

Demographic and Infrastructural Characteristics of the First Cluster of the Developing Countries

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Abstract: We present briefly the project "Clusters of Capitalism. Typology and Dynamics of Capitalist Economies", continued in 2014 under the title "Identification and Comparative Analysis of the Types of State Capitalism and the Types of Liberal Capitalism (Based on Cluster Analysis)." It is a study in which for the first time the typology of the capitalist way of production has been done inductively, not deductively, and with the application of modern statistical methods. We examine the demographic and infrastructural characteristics of one of the twelve revealed distinctive types of capitalism in the twentieth century, namely the First cluster of the developing countries.

Index Terms: Cluster analysis, types of capitalism, liberal capitalism, state capitalism, developing countries

JEL: C38, C82, N3, N7

I. CLUSTER ANALYSIS OF THE TYPES OF CAPITALISM

Most often in order to distinguish the types of capitalism the dichotomy **liberal capitalism – state capitalism** is applied. Societies of liberal capitalism are those ones that have a democratic political system, a limited state sector and minimized state intervention in the economic processes. Societies of state capitalism are the societies where the state has a significant role in both economy and politics.

For a long time West European capitalism was considered the only "authentic", **autochthonous and natural** one. The capitalist development of the countries from the second and third echelons of capitalism is considered successful only on condition that the development resembles the development of the countries from the first echelon. Over the last decades a new view has established – the view that the different countries and regions realized the transition from traditional, patriarchal society to modern capitalist society in a **specific way**. The prevailing opinion is that there are **different types of capitalism** and that each of them is **natural and authentic** for the countries and regions where the transition is being carried out. In time and space there are different **clusters** of countries with a **similar** way of production depending on the specific natural and climatic conditions, particular historical development, etc. Each of these clusters represents a specific **type** of capitalism.

The next step of the scientific research of the types of capitalism is to establish these original types of capitalism not in a **deductive**, but in an **inductive** way. This means to establish the original types of capitalism in a "**natural**" way, i.e. through a cluster analysis according to several main indicators.

In order to conduct the clustering, we collected data according to three main indicators:

- degree of country development, which is examined through the gross domestic product per capita of the countries;

- share of the state sector in the national economy – for it we use an expert appraisal based on a five-stage scale:

- Share of the state sector up to 20%
- Share of the state sector between 20% and 40%

- Share of the state sector between 40% and 60%
- Share of the state sector between 60% and 80%
- Share of the state sector over 80%

- participation of the state in the re-distribution of the Gross Domestic Product, which is examined in two ways: a) we trace the dynamics of the share of governmental revenue compared to the gross domestic product; b) we trace the dynamics of the share of governmental expenditure compared to the gross domestic product. Then, we take the smaller share.

The methodology of statistical analysis of data and clustering is "hierarchical agglomerative clustering". The countries are grouped in qualitatively homogeneous groups based on the values of the three quantitative indicators.

The period for which we found time series of statistical data long enough for a minimum of countries is from 1900 to 2005. The step that we use is 5 years.

As a result from the clustering for each of the 22 fixed years we received four to ten clusters. In each cluster there are between 1 and 34 countries.

We found out that there are cores of countries (or a country-cluster) that last successively for a longer or shorter period of time during these 22 fixed years. With the flow of time the cores "attract" other countries or vice versa – some countries "run away" from their cluster. We identified **twelve** such „cases" and think that they develop in time and become **original** types of capitalism. Provisionally, we designate these clusters as First "West European" cluster; Second "West European" cluster; First "Latin American" cluster; Second "Latin American" cluster; First "East European" cluster; Second "East European" cluster; "the USA"; "Japan"; First "Arab" cluster; Second "Arab" cluster; First cluster of the developing countries; Second cluster of the developing countries.³

The designations "first" and "second" refer to: a) their earlier or later emergence in time; b) longer or shorter duration.

We would like to state explicitly that the names we suggest are only the first step towards the determination of the type of capitalism of each cluster. At this stage the names of the clusters are so to say "**geographical**". Later, we will try to find a suitable name for each type of capitalism – liberal or state – of the clusters. This can be done after the examination of the characteristics of the particular type.

Having done the clustering with reference to the three indicators, we gathered statistical information with

³ We use quotes for these provisional names in order to show that: - when the name of the cluster is collective like the First "West European" cluster the quotes show that the cluster includes countries that are not from the given geographical region. (In the particular example, these are more often Australia, New Zealand and Canada.) - when the name of the cluster includes one country only like "the USA", the quotes mean that this country is the core of the cluster and that over the years it includes other countries. (In the particular example Australia and Switzerland often appear together with the USA.)

reference to 20 more indicators, grouped in four sections: economic indicators; social indicators; demographic indicators and infrastructural indicators. Together with the three main economic indicators, the indicators become 23 – nine economic, three social (in the sphere of education), six demographic and five infrastructural ones.⁴ The indicators used by us are the result of recalculation based on capita or 1000 people (1 000 000 people respectively) of the population.

The nine economic indicators are: GDP per capita, annual growth rate of GDP (%), share of GDP allocated by the state (%), share of the state sector in national economy, unemployment (% of overall population), unemployment (% of workforce), industrial (labor) disputes (per 1 000 000 people of the population), employees involved in industrial (labor) disputes (per 1000 people of the population), days lost because of industrial (labor) disputes (per 1000 people of the population).

The social indicators are from the sphere of **education** and they are: children in primary and secondary schools (per 1000 people of the population), teachers in primary and secondary schools (per 1000 people of the population), university students (per 1000 people of the population).

The six demographic indicators are: birth rate and death rate, life expectancy, infant mortality, coefficients of emigration and immigration.

The five infrastructural indicators are: Length of the railway (kilometers per 1000 people of the population); freights transported by trains (tons per capita); passengers transported by trains (per capita); postal services (letters per capita); telegraphic services (telegrams per capita).

II. DYNAMICS OF THE COMPOSITION AND GENERAL CHARACTERIZATION OF THE FIRST CLUSTER OF THE DEVELOPING COUNTRIES

The number of the countries in the First cluster of the developing countries is not very big. For the period 1970-2005 there is only one year, 1975, when the cluster consisted of a relatively big number of countries: Algeria, Ghana, Egypt, Ethiopia, Zaire, India, Iraq, Kenya, China, Tunisia, Chile. For the rest of the period considered the cluster consisted of several countries. In 1995 it consisted of two countries only – Burma and India. In 2000 and 2005 the cluster consisted of one country only – India. India is part of the cluster throughout the whole period of the cluster's existence. Obviously, it is India's economic development that is indicative of the most important characteristics of the First cluster of the developing countries.

⁴ Our main source of primary data was B. R. Mitchell's book "International Historical Statistics. 1750-2005". It has three volumes respectively for Europe, for North and South America and for Africa, Asia and Oceania.

TABLE 1.
COMPOSITION OF THE FIRST CLUSTER OF THE DEVELOPING COUNTRIES

Year	Degree ⁵	Composition
1970	3S	Algeria, Ethiopia, India, Iraq
1975	4S	Algeria, Ghana, Egypt, Ethiopia, Zaire, India, Iraq, Kenya, China, Tunisia, Chile
1980	5S	Ghana, India, Somalia, Sudan
1985	5S	India, Yemen, Kenya, Tanzania
1990	4S	Burma, Vietnam, Egypt, India, Kenya, Tanzania
1995	3S	Burma, India
2000	1S	India
2005	1S	India

Regarding the cluster's geography we can see that it consists mostly of African and Asian (South and South Eastern) countries. The cluster included a country from Asia Minor twice only. This was Iraq in 1970 and 1975. It included a South American country once – Chile in 1975.

What is typical of the economic development of the cluster is that throughout the whole period it is a **state capitalism**. In the beginning the cluster was characterized by an average degree of state intervention – 3S. In the 80s both indicators had an increasing value and the cluster marked low values of state intervention and share of state ownership – 5S. In the early 90s the degrees of state intervention and share of state ownership increased and reached 1S, the highest value for these indicators.

The political systems of the countries from the cluster are characterized by some form of an authoritarian regime. The "mildest" form of authoritarianism is the one in India – authoritarian parliamentarism. There was a socialist country in the cluster only in 1975 but most of the regimes in the other countries were more or less influenced by socialist ideology.

III. DEMOGRAPHIC INDICATORS OF THE FIRST CLUSTER OF THE DEVELOPING COUNTRIES

a) Birth-rate, death-rate and infant mortality. For the period 1970-2000 the dynamics of the birth-rate was downward. The coefficient was 36,8‰ in 1970 and fell to 25,8‰ in 2000. This means that the birth-rate as a factor for the demographic boom diminished in importance. Nevertheless, this coefficient is considerably higher than the death-rate. The dynamics of the death-rate is more oblique than the one of the birth-rate. The death-rate was 11,2‰ in 1975 and fell to 8,5‰ in 2000. The difference between the birth-rate and death-rate kept its high values.

⁵ XS stands for state capitalism. The scale has eight degrees. The bigger the number, the less the state participation in the economic processes and the weaker the state capitalism is. The smaller the number, the stronger and "harsher" the form of the established state capitalism is.

This means that the demographic boom continued in 2000 as well. The dynamics of infant mortality is controversial. For the period 1975-1985 it increased considerably from 73,5‰ to 105,0‰. Then, for the period 1985-2000 there was a sharp fall from 105,0‰ to 68,0‰. For the overall period the fall in infant mortality was slight.

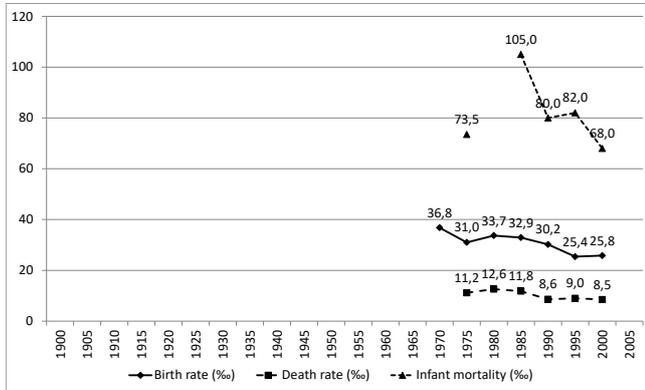


Fig. 1. Birth-rate, death-rate and infant mortality

b) Life expectancy. The dynamics of the life expectancy is increasing. For the period 1970-2005 there was only one five-year period – 1975-1980 that was marked by a decrease. From 1970, when the life expectancy was 50,9 years, the future life expectancy increased considerably to 64 years in 2005.

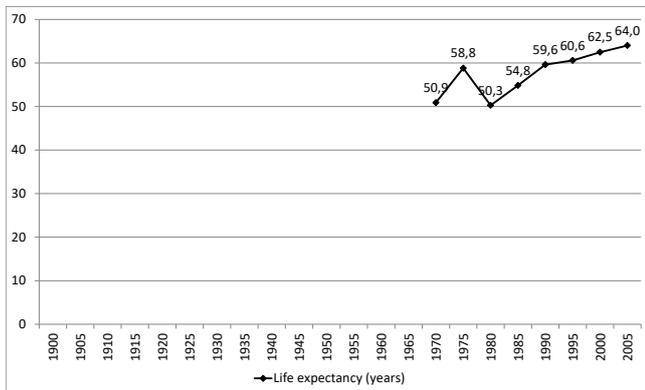


Fig. 2. Life expectancy

IV. INFRASTRUCTURE INDICATORS OF THE FIRST CLUSTER OF THE DEVELOPING COUNTRIES

a) Length of railway (kilometers per 1000 people of the population). For the period 1970-1975 the length of railway (kilometres per 1000 people of the population) increased. However, during the last year of the period there was obvious saturation with this kind of transportation. For the period 1975-2000 From 1975 the length of railway (kilometers per 1000 people of the population) decreased dramatically from 0,20 km per 1000 people of the population in 1975 to 0,06 km per 1000 people of the population in 2000. In fact, the length of railway did not decrease. It was the demographic boom that led to its fall per 1000 people of the population.

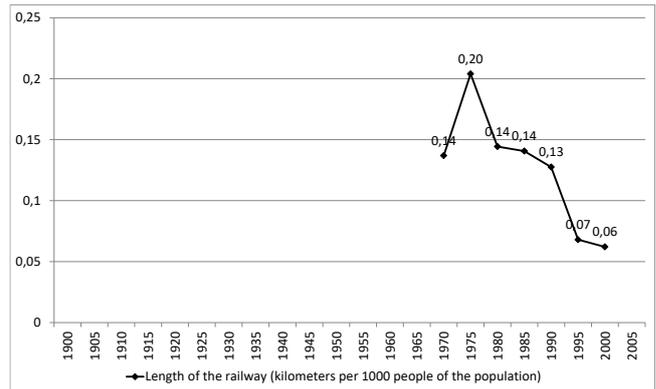


Fig. 3. Length of railway (kilometers per 1000 people of the population)

b) Passengers transported by trains (per capita); freights transported by trains (tons per capita). The dynamics of both indicators for the period 1970-1980 is identical. For the period 1970-1975 both indicators showed a dramatic rise whereas for the period 1975-1980 there was a sharp fall. During the second period, 1980-1990, the dynamics of both indicators was reciprocal. When one of them went up, the other one went down and vice versa. However, during that period both indicators showed a downward trend. On the whole, there was a fall in the values of both indicators for the period 1975-1990. That trend is similar to the trend of the length of railway (kilometers per 1000 people of the population). Definitely, one of the reasons for the decrease in both indicators is the same as the one for the length of railway (kilometers per 1000 people of the population). The demographic boom led to a decrease in the relative number of passengers and freights transported by train. The capacity for transportation of passengers and freights was limited. Evidently, the point of saturation was the year 1975. There was one more major reason for the change in the dynamics, namely the growing importance of automobile transport for the transportation of passengers and freights.

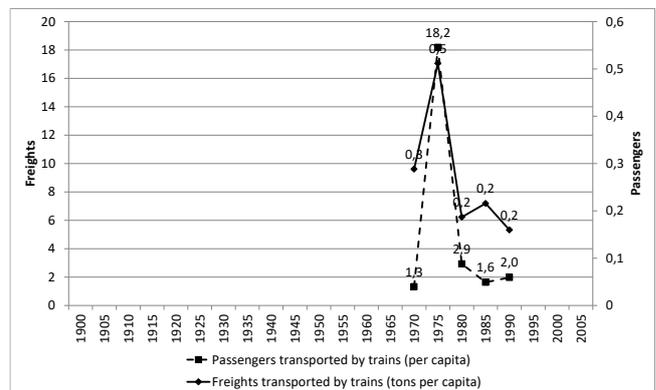


Fig. 4. Passengers and freights transported by trains

c) Postal services (letters per capita); telegraphic services (telegrams per capita). Except for the period 1975-1980 the dynamics of the postal services is increasing. The number of letters per capita rose from 10,2 in 1970 to 15,6 in 2000.

Therefore, in spite of the demographic boom and the development of new communication technologies like the Internet, letters remain a major means of communication unlike telegraphic services. Their dynamics was decreasing. There are two periods marked by a rise in telegraphic services: 1970-1975 and 1980-1985. However, this fact did not change the downward trend. The number of telegrams per capita fell from 0,11 in 1970 to 0,06 in 1995. Clearly, new communication technologies replaced telegraphic services.

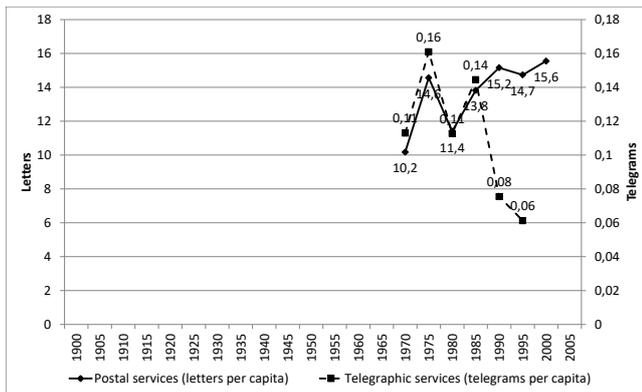


Fig. 5. Postal and telegraphic services

V. CONCLUSIONS

- The demographic policy of the elites of the countries from the First cluster of the developing countries is not very successful. The fall in the birth-rate and the death-rate is not very impressive. This leads to demographic pressure in the countries themselves as well as with relation to the neighbor countries. For example, the hostile relations between India and Pakistan definitely soured due to the demographic boom in these two countries.

- The decrease in the infant mortality as well as the increase in the life expectancy are positive factors.

- The development of the infrastructural characteristics can be evaluated as good. There is rapid growth in railway building and in the development of postal and telegraphic services. Later on, the importance of railways and telegraphic services declined due to the demographic boom and the development of new means of transportation and communication.

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