THE REGIONAL STRUCTURE OF THE STANDARD OF LIVING IN POLAND

ZBYSZKO CHOJNICKI, TERESA CZYŻ

Institute of Socio-Economic Geography and Spatial Planning
Adam Mickiewicz University, Poznań, Poland

1. INTRODUCTION

The standard of living has attracted much attention of Polish researchers in recent years. This may be attributed to the worsening economic and ecological situation of the country and the deterioration of the living conditions. These are the domain of various studies, including those on the standard of living and ways of measuring it as undertaken by socio-economic geographers.

The notion of the standard of living is rather difficult to define because of its normative character and relativization to a specified social system under which various individual needs develop and evolve. Individual scholars employ their own definitions; hence, the standard of living has become an ambiguous notion. In Polish social geography, apart from the standard of living, other terms are used, e.g. social welfare, living conditions, the life style, the way of life, the quality of life. Some of these notions are similar, others overlap, still others differ significantly.

Since the adoption of a given conception of the standard of living is of cardinal importance for its measurement and determines the comparability of cognitive results, further attempts are made to introduce order into the terminology and to develop a concept in question.

The results obtained thus far seem to suggest the following:

(1) The standard of living is the actual state of satisfaction of human needs rather than a collection of aspirations generally accepted in a given community.

(2) The essential elements of the standard of living include a specified level of satisfaction not only of existential needs, viz. feeding, clothing, residential, material services, health, recreational and ecological, but also those whose satisfaction is necessary for the development of human personality, viz. education, upbringing and care, as well as social needs, i.e. the reception of culture, participation, approval, gratification, and keeping in touch. This formulation assumes that the standard of living is not identical with the set of material conditions experienced by an individual or a social group in a given social system. The weight, or even the very consideration, of particular components and the determination of their content in an empirical analysis depends, however, on the spatial scale and the character of the social system.

(3) The standard of living is determined by a number of both external and internal factors. The external factors cover the impact of the surroundings. The internal ones operate at the onset of the process of the formation of the standard of living by modifying the kind of human needs, while external ones determine the satisfaction of already defined needs. Thus, external factors are the principal determinants of the standard of living. In other words, the

variable properties of man constituting a standard of living are associated, i.e. have relations, with specific external factors. The relations are interpreted in terms of determination and are important for the understanding of the mechanism of the formation of the standard of living. This mechanism is complicated and rests on relations corresponding to bidirectional interactions. One direction of interaction is when specific events in man's environment (external factors) ensure the fulfilment of specific needs and shape the standard of living. According to some scholars, these are dependences between outlays (means) and social effects. The other direction of interaction is in the ongoing process of the formation of the standard of living when, after a certain level of need satisfaction has been attained, there may occur a change in the kind of some needs or new needs may arise, and in this way a specific standard of living will result in a change in the environment. This approach to the research rests on two notions, well founded in Polish social geography: living conditions and the standard of living, and justifies their joint treatment. The combination of living conditions and the standard of living into one category underlies empirical studies carried out in this field.

The investigation of the standard of living is conducted in two dimensions: individual and aggregate. In the individual dimension, the research aims at the determination of the standard of living of a population through interviews or questionnaire inquiries concerning the level of need satisfaction. Whatever the definition of a need, this kind of research is subjective--evaluative because it relies on an individual's values against which he (she) measures the level of the satisfaction of his (her) needs.

In the aggregate dimension, the research seeks to find overall and partial measures of the standard of living in terms of flows of commodities and services as well as conditions of the environment. These measures can be expressed in terms of either monetary or non-monetary value, in which case they are natural.

Monetary-value measures are magnitudes of various types expressed in terms of prices. The most important measure of this kind is variously defined national income. It is considered to be the principal measure characterizing not only economic development, but also the level of prosperity. In spite of the positive correlation between an increase in national income and in prosperity, its use in defining the standard of living has been questioned (cf. Zienkowski 1979: 25–26). This is done on the grounds that the standard of living is not determined merely by the quantity of consumed and accumulated goods and services, but also by their quality and the socio-economic and ecological conditions in which a person lives. At the same time, it is impossible to distinguish clearly between the standard of living and the quality of life.

Under the Polish conditions, in the 1980s an additional important factor limiting the validity of national income as a measure of the standard of living was the fact that in an economics of shortage monetary-value measures were inadequate exponents of the exchange of goods and services on the market, because money was not a sufficient means of acquiring specific goods and services.

Non-monetary-value measures, which can be conventionally called natural, are magnitudes of various types expressed in physical units and embracing not only goods and services, but also ecological conditions, i.e. certain states of the environment and people (socio--demographic states). However, these measures concerning specific properties are partial, and attempts at their aggregation, although possible (e.g. in the framework of factor analysis), lead to significant information loss resulting from the reduction of their multidimensionality (cf. Chojnicki, Czyż 1987).

Attempts at investigating the standard of living in the aggregate approach have proved that the use of either group of measures leads to one-sided results. Hence, in the present study an attempt is made to apply them jointly and to define their mutual relations.

Another important matter in the study of the standard of living, besides its measurement, is its evaluative interpretation. Although the present study focuses primarily on the question of how to establish the actual state of affairs, i.e. on description, it is impossible to avoid evaluative elements. These can assume various characters and can be introduced in various ways.

In the conception of social development it is assumed that an increase in income, as well as in the production and consumption of goods and services is positive, while their decrease is negative. It is the other way around with the evaluation of those measures the increase of which is the indication of a deteriorating standard of living, e.g. an increase in the time of waiting for a flat, or an increase in mortality. Thus, the measures indicating a standard of living are divided into positive and negative.

Also the spatial, or regional, differences in the standard of living are subject to evaluation based on the concept of spatial equity. The justification of this egalitarian conception rests on various premises. Some authors derive it from the principles of social justice, others from pragmatically understood advantages of even development. It should be noted that while the conception of equity is treated normatively as a goal of socio-economic development, spatial differences in the standard of living belong to the major factors controlling social mobility (migrations) as well as the development of industry and urbanization.

2. RESEARCH APPROACHES

The aim of this study is to determine the standard and conditions of living of the population in the regional system of Poland. Three closely related approaches to the study of this problem have been employed. This strategy allows not only the comparison of results, but also their joint interpretation.

In the first approach, the adopted measure of the standard and conditions of living in a region is the volume of goods and service consumption, both those bought with personal incomes and those received free from social funds. The private consumption is the principal part of income distributed. However, the use of this regional index is debatable. Two issues are raised in the debate. First, the index of the consumption of material goods and non-material services from personal incomes is an aggregate one, and two regions with identical incomes may differ widely as to the adaptation of their structures of consumption to people's needs. Secondly, regional income is an estimated value, and the consumption in a region is not exactly the consumption by the regional population. This is due to inter-regional transfers of goods and non-material services. In order to check if global consumption as part of the national income distributed assigned to the given region is an adequate measure of the standard of living, one should pass on to the analysis of partial indices of the standard and conditions of living in the regions. These more concrete indices are supposed to have a supplementary or corrective role with respect to the previous, synthetic description of the standard of living.

The second approach rests on the recognition of the set of properties defining the standard of living in terms of positive phenomena, i.e. desirable in the social development of a region. Partial indices relevant in the regional system under study describe the empirical pattern of a multidimensional standard of living. The indices measure its various aspects and are assigned to particular components of this standard. The following components are distinguished: (1) service accessibility, (2) housing, (3) health care, (4) education, (5) culture, and (6) income surplus. For these six components, a set of 18 regional indices is prepared (see Table 1). Due to the incompleteness of the regional data published in the Polish official statistics, which were the only source of information available, the set of indices and components is not complete, either. Without going into the details of index selection, it should be stated that the ones taken into consideration were predominantly those describing the level of satisfaction of existential needs. No indices of social properties were introduced into the analysis owing to the impossibility of obtaining those data for the whole regional system of Poland.

A comparison of results obtained in the two approaches is supposed to answer the question of whether regional income considered in terms of consumption is a significant socio-economic magnitude determining the satisfaction of a person's needs.

TABLE 1. Positive indices of the standard of living

No.	Indices
1	Total floorspace of retail outlets in socialized market trade per 1000 population (m^2)
2	Sale of services to individuals per capita
3	Habitable rooms completed per 1000 population
4	Percent of urban population supplied with water installations
5	Percent of urban dwellings with bathrooms
6	Electric power consumption in urban households per consumer (in kWh)
7	Electric power consumption in rural households per consumer (in kWh)
8	Physicians per 10 000 population
9	Beds in general hospitals per 10 000 population
10	Pupils of vocational schools per 1000 population
11	Students of general secondary schools per 1000 population
12	Sales of newspapers and periodicals per inhabitant (in copies)
13	Seats in stationary cinemas per 1000 population
14	TV sets per 1000 population
15	Retail sale of goods in socialized shops per inhabitant (in thousand zl.)
16	Privately owned cars per 1000 population
17	Telephones per 1000 population
18	Savings deposits in the Polish Savings Bank (PKO) and co-operative banks per inhabitant

Sources: *Rocznik Statystyczny* (Statistical Yearbook), GUS 1987, *Rocznik Statystyczny Województw* (Statistical Yearbook of Voivodships), GUS 1987, *Rocznik Demograficzny* (Demographic Yearbook), GUS 1987.

In this connection, other questions also arise: What are the relations in a region between the level of welfare as defined by the volume of consumption and other indices of the standard of living pertaining to the social and economic state of the region (the population and infrastructure)? Will various configurations of partial indices correspond to the same regional income in terms of consumption?

The third approach makes use of indices of undesirable phenomena that are symptoms of negative social, economic and ecological phenomena in particular regions. They make up a set of six variables and give information on housing problems, mortality, and the quality of the environment (Table 2). The set includes indices of negative phenomena which are symptomatic of irregularities in development (e.g. long time of waiting for a flat) or which are an undesirable side-effect of development (e.g. air pollution related to industrial development). Methodologically, the difference between desirable and undesirable phenomena

TABLE 2. Negative indices of the standard of living

No.	Indices
1	Members of housing co-operatives waiting for dwellings per 1000 population
2	Infant mortality per 1000 live births
3	Deaths from cancer per 1000 population
4	Deaths from circulatory diseases per 1000 population
5	Emission of dusts and gases per km^2 (in tons)
6	Industrial and communal waste requiring treatment and discharged into surface waters per km^2 (in dam^3)

Sources: *Rocznik Statystyczny* (Statistical Yearbook), GUS 1987, *Rocznik Statystyczny Województw* (Statistical Yearbook of Voivodships), GUS 1987, *Rocznik Demograficzny* (Demographic Yearbook), GUS 1987.

consists in the fact that with the latter, all values greater than zero mean a situation unfavourable for the standard of living (e.g. even slight air pollution). Indices of desirable phenomena, in turn, require an arbitrary boundary to be drawn between a favourable and an unfavourable value from the point of view of the standard of living (e.g. the index of 10 physicians per 10 000 population may be taken to indicate a low standard of living). The comparison of the positive and negative indices adopted in the second and third approaches changes the ordering of the regions on the scale of the standard of living. The final comparison of the results will provide an answer to the question of whether or not regions with the highest consumption indices have the highest indices of desirable phenomena and the lowest indices of socially undesirable ones, determining the standard of living of the resident population. The study concerns the year 1986, i.e. a period of crisis-related phenomena in the economy and living conditions in Poland, and is carried out for 49 voivodships.

3. THE STANDARD OF LIVING IN TERMS OF INCOME DISTRIBUTED

Per capita income distributed (consumed) in a region is thought to be the best of the existing summary measures of the satisfaction of people's needs. In 1986, Poland's national income distributed (= gross domestic product, GDP) amounted to 12 835 000 000 000 zl. (at current prices). Total consumption took up 71%, of which 53% from personal incomes and 9% from social funds; accumulation amounted to 29%, of which 22% investment outlays on fixed assets. The shares of particular voivodships in income distributed varied from 11.8% (Katowice) to 0.7% (Biała Podlaska, Ostrołęka). *Per capita* regional income distributed varied between 568 000 zlotys (Warsaw) and 238 000 zlotys (Siedlce).

The aggregate character of income distributed is considered to be a great advantage of this measure, because it yields itself to analysis both in this summary form and when disaggregated into particular components. What is considered in the analysis of the standard of living, is income distributed in its part allocated to total private consumption. The latter includes direct consumption of goods and services, both those bought with personal incomes and those obtained free from social funds. As mentioned above, total private consumption accounts for 62% of national income distributed.[1]

Before we pass on to a detailed analysis of the standard of living by regions on the basis of total private consumption, let us remark on the relations between the distributions of the indices of consumption from personal incomes and consumption from social funds, and then on the relation between the indices of consumption and income distributed.

Private consumption from social funds (9% of national income distributed) has a similar spatial variation as consumption from personal incomes (53% of national income distributed). Voivodships with a higher index of consumption from personal incomes have a proportionally higher index of consumption from social funds (the correlation coefficient of these regional indices is 0.77; cf. Fig. 1). Naturally, there are deviations from this regularity in some voivodships, resulting from differences in the degree of concentration of institutions offering social services, such as health care, education and culture. This group of voivodships includes: Bielsko-Biała, Nowy Sącz, and Bydgoszcz (with a "deficit" of *per capita* consumption from social funds in relation to *per capita* consumption from personal incomes), Lublin and Olsztyn with a high consumption from social funds in relation to consumption from personal incomes. The class of average indices of regional consumption from social funds (12 voivodships) is smaller than that of indices of consumption from personal incomes (19 voivodships).

The ranking of voivodships on the scale of *per capita* consumption corresponds closely to their ordering on the scale of regional income distributed (the correlation coefficient of these

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[1] The remaining components of national income distributed are national consumption and accumulation.
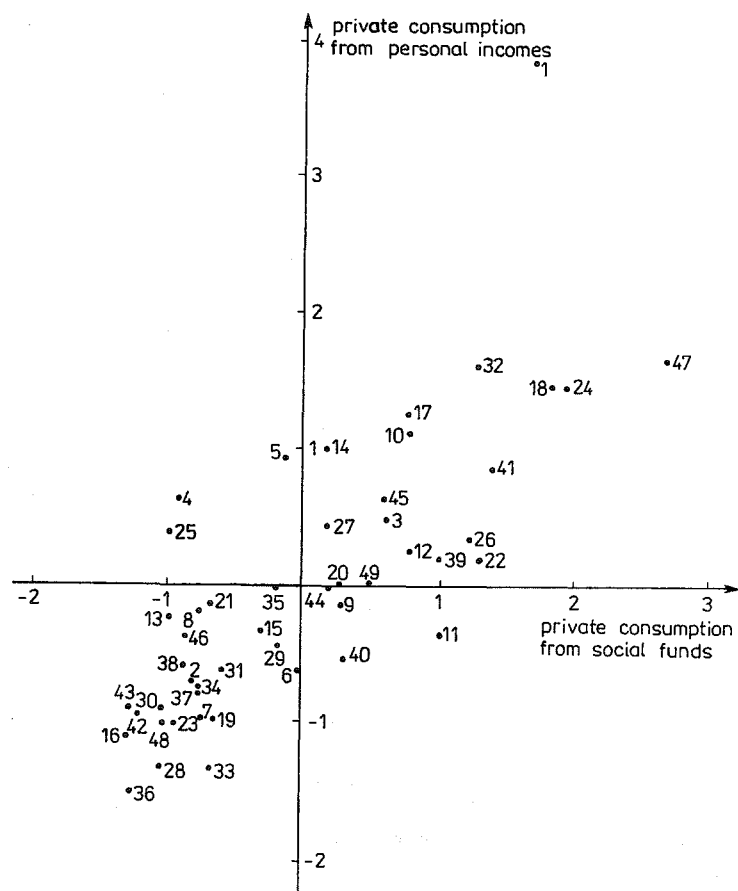
Fig. 1. Relations between the distribution of the index of consumption from personal incomes and the distribution of the index of consumption from social funds

1 — Warsaw, 2 — Biała Podlaska, 3 — Białystok, 4 — Bielsko-Biała, 5 — Bydgoszcz, 6 — Chełm, 7 — Ciechanów, 8 — Częstochowa, 9 — Elbląg, 10 — Gdańsk, 11 — Gorzów, 12 — Jelenia Góra, 13 — Kalisz, 14 — Katowice, 15 — Kielce, 16 — Konin, 17 — Koszalin, 18 — Cracow, 19 — Krosno, 20 — Legnica, 21 — Leszno, 22 — Lublin, 23 — Łomża, 24 — Łódź, 25 — Nowy Sącz, 26 — Olsztyn, 27 — Opole, 28 — Ostrołęka, 29 — Piła, 30 — Piotrków, 31 — Płock, 32 — Poznań, 33 — Przemyśl, 34 — Radom, 35 — Rzeszów, 36 — Siedlce, 37 — Sieradz, 38 — Skierniewice, 39 — Słupsk, 40 — Suwałki, 41 — Szczecin, 42 — Tarnobrzeg, 43 — Tarnów, 44 — Toruń, 45 — Wałbrzych, 46 — Włocławek, 47 — Wrocław, 48 — Zamość, 49 — Zielona Góra

indices equals 0.92). There are, however, some shifts in the positions of voivodships with a large share in national investment outlays on fixed assets: the Piotrków (open-cast brown coal mines and power station), and Legnica (copper mines and copper-works) voivodships, as well as those with a small share (below the national average), i.e. the Częstochowa and Nowy Sącz voivodships. Seven voivodships lead in the ranking of *per capita* regional indices of consumption, i.e. the Warsaw, Wrocław, Poznań, Łódź, Cracow, Koszalin and Gdańsk voivodships (315 000 to 230 000 zlotys; see Table 3 and Fig. 2). With the exception of
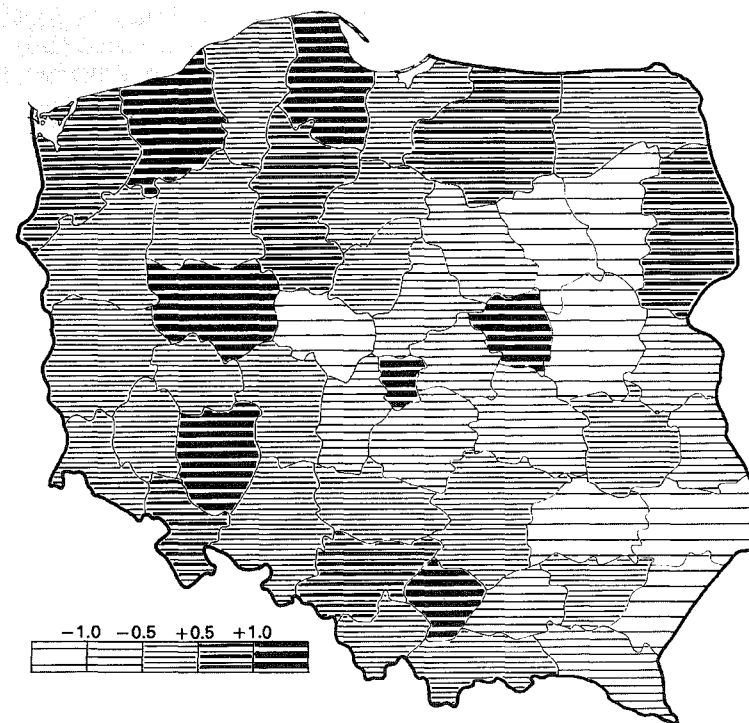

Fig. 2. Regional indices of consumption per inhabitant

the Koszalin voivodship, these are urban regions the cores of which are large urban agglomerations. The next class, with high values of the index, is also composed of voivodships with major urban agglomerations (Szczecin, Katowice and Bydgoszcz); of those with smaller urban agglomerations (Wałbrzych and Białystok); and of one with a potential urban agglomeration: Olsztyn (230 000 to 210 000 zlotys).[2]

Seventeen voivodships have low and very low levels of consumption (180 000 to 140 000 zlotys). These are the central voivodships surrounding Łódź and Warsaw, the eastern voivodships (Łomża, Biała Podlaska and Chełm), and the south-eastern voivodships (Tarnobrzeg, Zamość, Tarnów, Przemyśl and Krosno; see Table 3 and Fig. 2). There are average regional indices of consumption (210 000 to 180 000 zlotys) in 19 voivodships of the northern, western and southern parts of Poland.

In the pattern of regional differences in consumption indices, there is a clear division of Poland into the western and northern part with an average consumption level, and the central and eastern part with a low level. Scattered throughout the country are individual voivodships with high or average consumption indices containing large or medium-sized urban agglomerations. In south-eastern Poland, these are the Kielce, Lublin and Rzeszów voivodships with average indices of regional consumption. The strongest contrast in the level of consumption can be observed between the highly urbanized Łódź and Warsaw voivodships and the neighbouring rural-agricultural ones.

There is also a close relationship between regional consumption indices, on the one hand, and the economic functions and the level of urbanization of the voivodships, on the other.[3]

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[2] Regional indices are standardized and divided into five classes: above 1 — very high; +1 to +0.5 — high; +0.5 to −0.5 — average; −0.5 to −1 — low; and below −1 — very low.

[3] The economic functions of voivodships were determined on the basis of the structure of income

TABLE 3. Regional indices of consumption per inhabitant*

Voivodship	Consumption per inh. (,000 zł)	Voivodship	Consumption per inh. (,000 zł)
1. Warsaw	315	26. Leszno	187
2. Wrocław	258	27. Częstochowa	186
3. Poznań	249	28. Kielce	184
4. Łódź	248	29. Kalisz	183
5. Cracow	247	30. Piła	183
6. Koszalin	236	31. Suwałki	183
7. Gdańsk	232	32. Włocławek	180
8. Szczecin	228	33. Chełm	177
9. Katowice	225	34. Płock	175
10. Bydgoszcz	221	35. Skierniewice	175
11. Wałbrzych	217	36. Biała Podlaska	171
12. Białystok	212	37. Radom	170
13. Olsztyn	212	38. Sieradz	169
14. Opole	209	39. Piotrków	164
15. Bielsko Biała	209	40. Krosno	164
16. Lublin	208	41. Ciechanów	163
17. Słupsk	208	42. Tarnów	163
18. Jelenia Góra	207	43. Tarnobrzeg	162
19. Nowy Sącz	202	44. Zamość	162
20. Zielona Góra	199	45. Łomża	161
21. Legnica	198	46. Konin	156
22. Toruń	195	47. Przemyśl	153
23. Rzeszów	193	48. Ostrołęka	152
24. Elbląg	193	49. Siedlce	145
25. Gorzów	191		

*Total private consumption is the sum of two components of income distributed (GDP): "private consumption from personal incomes" and "private consumption from social funds".

Source: *Dochód narodowy Polski wg województw w 1986 r.* (Poland's 1986 national income by voivodships), Zakład Badań Statystyczno-Ekonomicznych GUS and Polska Akademia Nauk, Warszawa 1989.

The class of the highest consumption level is composed of highly industrialized and urbanized voivodships: Warsaw, Wrocław, Poznań, Łódź, Cracow and Gdańsk; the Poznań and Wrocław voivodships are also very well developed agriculturally. The Koszalin voivodship, with the dominant agricultural function and an average level of urbanization, is an exception. The class of the high level of consumption includes the Katowice, Szczecin and Wałbrzych voivodships, highly urbanized and highly (Katowice) or moderately (Wałbrzych, Szczecin) industrialized, as well as three voivodships: Białystok and Bydgoszcz at an average, and Olsztyn at a low level of industrialization and an average level of urbanization.

To the class of an average consumption level belong voivodships differing in their economic character and the level of urbanization. They are either at an average urbanization level and (a) highly industrialized (Bielsko-Biała, Częstochowa, Legnica, Jelenia Góra, Zielona Góra), (b) industrial-agricultural (Opole, Lublin, Toruń, Słupsk, Elbląg, Gorzów Wielkopolski), (c) agricultural (Piła, Suwałki) or they are at a low urbanization level and (d) industrialized (Rzeszów), (e) industrial-agricultural (Kielce, Kalisz), (f) agricultural (Leszno, Włocławek, Nowy Sącz).

generated by sectors of the national economy. The percentage of urban population was taken as the measure of the urbanization level.

In the class of low and very low consumption, weak agricultural-rural regions prevail. These are the Biała Podlaska, Sieradz, Ciechanów, Zamość, Łomża, Przemyśl, Ostrołęka, Siedlce, Chełm and Skierniewice voivodships. This class also includes new industrial regions with rural agricultural traditions (Płock, Piotrków, Tarnobrzeg), and regions with poor agriculture, relative dominance of industry, and poorly urbanized (Konin, Radom, Krosno and Tarnów).

The above pattern reveals a clear regularity in the regional system of Poland: the higher the industrialization and urbanization of a region, the higher is its level of private consumption. In the case of a marked disparity between the urbanization and industrialization levels, voivodships move up or down the scale of consumption.

The following cases are worth noting:
(1) the Koszalin voivodship, characterized by an average level of urbanization, with poor industrialization, and belonging to the class of high consumption indices; (2) the Bielsko-Biała and Legnica voivodships, highly industrialized and moderately urbanized, belong to the class of average regional consumption; (3) the Płock voivodship, poorly urbanized with relation to its high industrialization, belongs to the low consumption class; (4) the Rzeszów voivodship, with average industrialization and poor urbanization, and included in the average consumption class; (5) the agricultural Suwałki voivodship with average urbanization, and the Leszno and Nowy Sącz voivodships with a low urbanization level, with their consumption indices boosted to average by strong tourist and recreation functions (Nowy Sącz and Suwałki) or a high level of agricultural production (Leszno).

It is also worth noting that the dominance of industrialization over urbanization can lead to a shift of regions either up or down the scale of consumption, while a relative dominance of urbanization over industrialization is as a rule accompanied by an increase in the position of a region on this scale.
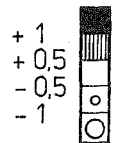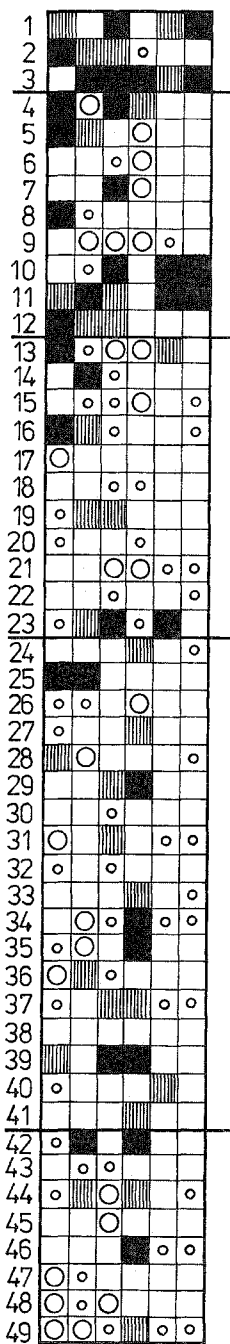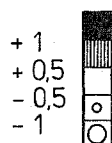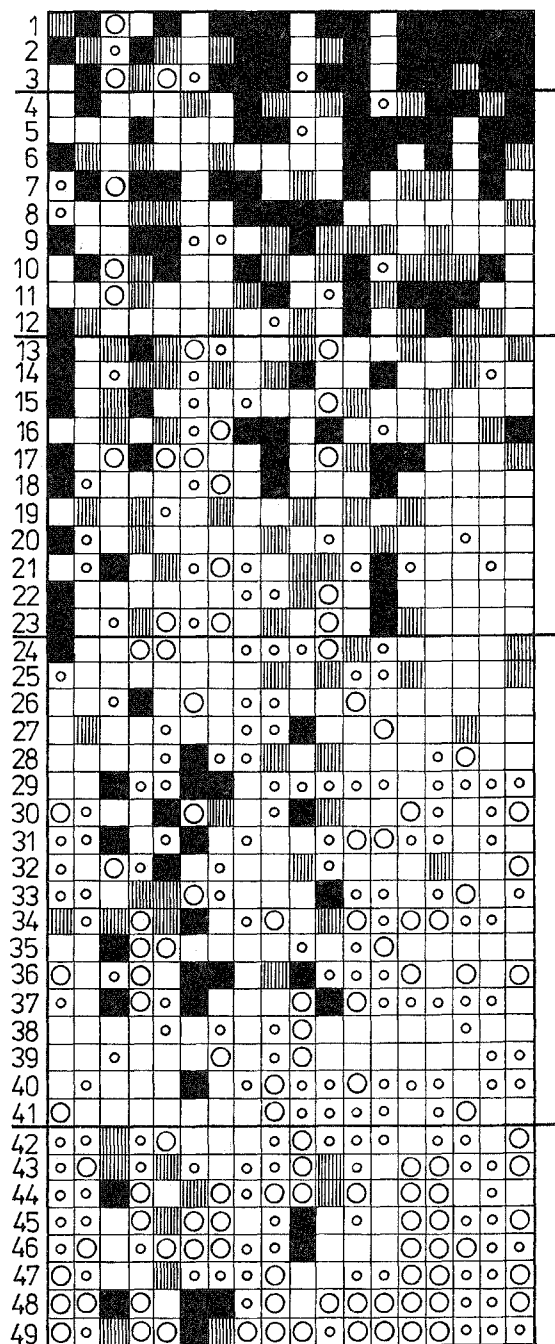
4. PARTIAL INDICES OF THE STANDARD OF LIVING

Private consumption as part of the GDP remains an aggregate index, and as such it does not provide much information essential to the evaluation of the standard of living.

There may also appear errors in the interpretation of the indices of consumption in the regional pattern, resulting from the method of disaggregating or, more precisely, estimating income distributed by voivodships. This justifies the use of partial indices to describe particular aspects of the standard of living. In empirical studies, it is necessary to provide not only a synthetic index, but also a whole system of measures characterizing the standard of living, which ensures more detailed information.

In this part of the study, a multi-index analysis of the standard of living in the regional approach is carried out parallel to the evaluation of this level using income distributed.

Regional indices of the level of living comprise two sets. The first, basic one, is composed of indices of positive phenomena, i.e. those defining a high standard of living, assigned to its particular components (aspects). Eighteen such indices have been adopted, related to: accessibility to services (variables 1–2), housing (3–7), health care (8–9), the level of education (10–11), cultural facilities (12–14), affluence (15–18; see Table 1). This list includes indices of the standard of living commonly used in Poland, and is incomplete owing to the lack of statistical data broken down by regions. Without entering into a discussion on the criteria of the selection of social indices, let us focus on the reasoning followed in the evaluation of the statistical representativeness of the indices used. They have different contents and give information about quite different phenomena. It is assumed that a strong correlation between the indices suggests that these phenomena represent a certain pattern of regional development common to most regions, and hence the set of indices can be taken as representative of the standard of living.

An essential element of the research procedure is the establishment of the pattern of the real standard of living in a region. This multidimensional pattern is built on the basis of the set of 18 regional indices observed. By comparison with average regional values of the indices, classes of regions relating to the standard of living are built.[4] Since each region is described by a different combination of the classes of values of the 18 indices, the classification of the regions rests on the generalized characteristic of the frequency of particular classes of these indices. The prevalence of indices with very high, high, average, low, or very low values allows a given region to be included in the appropriate class of the standard of living (see Fig. 3). The Perkal index (the sum of standardized values of indices defined for each region) is used as an additional criterion of the ordering of regions on the scale of the standard of living. The results of the regional classification using the above criteria are as follows.

Regions of particular classes are characterized by high values of the selected partial indices. For regions with the very high standard of living these are: the sale of services (variable 2), the consumption of electric energy in the rural areas (7), physicians (8), hospital beds (9), students of general secondary schools (11), sales of newspapers (12), TV sets (14), retail sale of goods (15), telephone subscribers (17), privately owned cars (16), savings deposits (18). In the class of a high standard of living, most regions have only six indices with high values (8, 9, 12, 14, 15, 17). Among regions with a very low standard of living, there are even five with a high value of the index of "habitable rooms completed" (variable 3). It may be interesting to note at this point that the three regions with a very high standard of living have a low value of this index. Regions with a very low standard of living have low values of the following indices: floorspace of retail outlets (variable 1), the sale of services (2), hospital beds (9), retail sale of goods (15).

The second set contains indices of negative phenomena, i.e. ones that bring down the standard of living and result from irregularities in regional development or that are undesirable side-effects of this development. It is impossible to characterize the standard of living without appraising such undesirable results and their impact on living conditions.

The choice of indices of negative phenomena observed in the regions encounters serious difficulties due to the lack of statistical information. Hence, the study was limited to six indices of negative phenomena observed in the regions in the fields of housing (variable 1), health status of the population (2–4), the natural environment (5–6; see Table 2).

There is a large deficit of flats which creates a strong pressure for dwellings, measured as the number of members of housing co-operatives waiting for flats per 1000 population. The housing pressure is stronger in voivodships with large urban agglomerations and weaker in rural regions, where the housing problem is often even worse. The lagging of residential construction behind growing needs in large agglomerations can be attributed to the wrong organization of construction, monopolized by ineffective housing co-operatives, and to the hampering of individual initiatives. The slower population growth in rural regions, resulting from out-migration, together with the development of private construction in the country (e.g.

Fig. 3. The distribution of partial positive indices of the standard of living

1 — Warsaw, 2 — Wrocław, 3 — Łódź, 4 — Poznań, 5 — Szczecin, 6 — Koszalin, 7 — Gdańsk, 8 — Lublin, 9 — Olsztyn, 10 — Cracow, 11 — Katowice, 12 — Bydgoszcz, 13 — Legnica, 14 — Opole, 15 — Słupsk, 16 — Białystok, 17 — Wałbrzych, 18 — Gorzów, 19 — Toruń, 20 — Zielona Góra, 21 — Suwałki, 22 — Piła, 23 — Jelenia Góra, 24 — Leszno, 25 — Płock, 26 — Elbląg, 27 — Kalisz, 28 — Chełm, 29 — Sieradz, 30 — Rzeszów, 31 — Ciechanów, 32 — Bielsko-Biała, 33 — Kielce, 34 — Zamość, 35 — Skierniewice, 36 — Nowy Sącz, 37 — Biała Podlaska, 38 — Włocławek, 39 — Częstochowa, 40 — Konin, 41 — Radom, 42 — Piotrków Trybunalski, 43 — Tarnobrzeg, 44 — Łomża, 45 — Krosno, 46 — Przemyśl, 47 — Tarnów, 48 — Ostrołęka, 49 — Siedlce

Fig. 4. The distribution of partial negative indices of the standard of living; 1–49 — cf Table 3

[4] Partial indices are standardized and divided into five classes: cf. footnote 2.

in the south-eastern regions, where houses are built often at the cost of limited current consumption, or with money earned abroad) relieve the housing pressure.

When evaluating the health-care system in Poland, it must be argued that the state of health service, especially its infrastructure and effectiveness, is poor. Also, the environmental conditions affecting human health are not satisfactory (there are zones of ecological disaster). This has led to the deterioration of the health status of the population. The negative symptoms of health conditions are high infant mortality and a high frequency of deaths from cancer and circulatory diseases. The worst situation, as far as infant mortality is concerned, is in the Łódź, Katowice, Opole, Płock and Piotrków voivodships; deaths from cancer are most frequent in the Warsaw, Poznań, Cracow, Łódź, Gdańsk, Jelenia Góra, Katowice and Częstochowa voivodships, while from circulatory diseases in the Łódź, Częstochowa, Skierniewice, Sieradz, Piotrków, Zamość and Przemyśl voivodships.

Generally, one may conclude that high mortality rates occur mainly in three kinds of regions: (1) those highly urbanized and industrialized in spite of a relatively good accessibility to medical services, e.g. Łódź; (2) industrial regions with insufficient health-care service, e.g. Piotrków and Częstochowa; and (3) weak agricultural regions with underdeveloped health-care service, e.g. Zamość, Przemyśl and Sieradz.

The principal regional threats to human health in urban agglomerations and industrial areas come from environmental degradation. The most noxious is air and water pollution. The highest indices of dust and gas emission, as well as industrial and communal waste discharge, are recorded in regions with large urban agglomerations: Katowice, Łódź, Warsaw and Cracow; the highest air pollution indices are also observed in the industrial regions of Jelenia Góra, Legnica and Konin. The detrimental effect of the deteriorated environment on human health in urban agglomerations is not offset by better medical services in these regions (a larger number of physicians and hospital beds). There is a statistically significant positive correlation in the regional pattern between the level of water pollution and infant mortality and deaths from cancer. The social significance of undesirable phenomena varies widely. The most dangerous is the kind of environmental pollution resulting directly in people's poor health.

The set of six indices of socially negative phenomena that are inherent features of regional development in Poland is a system weakening the effect of the positive factors on the standard of living in a region. The system can be treated as a complex of undesirable phenomena in clear conflict with the formation of a high standard of living.

Considering the seriousness of threats to the natural environment, sharp-conflict regions are taken to be those with very high intensity of dust and gas emission and/or relatively high water pollution. These are the Warsaw, Cracow, Łódź, Katowice, Jelenia Góra, Legnica and Konin voivodships. Two of the seven have simultaneously the largest number of high indices of undesirable phenomena at the regional scale: Katowice 5 and Łódź 5, with recurrent high infant mortality and high mortality from cancer (Fig. 4). The slight-conflict regions include those in which at least one index of environmental degradation is low and another average or low, and the whole set has predominantly low and average indices. By this criterion, there are 13 units in this class: Siedlce, Przemyśl, Łomża, Zamość, Ciechanów, Biała Podlaska, Chełm, Suwałki, Piła, Leszno, Słupsk, Olsztyn and Białystok. In these regions, in the conditions of relatively low environmental pollution, the undesirable phenomena of high intensity are mostly deaths from circulatory diseases (in Siedlce, Łomża, Biała Podlaska, Zamość, Przemyśl and Leszno voivodships). In the remaining 29 moderate-conflict regions with average environmental degradation the conflict is usually between the standard of living, and high mortality and difficult housing conditions.

In order to relate the results of the analysis of the set of partial indices of the standard of living to the results of the analysis of the set of phenomena decreasing this standard, the classification of regions by the strength of environmental conflict is superimposed on the classification according to the standard of living; in this way, a multidimensional classification is produced (see Table 4). It follows from this classification that conflicts tend to grow with the standard of living rising above average. Since the standard of living in Poland is a function of urbanization and industrialization, sharp- and moderate-conflict regions tend to be situated in southern, western, northern and central Poland. They mainly contain urban agglomerations and industrial districts. Out of highly and moderately developed regions, only the Olsztyn, Białystok, Suwałki, Słupsk and Piła voivodships are characterized by a relatively low intensity of undesirable phenomena. In regions with low and very low standards of living, the conflicts usually focus on social problems, but if there is the extractive industry or an industry regarded as objectionable, conflicts with the natural environment emerge (as in Piotrków, Tarnobrzeg, Tarnów, Ostrołęka).

TABLE 4. Multidimensional classification

Standard of living	Sharp conflicts	Moderate conflicts	Slight conflicts
Very high	Warsaw Łódź	Wrocław	
High	Cracow Katowice	Poznań Szczecin Koszalin Gdańsk Lublin Bydgoszcz	Olsztyn
Average	Legnica Jelenia Góra	Opole Wałbrzych Gorzów Toruń Zielona Góra	Słupsk Białystok Suwałki Piła
Low	Konin	Płock Elbląg Kalisz Sieradz Rzeszów Bielsko Biała Kielce Skierniewice Nowy Sącz Włocławek Częstochowa Radom	Leszno Chełm Ciechanów Zamość Biała Podlaska
Very low		Piotrków Tarnobrzeg Krosno Tarnów Ostrołęka	Łomża Przemyśl Siedlce

5. A COMPARISON OF THE CLASSIFICATIONS OF REGIONS ON THE SCALE OF THE STANDARD OF LIVING

In comparison with classification A by private consumption (Fig. 2), classification B based on partial indices (Fig. 5) shows the degradation of 18 and the advance of 3 voivodships on the scale of the standard of living. The decrease in the position involves a drop in the standard of living by one class. The most numerous shifts are from class A of an average standard of living to class B of a low standard. Another difference is that classification B has a larger class of a high standard of living at the cost of the class of a very high standard of living, and a larger class of a low standard at the cost of that of an average standard. The size distribution of the classes is more asymmetric. In classification B, the number of voivodships with very high and high standards of living (12) is less than a half of the number of voivodships with low and very low standards (26); in classification A, the latter number is greater only 1.5 times. It is worth noting that the regions that have moved down the scale of the standard of living are mostly the areas of environmental conflicts.

The results of this study seem to support the claim that the definition of the standard of living using the index of income distributed by regions produces an overestimation, both for strong and weak regions. Strong, highly urbanized regions intercept the incomes of inhabitants of other regions suffering from service underdevelopment. Some weak regions with well developed tourist and recreation functions have, in turn, relatively high indices of income consumption which result not from a high consumption level of residents, but from the inflow of tourists. It should also be noted that high and very high standards of living prevail in old voivodships, while low and very low standards in new ones. The "old" voivodships form the cores of the pre-1975 voivodships whose centres are urban agglomerations; the "new" voivodships were formed from the peripheries of the "old" ones. This contrast between the old and the new voivodships is even more pronounced in the classification based on partial indices. It turns out that even those few new voivodships with an average income distributed, located near strong urban regions, have an even lower standard of living by partial indices than their income distributed suggests. The Nowy Sącz, Elbląg, Leszno, Częstochowa, Kalisz, Włocławek, Krosno, Piotrków and Tarnów voivodships go down on the scale of the standard of living due to their poor infrastructural facilities (hospitals, schools, shops), and their communities do not show signs of affluence (cars, savings). The Piotrków voivodship, despite its intensive industrial development, is even assigned to the class of a very low standard of living due to its lagging urbanization.

6. CONCLUSIONS

The spatial structure of the standard of living in Poland is characterized by considerable differences which can be observed: (1) at the national scale — between the western and eastern parts; (2) at the interregional scale — between urban regions whose cores are large urban agglomerations and their neighbouring regions; (3) at the regional scale — between urban and rural areas (cf. Chojnicki, Czyż 1991). The occurrence of these differences is a result of the low efficiency of the regional policy pursued in Poland so far.

The division of Poland with respect to the level of development into the western and eastern parts is conditioned by historical factors; it dates back to the 19th century and is the result of differences in the development of the Polish territories in 3 partitions. The fact that these contrasts have not been reduced over the last 40 years should be blamed on a rather passive regional policy. It proves that the efforts to stimulate economic activity in the backward areas, based mainly on the development of industry, were insufficient and produced small effects in reducing the differences.

Thus, the equalization of the standard of living between the western and eastern parts of Poland remains an issue of the regional policy. Development should be stimulated not only by industry but also, and perhaps primarily, by highly efficient and modernized agriculture associated with agricultural processing industry, by crafts and specialized services, e.g. tourist services. It should be stressed, however, that a rational strategy of the equalization of the standard of living implies a functional and ecological diversity, and hence precludes interregional uniformity.

The development of individual regions should accommodate their different natural, economic and social conditions, and should be based on criteria of regional efficiency. Further processes of the levelling out of disparities in the development of Poland ensuring the adaptation of the space economy to the natural conditions should lead to the formation of three main horizontal economic zones (southern, central and northern) of a high-quality economy and equal standards of living (Dziewoński, Malisz 1978).

The contrasts between regions with large urban agglomerations and the neighbouring regions have appeared as a result of the policy of the excessive development of the agglomerations and the underdevelopment of other components of the settlement system. The development of the urban economy connected with the concentration of the population, employment and production in big cities was accompanied by a lag in urbanization in the neighbouring voivodships caused, among other things, by the insufficient development of the technical and social infrastructures and trade in those voivodships. In 1975, peripheral areas of the agglomerations obtained the status of new voivodships, and this fact gave them an impulse to development. However, it manifested itself largely in a dynamic development of voivodship centres. When planning their development, the various resources of the peripheral regions were not properly utilized.
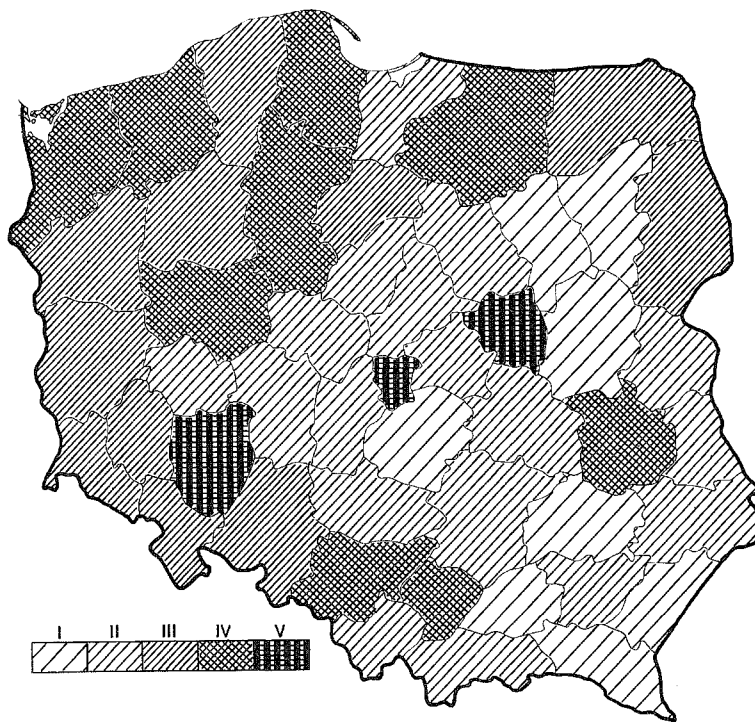

Fig. 5. The classification of voivodships on the basis of partial positive indices of the standard of living

I — very low, II — low, III — average, IV — high, V — very high

There are marked urban-rural differences within individual regions. They result from the underestimating of the role of agriculture in socio-economic development and in promoting economic efficiency and a high standard of living in a region. The bad agrarian policy and the underdevelopment of the technical, social and commercial infrastructures hampered the socio-economic development of the rural areas. What has brought particularly noxious effects was the underestimation of the importance of infrastructure for the standard of living of man as both producer and consumer.

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