A C T A U N I V E R S I T A T I S L O D Z I E N S I S
FOLIA OECONOMICA 91, 1989

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ANALYSIS OF INVESTMENT PROCESSES IN CMEA COUNTRIES

In the period of economic development of CMEA countries (1960--1980) which we analyse, two stages can be distinguished: the years 1960-1975 characterized by great economic changes and by an increasing economic growth realized mainly due to high investment outlays, and the years 1976-1980 which brought about the economic crisis in Poland, Romania, Hungary and weakening of economic growth in other CMEA countries.

In the years 1960-1975 a significant equalization of production potentials and their structures in particular CMEA countries could be observed[1]. In all CMEA countries in the period analysed, the share of industry in national income formation increased considerably. (A relatively small increase was observed in Czechoslovakia and GDR, i.e. in the countries having the highest initial level of production potentials.) At the same time a distinct decrease of the share of agriculture in national income formation occurred, excluding USSR. The character of structural changes in particular CMEA economies, i.e. especially the changes in industry and agriculture, points out to the fact that the economic growth was mainly extensive. This is also reflected by comparisons of annual growth rates of investment outlays with the annual growth rate of national income (cf Table 1). The 1960-1975 investment outlays were highly dynamic especially in Romania, Poland and Bul-

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[1] A detailed analysis of investment policy in CMEA countries is presented by B i s k u p and Z a w a d z k i [2].

Table 1

Average annual rate of growth of national income produced (DN), investment outlays (NI), fixed assets (ST), and fixed assets in production sectors (STP)

Country	1961-1965				1966-1970				1971-1975			
	DN	NI	ST	STP	DN	NI	ST	STP	DN	NI	ST	STP
Bulgaria	6.7	7.9	7.6	10.2	8.8	12.5	8.8	10.9	7.8	8.6	7.9	8.9
Czechoslovakia	1.9	2.0	4.0	4.5	6.9	7.3	3.8	4.2	5.5	8.0	5.3	5.3
GDR	3.4	5.0	3.9	6.1	5.2	10.1	3.5	4.9	5.4	4.7	4.3	5.9
Poland gross	6.2	6.8	3.4	4.4	6.3	8.1	4.6	4.9	9.7	17.5	5.8	8.0
net	6.2				6.0				9.8			
Romania	9.1	11.3	6.7	8.0	7.6	11.2	8.6	10.7	11.4	11.5	9.6	11.8
Hungary	4.1	5.1	4.1	5.0	6.8	11.7	4.6	5.6	6.5	7.1	6.3	7.5
USSR	6.5	6.3	8.5	9.7	7.8	7.6	7.5	8.2	5.7	7.0	7.8	8.7

Source: Rocznik statystyki międzynarodowej GUS, Warszawa 1977.

garia (Table 2). The rate and nature of economic changes in particular CMEA countries can be described explicitly by comparisons of the average annual growth rate of national income produced, investment outlays and fixed assets (cf Table 1). Differences between the countries result first of all from some differences in the economic level, unequal industrialization and also from the differences in the structure of expenditures in particular sectors of the economy. This is connected with various geographical conditions (variety of natural resources and demographic conditions), and the situation in domestic and foreign trade of particular countries. Although the period of 1960-1975 was marked by a significant increase in investment outlays, it was very uneven. Up to 1970 the investment policy in most countries was expansive using mainly domestic resources. In 1970 some symptoms of the economic crisis were observed, the most visible ones in Poland. It was caused by the difference in growth rates of the national income

Table 2

Dynamics of investment outlays in the national economy
in the years 1961-1975
(1960 = 100)

Country	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Bulgaria	101	109	124	136	146	175	216	236	238	263	268	294	315	339	398
Czechoslo-vakia	107	104	93	103	110	121	125	135	149	157	165	179	196	214	231
GDR	101	104	106	117	127	137	149	165	190	204	205	213	230	240	249
Poland	157	118	121	127	139	150	167	182	197	205	220	272	340	416	476
Romania	118	133	143	157	171	187	218	244	260	289	319	353	382	433	500
Hungary	96	106	121	126	127	141	169	148	188	221	246	243	252	275	312
USSR	104	109	115	125	136	145	157	170	175	195	209	224	235	252	273

S o u r c e: Ekonomika Stran-Chlenov Soveta Ekonomicheskoj Vzaimpomoshchi. Dinamicheskie Ryady 1950-1975, Moskva 1976; Tablice problemu węzłowego 11.6 dotyczące nakładów inwestycyjnych, Warszawa 1978.

T a b l e 3

Share of investments in gross national income (in %)

Country	1961-1965	1966-1970	1971-1975
Bulgaria	25.7	30.9	30.6
Czechoslovakia	24.3	25.9	28.1
GDR	20.5	24.8	25.8
Poland	23.0	25.0	32.7
Romania	25.0	28.3	26.5
Hungary	26.8	30.5	32.3
USSR	26.0	25.9	26.5

S o u r c e: Statisticheskij Ezhegodnik Stran Chlenov Soveta Ekonomicheskoj Vzaimopomoshchi, 1971-1977, Moskva 1978.

and the expansive investment policy which was realized. Favourable economic and political conditions facilitated to overcome this crisis by pretty high foreign credits which in turn made it possible to continue the previous expansive investment policy. As a consequence, in most CMEA countries the share of investments in the national income increased in relation to the previous years (cf Table 3).

As a result of the investment policy being realized some equalizing of the level of economic development has been observed, especially in the production sector, mainly in industry. In other spheres of economic activity the picture is less encouraging. This refers especially to non-productive activities and agriculture (cf Table 4).

The years 1976-1986 mark bigger or less economic breakdown in all European CMEA countries. This points at the fact that the consequences of this crisis will be still significant in the next five years. In this period (1976-1980) significant difficulties appeared in the realization of investments. Among the sources of the difficulties apart from mismanagement and wrong planning, some other elements, frequently considered as a result of systems errors, are to be mentioned here:

Table 4

Differences in fixed assets and investments in CMEA countries (per capita) in 1960 and 1975
(the country having the highest level of a given index = 100)

Country	Investment									
	assets used in production process		outlays in industry		outlays in agriculture		outlays in residential building		outlays for research and development	
	1960	1975	1960	1975	1960	1975	1960	1975	1960	1975
Bulgaria	25.7	50.7	44.0	75.8	85.5	76.6	24.3	79.6	33.8	36.8
Czechoslovakia	100.0	100.0	100.0	87.5	100.0	81.2	100.0	100.0	96.7	100.0
GDR	67.2	79.0	89.6	100.0	51.4	69.5	58.7	62.3	77.5	84.9
Poland	39.6	44.7	35.1	81.3	26.8	67.1	35.8	99.8	20.5	28.2
Romania	-	-	37.9	84.5	42.6	63.8	17.0	94.4	17.9	30.3
Hungary	39.9	47.1	39.2	57.5	47.7	66.8	29.0	36.1	39.7	45.9
USSR	52.7	74.6	62.0	62.1	56.9	100.0	63.0	67.9	100.0	91.7

S o u r c e: M. S i k u l a, Ekonomicky rast, a vyrovnanie urovne ekonomickeho rozvoja krajin RVHP, Bratislava 1979, after B i s k u p, Z a w a d z k i [2].

1. Too large value of investments being realized, and thus distribution of financial resources to too many objects which in turn caused prolonged time for investment realization and postponed putting into operation of new investments. Therefore, the investments become less efficient.

2. Incorrect realization of investment imports - its main objective, being modernization of economy and dynamization of growth rate in exports, has not been achieved in any CMEA country.

3. Inappropriate investment structure - too high share of investments covering construction and assembly as well as too many preferences of industry at the cost of agriculture, transport, communication and environmental protection. Within industry special privileges had: machinery industry, metallurgy and chemical industry. Light and food industries belonged in most CMEA countries (excluding Hungary and GDR) to the "neglected" industries as far as investments were concerned which resulted infavourably on consumer's market.

4. Increased investment outlays were not accompanied by appropriate technological development.

Due to the above mentioned difficulties in investments realization in most CMEA countries a significant limitation of their level in 1976-1980 was planned. It appeared that the limitation of the level of investment outlays was not a simple process and the

T a b l e 5

Per cent increase of investment outlays in the years 1976-1979

Country	Plan	Realization
Bulgaria	10.3	13
Czechoslovakia	22.4	12.9
GDR	22.3	19.2
Poland	-7.6	-3.1
Romania	76.9	46.6
Hungary	7	19.7
USSR	13.4	15.6

S o u r c e: According to Economic Survey of Europe in 1979, United Nations, 1980, after B i s k u p, Z a w a d z k i [2] and Statistical Yearbook. CMEA Countries. 1982, New York 1985.

plan was overfulfilled (Bulgaria, Poland, Hungary, USSR). In Czechoslovakia, GDR and Romania the intended level of investments was not achieved but this level was planned too high, especially in Romania, taking into account the difficulties occurring already in the previous five-year period (Table 5). In the years 1976-1980 an increasing share of investment outlays for industry and construction in most CMEA countries (except Poland) was observed. In many countries the share of investment outlays for agriculture and forestry decreased (Table 6). However, it was forecasted that the

T a b l e 6

Share of investment outlays
in total outlays (in per cent)

Country	Years	Manufacturing and building industry	Agriculture and forestry
Bulgaria	1975	44	14.7
	1980	44.4	12.4
Czechoslovakia	1971-1975	41.1	11.5
	1976-1980	42.9	11.5
GDR	1971-1975	55.7	12.0
	1976-1980	56.2	10.3
Poland	1971-1975	47.0	15.3
	1976-1980	44.0	16.8
Romania	1971-1975	55.0	14.4
	1976-1980	55.1	13.8
Hungary	1975	34.6	16.0
	1980	35.4	14.6
USSR	1971-1975	38.8	20.2
	1976-1980	39.3	20.4

S o u r c e: Statistical Yearbook. CMEA Countries. 1982, New York 1985.

tendency of "shifting" the investments to agriculture and possibly to transportation and communication as well as to residential building would occur in all CMEA countries in the period 1981-1985. The consequence of an increase in the share of investment outlays in industry and construction in most CMEA countries both in the last and in the present five-year period (1971-1980) is an in-

crease in the share of fixed assets in those sectors in the years 1976-1980 and a planned increase in this share in the first years of the five-year period (1981-1985). In non-productive sectors in most countries the share of the total value of fixed assets decreased (Table 7).

T a b l e 7

Share in the total value of fixed assets (in %)

Country	Years	Fixed assets in		
		manufacturing and building industry	agriculture	non-production sectors
Bulgaria	1975	38.6	12.4	32.4
	1980	38.6	11.1	31.7
Czechoslovakia	1975	37.5	8.2	33.2
	1980	34.8	8.7	33.5
GDR	1975	41.9	8.1 (forestry ind.)	36.4
	1980	45.3	8.4	32.5
Poland	1975	29.7	15.9	38.9
	1980	33.2	16.1	37.2
Romania	1975	44.8	11.4	27.9
	1980	48	10.7	24.2
Hungary	1975	27.7	11.9	38.5
	1980	30.9	11.9	37.0
USSR	1975	33.5	13.3	35.9
	1980	34.8	13.6	34.1

S o u r c e: Statistical Yearbook. CMEA Countries. 1982. New York 1985.

The total indices of economic growth for the years 1976-1980 are presented in Table 8. It is very interesting to compare them with the indices of growth of investment outlays given in Table 9. This comparison is presented in Tables 10 and 11. For comparative reasons in Tables 8 and 10 the same values are given in brackets for the years 1971-1975. In many countries the limitation imposed on investments in the years 1976-1980 improved their efficiency as

Table 8

Average annual growth rate in the years 1976-1980 (in %)

Country	National income produced		Investment outlays of industry		Gross output of industry		Agriculture output		Exports	
Bulgaria	6.1	(7.8)	4.0	(8.6)	6.0	(9.1)	0.9	(2.9)	13.2	(10.0)
Czechoslovakia	3.7	(5.5)	2.8	(8.0)	4.6	(6.7)	2.1	(2.6)	6.3	(6.3)
GDR	4.1	(5.4)	3.7	(4.7)	4.9	(6.5)	1.2	(2.7)	6.6	(9.0[a])
Poland	1.2	(9.8)	-3.0	(17.5)	4.7	(10.4)	-1.7	(3.7)	4.0	(10.7)
Romania	7.0	(11.4)	8.5	(11.5)	9.6	(12.9)	4.2	(6.5)	15.2	(19.0)
Hungary	3.5	(6.5)	2.4	(7.0)	3.5	(6.4)	2.3	(4.6)	7.0	(9.4)
USSR	4.2	(5.7)	3.4	(7.0)	4.4	(7.4)	1.5	(0.6)	5.1	(4.9)

[a] In the years 1976-1979.
Note: In brackets - the growth rate in the years 1971-1975.
Source: Statistical Yearbook. CMEA Countries. 1982, New York 1985.

Table 9

Growth rate of investment outlays
in CMEA countries
in the years 1976-1980 (% of the previous year)

Country	Growth rate of investment outlays						
	1976	1977	1978	1979	1980	1976-1980	average annual in 1976-1980
Bulgaria	0.6	14.2	0.6	-2.2	7.5	21.5	4.0
Czechoslovakia	3.6	2.8	4.3	1.6	1.6	14.7	2.8
GDR	7.4	5.6	3.0	2.0	0.6	19.9	3.7
Poland	1.0	3.1	2.1	-7.9	-12.3	-15	-3
Romania	8.5	11.7	16.0	4.1	3.0	51	8.5
Hungary	-0.1	13.0	5.0	1.0	-6.1	12.4	2.4
USSR	4.5	3.7	6.0	0.7	2.2	18.2	3.4

Source: Statistical Yearbook. CMEA Countries. 1982, New York 1985.

Table 10

Average annual growth rate of national income produced,
of gross industrial output, agricultural output and exports
(%) vs. 1% average annual growth rate
of total investment outlays in the years 1976-1980
(in brackets - in the years 1971-1975)

Country	National income produced	Gross industrial output	Agricultural output	Exports
1	2	3	4	5
Bulgaria	1.5 (0.9)	1.5 (1.06)	0.225 (0.35)	3.3 (1.16)
Czechoslovakia	1.3 (0.7)	1.6 (0.84)	0.75 (0.325)	2.25 (0.78)
GDR	1.1 (1.1)	1.3 (1.4)	0.32 (0.57)	1.5 (1.9)
Poland	x (0.6)	x (0.59)	x (0.21)	x (0.61)
Romania	0.8 (1.0)	1.13 (1.12)	0.49 (0.56)	1.8 (1.6)

Table 10 (contd)

1	2	3	4	5
Hungary	1.5 (0.9)	1.46 (0.91)	0.96 (0.66)	2.9 (1.34)
USSR	1.2 (0.8)	1.29 (1.06)	0.44 (0.086)	1.5 (0.7)

S o u r c e: The author's calculations based on the data from Statistical Yearbook. CMEA Countries. 1982, New York 1985.

T a b l e 11

Average annual growth rate of gross output of industry and agriculture in the years 1976-1980 (in %) vs. 1% average annual growth rate of investment outlays in industry and agriculture, respectively

Country	Industry	Agriculture	Average annual growth rate of investment outlays in	
			industry	agriculture[a]
Bulgaria	1.22	0.75	4.9[b]	1.2[b]
Czechoslovakia	1.3	-	3.5	0
GDR	0.96	-	5.1	-0.1
Poland	-	-	-7.2	-0.7
Romania	1.00	0.49	9.6	8.5
Hungary	0.49	0.27	8.8[b]	8.5[b]
USSR	1.26	0.58	3.5	2.6

[a] Agriculture and forestry (excluding Poland).

[b] In current prices.

S o u r c e: The author's calculations based on the CMEA data bank and Statistical Yearbook. CMEA Countries.1982, New York 1985.

compared to the years 1971-1975. In all countries a low efficiency of investment outlays is observed in agriculture (cf Tables 10 and 11).

While analysing the economic development of CMEA countries, its breakdowns and their consequences for development of individual

countries and mutual relationships, attention is paid to similar developmental tendencies in different countries, development of identical industrial branches which makes mutual completion impossible in the situation of an economic crisis. On the other hand from the point of view of integration of these countries a positive element is a mutual equalizing of the levels of development of particular CMEA countries which might facilitate the economic exchange among these countries in the future [2]. A considerable decrease and often a limitation of investment outlays has an explicit effect on the value of fixed assets. It is difficult to evaluate this influence because of some delay in the reaction of fixed assets to changes in investment outlays. Besides, this effect weakens to some extent the freezing of outlays for investments being realized. A quick increase of investments enhances the growth of freezing (due to limited investment possibilities) which weakens somehow the increase in fixed assets in the periods of growing investment outlays. In turn, the decrease of investment outlays induces a possibility of faster de-freezing of outlays for investments being realized which makes the fixed assets grow in the period when investment outlays are being limited.

The formation of fixed assets in particular countries and the comparison of growth rates of fixed assets with those of national income produced in the years 1976-1980 are presented in Tables 12 and 13, respectively. As can be seen, despite that in this period the growth rate of investments is slowed-down and in some countries the level of investments is lowered, these facts are not reflected in the growth rate of fixed assets. A decrease in marginal productivity of fixed assets is observed, the sharpest decrease being observed in Poland.

All the above described processes are subject to econometric modelling within the investment sector (apart from consumption, production, foreign trade and population). These models are built for six CMEA countries - Bulgaria, Czechoslovakia, GDR, Romania, Hungary and the Soviet Union.

From the point of view of economic development in particular countries the investments will be of special interest mainly as a factor affecting the production growth, since through investments the means of production increase and the gross output grows in the next production periods.

T a b l e 12

Increase of fixed assets in the years 1976-1980
(% of the previous year)

Country	Increase of fixed assets					Average annual growth rate of fixed assets	
	1976	1977	1978	1979	1980	1971-1975	1976-1980
Bulgaria	7.7	9.2	6.9	18.5	7.1	7.9	9.8
Czechoslovakia	6.1	6.0	4.8	4.0	5.0	5.3	5.2
GDR	4.6	4.7	4.1	4.4	4.3	4.3	4.4
Poland	7.3	7.6	7.9	6.0	4.4	5.8	6.6
Romania	10.1	9.7	8.9	-	-	10.1[b]	9.5[c]
Hungary	3.7	44.6	5.9	6.0	-	5.5[a]	13.9[d]
USSR	6.9	6.9	7.0	6.4	6.5	7.8	6.7

[a] 1972-1975.
[b] 1973-1975.
[c] 1976-1978.
[d] 1976-1979.

S o u r c e: The author's calculations based on the CMEA data bank and Statistical Yearbooks 1976-1982, New York 1985.

On the other hand, investments are the result of some decision-making processes strictly connected with the value of the final product and its distribution into accumulated and consumed parts. The determination of factors affecting the investment decisions is widely presented in the literature.

In the case of formalizing this problem apart from the question of the form of investment function it is also important to answer the question what kind of information affects the process of investment decision-making and which economic values are the carriers of this information. In capitalist countries, in quite rich literature on the subject[2] among the factors determining investments the volume of production, the level of income or the rate of its changes, fluctuating investment resources of the firm, remunerativeness of production usually determined by the rate of

[2] A vast review is given by P r y m a k a [14].

Table 13

Increase of national income produced (%) vs. 1% increase of fixed assets

Country	Increase of national income produced (%) vs. 1% increase of fixed assets					Average annual growth rate of national income produced (%) vs. 1% average annual growth rate of fixed assets	
	1976	1977	1978	1979	1980	1971-1975	1976-1980
Bulgaria	0.84	0.68	0.81	0.36	0.8	0.98	0.62
Czechoslovakia	0.67	0.73	0.85	0.75	0.58	1.03	0.71
GDR	0.78	1.1	0.88	0.86	0.97	1.25	0.93
Poland	0.93	0.66	0.38	x	x	1.68	0.18
Romania	1.0	0.89	0.84	-	-	1.09	0.92
Hungary	0.81	0.18	0.76	0.38	-	1.2	0.32
USSR	0.85	0.65	0.73	0.34	0.54	0.73	0.63

S o u r c e: The author's calculations made on the basis of information from the CMEA data bank of the Institute of Econometrics and Statistics, University of Łódź.

profits from capital and other financial factors such as price indices for investment goods, depreciation rate, bank rate, etc. are mentioned.

It does not seem possible that there is one good theory of investment[3]. However, taking into account the type, place and time of investment decision-making, we may deal with a larger influence of one type of factors in relation to another one.

Considering investment functions in the case of centrally planned economy, one should take into account specific features of our economic system, and especially of the financial system.

Taking as a starting point that investment decision-making follows from the demand for a given output and from the possibilities of satisfying this demand, among the factors affecting the investment decisions, only these are taken into account which des-

[3] Interesting remarks on the subject are given by K o r n a i [9].

cribe the influence of the past (the volume of production, the value of fixed assets in the previous period) and these which determine the influence of the future (the value of production being desirable).

Among the information affecting the investment decision-making in a given year the data concerning investment efficiency and import possibilities seem to be important, too. The latter element has great significance in a country in which development is affected by purchase of modern technologies.

We assume that the results of investment decisions are the determined investment outlays which in turn cause an increase in a new stock of fixed assets - investments put into operation[4] which can be described approximately by the value of difference between fixed assets in the period t and in the year t - 1 if we omit the values of depreciation and shifts as well as reestimations of capital (see Figure 1). Thus

$$I_t = K_t - K_{t-1}$$

which follows from

$$I_t = K_t - K_{t-1} + KS_t$$

at

$$K_t = K_{t-1} + I_t - KS_t$$

Hence, generally

$$I_t = f(J_t, J_{t-1}, J_{t-2}, \ldots)$$

where:

K - fixed assets;

KS - value of depreciation and shifts in fixed assets; no statistical data on this value are available;

I - investments put into operation (total, no statistical data available, except Poland);

J - investment outlays, total.

[4] We have no statistical data on investments put into use in CMEA countries (excluding Poland).

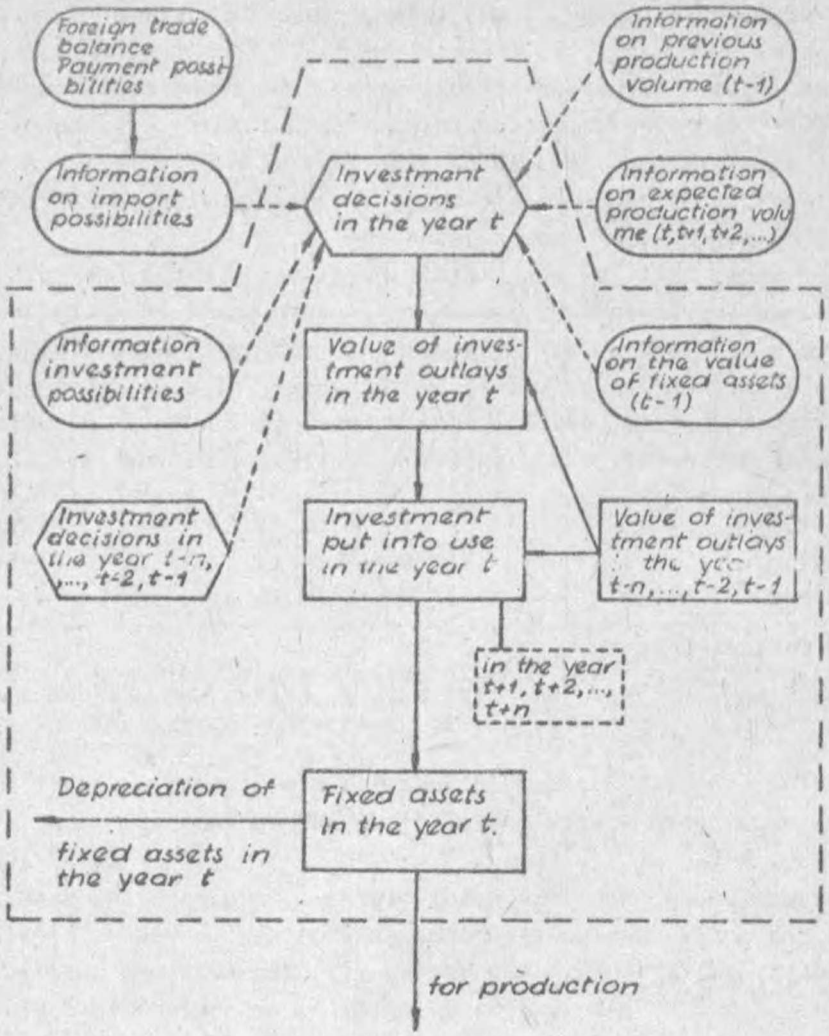


Fig. 1. Relationships in the investment sector analyzed at construction of econometric models for CMEA countries

The value of investment outlays in the year t is not only the result of investment decisions made in that year but also in the previous years. The way in which this dependence is formed, follows directly from the realization of investment outlays in the previous years.

The investments put into operation in the year t include the investments started every year. The degree of realization in the year t of investment outlays from the previous years was the subject of several hypotheses. Most frequently the hypothesis assuming geometrically decreasing lag distribution was realized, i.e. a decreasing to zero influence of lagged variable on an explanatory variable. Almon's polynomial lag distribution was also often used. It assumed that the effect of the lagged variable on the explanatory variable increases with an increase of the lag up to the moment when this effect starts to decrease again.

For analytical purposes the following general model of the form

$$I_t = \alpha_o + \sum_{i=0}^{m} \beta_i I_{t-i} + \varepsilon_t$$

can be formulated. It can be also written as:

$$I_t = \alpha_o + \beta \sum_{i=0}^{m} w_i I_{t-i} + \varepsilon_t.$$

Usually a finite number of lags m is assumed. It is assumed also that the parameters standing at lagged variables have a determined distribution.

We took in our study:

1. Koyck's lag distribution which assumed that weights decrease geometrically

$$w_i = \lambda^i, \quad \text{for } i = 0, 1, \ldots$$

where $0 < \lambda < 1$.

It follows that particular weights w_i will fulfil the following condition:

$$w_o > w_1 > w_2 > \ldots$$

An average lag for this distribution is:

$$\bar{w} = \frac{\lambda}{1 - \lambda}.$$

For the estimation we used Koyck's transformation of the form:

$$I_t = \lambda\alpha + \beta I_t + \lambda I_{t-1} + \xi_t.$$

2. Almon's polynomial distribution, i.e. weight distribution dependent on polynomial degree and the assumed constraints, where:

$$w_i = \lambda_0 + \lambda_1 i + \lambda_2 i^2 + \ldots + \lambda_n i^n$$

n = 2, 3, ... is the assumed polynomial degree.

In our studies we took alternatively 2, 3, and 4th polynomial degree assuming the lag from 2 to 5 periods.

To determine particular elements of fixed assets in the year t, i.e. the value of fixed assets which remained after the period t - 1, and the value of investments put into use, we tried to estimate for each country the following functions:

$$K_t = \alpha_0 + \alpha_1 K_{t-1} + \alpha_2 J_t + \varepsilon_t$$

$$K_t = \alpha_0 + \alpha_1 K_{t-1} + \alpha_2 \frac{J_t + J_{t-1}}{2} + \varepsilon_t$$

$$K_t = \alpha_0 + \alpha_1 K_{t-1} + \alpha_2 \frac{J_t + J_{t-1} + J_{t-2}}{3} + \varepsilon_t$$

$$K_t = \alpha_0 + \alpha_1 K_{t-1} + \alpha_2 \frac{J_{t-1} + J_{t-2}}{2} + \varepsilon_t$$

$$K_t = \alpha_0 + \alpha_1 K_{t-1} + \alpha_2 \frac{J_{t-1} + J_{t-2} + J_{t-3}}{3} + \varepsilon_t$$

where:

$K_t(K_{t-1})$ - fixed assets in the year t (in the year t - 1);

$J_t(J_{t-1}, J_{t-2})$ - investment outlays in the year t (in the year t - 1, t - 2).

While analyzing statistical series some difficulties were encountered in the determination of the lag in particular invest-

ment realizations and in the way of realizing investment processes in individual countries. Thus, several a priori versions with the structure of lag distribution and maximum lags were assumed. All these versions were tested for each of the seven countries, and calculated separately for the whole economy of particular countries:

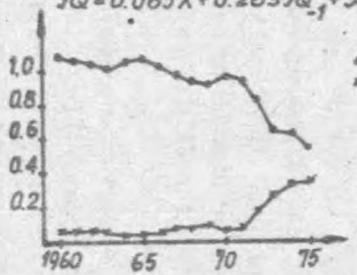
- industry (Q),
- construction (B),
- forestry (L),
- agriculture and forestry (RL),
- transport and communication (T),
- others (O),
- production sectors (M),
- non-production sectors (N).

Selected results (the 1960-1975 sample) for particular countries are presented in tables enclosed (Appendix 1). Since we have no information about the investments put into use (I_t) we assumed as explained variables the increment of fixed assets in the year t (K_t). While choosing the presented results we took into account the determination coefficient (R^2), significance of the effect of particular explanatory variables and the possibility of reasonable economic interpretation of the obtained parameters of the models. In each case OLS was used in the estimation, for lag distribution functions with given geometric distribution or Almon's distribution appropriate transformations were used. In the estimation of fixed assets function we tried to avoid collinearity of explanatory variables by introducing an average variable, i.e. investment outlays for two or three periods. The results obtained so far are unfortunately unsatisfactory for preparing forecasts. They reveal, however, a general view on the formation of investment processes.

The hypothesis on geometric lag distribution proved to be valid only for Czechoslovakia (for total economy, for non-production sectors and for other sectors). The Almon distribution, despite significant estimates of the parameters at explanatory variables, not always gives sufficiently high adjustment degree (R^2). For Czechoslovakia the correct results were obtained at the two-period lag and weight distribution according to polynomial of the second degree with the conditions $F(-1) = 0$, $F(m + 1) = 0$ (for the whole economy, production sector, construction and agriculture).

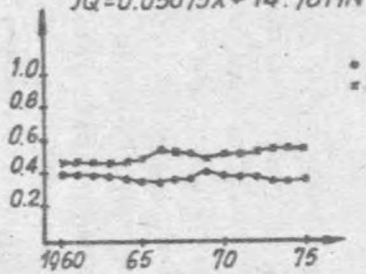
Poland [4]

$JQ = 0.063X + 0.263JQ_{-1} + 54.50MNM - 10350$



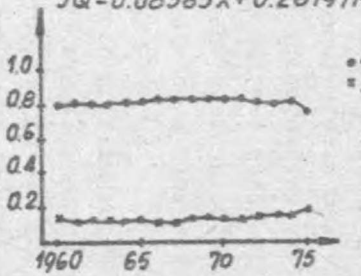
Czechoslovakia [2]

$JQ = 0.05075X + 14.76MN + 3065$



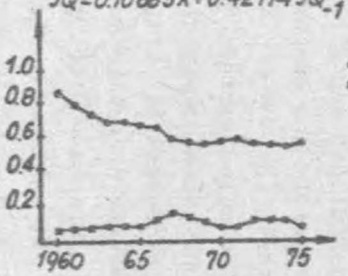
USSR [7]

$JQ = 0.08385X + 0.28197MD + 1437$



Romania [5]

$JQ = 0.10683X + 0.42114JQ_{-1} + 9.2013MNM - 3056$



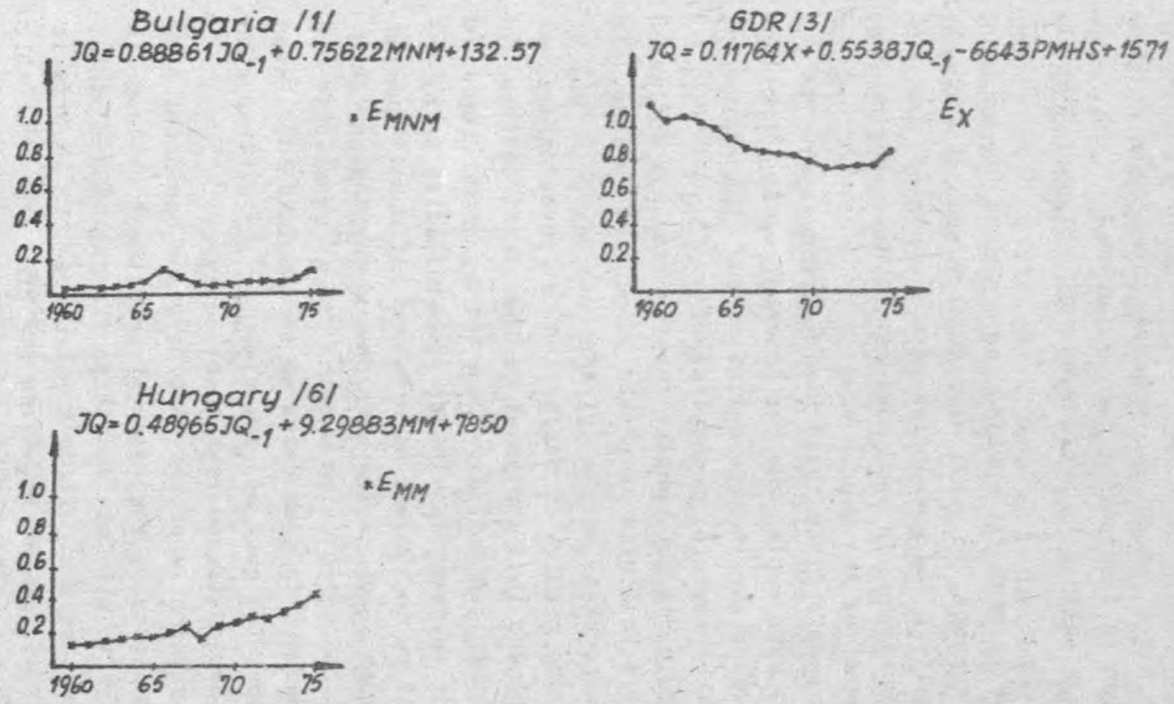


Fig. 2. Elasticities of investment outlays in industry in the years 1960-1975

JQ - investment outlays in industry (million, domestic currency); JQ -investment outlays in industry in the year t - 1; X - produced national income (million, domestic currency); MD - total imports (constant 1970 prices, million dollars); MNM - imports of machinery and equipment from -CMEA countries (million dollars); MM - imports of machinery and equipment (million dollars); MN - total imports from non-CMEA countries (million dollars); PMMS - world price index for machinery and equipment (1970 = 1)

For Bulgaria and GDR for most sectors it proved to be justified to assume a five-period lag and polynomial of the second degree for weight distribution, under the conditions $F(-1) = 0$ and $F(m+1) = 0$. For Poland the Almon weight distribution proved to be justified only for construction (a four-period lag, polynomial of the degree equal 3), and for agriculture (a two-period lag, polynomial of the degree equal 2).

For the USSR the assumed five-period lag appeared to be right only for the total economy. In particular sectors such as industry construction, agriculture the assumption of a two-period lag appeared to be more justified. In each case weight distribution was given by the polynomial of the degree equal 2.

In an extended sample (1960-1978) beside fixed assets (K), investment outlays (J) were explained. For Czechoslovakia functions of investments and fixed assets were estimated for transport and communication and other sectors, trade including (TO).

In the case of Bulgaria and Hungary the function was estimated on the basis of statistical data expressed in current prices, in other countries - in constant prices (cf Appendix 2).

On the basis of the results of estimation of investment functions it can be concluded that the value of investment outlays in CMEA countries is determined mostly by investment possibilities and not by the demand for investments. These possibilities were determined first of all by the volume of produced national income and of imports. This volume is connected with demand for modern technologies in all CMEA countries which purchase them especially in the recent years. However, in some cases we should take into account the continuation of a part of investments by introducing the variable of one-period lagged investment outlays.

The variable expressing import of machinery and equipment (MM or MNM) affected significantly the value of investment outlays in the sector of industry in all CMEA countries (in the USSR - total imports). In other sectors a significant influence of imports is observed in Bulgaria and Poland. In Poland it is characteristic that this is an effect of the variable expressing imports from non-CMEA countries (MN). In the USSR the variable of total imports affects the value of investment outlays in agriculture and forestry (apart from the above mentioned industry). In GDR the influence of

world price index for machinery and equipment (OMHS) on the value of investment outlays in industry proved to be significant.

Figure 2 presents a formation of investment outlays, elasticities in industry. The elasticities of investment outlays against imports in 1975 attained the similar level in Poland, Czechoslovakia and Hungary. While in Czechoslovakia this elasticity was pretty stable in the years 1960-1975, in Hungary and especially in Poland this elasticity had to increase before it reached the level attained in Czechoslovakia. To compare the investment outlays functions in industry in the years 1960-1975 we present the results of estimation of these functions for the period of 1963-1978.

Bulgaria

$$JQP1 = 0.86138\ JQP1_{-1} + 0.61541\ MNM1 + 197.17 \qquad R^2 = 0.963$$
$$(t) \qquad (10.33) \qquad (2.14) \qquad (2.19)$$

Czechoslovakia

$$JQ2 = 0.08666X2 + 2.7338MN2 + 1.97 \qquad R^2 = 0.977$$
$$(t) \quad (2.58) \qquad (1.5) \qquad (1.71)$$

GDR

$$JQ3 = 0.14903X3 + 0.39044\ JQ3_{-1} - 1687PMHS + 1571 \qquad R^2 = 0.989$$
$$(t) \quad (2.42) \qquad (1.43) \qquad (1.44) \qquad (2.01)$$

Poland

$$JQ4 = 0.7505X4 + 0.32481JQ4_{-1} + 7901MNM4 - 11109 \qquad R^2 = 0.998$$
$$(t) \quad (6.14) \qquad (5.84) \qquad (12.92) \qquad (1.63)$$

Romania

$$JQ5 = 0.10394X5 + 0.52146JQ5_{-1} + 12MNM5 - 6846 \qquad R^2 = 0.991$$
$$(t) \quad (1.66) \qquad (1.49) \qquad (1.87) \qquad (2.38)$$

Hungary

$$JQP6 = 0.6847JQP6_{-1} + 7.02394MM6 + 5452 \qquad R^2 = 0.977$$
$$(t) \quad (3.04) \qquad (2.19) \qquad (1.44)$$

USSR

$$JQ7 = 0.0753X7 + 0.43246MD7 + 2115 \qquad R^2 = 0.998$$
$$(t) \quad (12.08) \qquad (4.82) \qquad (3.03)$$

As follows from the equations presented in Appendix 1 for the sample covering the period of 1960-1975 the form of the function of investment realization

$$I_t = f(I_t, I_{t-1}, I_{t-2}, \ldots)$$

for particular CMEA countries has not been determined satsifactorily from the point of view of forecasts. That is why for the 1963-1980 sample the fixed assets functions were estimated. Only in the case of GDR the fixed assets functions for the whole economy were replaced by the function of fixed assets increment.

All functions of fixed assets are characterized by a high determination coefficient (R^2 approaching 1) and in most cases by significant estimates of parameters. Although from the point of view of statistical evaluation these functions do not arouse doubts their evaluation from the point of view of their merits, concerning especially the parameters standing at the variable of one-period lagged fixed assets, is not explicit (except for the case when this parameter exceeds unity). The evaluation is hindered by the fact that we do not know the value of depreciation and shifts in fixed assets in particular sectors of the national economy of each CMEA country. As far as the realization of investment outlays is concerned, on the basis of the results obtained, we can presume that on the average most of the investment outlays in particular sectors of CMEA economies are realized in the periods following the year when the outlays were born (Table 14).

T a b l e 14

Production sectors - realization of investment outlays (average in years)

Country	Industry	Construction	Transport and communication	Agriculture and forestry	Other sectors including trade	Production sectors
Bulgaria	4	2	4	4	2	3
Czechoslovakia	2	3	2 [TO]	2	x	3
GDR	2	2	3	3	4	3
Poland	3	3	4	2	2	3
Romania	4	4	2	3	2	3
Hungary	3	-	2	-	3	3
USSR	3	2	2	2	3	3

S o u r c e: The author's calculations.

Table 15 presents a comparison of data on an average cycle of investment realization in Poland.

T a b l e 15

Average cycle of investment realization

Country	Industry	Construc-tion	Agriculture	Forestry	Transport and communica-tion	Trade
Poland	3.99	2.45	1.65	1.75	2.80	2.00

S o u r c e: The author's calculations based on Statistical Yearbook. Investments 1979. No. 122, Central Statistical Office, New York.

The comparison of both Tables allows us to observe significant differences in the estimation of investment cycle for industry (Q) and transport and communication (T). It should be taken into account that the investment cycle calculated on the basis of statistical data is an average for the years 1971-1978, while the equations were estimated on the basis of 1963-1978 sample. In spite of this the evaluation of investment cycle for transport and communication seems to be highly overestimated. Unfortunately,we have no similar data for other countries which makes a full comparative analysis of the investment cycle for all CMEA countries impossible. The delay in publication of our analysis makes it necessary to expand it by a short statistical analysis for the period 1981-1985.Investment outlays in all CMEA countries, except for Bulgaria and USSR, have been considerably limited in 1981-1985 (see Table 16). In case of Poland the decrease was especially deep, with further negative effects on the rate of economic growth.

Simultaneously, all the countries took measures towards achieving economic growth by more intensive means. Plans declared significant changes in the structure of CMEA countries modernization of economic mechanisms along with more active stimulation of technical progress [17].

Unfortunately some of them (except for GDR, perhaps) recorded significant advances neither in the structure of economy [3], [17] nor in the efficiency of economic performance. This accompanied by limitations of investment outlays (considerable reductions in

T a b l e 16

Dynamics of investment outlays (1980 = 100)

Country	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Bulgaria	82.4	93.9	94.5	92.6	100	108	114	115	115	117.9
Czecho-slovakia	89.7	92.4	96.1	98	100	96	94	94	90	95.9
GDR	91	96	99	100	100	103	97	97	93	95.8
Poland	117.6	121	123.5	113.6	100	78	68	75	83	88.1
Romania	71.9	80	93.4	97.1	100	93	90	92	98	99.6
Hungary	88.8	100	105.3	106.4	100	95	93	90	87	87
USSR	88.3	91.8	97.4	98	100	104	107	113	116	119.4

S o u r c e: The author's calculations based on the data from Statisticheskij Ezhegodnik Stran Chlenov Soveta Ekonomicheskoj Vzaimopomoshchi. 1984-1985, Moskva 1985-1986.

case of Poland) negatively influenced growth of CMEA economies. Additional hindrance had its roots in problems of balance of payments of Poland, Romania and Hungary. Poland was obviously in the most difficult situation, especially that the negative effects of the years 1980-1982 have not been compensated in the next years of the five year plan widening the gap between Poland and the rest of the CMEA countries (see Table 17). As mentioned above in all CMEA countries the necessity of structural changes in economic mechanisms is discussed. This implies however appropriate changes in investment plans, changes which in economic reality have not been observed, yet. For example the share of outlays on construction and assembly works (as opposed to outlays on machinery) is still high. In the last few years in Romania, Hungary, Poland and Bulgaria the share has increased while plans declared the intention to restrict construction works in favour of modernisation (see Table 18). Also jumps of the rate of growth of investment outlays influence negatively the process of fixed capital formation [3], [17]. Since 1983 investment outlays in Poland have grown faster than the possibilities of turning them into functioning capital stock, with resulting increase in the amount of money frozen in the projects - under - construction.

Table 17

Average annual rate of growth of national income produced (DN), investment outlays (NI), fixed assets (ST) and fixed assets production sectors (STP) in the years 1981-1985

Country	DN	NI	ST	STP	Investment outlays in	
					agriculture	industry
Bulgaria	3.7 (3.7)	3.4	6.7	6.5	6.9	3.2
Czechoslovakia	1.6 (1.4)	-1.2	4.3	4.8	1.3	0.6
GDR	4.4 (5.1)	-1.0	4.0	5.3	3.3	6.7
Poland	(3.5- -0.8 5.6)[a]	-2.5	2.8	2.7	-1.1	3.8
Romania	4.4 (7.5)	-0.5	8.6	9.3	4.9	2.6
Hungary	1.3 (2.7- -3.2)	-3.7	3.9	3.9	2.9	1.3
USSR	3.7 (3.4)	3.8	6.1	6.4	3.4	0.6

[a] In the year 1983-1985.

Source: The author's calculations based on the CMEA data bank of the Institute of Econometrics and Statistics, University of Łódź and Statystyka rozwoju krajów RWPG, "Życie Gospodarcze" 1986, nr 12.

Table 18

Share of two dominant items in investment

Country	Construction and assembly works			Machinery		
	1978	1982	1984	1978	1982	1984
1	2	3	4	5	6	7
Bulgaria	42.4	51.1	52.6	41.4	35.1	35.3
Czechoslovakia	58.5	56.8	56.6	39.8	40.7	41.7
GDR	43.3	43.9	41.9	48.2	47.1	46.1
Poland	51.1	65.1	65.0	44.2	30.5	30.5
Romania	42.3	45.2	46.3	48.4	43.4	43.0

Table 18 (contd)

1	2	3	4	5	6	7
Hungary	56.0	59.8	62.5	37.0	31.7	28.7
USSR	54.0	49.8	51.9	36.0	38.9	36.9

S o u r c e: Statisticheskij Ezhegodnik Stran Chlenov Soveta Ekonomicheskoj Vazaimopomoshchi. 1984, Moskva 1985.

Significant restrictions in the 1980-1982 investment further worsened the age structure of existing capital stock. All CMEA countries plan considerable increase in investment in 1986-1990 as compared with that of 1981-1985. Structural changes in the CMEA economies were announced, however only in the case of GDR one can observe increase in investment into modern industries. Unfavourable phenomena e.g. starting too many investment projects without real possibilities of completing them and foreign trade balance (especially in Poland, Romania and Hungary) impose significant limitations to economic growth. As a result in many cases the import of investment goods, necessary for modernization of the economy cannot be fully realized. Improper structure of investment preserves existing structure of economy. In case of Poland investments (planned for 1986-1990) still prefer the energy and fuel producing industries, as well as metallurgy and mineral industries (49% of total investment) [4]. In addition the intended reduction of consumption of raw materials and fuels per unit of output does not reach the expected amount (especially Bulgaria and Romania experienced energy shortages in the last years). Which way and how fast will CMEA countries cope with these problems - depends to a great extend on changes in their economic mechanisms.

So far, the most significant changes have been taking place in Hungarian economy, yet in the recent period we can observe an increasing interest in economic reform in the rest of CMEA countries.

Next we shall present the whole system of equations of investment outlays and fixed assets.

Appendix

Equations for fixed assets (1960-1975 sample)

The following notation was used in Appendix 1 and 2:

t - Student t-ratio,

R^2 - determination coefficient,

D-W - Durbin-Watson statistic.

Variables:

1. The first letter denotes the group to which the variable belongs:

K - fixed assets,

J - investment outlays,

M - imports.

2. The second letter denotes the economic sector:

Q - industry,

B - construction,

T - transport and communication,

RL - agriculture and forestry,

O - other sectors including trade,

M - production sectors,

N - non-production sectors.

3. In the case of imports:

MN - imports from non-CMEA countries,

MM - imports of machinery and equipment,

PMMS - world price index for machinery and equipment.

BULGARIA (1)

Explanatory variables / Variables explained	JQ1 JB1 JT1 JN1 JJ1	$JQ1_{-1}$ $JB1_{-1}$ $JT1_{-1}$ $JN1_{-1}$ JJ_{-1} $JM1_{-1}$	$JQ1_{-2}$ . . . $JM1_{-2}$	$JQ1_{-3}$ . . . $JM1_{-3}$	$JQ1_{-4}$ . . . $JM1_{-4}$	$JQ1_{-5}$ . . . $JM1_{-5}$
ΔKQ1 (t)	0.107 (6.189)	0.179 (6.189)	0.214 (6.189)	0.214 (6.189)	0.179 (6.189)	0.107 (6.189)
ΔKB1 (t)	0.107 (5.633)	0.179 (5.633)	0.214 (5.633)	0.214 (5.633)	0.179 (5.633)	0.107 (5.633)
ΔKT1 (t)	0.107 (8.268)	0.179 (8.268)	0.214 8.268	0.214 8.268	0.179 8.268	0.107 8.268
ΔKN1 (t)	0.107 (8.268)	0.179 (8.268)	0.214 (8.268)	0.214 (8.268)	0.179 (8.268)	0.107 (8.268)
ΔK1 (t)	0.107 (13.7)	0.179 (13.7)	0.214 (13.7)	0.214 (13.7)	0.179 (13.7)	0.107 (13.7)
ΔKM1 (t)	0.107 (9.16)	0.179 (9.16)	0.214 (9.16)	0.214 (9.16)	0.179 (9.16)	0.107 (9.16)
KB1 (t)						
KT1 (t)						

Appendix 1

$KB1_{-1}$ $KT1_{-1}$	$\frac{(JB1+JB1_{-1}+JB1_{-2})}{3}$ $\frac{(JT1+JT1_{-1}+JT1_{-2})}{3}$	Const	R^2 D-W	Notes
		230.9 (1.85)	0.732 1.950	polynomial degree = 2 condition: F(-1) = 0 F(+1) = 0
		8.478 (0.653)	0.694 1.295	polynomial degree = 2 condition: F(-1) = 0 F(+1) = 0
		40.08 (1.28)	0.830 2.099	polynomial degree = 2 condition: F(-1) = 0 F(m+1) = 0
		117.918 (1.906)	0.803 2.155	polynomial degree = 2 condition: F(-1) = 0 F(m + 1) = 0
		409.43 (2.945)	0.931 1.36	polynomial degree = 2 condition: F(-1) = 0 F(m+1) = 0
		299.28 (1.916)	0.857 1.717	polynomial degree = 2 condition: F(-1) = 0 F(m + 1) = 0
0.90786 (7.77)	0.3738 (1.7)	17.60 (1.63)	0.996 1.987	
0.92316 (8.30)	0.5399 (1.69)	190.55 (0.89)	0.997 2.27	

Explanatory variables / Variables explained	J2 JPO2 JN2 JM2 JB2 IR2	$J2_{-1}$ . . . $JR2_{-1}$	$J2_{-2}$ . . . $JR2_{-2}$	$J2_{-3}$ . . . $JR2_{-3}$	$J2_{-4}$ . . . $JR2_{-4}$	$J2_{-5}$ . . . $JR2_{-5}$
ΔK2	0.0052	0.00253	0.00123	0.0006	0.00029	0.00014
(t)	(2.94)	(2.16)	(2.16)	(2.16)	(2.16)	(2.16)
ΔKPO2	0.005	0.00310	0.00190	0.00117	0.00072	0.00045
(t)	(3.08)	(3.83)	(3.83)	(3.83)	(3.83)	(3.83)
ΔKN2	0.007	0.00299	0.00127	0,00055	0.00023	0.00098
(t)	(3.74)	(2.02)	(2.02)	(2.02)	(2.02)	(2.02)
ΔKM2	0.3	0.4	0.3			
(t)	(12.058)	(12.058)	(12.058)			
ΔKB2	0.3	0.4	0.3			
(t)	(11.848)	(11.848)	(11.848)			
ΔKR2	0.134	0.317	0.55			
(t)	(1.142)	(4.669)	(2.815)			
KN2						
(t)						
KQ2						
(t)						
KN2						
(t)						
K2						
(t)						

$KN2_{-1}$	$\frac{JN2+JN2_{-1}}{2}$	$\frac{JM2+JM2_{-1}+JM2_{-2}}{3}$ $\frac{J2+J2_{-1}+J2_{2}}{3}$	Const	R^2 D-W	Notes
			-10.25 (1.77)	0.94 2.28	assumption: geometrical distribution
			-0.46 (1.10)	0.912 2.05	assumption:geometrical distribution
			-5.29 (2.61)	0.94 2.13	assumption:geometrical distribution
			-20.39 (4.18)	0.895 1.402	polynomial degree =2 F(-1) = 0 F(m+1) = 0
			-0.752 3.335	0.892 2.519	polynomial degree = 2 assumption: F(-1) = 0 F(m + 1) = 0
			-6.694 (4.476)	0.798 2.36	polynomial degree = 2 F(-1) = 0
0.974 (30.05)	0.0079 (4.65)		-2.296 (0.27)	0.999 (2.284)	
0.996 (21.42)	0.0055 1.58		-8.51 (1.89)	0.999 1.301	
0.939 (22.67)		0.006 (3.22)	-4.969 (0.62)	0.999 1.869	
0.93 27.77		0.0084 (4.63)	3.639 (0.25)	1 2.23	

GERMAN DEMOCRATIC REPUBLIC (3)

Appendix 1 (contd)

Variables explained \ Explanatory variables	JN3 JB3 J3 JQ3 JM3	$JN3_{-1}$ . . $JM3_{-1}$	$JN3_{-2}$ . . $JM3_{-2}$	$JN3_{-3}$ $J3_{-3}$ $JQ3_{-3}$ $JM3_{-3}$	$JN3_{-4}$ . . $JM3_{-4}$	$JN3_{-5}$ . . $JM3_{-5}$	$KQ3_{-1}$ $KB3_{-1}$ $KT3_{-1}$ $KRL3_{-1}$	$\frac{JQ3+JQ3_{-1}}{2}$	$\frac{JB3+JB3_{-1}+JB3_{-2}}{3}$ $\frac{JT3+JT3_{-1}+JT3_{-2}}{3}$ $\frac{JRL3+JRL3_{-1}+JRL3_{-2}}{3}$	Const	R^2 D-W	Notes
ΔKN3 (t)	0.107 (5.663)	0.179 (5.663)	0.214 (5.663)	0.214 (5.663)	0.179 (5.663)	0.107 (5.663)				0.676 (1.528)	0.696 1.739	polynomial degree = 2 F(-1) = 0 F(m + 1) = 0
ΔKB3 (t)	0.3 (9.281)	0.4 (9.281)	0.3 (9.281)							0.031 (0.65)	0.835 0.914	polynomial degree = 2 F(-1) = 0 F(m + 1) = 0
ΔK3 (t)	0.0 (0.0)	0.143 (12.737)	0.229 (12.737)	0.257 (12.737)	0.229 (12.737)	0.143 (12.737)				4.115 (4.058)	0.921 1.664	polynomial degree = 2 F(0) = 0 F(m + 1) = 0
ΔKQ3 (t)	0.0 (0.0)	0.143 (8.489)	0.229 (8.489)	0.257 (8.489)	0.229 (8.489)	0.143 (8.489)				1.603 (1.797)	0.837 1.239	polynomial degree = 2 F(0) = 0 F(m + 1) = 0
ΔKM3 (t)	0.0 (0.0)	0.143 (9.364)	0.229 (9.364)	0.257 (9.364)	0.229 (9.364)	0.143 (9.364)				3.401 (3.051)	0.862 0.96	polynomial degree = 2 F(0) = 0 F(m + 1) = 0
KQ3 (t)	0.0069 (1.15)						0.973 (12.02)			2.997 (0.81)	0.998 1.136	
KQ3 (t)							0.886 (8.04)	0.0067 (1.62)		6.87 (1.39)	0.999 1.187	
KB3 (t)							0.949 (41.77)		0.634 (5.46)	0.21748 (3.92)	0.999 1.914	
KT3							0.94064 (14.52)		0.00401 (1.55)	1.0467 (0.89)	0.995 1.583	
KRL3 (t)							0.9346 (7.86)		0.0002 (0.79)	1.467 (1.05)	0.994 2.012	

POLAND (4)

Appendix 1 (contd)

Variables explained \ Explanatory variables	JB4 JR4 JN4	$JB4_{-1}$ $JR4_{-1}$	$JB4_{-2}$ $JR4_{-2}$	$JB4_{-3}$	$JB4_{-4}$	$KN4_{-1}$	Const	R^2 D-W	Notes
ΔKB4	0.143	0.229	0.257	0.229	0.143		1 799.6	0.698	polynomial
(t)	(5.886)	(5.886)	(5.886)	(5.886)	(5.886)		(1.728)	2.531	degree = 2 F(-1) = 0 F(n+1) = 0
ΔKR4	0.3	0.4	0.3				-6 866.7	0.897	polynomial
(t)	(12.175)	(12.175)	(12.175)				(2.897)	1.881	degree = 2 F(-1) = 0 F(m+1) = 0
KN4	0.8897					0.9429	86 543	0.997	
	(2.25)					(2.12)	(1.64)	1.804	
KR4	0.776					0.834	59 163	0.998	
	(3.85)					(10.91)	(2.02)	2.566	

HUNGARY (6) Appendix 1 (contd)

Explanatory variables / Variables explained	$K6_{-1}$ $KR6_{-1}$ $KT6_{-1}$ $KM6_{-1}$	$\frac{J6+J6_{-1}+J6_{-2}}{3}$ ⋮ $\frac{JM6+JM6_{-1}+JM6_{-2}}{3}$	Const	R^2 D-W	Notes
K6	0.845	0.0083	62.6	1.00	
(t)	(15.10)	(4.48)	(2.46)	2.20	
KR6	0.912	0.0089	-1.27	0.995	
(t)	(15.21)	(3.64)	(0.44)	2.689	
KT6	0.8735	0.00629	15.49	0.997	
(t)	(3.86)	(0.78)	(0.65)	2.756	
KM6	0.945	0.0056	-0.740	0.999	
(t)	(22.89)	(3.86)	(0.09)	1.834	

SOVIET UNION (7)

Explanatory variables / Variables explained	$J7$ $JM7$ $JQ7$ $JB7$ $JR7$	$J7_{-1}$ $JM7_{-1}$ . . $JR7_{-1}$	$J7_{-2}$ $JN7_{-2}$ . . $JR7_{-2}$	$J7_{-3}$	$J7_{-4}$	$J7_{-5}$
$\Delta K7$	0.107	0.179	0.214	0.214	0.179	0.107
(t)	(5.019)	(5.019)	(5.019)	(5.019)	(5.019)	(5.019)
$\Delta KM7$	0.0	0.5	0.5			
(t)	(0.0)	(6.134)	(6.134)			
$\Delta KQ7$	0.0	0.5	0.5			
(t)	(0.0)	(7.436)	(7.436)			
$\Delta KB7$	0.3	0.4	0.3			
	(8.027)	(8.027)	(8.027)			
$\Delta KR7$	0.3	0.4	0.3			
(t)	(6.147)	(6.147)	(6.147)			
KR7	0.00111					
(t)	(1.19)					
KB7						
(t)						
KT7						
(t)						
K7						
(t)						
KM7						
(t)						

$KR7_{-1}$	$\frac{JB7+JB7_{-1}}{2}$ $\frac{JT7+JT7_{-1}}{2}$	$\frac{J7+J7_{-1}+J7_{-2}}{3}$ $\frac{JM7+JM7_{-1}+}{3}$ $+JM7_{-2}$	Const	R^2 D-W	Notes
			0.309	0.643	polynomial
			(0.079)	2.586	degree = 2 F(-1) = 0 F(m + 1) = 0
			-9.559	0.689	polynomial
			(1.267)	1.928	degree = 2 F(0) = 0 F(m + 1) = 0
			-6.354	0.765	polynomial
			(1.968)	2.004	degree = 2 F(0) = 0 F(m + 1) = 0
			-0.326	0.791	polynomial
			(1.262)	1.064	degree = 2 F(-1) = 0 F(m + 1) = 0
					polynomial degree = 2 F(-1) = 0 F(m + 1) = 0
0.93118			0.75156	0.999	
(5.85)			(0.2)	0.65	
0.9705	0.00477		0.24366	0.998	
(10.29)	(1.23)		(0.83)	2.118	
0.9677	0.00806		0.2023	0.999	
(18.15)	(2.10)		(0.26)	1.666	
0.9583		0.0047	-3.4028	1.00	
(18.15)		(1.42)	(0.64)	0.963	
0.8965		0.009	-3.838	1.00	
(6.66)		(1.37)	(0.72)	0.971	

BULGARIA (1)

Appendix 2

Variables explained \ Explanatory variables	XP1	$JQP1_{-1}$ $JMP1_{-1}$ $JNP1_{-1}$ $JP1_{-1}$	MNMP1	MNP1	MP1	MMP1	$KQPK1_{-1}$ $KBPK1_{-1}$ $KTPK1_{-1}$	$\frac{JQP1_{-1}+JQP1_{-2}+JQP1_{-3}}{3}$	$\frac{JBP1+JBP1_{-1}}{2}$	$\frac{(JTP1_{-1}+JTP2_{-2}+JTP1_{-3})}{3}$	Const	R^2 D-W	Notes
JQP1		0.86138 (10.33)	0.61541 (2.14)								197.17 (2.19)	0.965 3.02	
JBP1	0.00769 (5.67)			0.06411 (3.71)								0.923 1.656	
JTP1	0.02844 (2.32)				0.06594 (3.11)						-90.3 (1.24)	0.964 1.981	
JRLP1	0.04613 (16.9)										111.03 (3.64)	0.953 1.972	
JOP1	0.01650 (10.51)										-50.57 (2.88)	0.887 1.382	
JMP1		0.70938 (4.9)				0.41573 (2.19)					465.41 (2.54)	0.972 2.686	
JNP1	0.07574 (4.72)	0.34026 (2.29)									-188.66 (3.57)	0.995 2.573	
JP1		0.91334 (11.79)	1.11968 (1.64)								356.62 (2.0)	0.978 3.008	
KQPK1							0.90878 (16.29)	1.5036 (3.28)				0.997 1.395	
KBPK1							0.88203 (13.37)		1.3589 (4.72)			0.996 2.152	
KTPK1							0.95753 (15.5)			1.84813 (2.25)		0.987 2.8	

BULGARIA (1)

Appendix 2 (contd)

Variables explained \ Explanatory variables	$KRPK1_{-1}$ $KOPK1_{-1}$ $KMPK1_{-1}$ $KNPK1_{-1}$ $KPK1_{-1}$	$\frac{(JRLP1_{-1}+JRLP1_{-2}+JRLP1_{-3})}{3}$	$\frac{JOP1_{-1}+JMP1_{-2}}{2}$	$\frac{JMP1_{-1}+JMP1_{-2}}{2}$	$\frac{(JNP1+JNP1_{-1}+JNP1_{-2})}{3}$	$\frac{JP1+JP1_{-1}}{2}$	Const	R^2 D-W	Notes
KRPK1	0.87949 (10.13)	1.4821 (2.13)						0.997 2.548	
KOPK1	0.45384 (3.21)		6.06134 (4.79)				-149.87 (2.29)	0.973 2.327	
KMPK1	0.97402 (17.03)			0.98774 (2.03)				0.999 1.954	
KNPK1	0.86592 (5.97)				1.96133 (1.55)		715.43 (1.04)	0.999 1.507	
KPK1	0.98429 (24.17)					0.92258 (2.38)		1 1.376	

CZECHOSLOVAKIA (2)

Variables explained \ Explanatory variables	$JQ2_{-1}$ $JTO2_{-1}$ $JRL2_{-1}$ $JN2_{-1}$	MNM2	X2	MN2	MD2	$KQK2_{-1}$ $KBK2_{-1}$ $KTOK2_{-1}$ $KRK2_{-1}$
JQ2	0.85989 (7.79)	11.69 (1.94)				
JB2			0.02357 (20.72)			
JTO2	0.89672 (9.64)			2.38476 (1.76)		
JRL2	0.504 (2.46)		0.0254 (2.93)			
JM2			0.29195 (29.12)			
JN2	0.47517 (2.21)		0.07146 (2.60)			
J2			0.28905 (5.13)		7.6807 (2.42)	
KQK2						0.93629 (16.64)
KBK2						0.73824 (7.35)
KTOK2						0.75267 (4.46)
KRK2						0.98465 (21.01)

Appendix 2 (contd)

$\frac{JQ2+JQ2_{-1}}{2}$	$\frac{JB2_{-1}+JB2_{-2}}{2}$	$\frac{JT2+JT2_{-1}}{2}$	$\frac{JRL2+JRL2_{-1}}{2}$	Const	R^2 D-W	Notes
				2.982 (1.2)	0.969 2.223	
				-3 161 (9.29)	0.968 1.405	
					0.954 1.618	
				-1 197 (1.28)	0.944 1.966	
				-13 320 (4.44)	0.984 0.697	
				-5 683 (2.11)	0.986 1.268	
				-16 300 (3.82)	0.994 1.071	
1.63469 (2.05)					0.998 2.474	
	2.826 (3.51)			1 579 (1.91)	0.995 2.46	
		3.6904 (2.01)		34 829 (1.18)	0.963 2.376	
			0.79399 (1.62)		0.998 1.849	

CZECHOSLOVAKIA (2)

GERMAN DEMOCRATIC REPUBLIC (3)

Explanatory variables / Variables explained	$KMK2_{-1}$ $KNK2_{-1}$ $KK2_{-1}$	$\frac{(JM2_{-1}+JM2_{-2}+JM2_{-3})}{3}$	$\frac{(JN2_{-1}+JN2_{-2}+JN2_{-3})}{3}$	$\frac{J2_{-1}+J2_{-2}}{2}$
KMK2	0.90442 (17.42)	2.3278 (2.85)		
KNK2	0.97971 (34.01)		1.33575 (2.26)	
KK2	0.89336 (19.15)			2.24 (4.13)
JQ3				
JB3				
JT3				
JRL3				
JO3				
JM3				
JN3				
J3				

Appendix 2 (contd)

X3	$JQ3_{-1}$ $JB3_{-1}$ $JT3_{-1}$ $JRL3_{-1}$ $JO3_{-1}$	PMHS	DX3	$JN3_{-1}$ $J3_{-1}$	Const	R^2 D-W	Notes
						0.997 2.181	
						0.992 2.441	
					34 776 (1.48)	1 1.688	
0.14903 (2.42)	0.39044 (1.43)	-1 687 (1.44)			-4 571 (2.01)	0.989 1.939	
0.00715 (1.9)	0.58768 (2.71)				-389.76 (1.41)	0.913 1.039	
0.01735 (2.08)	0.47651 (1.94)				-419.89 (1.08)	0.923 1.002	
	0.88787 (9.10)		0.10512 (1.55)			0.937 1.581	
	0.74059 (6.15)		0.09046 (2.71)			0.89 1.235	
0.39088 (18.63)		-5 736 (4.91)			-11 942 (10.53)	0.994 1.829	
0.03636 (2.65)				0.61989 (3.33)	-1 797 (2.62)	0.98 1.809	
0.2922 (3.08)		-3 378 (2.10)		0.38424 (1.74)	-9 246 (2.67)	0.995 1.678	

*GERMAN DEMOCRATIC REPUBLIC (3)

Appendix 2 (contd)

Explanatory variables / Variables explained	$KQ3_{-1}$ $KB3_{-1}$ $KT3_{-1}$ $KRL3_{-1}$ $KO3_{-1}$ $KM3_{-1}$ $KN3_{-1}$	$\frac{JQ3+JQ3_{-1}}{2}$ $\frac{JB3+JB3_{-1}}{2}$ $\frac{JN3+JN3_{-1}}{2}$	$\frac{JT3_{-1}+JT3_{-2}}{2}$ $\frac{JRL3_{-1}+JRL3_{-2}}{2}$ JN3	$JQ3_{-1}$ $JM3_{-1}$ $JN3_{-1}$ $J3_{-1}$	$JQ3_{-2}$ $JM3_{-2}$ $JN3_{-2}$ $J3_{-2}$	$JQ3_{-3}$ $JM3_{-3}$ $JN3_{-3}$ $J3_{-3}$	$JQ3_{-4}$ $JM3_{-4}$ $JN3_{-4}$ $J3_{-4}$
KQ3	1.03 (19.45)	0.28043 (0.58)					
ΔKQ3				0.143 (8.489)	0.229 (8.489)	0.257 (8.489)	0.229 (8.489)
KB3	0.98809 (33.49)	0.58077 (3.37)					
KT3	0.95781 (16.54)		0.95052 (1.92)				
KRL3	0.95858 15.76		0.53604 (1.03)				
KO3	0.89479 (9.28)						
KM3	1.05 (25)						
ΔKM3				0.143 (9.364)	0.229 (9.364)	0.257 (9.364)	0.229 (9.364)
KN3	1.03 (25.51)	0.09816 (0,31)					
ΔKN3			0.107 (5.663)	0.179 (5.663)	0.214 (5.663)	0.179 (5.663)	0.107 (5.663)
ΔK3				0.143 (12.737)	0.229 (12.737)	0.257 (12.737)	0.229 (12.737)

$JQ3_{-5}$ $JM3_{-5}$ $JN3_{-5}$ $J3_{-5}$	$\frac{(JQ3_{-3}+JQ3_{-2}+}{3}$ $+ JQ3_{-3})$	$\frac{(JM3+JM3_{-1}+}{3}$ $+ JM3_{-2})$	Const	R^2 D-W	Notes
			-393.17 (0.21)	0.999 1.111	
0.143 (8.489)			1.603 (1.797)	0.837 1 ?39	polynomial degree = 2 F(0) = 0 F(m + 1) = 0
			169.42 (1.84)	0.999 1.781	
			1.063 (0.75)	0.998 1.312	
			1 368 (2.06)	0.997 2.11	
	0.96794 (1.37)		1 349 (1.42)	0.997 1.827	
		0.05354 (0.14)	950 (0.33)	1 0.985	
0.143 (9.364)			3 401 (3.05)	0.862 0.96	polynomial degree = 2 F(0) = 0 F(m + 1) = 0
			-4 588 (0.76)	0.999 2.371	
			0.676 (1.528)	0.696 1.739	polynomial degree = 2 F(-1) = 0 F(m + 1) = 0
0.143 (12.737)			4.115 (4.058)	0.925 1.664	polynomial degree = 2 F(0) = 0 F(m + 1) = 0

POLAND (4)

Appendix 2 (contd)

Variables explained \ Explanatory variables	X4	$JQ4_{-1}$ $JB4_{-1}$ $JRL4_{-1}$ $JO4_{-1}$ $JM4_{-1}$ $JN4_{-1}$	MNM4	MN4	MD4	$KQK4_{-1}$ $KBK4_{-1}$ $KTK4_{-1}$ $KRLK4_{-1}$	$\frac{(JQ4+JQ4_{-1}+JQ4_{-2})}{3}$	$\frac{(JB4+JB4_{-1}+JB4_{-2})}{3}$	$\frac{JT4_{-1}+JT4_{-2}+JT4_{-3})}{3}$	$\frac{JRL4+JRL4_{-1}}{2}$	Const	R^2 D-W	Notes
JQ4	0.07505 (6.14)	0.32481 (5.84)	79.01 (12.92)								-11 109 (1.63)	0.998 2.199	
JB4	0.01758 (3.33)	0.47706 (2.67)									- 9 933 (2.85)	0.973 1.129	
JT4	0.02517 (2.95)			9.16006 (2.47)							9 000 (2.30)	0.957 1.898	
JRL4		0.87344 (14.65)	13.78 (3.46)								6 713 (3.16)	0.99 3.063	
JO4		0.37951 (1.84)			1.04717 (2.86)						1 278 (1.64)	0.916 0.984	
JM4	0.1645 (6.27)	0.29144 (4.22)	114.02 (10.08)								31 247 (2.31)	0.998 2.956	
JN4	0.04056 (3.81)	0.66933 (8.2)	10.31 (2.25)								-1 236 (2.45)	0.997 1.686	
J4	0.39239 (7.97)			52.04 (2.43)							-165 091 (7.32)	0.988 0.731	
KQK4						1.01 (28.86)	0.68672 (3.31)				-5 267 (0.36)	0.999 2.781	
KBK4						0.87587 (6.58)							
KTK4						0.98903 (44.23)							
KRLK4						0.98243 (141.23)							
								0.44329 (2.15)				0.993 2.215	
									1.10633 (3:52)			0.996 2.348	
											0.97848 (10.28)	0.999 2.27	

POLAND (4)
ROMANIA (5)

Explanatory variables / Variables explained	$KOK4_{-1}$ $KMK4_{-1}$ $KNK4_{-1}$	$\frac{JO4+JO4_{-1}}{2}$	$\frac{(JM4+JM4_{-1}+JM4_{-2})}{3}$	JN4	$\frac{J4+J4_{-1}+J4_{-2}}{3}$
KOK4	0.89368 (13.38)	1.61748 (2.50)			
KMK4	0.9901 (110.83)		0.90061 (10.22)		
KNK4	0.9237 (17.84)			1.2446 (3.09)	
KK4	0.95147 (25.57)				1.13728 (4.52)
JQ5					
JB5					
JT5					
JRL5					
JO5					
JN5					

XS	$JQ5_{-1}$ $JT5_{-1}$ $JRL5_{-1}$ $JN5_{-1}$	MNM5	DX5	MN5	Const	R^2 D-W	Notes
						0.966 2.393	
						1 2.25	
					139 384 (1.7)	0.999 1.994	
					138 881 (1.36)	1 2.122	
0.10394 (1.66)	0.52146 (1.49)	12 (1.87)			-6 846 (2.38)	0.991 1.293	
0.03105 (14.77)					-3 097 (5.27)	0.94 0.584	
0.01958 (2.59)	0.71341 (4.43)				-1 099 (2.28)	0.995 1.633	
0.01316 (1.49)	0.87722 (4.55)				-530.34 (0.97)	0.998 1.302	
			0.08937 (2.92)	1.96493 (2.38)	-942 (2.05)	0.894 2.202	
0.02877 (2.19)	0.64795 (2.78)				-1 081 (2.08)	0.99 2.432	

ROMANIA (5)

Appendix 2 (contd)

Explanatory variables / Variables explained	$JM5_{-1}$ $J5_{-1}$	MMP5	$KQ5_{-1}$ $KB5_{-1}$ $KT5_{-1}$ $KRL5_{-1}$ $KO5_{-1}$ $KM5_{-1}$ $KN5_{-1}$ $K5_{-1}$	$\frac{(JQ5_{-1}+JQ5_{-2}+JQ5_{-2})}{3}$	$\frac{(JB5_{-1}+JB5_{-2}+JB5_{-3})}{3}$	$\frac{JT5_{-1}+JT5}{2}$ $\frac{JO5+JO5_{-1}}{2}$	$\frac{JRL5_{-1}+JRL5_{-2}}{2}$	$\frac{JM5_{-1}+JM5_{-2}}{2}$	$\frac{(JN5_{-1}+JN5_{-2}+JN5_{-3})}{3}$	$\frac{(J5_{-1}+J5_{-2}+J5_{-3})}{3}$	Const	R^2 D-W	Notes
JM5	0.88836 (10.73)	11.52 (3.20)									2.381 (1.28)	0.998 2.002	
J5	0.89765 (12.2)	13.2 (3.49)									2 553 (1.28)	0.998 2.096	
KQ5			0.80007 (5.15)	0.22386 (1.91)								0.978 1.707	
KB5			0.74575 (4.59)		0.3498 (2.56)							0.981 2.614	
KT5			0.9303 (7.3)			0.11404 (1.13)					392.03 (2.20)	0.996 2.968	
KRL5			0.60906 (2.18)				0.27459 (1.71)				1 018 (0.96)	0.924 1.769	
KO5			0.79163 (7.15)			1.4487 (2.91)						0.974 1.315	
KM5			0.56486 (2.4)					0.49469 (2.29)				0.998 1.418	
KN5			0.93175 (14.18)						0.06709 (1.65)			0.88 2.732	
K5			0.83957 (4.34)							0.23381 (1.34)		0.997 1.666	

Variables explained \ Explanatory variables	X6	$JQP6_{-1}$ $JBP6_{-1}$ $JTP6_{-1}$ $JRL6_{-1}$ $JO6_{-1}$ $JNP6_{-1}$ $JP6_{-1}$	MMP6	$KQPK6_{-1}$ $KBPK6_{-1}$ $KRPK6_{-1}$ $KTPK6_{-1}$	$\frac{JQP6_{-1}+JQP6_{-2}}{2}$	$\frac{JTP6+JTP6_{-1}}{2}$	Const	R^2 D-W	Notes
JQP6		0.68477 (3.04)	7.02394 (2.19)				5 459 (1.44)	0.977 2.622	
JBP6		1.26787 (10.5)					207.17 (0.67)	0.887 1.42	
JTP6	0.02601 (2.04)	0.77762 (4.41)					-3 337 (2.01)	0.976 1.985	
JRLP6	0.03295 (1.63)	0.78215 (3.93)					-3 945 (1.43)	0.966 0.879	
JOP6	0.02077 (3.35)	0.41932 (2.25)					-3 075 (2.94)	0.969 2.08	
JMP6	0.24552 (6.48)		17.65 (7.35)				-15 597 (2.04)	0.988 1.28	
JNP6	0.15464 (3.77)	0.40331 (2.32)					-20 256 (3.42)	0.99 2.313	
JP6	0.22436 (2.06)	0.79017 (4.93)					-29 586 (2)	0.987 2.057	
KQPK6				0.89531 (9.37)	1.303 (1.86)		15 724 (1.53)	0.996 2.43	
KBPK6	0.06029 (2.98)			0.51219 (2.8)			-7 536 (2.66)	0.995 1.991	
KRPK6	0.35489 (2.29)			0.5743 (2.68)			-28 057 (1.88)	0.993 1.785	
KTPK6				0.994 (25.14)		0.91809 (1.36)		0.977 2.170	

HUNGARY (6)
SOVIET UNION (7)

Variables explained \ Explanatory variables	$KOPK6_{-1}$ $KMPK6_{-1}$ $KNPK6_{-1}$ $KPK6_{-1}$	$\frac{JOP6_{-1}+JOP6_{-2}}{2}$ $\frac{JMP6_{-1}+JMP6_{-2}}{2}$	$\frac{JNP6_{-1}+JP6_{-2}}{2}$	$\frac{JP6_{-1}+JP6_{-2}}{2}$
KOPK6	0.74718 (3.7)	1.34347 (0.84)		
KMPK6	0.96273 (12.28)	0.77979 (1.28)		
KNPK6	1.01 (152.4)		0.46613 (4.39)	
KPK6	0.92556 (10.94)			1.04808 (1.74)
JQ7				
JB7				
JT7				
JRL7				
JO7				
JM7				
JN7				
J7				

Appendix 2 (contd)

X7	MD7	$JB7_{-1}$ $JO7_{-1}$ $JM7_{-1}$ $JN7_{-1}$	MN7	Const	R^2 D-W	Notes
				19 697 (1.49)	0.831 1.82	
				28 432 (1.15)	0.998 1.637	
					0.998 2.185	
				71 066 (1.27)	0.999 1.894	
0.0753 (12.08)	0.42246 (4.82)			2 115 (3.02)	0.998 2.046	
0.00904 (1.97)		0.37348 (1.19)		-647.76 (1.36)	0.981 1.26	
0.03973 (21.37)				2 656 (4.6)	0.97 0.801	
0.05296 (5.75)	0.3047 (2.3)			-3 753 (3.64)	0.99 0.764	
0.0034 (2.26)		0.40709 (1.47)		-377.86 1.87	0.94 1.866	
0.10431 (3.97)	0.85947 (2.51)	0.32056 (1.54)			0.997 1.496	
0.0231 (1.54)		0.66338 (2.95)		2 357 (2.02)	0.987 1.47	
0.28404 (25.86)			0.99906 (1.84)	-3 889 (2.83)	0.997 2.001	

SOVIET UNION (7)

Appendix 2 (contd)

Variables explained \ Explanatory variables	$KQK7_{-1}$ $KBK7_{-1}$ $KTK7_{-1}$ $KRK7_{-1}$ $KOK7_{-1}$ $KMK7_{-1}$ $KNK7_{-1}$ $KK7_{-1}$	$\frac{JQ7+JQ7_{-1}+JQ7_{-2}}{3}$	$\frac{JB7+JB7_{-1}}{2}$	$\frac{(JT7_{-1}+JT7_{-2}+JT7_{-3})}{3}$	$JRL7+JRL7_{-1}$	$\frac{JO7_{-1}+JO7_{-2}}{2}$	$\frac{(JM7+JM7_{-1}+JM7_{-2})}{3}$	$\frac{(JN7+JN7_{-1}+JN7_{-2})}{3}$	$\frac{J7+J7_{-1}}{2}$	Const	R^2 D-W	Notes
KQK7	0.98993 (57.11)	0.86486 (5.4)									1 1.076	
KBK7	0.94213 (27.54)		1.19611 (4.67)								0.999 2.203	
KTK7	1.005 (12.69)			0.82991 (0.75)						1 912 (1.63)	0.999 2.195	
KRK7	0.94337 (25.71)				0.9979 (3.82)						0.999 1.669	
KOK7	0.9848 (27.82)					1.48712 (2.65)					0.996 2.4	
KMK7	0.93617 (33.7)						1.39924 (5.25)				1 0.907	
KNK7	1.0005 (39.55)							0.96929 (2.18)		-1865 (0.71)	1 2.128	
KK7	0.98868 (45.38)								0.91698 (3.96)		1 1.072	

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ANALIZA PROCESÓW INWESTYCYJNYCH W KRAJACH RWPG

Opracowanie to zawiera wyniki prac nad modelowaniem sektora inwestycji i majątku trwałego gospodarek krajów RWPG w latach 1960--1978 oraz analizę procesów inwestycyjnych do 1980 r., realizowanych w ramach tematu "Prognozy społeczno-gospodarczego rozwoju Polski na tle prognoz krajów RWPG (1980-1990)". Temat ten jest realizowany od 1978 r. w ramach problemu węzłowego 11.6 "Problemy międzynarodowej ekonomicznej integracji oraz współpracy krajów socjalistycznych", którego koordynatorem był początkowo GUS, a następnie od 1982 r. do 1985 r. Instytut Nauk Ekonomicznych Uniwersytetu Warszawskiego, a obecnie SGPiS.

Ze względu na długi okres, jaki upłynął od momentu złożenia artykułu do druku do momentu jego wydrukowania uzupełniono artykuł dodatkiem w postaci krótkiej statystycznej analizy danych za lata 1981--1985.

Szersza analiza statystyczno-ekonometryczna tego okresu oraz lat ostatnich będzie przedmiotem następnego opracowania w ramach publikacji Zespołu Gospodarek Krajów RWPG.