hungary. At present, these countries are undergoing a process of restructuring in the entire national economy, including industry. It should be also noted that the scope of restructuring is very wide because all the types of industrial structures badly need restructuring.

In Poland, one can distinguish three main goals of industrial restructuring: economic, social and ecological. Even though all these goals are extremely important, the economic one seems to be crucial as it determines the achievement of the remaining ones. The target is to increase the economic effectiveness of industry, to pull the economy out of recession and to increase the national income.

However, the social goal of restructuring, consisting in the improvement of poor living standards of the population and reducing unemployment, which reached a total of 2,140,000 or 11% the workforce, at the end of 1991, is also very important. The ecological goal of industrial restructuring is of special significance in Poland, too, because, next to Czecho-Slovakia and the area of the former GDR, Poland is one of the countries with the highest degree of environmental threats in Europe.

The accomplishment of these goals is impossible without a comprehensive restructuring of industry, covering all the aspects of its structure, and especially the ownership, organizational, size, branch, technological and spatial structures.

2. TRANSFORMATIONS OF OWNERSHIP STRUCTURE

One of the most important, if not the most important problem of economic reform in Poland is the transformation of ownership structure, and especially of the industrial ownership. After the introduction of the Stalinist, or command-and-distribution, economic system in Poland in 1945, all factories were gradually nationalized and taken over mainly by state enterprises. In 1980, i. e. at the beginning of the crisis, 85% of the entire industrial employment was concentrated in the state sector, over 14% in the co-operative sector and less than 1% in enterprises subordinate to social organizations. These figures indicate that the state-owned industry was actually holding a monopolist position. The role of co-operative industries, composed mainly of small and medium-size plants, patterned on the state-owned ones, was relatively small.

As a result of nationalization the private sector almost completely disappeared from Polish industry. It survived to a limited extent in industrial crafts, having the smallest plants which employed usually less than five workers. Yet, the development of private industrial crafts was deliberately checked by the administrative authorities for doctrinal reasons for fear of the revival of capitalism. Therefore, until the mid-1970s they were marked by stagnation trends. In 1980, private industrial crafts in Poland employed 281,000 people (328,000 including apprentices).

The spatial effect of the nationalization of factories in Poland consisted the closure of many thousand small industrial plants (mostly corn mills, oil mills, brickyards, and saw-mills), dispersed in small towns and rural districts, which state-owned and co-operative industrial units did not want to administer. The liquidation of small industrial plants, accompanied by administrative restrictions on the development of private craft workshops resulted in the decline of industrial functions in many small towns and rural areas. Only the signs of the gravest economic and social crisis in Poland's history, which erupted in 1980 and has not been overcome till the present day, accumulating since 1976, forced the Polish authorities to give a 'green light' to the development of small private industry

and industrial crafts and to initiate the economic reform aimed at introducing a market economy.

However, this reform, implemented under the conditions of recession and struggle against the political opposition produced rather little effects for the restructuring of industrial ownership. By the end of the 1980s, 3,067 private industrial enterprises were established in Poland, and, in 1989, they employed a total of 102,752 workers, among them 615 foreign enterprises which employed 73,624 workers. These were new enterprises but mostly small ones, and only several dozen of them employed more 100 people each.

The privatization of large socialized enterprises was initiated only by the act of July 13, 1990. In socialized industries, the 1980s saw a significant fall in employment and industrial sales, which still sharpened in 1990 as a result of anti-inflationary policies and problems with the supply of raw materials coupled with difficulties to sell goods. At the end of 1989, 6,733 socialized industrial plants in Poland employed 4,036,000 workers (in 1980 — 5,057,000), this including 139 enterprises with foreign participation (joint-ventures) which employed 17,179 workers. At the end of 1990, the number of socialized enterprises slightly increased to 6,777 but their employment fell to 3,679,000. All in all, in the 1980-1990 decade, employment in socialized industries in Poland fell by nearly 1.4 million people, or about 28%, and industrial sales by about 35%. A further aggravation of recession in the socialized industry occurred in the first half of 1991, mostly as a result of the introduction of hard currency settlements in foreign trade between the countries of the former CMEA (Comecon) and the reduction mostly by the U.S.S.R., of the supplies of raw materials and orders for Polish industrial products. As a result, Poland's industrial sales recorded by the socialized industry in the first half of 1991 were by 43% lower than in the first half of 1989 and by over 50% lower than in the first half of 1980.

In contrast to the recession in socialized industries, in the 1980s Poland recorded a high growth rate of private industrial handwork, which, at the end of 1989, employed 667,000 people, or twice as many as in 1980. Private crafts are still increasing despite difficulties stemming from antiinflationary policies pursued by the Government. Also new private industrial plants are being established. It should be noted that by the mid-1991 a dozen or so large and medium-sized factories were privatized individually, by way of an experiment, under the act of July 13, 1990, while at the beginning of July 1991, the Government announced a mass privatization programme which is to cover half of the state-owned industries by 1993. The first stage of mass privatization, to be completed in 1991, covers 200, mostly large and prosperous, state enterprises, including 150 industrial ones. It is expected that 50-70% of the state-owned industry in Poland will be privatized by the mid-1990s.

Since 1991, privatization has been accompanied in Poland by the process of communalization of those state enterprises whose production is designed directly for local population in towns (gas-works, power plants, large bakeries, meat processing plants, etc.). Thus, the municipal sector is being revived in industry

after it was liquidated by the communist authorities in 1949 when municipal plants were taken over by the state sector.

Due to the development of private enterprise in Poland, the share of the private sector in the national output and employment both in industry and industrial handicrafts rose from 5% in 1980 to 15% in 1989 and 19% in 1991. These figures show that the privatization of industrial activity in Poland is progressing at too slow a pace. This is due to both the impoverishment of society whose savings were largely consumed by inflation and the lack of wider interest on the part of foreign investors in industrial investment in Poland. By 1990, this investment did not exceed 500 million U.S. Dollars.

The recession in industry, which has been deepening over the past few years as a result of anti-inflationary policies pursued by the government and problems with the purchase of raw materials coupled by difficulties with sales of ready-made products, has produced massive unemployment in Poland. By the end of 1989, theoretically, there was no unemployment in Poland, even though, in fact, it did exist, but in a hidden form. Unemployment started to be registered as late as the beginning of 1990. At the end of 1990, there were already 1,140,000 unemployed and, at the end of 1991, their number increased to 2,140,000 which accounted for about 11% of the workforce. It is evident that the development of the private sector cannot keep pace with the decline in employment in the socialized sector. The greatest number of job-seekers has been registered in old industrial districts dominated by, or largely based on, the textile industry (e.g. the Łódź Industrial District, Sudetes Industrial District, and others), which used to sell their products chiefly to the Soviet market. The problem of unemployment is being further aggravated by serious cuts in orders from the U.S.S.R.

Even though the progress of privatization of industrial activity in Poland is not very impressive, its spatial effects are fairly visible. New private industrial plants and craftsman's workshops tend to be located in small towns and rural areas outside large urban and industrial agglomerations, but not very far away from them, in places where until not long ago local residents used to commute to work in industries located in those agglomerations. This particularly refers to the border zone of the Warsaw Industrial District, Cracow Industrial District, Łódź Industrial District and Poznań Industrial District. Such a location is attractive for new private plants because of the nearness of markets, vicinity of offices and banks concentrated in agglomerations, lower prices of building sites, and cheaper, skilled labour. Thus the development of small private industry and industrial handicrafts adds to the spatial deconcentration of industry and greater activity of many small towns and rural settlements whose residents were previously forced by the lack of employment to bear the hardships of daily commuting to work.

3. ORGANIZATIONAL RESTRUCTURING

The organizational structure of Polish industry, patterned on Soviet models, in the years 1945-1980, was marked by the existence of a huge bureaucratic apparatus of central planning and management of industry, employing 30,000-40,000 people (Government Planning Commission, more than ten branch ministries of industry, several dozen industrial branch groups and other organizational units) and of about 5000, usually large, enterprises composed of several plants, frequently monopolistic and not independent, which were easier to manage than small enterprises. In 1980, over 86% of the entire employment in Polish industries was concentrated in 2,139 large enterprises, each employing over 500 workers, including 72% (1208) largest ones, each employing over 1000 workers. There were only 321 small enterprises, employing less than 100 workers each and accounting for only 0.5% of the national industrial employment. A total of 1604 medium-sized enterprises, employing 100-500 workers each accounted for 13% of the workforce employed in the national industry.

This type of organizational structure of industry proved to be very inefficient because it virtually excluded any competition and constituted a powerful check on technological progress in this branch of the national economy. That is why, in 1981, the communist authorities started economic reforms in Poland. The huge bureaucratic apparatus of central planning and management of industry was gradually eliminated. More than ten branch ministries existing until 1981 were replaced by one, Ministry of Industry with a limited scope of activity, which was converted into the Ministry of Industry and Trade in August 1991. Socialized industrial enterprises, on the other hand, were given rights to independence, self-government and selffinancing. At the same time, numerous multiplant enterprises were divided into smaller units. Hence, the number of socialized enterprises increased from 4644 in 1980 to 6773 in 1989.

Favourable spatial effects of organizational restructuring were most evident in production linkages. For after gaining their independence, enterprises manufacturing final products could themselves organize their production (according to their own calculations in conjunction with enterprises located nearby whereas, previously, they were forced to co-operate with enterprises dispersed all over Poland, but subordinated to the same ministry or industrial group. The transport of parts and components from distant places increased production costs of final products.

Many socialized enterprises have been subjected to organizational restructuring since 1989 as a result of the establishment of many enterprises with foreign participation, called joint ventures, and, since mid-1990, also in connection with the initiated individual privatization of state enterprises. In order to co-ordinate this organizational restructuring, the Ministry of Privatization was established in 1990. Individual privatization is usually preceded by commercialization of state enterprises consisting of a change in their status into joint stock companies of the State Treasury, in which employees of those enterprises are entitled to buy 20% of shares at a price 50% below their nominal value.

The mass privatization programme announced by the Polish Government in July 1991, is expected to cover, in its early stage, by the end of 1991, a total of 204 large and medium-sized state enterprises, including 150 industrial ones, accounting for a total of 25% of the production capacity of the state industry, will produce significant changes in the organizational structure of these enterprises. All these enterprises are to be commercialized, i.e., transformed into joint stock companies, in which only 30% of shares will be held by the State Treasury, 10% will be given free, in equal amounts, to the employees of a given enterprise, while the rest, i.e., 60% will be distributed free, in equal amounts, among all the adult citizens in Poland who are at least 18 years of age on December 31, 1991, that is, among about 27 million people. However, the shares given free cannot be traded at stock exchanges before 1993.

Enterprises privatized in this way will be managed by specially-established National Wealth Management Funds composed of experienced managers and financial experts from Poland and abroad. Since the mass privatization programme, announced in July 1991, is an unprecedented organizational venture on a world scale, the economic effectiveness and possible spatial effects of this new form of organization of industry can be assessed only in future.

4. SIZE RESTRUCTURING

A characteristic feature of the Soviet model of socialist industrialization, implemented in Poland in the years 1945-1980, consisted of a trend to build ever greater industrial plants manufacturing their products for the home market and for exports. This trend, called by experts gigantism or gigantomania, was accompanied by a tendency to restrict small industrial plants, manufacturing mostly for local or regional markets. The underdevelopment of the small-scale industry was a major reason for the permanent imbalance on those markets.

As a result of the trend towards gigantism, in 1980, Polish industries reached a very high level of technical concentration of production in large plants, one of the highest in the world. At the end of 1980, 76.6% of the entire industrial employment was concentrated in huge plants, employing more than 500 workers each, including 60.2% in plants with over 1000 workers, while only 5.1% was concentrated in small plants with under 100 workers.

The economic reform initiated in Poland in 1981 also covers the restructuring of the size of plants aimed at increasing the significance of small and medium-sized plants which are easier to adjust to the changed market conditions. However, in the first five years of the reforms, changes introduced in this respect were slight so that, in 1985, large plants still concentrated 73.8% of the entire employment in socialized industries in Poland, whereas small industry only 5.6% (Table 1). Only at the turn of the 1980s and 1990s was the role of the large industry significantly reduced as a result of faster transformations in the ownership structure and the development of small foreign enterprises.

Table 1. Size structure of employment in socialized industry in Poland in the years 1980-1985

Year	Total employment in %	including plants employing		
		under 100 workers	101-500 workers	over 500 workers
1980	100.0	5.1	18.2	76.6
1985	100.0	5.6	20.6	73.8

Source: Rocznik statystyczny przemysłu (Statistical Yearbook of Industry), Warszawa, GUS, 1981, 1986

The spatial effect of the growing significance of the small industry is the boosting of industrial functions in small towns and many rural districts and is making a visible improvement in the supply of goods to local markets.

5. BRANCH RESTRUCTURING

The branch structure of industry in Poland in the years 1945-1980 was marked, and continues to be marked, by enormous disproportions. These disproportions consist in the predominance of heavy industrial branches, manufacturing mainly production means (fuel and power, metallurgical products, engineering and metal goods, chemicals, and minerals), over the remaining industrial branches manufacturing mainly consumer goods (Table 2). As a result, by the end of the 1980s, there was a permanent shortage of consumer goods on the home market. Even though the programme of economic reforms initiated in 1981 stressed the necessity of branch restructuring of industry by means of speeding up the development of branches manufacturing consumer goods, the limited investment outlays at the time of the crisis were still earmarked for the development of heavy industry (chiefly fuel and power).

Table 2. Structure of industrial employment in Poland in the years 1980 and 1985 according to groups of industrial branches

Groups of industrial branches	1980	1985
total industry	100.0	100.0
fuel-power	12.0	13.2
metallurgical	5.4	4.6
engineering-metal	33.7	33.1
chemical	6.6	6.0
mineral	5.7	6.1
wood-paper	5.6	5.4
light	16.6	14.5
food	10.7	11.5
remaining branches	3.7	5.6

Source: Rocznik statystyczny (Statistical Yearbook), Warszawa, GUS, 1981, 1986

The spatial effect of such a branch structure was an excessive concentration of industry in the southern regions of Poland, where the most important raw materials are mainly located, and especially within, and in the vicinity of, the Upper Silesian Coal Basin. On the other hand, in a majority of regions of the eastern and northern part of the country, the progress of the process of industrialization was relatively poor.

The development of private industry, which took place on a small scale after 1980, could not have produced significant changes in the branch structure, even though this industry is represented mainly by enterprises manufacturing consumer goods. Major changes in this structure have been recorded only since 1989 as a result of the grave recession in socialized industry which has more acutely hit branches processing imported raw materials than those processing home raw materials. The scale of these changes can be evidenced by figures published by the *Życie Gospodarcze* economic biweekly No. 29, of 22 July, 1991, which show that, in the first six months of 1991, the output of the engineering, metal and light (mostly textile and leather) industries was by about 50% lower than in the first six months of 1989, of the metallurgical industry by 45%, chemical industry by 44%, wood and paper industries by 38%, food industry by 34%, mineral industry by 32% and fuel and power industries by 22%.

The necessity of branch restructuring of industry is most urgent in old industrial districts marked by a high degree of specialization or a large share of traditional declining branches, and especially in the Upper Silesian, Łódź and Sudetes Industrial Districts. These districts also have the greatest number of registered job-seekers.

6. TECHNOLOGICAL RESTRUCTURING

Polish industry, reconstructed from the damages of war and developed after 1945, shows great technological backwardness when compared with industries in developed countries. This was due to both political and economic factors, and especially difficulties with purchase of high technology caused by Poland's membership in the Warsaw Pact and the CMEA (Comecon) in the long period of cold war, and the shortage of hard currency. This is why in the first 20 post-war years, Polish industry was mostly based on outdated and energy-consuming technologies worked out at home or imported from other Comecon countries, chiefly from the U.S.S.R.

It was only the easing of the cold-war atmosphere and credits extended to Poland by banks in developed countries that made it possible to modernize and update technology in some industrial branches in the 1970s. However, those credits were not rationally used, which had led to Poland's huge foreign debt and largely contributed to the outbreak, in 1980, of the longest economic crisis in Poland's history, one that has been continuing until the present day.

As a result of economic recession and the need to repay credits, investment

had been considerably reduced in Polish industry since 1981, which resulted in a significant increase in the depreciation of fixed assets. As a consequence, the technological gap separating Polish industries from industries in developed countries has been permanently widening. The technological backwardness of Polish industry is evidenced by its energy-consumption which is twice or three-times as big as in the developed countries and a very low, 3%-share of high technology in Poland's industrial sales. This technological backwardness accounts for the fact that Polish industry stands little chance in the competition on world markets.

The spatial effect of the outdated technological structure represents a serious threat to the natural environment in Poland by emissions and industrial wastes (dusts, gases, sewage, and dumps). The threats, persist in about 1/3 of Poland's area, and 27 regions, covering 11% of the country, have acquired the character of an ecological disaster. The areas of the gravest ecological threats in Poland include the Upper Silesian Industrial District, Cracow Industrial District, and Legnica-Głogów Industrial District. Poland, next to Czechoslovakia and the former GDR, belongs to the group of European countries of the highest degree of ecological threats. It should be noted, however, that, in the recent years, the emission of industrial waste has decreased in Poland in connection with the recession, and the installation of dust collectors and sewage treatment plants, e. g. the emission of dust pollutants decreased from 2,338,000 tonnes in 1980 to 1,788,000 tonnes in 1985 and 1,513,000 tonnes in 1989, and gas ones from 5,135,000 tonnes in 1980 and 5,387,000 tonnes in 1985 to 5,113,000 tonnes in 1989. In 1989, 35% of all the dust pollutants and 44% of gas pollutants were emitted by the industries of the Upper Silesian-Cracow Industrial Macrodistrict.

Huge outlays are necessary to reduce the threats posed to the natural environment in Poland by industry, and the national economy is not capable of performing this task.

Rescuing the Polish economy out of a deep crisis and decreasing ecological threats to the natural environment in the country is impossible in the 20th century without a profound technological restructuring. This calls for huge investment outlays, and Poland will not be able to do this without the assistance of developed countries.

7. SPATIAL RESTRUCTURING

The structure of Polish industry created at the time of socialist control is also marked by huge spatial disproportions in the distribution of its production potential. In spite of official announcements made by the state authorities about the planned even distribution of industry and deglomeration of its biggest concentrations, in the years 1945-1980, socialized plants showed a permanent trend towards being located in those centres which had germs of industry already before 1945, or in areas with deposits of raw materials. This trend in the location

of socialized plants was accompanied by the liquidation of the small private industry, which led to the disappearance of industrial function in numerous small towns and rural areas.

In spite of official announcements, in the years 1945-1980, the process of spatial concentration of industry was taking place in Poland in large industrial agglomerations (districts and centres) formed primarily in the southern and central part of the country. In 1980, 24 industrial districts covering a total of 26% of Poland's area contained 81% of the national value of fixed assets, 84% of electric energy consumption, and 80% of industrial sales and industrial employment. The largest Polish industrial agglomeration, called the Upper Silesian-Cracow Industrial Macroregion was formed within the Upper Silesian Coal Basin and the adjacent areas. Covering only 5% of the area of the country, this agglomeration is responsible for about 30% of the industrial potential, i. e. much more than before the Second World War.

The spatial effect of the excessive concentration of industry in large centres and industrial districts consisted, among other things, in permanent massive population migration mass, daily commuting to work over large distances, and severe threats to the natural environment posed by industrial emissions, especially in those agglomerations where the plants of "dirty" industries-fuel and power, metallurgical and chemical production — are concentrated.

Because of the existence of excessive disproportions in the distribution of industry, the spatial restructuring of this branch of the national economy is also necessary. It seems that a positive impact on the spatial restructuring will be exerted by transformations in the ownership and size structure of industrial plants. For the experience of the 1980s shows that private industrial plants and craftsman's workshops tend to locate outside large industrial districts, or on their outskirts where the building sites and labour are cheaper. As it has been already mentioned those plants usually employ local workers who, until recently, had to commute to work.

It seems that the process of spatial restructuring of the Polish industry, which has not recorded substantial progress yet, could be speeded up if new local governments in poorly industrialized towns and rural districts, created more favourable conditions conducive to the location of plants. This can be done through lowering prices of building plots, exemptions from taxes in early stages of activity, etc.



In conclusion it should be stated that the results of the restructuring of Polish industry, implemented since 1981, have been rather small and differentiated. It seems that the process of organizational and ownership restructuring has been most advanced, while the process of technological and spatial restructuring least advanced. The results of spatial restructuring can be fully assessed only in a few years' time after the process has been completed.

POLAND IN TRANSITION: GEOPOLITICAL AND GEOECONOMIC TRANSFORMATIONS

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In 1989 basic changes of the political system occurred in Poland: 6th February — 5th April "round table" debate, 5th April — legalization of "Solidarity"— the new main political power in Poland, 4th June — partially free parliamentary election, 24th August — appointing of the first, non-communist prime minister, 12th September — creation of a coalition government, in which majority belonged to non-communists, and in January 1990 — dissolving of the Polish United Workers' Party (communist party), which was the crucial support of the communist system.

Due to those events, Poland, in an evolutionary way, got rid of the totalitarian system and began to create the democratic one; the fully free parliamentary election took place in October 1991. Simultaneously, Poland entered the difficult way of economic reforms, whose aim is market economy.

1. NEW GEOPOLITICAL SITE OF POLAND

After or together with the political changes observed in Poland, the analogical ones occurred at the end of 1989 in nearly all the countries of the so-called "Eastern Europe" including those neighbouring Poland. Moreover, abolition of the communist system in the former German Democratic Republic and destruction of the Berlin Wall made possible unifying of both German states (on 3rd of October, 1990). Democratic Czecho-Slovakia changed into the federation of the autonomous republics of Bohemia and Slovakia. Finally, the changes occurring in the eastern neighbouring country that of the USSR, stimulated declaration of independence of Lithuania and of the Russian Federation in 1990. In 1991 the Ukraine and Byelorussia (White Russia) also declared independence.

The geopolitical effect of all those transformations in this part of Europe is that since 1990/1991 Poland has "new neighbours" (Fig. 1). The western neighbour is now the unified Germany, the strongest economic power in Europe. Since



Fig. 1. Poland's new neighbours

disappearing of ideological-political differences and concluding of a treaty (in the end of 1990), guaranteeing Polish western frontiers, Poland and Germany should co-operate as two democratic neighbours. It was confirmed in a general treaty of co-operation between Poland and Germany signed in June 1991.

The co-operation with the southern neighbour as well, that of Czechoslovakia, should be based on mutual advantages, the more so because the economies of both countries are complementary. Moreover, these two countries and Hungary initiated the closer political co-operation (so called Warsaw-Prague-Budapest-triangle) to aid their 'come back' to Europe (the Visegrad Declaration, 15 February 1991). Besides, Poland joined the regional organization of 5 states, called "Pentagonale" (Italy, Austria, Yugoslavia, Czechoslovakia and Hungary) and since July 1991 became a full member of this organization (Hexagonale), (Fig. 2).



Fig. 2. Poland in regional-European co-operation

Poland is also very interested in a good co-operation with the new eastern neighbours that of Russia, Lithuania, Byelorussia, and Ukraine but as an equal partner, not discriminated politically or economically.

Finally, decisions undertaken at the beginning of 1991 on dissolution of the COMECON and later on the military Warsaw Pact, became the fulfilment of the basic changes in the former "Eastern Europe". They defined also the new geopolitical and geoeconomic site of Poland in Europe.

This process of changes should be accompanied by an evolution in the consciousness and attitudes of Poles towards their "new neighbours". Not forgetting the past, they should present loyal, open and future-oriented attitudes. They should get rid of the Polish complex of the unfavourable geopolitical site between two great neighbours (Germany and Russia) and replace it by searching for

chances of the fruitful co-operation with them. Poles need the "pedagogics of the new neighbourhood".

Under recent conditions of the peaceful co-operation in the whole continent, the transitional site of Poland in Europe has got new dimensions and a new importance. Poland has an opportunity to use fully the economic values of its site, interceding in economic links and transport flows between Germany and the post-USSR countries and also in contacts (mostly the tourist ones) of Scandinavian countries with those of Southern Europe. During the 80s the cargo transit amounted in the Polish railway traffic only 2.5-3.5%, in the inland navigation 15-25%, in the sea transport 6-7%. In Polish seaports the share of transshipped transit cargo amounted to 10-17%, from which over 50% falls to Szczecin seaport. Poland tries now to restore the Czecho-Slovakian (and partially Hungarian) transit towards the Baltic Sea, which developed favourably between 1945 and the 1960s. According to the last agreement (February 1992) also Byelorussia will use Polish seaports for transit. One of the basic conditions of increasing of the transit traffic through Poland is a modernization of the road network, mostly construction of motorways and international links. It will last long and needs financial help, which was just offered partially for a realization of the north-south motorway. The need of the modernization of frontier crossings is urgent, as they are not prepared for serving the growing traffic of goods and people. An important element of the transit traffic is the air transport. An extension of the Warsaw airport of "Okęcie" is nearly completed (its annual capacity has been about 2 million passengers), in order to make it the modern international transit airport.

2. ECONOMIC TRANSFORMATIONS

Even under the conditions of the so-called "socialist system" there were attempts to introduce economic reforms in Poland — after 1956, in the 1970s and in the 1980s. But they always failed, due to the internal political-doctrinal obstacles, or because of the external ones (dictates of the USSR or of the COMECON). The real reforms could be realized only by the new democratic Government, created in September 1989. Their basic aims are: the market economy, general privatization as well as the restructuring and modernizing of the economy.

Table 1 shows a degree of the privatization of Polish economy before 1989 against the economic macrostructure of the country. It is known, that among all the former "socialist countries" only Poland had a private sector in agriculture, in which the employment share amounted to over 75% (Table 1). At the end of the 1980s, when the "socialist planned economy" became inefficient, the private sector began to develop more quickly in other branches of the national economy as well. In 1989 the share of employees in the private sector in branches apart from agriculture amounted to 12%, being the highest in building industry (over 26%) and in other branches of industry (15%). The turning point in the privatization

Table 1. Employment structure in Poland

Sector	1980			1985			1989		
	Total ('000)	%	of which in private enterprises (%)	Total ('000)	%	of which in private enterprises (%)	Total ('000)	%	of which in private enterprises (%)
Total	17324.7	100.0	26.6	17136.7	100.0	28.5	17129.8	100.0	29.6
Agriculture and forestry	5298.1	29.7	75.6	5121.3	28.9	77.1	4522.9	26.4	78.7
Outside agriculture and forestry	12026.6	70.3	5.0	12015.4	71.1	7.7	12606.9	73.6	12.0
Industry	5244.9	30.3	5.2	4876.5	28.5	9.1	4894.3	28.6	14.6
Building industry	1336.6	7.7	7.7	1282.4	7.5	13.6	1318.3	7.7	26.2
Transport	959.0	5.5	1.1	890.2	5.2	2.0	810.3	4.7	5.6
Commerce	1273.7	7.3	3.6	1426.5	8.3	5.3	1424.7	8.3	8.2
Others	3212.4	19.5	5.3	3539.8	21.6	6.0	4159.3	24.3	6.9

Sources: Roczniki statystyczne (Statistical yearbooks), GUS, Warszawa.

process was that of 1990 (Table 1), where further increasing tendency is remarkable. The private enterprises broke also the State monopoly in the foreign trade, as their share in Polish export amounted to 5% in 1990, while in import — some 20%.

Besides the marketization and the privatization processes, Poland's economy needs the basic restructuring and modernization. It is still dominated by the primary and secondary sector (agriculture and industry) while the share of services in the employment structure amounts to about 32-33% only (Table 1).

Polish industry desperately needs productive and technological restructuring. According to the "socialist industrialization" ideology, this sector of the national economy was dominated by the heavy industry, the high energy- and raw-material — consuming one, and very oppressive for the natural environment. In spite of slogans and several industry modernization programmes its traditional structure was not changed during the period 1975-1989 (Table 2). On the contrary, the share of the traditional fuel and energy branches increased again mostly that of coal mining. At the same time the modern branches were neglected.

Table 2. Changes in the branch structure of Polish industry, 1975-1989

Industry branches	Employment structure (%)		
	1975	1985	1989
Fuel and power (inc. coal mining)	11.0 (7.7)	14.3 (10.6)	16.3 (12.1)
Metallurgy	5.5	5.3	5.1
Engineering	32.5	33.1	32.1
Chemicals	6.9	6.8	6.8
Minerals	6.3	5.6	5.1
Timber and paper	6.0	5.4	5.2
Textile, clothing, leather	17.8	16.1	15.6
Food industry	11.2	9.8	10.1
Remaining industries	2.8	3.5	3.6
Total	100.0	100.0	100.0

Sources: Roczniki statystyczne (Statistical yearbooks), GUS, Warszawa

Restructuring is particularly necessary in the greatest industrial region of Poland, that of Upper Silesia. It means a reduction of the coal output and that of metallurgical production, and introducing of numerous other activities, the improvement of the catastrophic ecological situation included. In the Wałbrzych Industrial Region all four coal mines are just in the stage of closure, as their production is unprofitable due to the disadvantageous geo-technical conditions. There are inevitable processes of restructuring of the old, first generation industrial regions, which were realized in Western Europe (in West Germany, United Kingdom, Belgium, France) in the 1960s.

Restructuring should also be introduced in other Polish industrial regions, and in numerous industrial branches, in order to reach West-European productive-

technological standards. For instance, the share of the high-tech industry in Polish manufacturing industry in 1988 amounted to 4% only.

One of the complex problems is restructuring and modernization of the energy sector in Poland. Structure of the energy consumption is very unfavourable, as 78% of energy is produced from coal and lignite. In the oil consumption, Poland depends nearly in 100% on the imports, in that of natural gas — in 50%. All imported natural gas and most of the imported oil are of Russian origin, and those deliveries were uncertain in the last two years. Also the necessary transport infrastructure built before (that of pipelines) imposes imports of Russian oil and gas, restricting a scope of manoeuvre in importing those raw-materials from other countries.

Construction of the first Polish nuclear power plants (at Żarnowiec, close to the sea-shore) was stopped, due to financial causes and because of the lack of the guaranteed safety (the plant was to be equipped with Soviet reactors) — and was postponed till after the year 2000.

As potential possibilities of the expansion of the hydroenergetics are small in Poland, the coal will henceforth be the basic raw-material for the energy production. It means the further growth of the ecological danger, because a combustion of coal is the main source of sulphur-dioxide emission in Poland. Thus, proper technologies and processes of the amelioration of coal (i.e. its desulfurization) will be needed. Poland wants to use Western experiences and technologies in this respect.

Simultaneously with those actions, the energy consumption should be reduced. In Poland it is 2-3 times higher (per the national gross product unit), than in the most developed countries.

Political transformations of the former "Eastern Europe" changed considerably geographical structure of Polish foreign trade. Until 1989 the main Polish trade partner was the USSR, although its share has continuously decreased since 1985 - from 31% to 16% in 1990. The same trend concerned the foreign trade of Poland with the remaining former COMECON countries. In 1991 the share of the turnover with the USSR and the remaining countries of the former rouble zone will be smaller, because in accounts the rouble was replaced by Western currencies. The trade with those countries became less profitable. Nevertheless, the collapse of the COMECON market has also negative effects for a part of Polish industry. Some enterprises were specialized for the Soviet market. Now they have selling problems which results in considerable job losses. Therefore the eastern neighbours are important for Poland as economic partners being the suppliers of the raw-materials and the great market. Poland just leads the commercial negotiations directly with Russia, the Ukraine, Byelorussia, Kazakhstan und Usbekistan, and other post-Soviet countries.

Since 1990 Germany has become the first trade partner of Poland, its share in the turnover amounts to 23%. Germany was also the main partner in Polish foreign trade prior to the Second World War. Actually its share will increase, due to the considerable activity towards the co-operation, showed by Polish and Ger-

man businessmen — i.e. 35% of the existing 4800 joint-ventures in Poland (June 1991) have German partners.

Poland occupies the 3rd position, after Hungary and Czecho-Slovakia, as regards attractiveness for Western capital investments in the post-communist countries. In international classifications, Poland is still treated as the country of high investment risk. Its attractiveness is reduced by rather unfavourable legal-financial conditions for the foreign enterprises and the unstable socio-economic situation, too. It is also the problem of the high foreign debts (48.5 billion US dollars¹ and 5 billion of roubles in 1990). But the actual economic policy consequently leads to the economic stabilization and to the creation of more favourable conditions for an inflow of foreign capital. The decision of the so called Paris-Club (in April 1991) to reduce the Polish debts by 50% improves Poland's financial conditions. Some of the positive factors for investment location in Poland are still a relatively low labour costs (about 30% lower than in Germany) and a big market (over 38 million people).

3. SOCIAL TRANSFORMATIONS

Those changes are derivative of the political and economic ones. An economic crisis, observed in Poland since the end of the 1970s, caused the considerable decrease of the national product and reduced a standard of life of the population (by some 20-30%). Such a great pauperization of the society is, of course, a cause of various social problems — protests, industrial-actions, conflicts concerning salaries, etc. In a contrast to those which occurred during the communist period, the actual conflicts are usually solved by the partner negotiations between social groups or trade unions and employers or representatives of the Government.

An inevitable consequence of the radical reforms, initiated in 1990, are job losses, mostly in State-owned enterprises, not compensated by new jobs created in the private firms, the service and productive ones. Thus, a new socio-economic phenomenon arose in Poland — that of unemployment. A number of unemployed, officially registered and taking subsidies amounted to 2.1 million in December 1991 (10-11% of active population) and shows the growing trend. Thus, the special programs of instructing and re-skilling of the employees from closed or restructured plants are under way, also with the help of numerous foreign experts and organizations.

Another effect of the political and economic crisis in Poland is emigration, showing the considerable intensity since the mid- 1970s (Table 3). This is mostly the economic outmigration, with the small share of political emigrants during the

¹ To compare: Bulgaria — 10.4, Czecho-Slovakia — 7.9, Yugoslavia — 17.3, Romania — 2.3, Hungary — 21.7, Soviet Union — 52.5 billion US dollars (1990).

communist period. Most of the emigrants are young and educated people, which increases Polish losses.

Table 3. Migrations to and from Poland, 1951-1989 ('000)

Years	Immigration	Outmigration
1951-1955	16.6	17.9
1956-1960	261.1	359.5
1961-1965	13.9	119.5
1966-1970	10.4	104.3
1971-1975	8.2	83.7
1976-1980	8.1	142.0
1981-1985	6.7	120.0
1986-1989	8.0	128.3
1951-1989	333.0	1075.2

Sources: Roczniki demograficzne (Demographic yearbooks), 1975-1989, GUS, Warszawa, and Rocznik statystyczny (Statistical yearbook), 1990, GUS, Warszawa

Owing the democratic liberties, introduced in Poland, an animation of national minorities is observed. They are small — the greatest ones are Ukrainians and Byelorussians (some 150-180 thousand each), Lithuanians (10-12 thousand, Slovaks (several thousand), Jews (over 10,000) and Germans (probably over 100,000). Those numbers are only estimated, because in post-war Poland nationality statistics was not led. In total, the share of minorities amounts to 1-2% of the population of Poland. The minorities have now their full rights (schools, socio-cultural organizations, etc.).

Also the full religious freedom is the result of the democratization of Poland. The new Government entered into diplomatic connexions with the State of Vatican (broken by the communists in 1945). Other, non-catholic churches and confessions enjoy also their full rights. Attitudes of Poles toward other nationalities and denominations will be, doubtlessly, a prove of their democratic maturity.

4. TRANSFRONTIER ECOLOGICAL PROBLEMS

Catastrophic ecological situation of Poland, being one of the effects of the communist economy, especially that of the industrialization, aggressive for the natural environment, is well-known. The situation has also its international implications, i.e. a magnitude of transfrontier pollutants emission and their inflow over Polish territory from other countries.

Due to the geographical site of Poland and a domination of west winds in this part of Europe, the considerable quantities of the polluted air flow to Poland from west and south-west. It is estimated, that in the case of sulphur-dioxide immission observed in Poland, share of 50% is that of the foreign pollution. The analogical share of NO_x amounts to some 70%.

Emission sources of those gases, situated the most closely to Poland, are the

lignite-consuming power stations of eastern Germany (those lying in the Lausitz region and in the Leipzig-Halle one), the north-Bohemian lignite-power stations as well as the Ostrava-Karvina Industrial Region (with coal mines, power stations, steel works and cokeries), lying directly by Polish frontier. The result is (among others) the catastrophic dying away of forests in the western part of the Sudety Mts. and the Beskidy Mts. Strongly polluted is also the upper section of the Odra river in the Ostrava Basin, behind Polish territory.

In 1988 high representatives of Poland, Czechoslovakia and East Germany met at Jelenia Góra (Sudety Mts.) in order to solve this problem (the so called "Sudety Declaration") the meeting was followed by an international environmental agreement signed at Wrocław in 1989. Earlier in 1987 a bilateral meeting of the ministers of the natural environment protection of Czechoslovakia and Poland in Cracow, took place after the well-known ecological disasters in the upper Odra river course (1986), caused by the Ostrava Region industry. But all those meetings and agreements of the communist governments were fruitless. Now, there is a hope that the actual democratic governments of Germany, Czecho-Slovakia and Poland will treat those difficult problems more seriously and more loyally. The same situation goes on along the eastern border of Poland, along the Bug river (363 km), which upper course is for years polluted by industry and cities of the Ukrainian Lwów-Wołyń Industrial Region. For several years the experts from both sides have met (lastly due to a strong pression of Polish and Russian or Ukrainian ecological movements), but without any results. The Bug river is one of the main sources supplying Warsaw with drinkable water.

Of course, also from Poland the pollutants are transported outside, but the quantity of "exported" gases is estimated at 50% of the "imported" ones. The considerable international implications are connected with the pollution of the Baltic Sea by the greatest Polish rivers, the Vistula and the Odra. The share of Poland in the emission of sewages to this sea is the greatest (before the USSR, Sweden, Denmark and Finland), it amounts to 40% of phosphorous compounds of the totally delivered to this Sea, 30% of the nitrogen ones, and 21% of the organic ones (1990). Some Baltic states (i.e. Sweden and Denmark) offer credits and other help to Poland for ecological investments which could reduce the sewage emission. This is one of the examples of international environmental policy and co-operation. Negotiated is also a proposal for so called "ecoconversion" of some 10% of Polish foreign debt.

The Government as well as the society are acquainted now with the country's very bad ecological situation and with its negative outer effects, i.e. with the case of the Baltic Sea. There is also the common conscience that one of basic conditions of "Poland's entering to Europe" is the general amelioration of the country's ecological situation and reaching of the international ecological standards.

For example, in the mid-1980s Poland refused to enter to the so-called "30% — Club", to the group of countries promising to reduce untill 1993 their sulphur-dioxide emission by 30%. The cause was a lack of financial means in Poland. The ecological movements and the opposition circles criticized at that time this

decision as sanctioning the further pollution of the environment and demobilizing the authorities and the society in their struggle for improving the ecological situation in the country.

The difficult and politically delicate problem is the considerable degradation of the natural environment caused by Soviet troops stationed in Poland since 1945. This theme was a taboo and only in the last time Polish authorities were allowed to control some of 35 Soviet garrisons, lying mostly in north-western Poland. The great pollution of soil and water by liquid fuels was discovered, also that of the air caused by heating stations, concentrations of waste in forests, an excessive noise in the air bases, frequent fires in the forests, too. There are no protecting installations (filters, water cleaning stations, etc.). Soviet garrisons used Polish natural environment illegally, breaking Polish regulations concerning the environment protection, they took the water freely and did not pay for damages to the natural environment. Polish authorities demand now compensations for the ecological losses beared by Poland and wanted Soviet troops to respect Polish environmental law before they leave Poland.

5. FINAL REMARKS

The above presented geopolitical, economic and social changes, made or being made, are, on the one hand, "Polish fragment" of the transformations which occurred (and one occurring) in the post-communist European countries, and, on the other hand, they show special Polish features of those changes. The last ones are caused by the geopolitical and geoeconomic site of Poland in Europe, its geographical conditions and the inner ones, mostly by the socio-political and economic situation.

The basic aim of all those changes and processes observed in Poland (and in the remaining post-communist countries) is the "come back to Europe", not in the geographical sense, but to Europe as an idea, as a cradle of own history and culture, from which those countries were separated during several decades. Another aim is to reach European standards of modern economy, technology and quality of life.

Those changes have many spatial, geographical aspects and consequences; they are not analysed yet in this paper, because of lack of respective data and very uncertain situation in this field. For instance, some old industrial regions like Upper Silesia, Łódź and Wałbrzych undergo a structural crisis, some other ones like Warsaw, Poznań try to develop modern activities (high-tech industry, joint-ventures, etc. There also arise now conditions and possibilities to activate some border regions, as transfrontier "Euroregions" as well.

Finally, those changes create a new challenge and new tasks for teaching of geography of Poland. It means a new perception of this "new geography" of Poland by society, mostly by the youth — in Poland and outside of Poland, too.

THE INDUSTRIALIZATION AND POPULATION MOVEMENT IN THE NEWLY INDUSTRIALIZING ECONOMIES: THE CASES OF SOUTH KOREA AND TAIWAN

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1. INTRODUCTION

The industrialization and following economic growth may largely change both the economic and regional structure in a country. The penetration of capitalism may form the national economy, and give rise to expanding the metropolis and extending the difference between the metropolitan areas and the countryside. Thus, it seems that the pace of industrialization may control the degree of the difference of regional development. The industrialization of the present developing countries by the investment from overseas capital shows getting out of the previous colonialism, on the one hand, but it shows the new control of capital, technology, and information by the developed capitalistic countries, on the other hand. Especially, the industrial location by the direct investment of foreign private capital tends to be concentrated in the metropolitan areas or large ports, though the location is able to be induced to "export processing free zones" or "free trade zones". Therefore, the location of foreign capital may bring the extension of regional differences in the developing country's economy. It seems that the socio-economic activities also tend to be concentrated in the metropolitan areas in Asian NIEs. They were characterized by the rapid expansion of manufacturing production and trade in the 1970s in the OECD report (OECD 1979) and attracted the world's attention in terms of their economic performance.

Thus, in this paper we will analyze the process of economic expansion and the change of regional structure which resulted from the economic expansion, mainly in terms of the population movement in South Korea and Taiwan. Those economies were rapidly industrialized under the large influences of the U.S.A., and especially Japan.

2. THE CHARACTERISTICS OF INDUSTRIALIZATION IN NIEs

The industrialization of developing countries has been classified into some types, then we will introduce the typical division according to the most recent literature by economic geographer (Gwynne 1990). According to it, the industrialization after the Second World War is basically divided into four types, as follows:

(1) Less developed countries (LDCs) whose manufacturing growth has been primarily connected with their home market;

(2) LDC whose manufacturing growth has been strongly influenced by exports;

(3) LDCs whose manufacturing growth has been connected with the investment of surplus oil revenues; and

(4) LDCs without large markets, without oil and whose manufactured exports constitute less than 0.4 per cent share of the manufactured exports from developing economies.

Though there is no need to refer to the fact that Asian NIEs are included in the second type, both South Korea and Taiwan had taken "import substitution" policy for the industrialization in early times. But such a policy failed to industrialize those economies because of the small domestic markets. Those economies were inevitably compelled to take an "export oriented" policy for the industrialization, and the rapid growth began in the 1960s in terms of labor intensive manufacturing industries that had comparative advantage at that time. That growth was in relation to the good market conditions which were in the period of expansion of world economy as a whole. On the other hand, Brazil and Turkey which had a relatively long history of industrialization and much more domestic markets, had taken the first type policy for a long time, and recently changed to the direction of export oriented policy. We will examine each case of South Korea and Taiwan in the following part.

(a) SOUTH KOREA

The South Korean government led in carrying out the export oriented industrialization of Five Year Plan for Economic Development started on 1962. In this Plan the government managed the overseas assistance fund, and preponderantly distributed it to the leading industrial sectors, so that the labor intensive sectors in connection with the big financial groups came to grow rapidly as a result. Moreover, in the third Five Year Plan started on 1972, the point of policy was shifted to the industrialization of heavy and chemical sectors such as steel or petrochemistry for attempting import substitution of basic material sectors. Those heavy and chemical industries also expanded depending on the exporting markets as the result of the immature domestic markets. Therefore, the

industrial structure of South Korea largely changed from 1960s to 1980s, and we can see the change in the composition of the industrial population (Table 1).

Table 1. The employment by sectors in South Korea

	Number (1,000 persons)		
	1967	1976	1986
Total	8,717	12,556	15,505
Primary	4,811	5,601	3,662
Secondary	1,115	2,743	4,013
Tertiary	2,791	4,212	7,830
	Composition (%)		
	1967	1976	1986
Total	100.0	100.0	100.0
Primary	55.2	44.6	23.6
Secondary	12.8	21.8	25.9
Tertiary	32.0	33.5	50.5

Data: Major Statistics of Korean Economy, 1987

What kind of characteristic can we find in the industrialization of South Korea? Firstly, the comparative advantage which had been clear in the labor intensive sectors from 1960s to 1970s, was gone in the 1980s because of the rise of wages in connection with the growing national income. And the industrial structure has been rapidly shifted to the capital intensive sector or assembling industry which has been the more value added sections. Secondly, the capital for industrial development has mainly depended upon the foreign countries, particularly Japan and the U.S.A., also this country has highly depended upon both countries for the technology. Consequently, the import of machinery of semi-processed goods from both countries, especially Japan, rapidly increased. As the export of manufacturing goods has been increasing more and more, the import from Japan has also grown. In this period such a structure of industry and trade was formed in South Korea. Thirdly, the imbalance among industries or sectors, for example the stagnation of agriculture or the weakness of small and medium scale companies, resulted from the bias of the fund distribution by the government. The fund has been mainly concentrated on the big business of manufacturing or financial groups.

(b) TAIWAN

Until the 1950s, Taiwan was industrialized on the basis of the material inheritance from pre-war Japanese colonization and on the assistance of U.S.A. According to the third Four Year Plan in 1961, the development policy of Taiwan was shifted to an export oriented industrialization. Particularly "the export processing free zone" which was established first at Kaohsiung in 1965, was the

first successful case for the location and fostering of export industries by overseas capital. Subsequently, such zones were established in other parts of Taiwan and other countries. The point of development policy was shifted from the fostering of labor intensive sectors to the industrialization of heavy and chemical sectors for import substitution of basic material sectors including steel or petrochemistry since the first half of the 1970s. Moreover, in the 1980s the industry of Taiwan has aimed at higher value added, higher technology and the overseas production for cheaper labor, as a result of the loss of comparative advantage. The industrial population of a secondary group rapidly increased from 1960s to 1980s (Table 2).

Table 2. The employment by sectors in Taiwan

	Number (1,000 persons)		
	1966	1976	1986
Total	3,856	5,669	7,733
Primary	1,748	1,641	1,317
Secondary	870	2,065	3,207
Tertiary	1,250	1,964	3,209
	Composition (%)		
	1966	1976	1986
Total	100.0	100.0	100.0
Primary	45.3	28.9	17.0
Secondary	22.6	36.4	41.5
Tertiary	32.4	34.6	41.5

Data: Taiwan Statistical Data Book, 1987

The characteristics of industrialization in Taiwan are, firstly, to depend on the relatively free economic activity by the private sector for fostering industry, rather than to be led by the government for fostering big business of leading sector. Consequently, the nucleus of industrialization consists of a lot of small and medium companies, rather than a few big businesses because of the lack of capital. Secondly, Taiwan has encouraged the introduction of foreign private capital, so that both joint-ventures and independent foreign companies are locating everywhere in Taiwan. Thirdly, capital and technology highly depends upon foreign countries, especially Japan, just as in the case of South Korea, so that the deficit in trade to Japan has not been covered until now. Lastly, it seems that the existence of a network in terms of the overseas Chinese capital in east and southeast Asia facilitates to remove the production into the countries in which the wage level is much lower.

It is common to South Korea and Taiwan, and also it may be common to other Asian developing countries that the capital, technology and market for manufacturing production highly depends on developed countries, particularly Japan and the U.S.A.

3. THE REGIONAL CHARACTERISTICS OF INDUSTRIALIZATION IN BOTH ECONOMIES

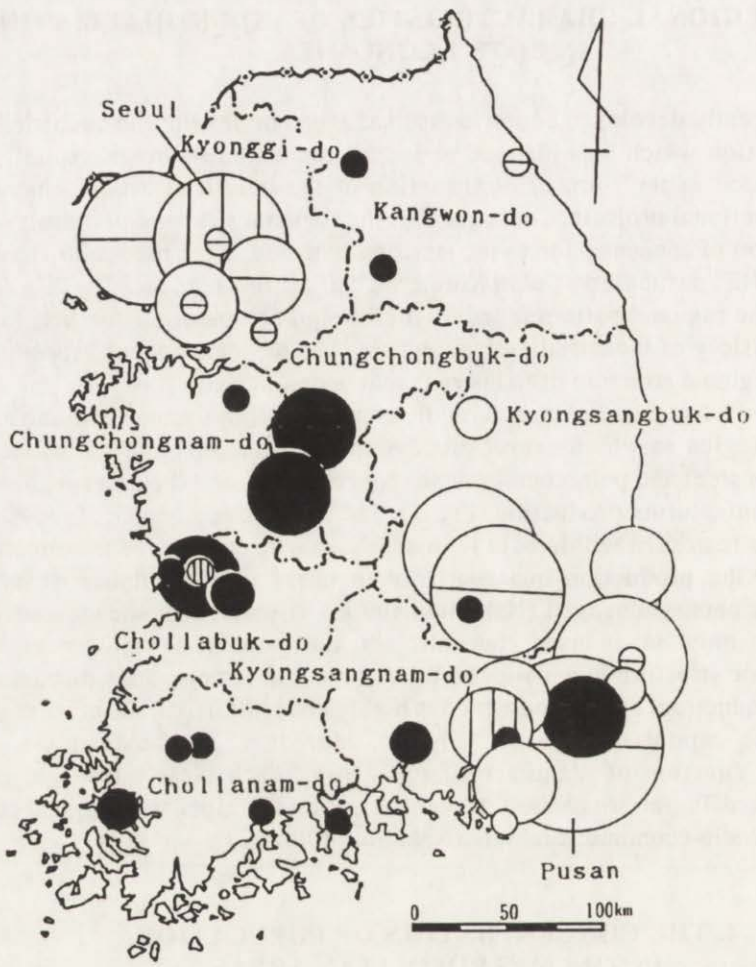
In the recently developed countries such as Japan or developing countries the industrialization which was planned or led by the state or foreign capital, has been proceeded in the form of construction of the industrial establishment or zone as the national projects. Consequently, the regional structure of industry has taken the form of concentration to the metropolitan area or the particular zone. In the case of NIEs particularly South Korea, we can see this tendency. In Taiwan, it seems that the regional pattern is led by the foreign companies. However, Japan has a long history of industrialization, and also has the spontaneous aspect of it, so that the regional structure of industry is more complicated.

South Korea has the large structural difference between the metropolitan area, Kyongsang region in which export processing free zone or basic industrial estates, such as steel and petrochemistry are concentrated, and the other regions in terms of manufacturing production (Fig. 1). The qualitative advance of industrial production is restricted within both regions, though we can see the movement to dispersal of the production quantitatively in terms of the number of establishments, or persons engaged (Nakajima 1990a). It seems that such a tendency appears not only in industry but also in the population movement and socioeconomic structure in general. In Taiwan, we can see also such dispersal of industrial production, but the industry has highly concentrated to the north region including the capital city, Taipei (Fig. 2). Moreover, the headquarters, the management function of manufacturing industry, much clearly tends to concentrate toward Taipei, we can see the centralization to Taipei as a regional characteristic of socio-economic structure (Nakajima 1990b).

4. THE CONCENTRATION OF POPULATION IN THE METROPOLITAN AREAS

In Japan, the concentration of population to the Tokyo metropolitan area has been a long-term trend, and the difference between Tokyo and the rest has enlarged. In NIEs the period of rapid industrialization and economic growth is not more than three decades, in such short range an intense population movement has happened. It seems that the differences of employment opportunity and income level are main factors as the regional movement of population in these economies. In this section we will discuss the population movement, after the analysis of the regional trend of income level in South Korea and Taiwan.

Firstly, in South Korea we can only make a comparison with the capital city, Seoul, and the other sampling provincial cities in terms of income level, because the detailed regional data is not available now. Table 3 shows the average monthly family income in Seoul and the other cities from 1966 to 1986. As a whole the income difference between Seoul and the rest increased in the later decade, al-



Legend

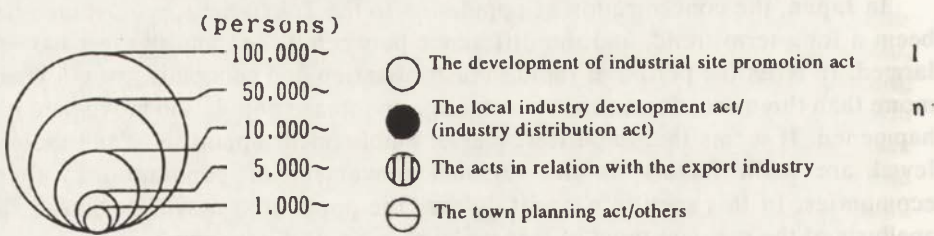


Fig. 1. The distribution of industrial estates in South Korea according to the legal system

Source: K. Murata, (ed.), The spatial structure of industry (in Japanese), Chuo-Daigaku, Tokyo, 1987

Note: the small estates less than 1,000 persons are omitted

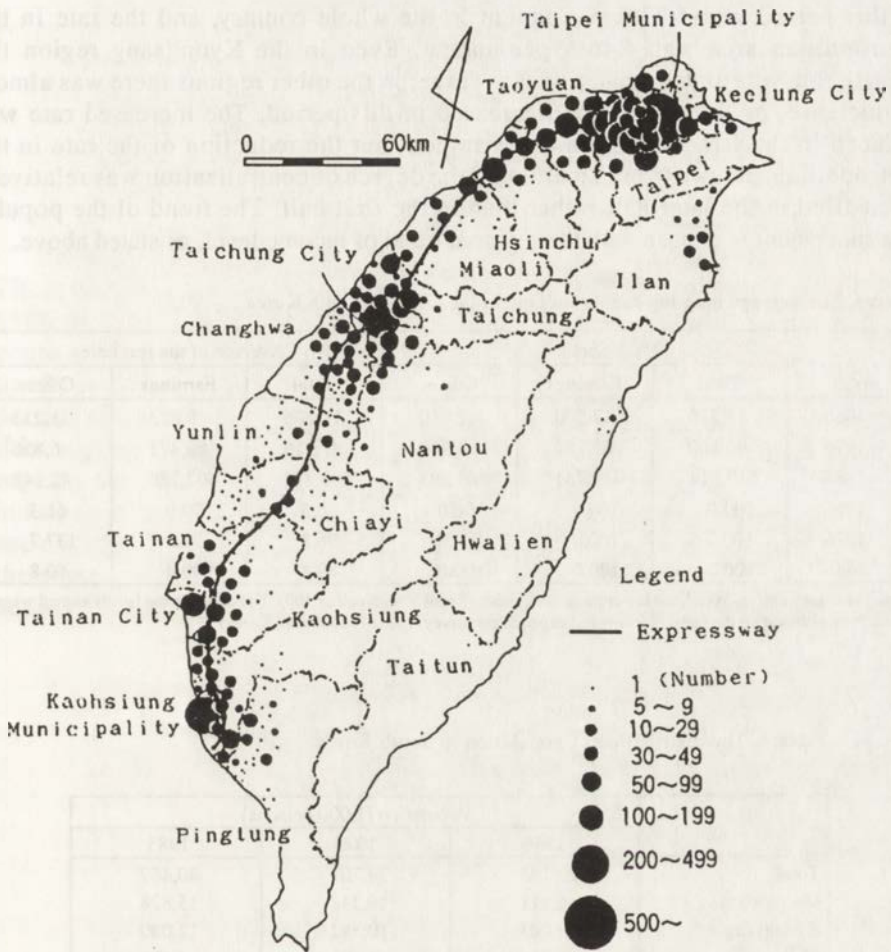


Fig. 2. The distribution of factories in Taiwan

Source: "'89/'90 Taiwan Business Directory"

Note: Firms of 50 and more persons are summed up

though the difference was reduced in the first decade. The concentration of economic activities to Seoul is in relation to the political and social centralization system in South Korea. In this sense the tendency in South Korea is very similar to the case of Japan. This tendency according to the official data may practically suggest the existence of a much greater difference in South Korea.

It seems that the population movement may be in relation to the socio-economic structure like as income difference in South Korea. We can see the centralization to the metropolitan area consistently according to the population movement by region from 1966 to 1985 (Table 4). The population increasing rate

in this period was 1.73% per annum in the whole country, and the rate in the metropolitan area was 4.46% per annum. Even in the Kyongsang region the growth rate was under the national average; in the other regions there was almost no increase, or the population decreased in this period. The increased rate was reduced in the later decade in every region, but the reduction of the rate in the metropolitan area was very small. And the degree of centralization was relatively intensified in the later half rather than in the first half. The trend of the population movement is in pace with the regional trend of income level, as stated above.

Table 3. The average monthly family income in the cities of South Korea

	Seoul			Average of the rest cities		
	Total	Earnings	Others	Total	Earnings	Others
1966	14,510	12,500	2,010	11,106	9,873	1,233
1976	90,160	85,180	4,980	87,316	80,471	6,856
1986	515,014	445,731	69,293	460,341	402,786	42,148
1966	100.0	100.0	100.0	76.5	79.0	61.3
1976	100.0	100.0	100.0	96.8	94.5	137.7
1986	100.0	100.0	100.0	89.4	90.4	60.8

Notes: the money unit is "Won", the lower rows show index (Seoul is regarded as 100). The object is the family earned wage
Source: Annual report on the family income and expenditure survey, 1981; 1986 (South Korea)

Table 4. The distribution of population in South Korea

	Population (1,000 persons)		
	1966	1975	1985
Total	29,193	34,707	40,467
Metropolitan	6,911	10,248	15,828
Kyongsang	9,083	10,592	12,080
Chungchong	4,455	4,471	4,393
Cholla	6,573	6,440	5,951
Others	2,170	2,274	2,216
	Composition (%)		
	1966	1975	1985
Total	100.0	100.0	100.0
Metropolitan	23.7	29.5	39.1
Kyongsang	31.1	30.5	29.9
	Composition (%)		
	1966	1975	1985
Chungchong	15.3	12.9	10.9
Cholla	22.5	18.6	14.7
Others	7.4	6.6	5.5
	Increasing rate /year (%)		
	'66~'75	'75~'85	'66~'85
Total	1.94	1.55	1.73
Metropolitan	4.47	4.44	4.46

	Increasing rate /year (%)		
	'66-'75	'75-'85	'66-'85
Kyongsang	1.72	1.32	1.51
Chungchong	0.04	-0.18	-0.07
Cholla	-0.23	-0.79	-0.52
Others	0.52	-0.26	0.11

Source: Major statistics of Korean economy 1987, 1988.

Secondly, the personal income statistics by county is available in Taiwan. Therefore, we will analyze the regional trends of income level between 1976 and 1986 in the case of Taiwan (Table 5). In the decade the substantial personal income increased by 1.63 times, but we can see the inequality by region according to the index as the national average is regarded as 100. In the first half of the decade the north region including Taipei increased the index, but in the later half this region decreased it. Adversely in terms of the central and the southern regions the indexes were down in the first half, and were up in the later half. The index decreased steadily at the eastern region in the decade. On the whole we can see clearly the income difference between the north and the remaining regions. In the same period the difference between the Taipei municipality, and the minimum county increased from 1.88 to 2.23 times.

Table 5. The index of personal income by region (Taiwan)

	1976	1981	1986
North	117.9	127.0	116.5
(Taipei)	132.8	152.8	143.5
Central	84.4	75.5	84.9
South	93.1	89.9	91.8
East	87.2	86.1	83.5
Total	100.0	100.0	100.0
Money	66,587	76,168	108,430

Notes: Money is national average, and fixed prices of 1976 (New Taiwan \$)

Source: Report of the survey of personal income distribution in Taiwan, 1976; 1981; 1986

The population increased by 2.03% per annum from 1976 to 1986 in Taiwan as a whole (Table 6), but the increasing rate was lower in the later half of the decade rather than in the first one. On the one hand, the increased rate was higher in the later half rather than in the first half in the northern and the central regions. On the other hand, the rate was down in the south, and the population decreased in the east in the later half. Within the northern region the population has rapidly increased in the area surrounding Taipei rather than in the Taipei municipality itself. Thus, it suggests that the economic activity has grown prosperous and has increasingly concentrated to the metropolitan area in Taiwan. There is a large socio-economic difference between the western part and the eastern part in the main island of Taiwan, and the difference has clearly reflected upon the population movement.

Table 6. The distribution of population in Taiwan

	Population			Composition (%)			Increasing rate/year (%)		
	1976	1981	1986	1976	1981	1986	'76 ~ '81	'81 ~ '86	'76 ~ '86
Total	16,364,392	18,374,261	20,010,040	100.0	100.0	100.0	2.34	1.72	2.03
North	6,665,949	7,614,669	9,043,010	40.7	41.4	45.2	2.70	3.50	3.10
(Taipei)	2,247,757	2,533,908	2,932,938	13.7	13.8	14.7	2.43	2.97	2.70
Central	4,298,827	4,611,141	4,984,555	26.3	25.1	24.9	1.41	1.57	1.49
South	5,024,525	5,520,362	6,018,734	30.7	30.0	30.1	1.90	1.74	1.82
East	606,793	611,024	590,520	3.7	3.3	3.0	0.14	-0.68	-0.27

Note: "North" region includes Taipei.

Source: Report on the survey of personal income distribution in Taiwan, 1976, 1981, 1986

5. CONCLUSIONS

In the paper we have analyzed the process of industrialization and the resultant change of the regional structure from the aspect of the population movement in South Korea and Taiwan. They are representatives of NIEs which have been rapidly industrialized and expanded economies in connection with Japan. And we have been able to see clearly the inequable development of the regional economies in both countries, and particularly, the concentration of socio-economic functions to the metropolitan areas has enlarged the regional difference of income. In addition, the historical circumstances among regions have encouraged the regional difference through the political organization in South Korea. Also, it seems that the antagonism between the Chinese from the Asian continent and the native minority group has been inherently connected with the stagnation of the eastern region in Taiwan. We may consider that such a non-economic scheme has been actualized in the regional difference of economy through the rapid economic growth. Then Japanese or other foreign companies have localized in the metropolitan or port areas at that time. Consequently, the location of local or domestic industries has followed those foreign establishments, and the regional difference of economic activity has been greatly enlarged. We are just looking at the process of reorganization of the regional structure in the developing countries under the influence of developed capitalist countries.

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