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WEAKNESSES IN THE PROCESS OF RESTRUCTURING POLISH INDUSTRY

The transformation of the Polish state has been taking place now for more than 10 years:

a) at the political level – in the form of transforming a totalitarian state into a state with a parliamentary democracy;
b) at the economic level – a transition from a centralised command economy to a market economy.

A condition for and at the same time an expression of an effective economic transformation is the transformation of the economic structure. Intentional structural change, often described as '**restructuring**', can be understood in different ways. It can be understood as an multifaceted notion – considering different aspects and different points of view, for example as the restructuring of ownership (legal entity of the firm), organisation, product, technology, as well as spatial and financial restructuring and the restructuring of the profile of Polish industry.

In this paper some aspects of the restructuring of the profile of Polish industry are presented, based on generally accessible statistical information from publications of the Main Statistical Office (*GUS – Główny Urząd Statystyczny*).

The restructuring of the profile of industry is understood as an intentional change related to the old division[1] into branches, specific and general types of industry, and currently (since 1994) according to the European Classification of Economic Activities – related to its division into sections, branches, groups and classes.

[1] According the National Economic Classification (*KGN – Klasyfikacja Gospodarki Narodowej*).

1. The profile of industry in Poland

The profile of Polish industry developed during the past half century (1945-1989) under conditions of a centralised management system and, among other things, a doctrinal, political, and, military nature, which led to a strong preference for the development of heavy industry and mining. Furthermore, Polish industry was influenced by the international division of labour within the CMEA (Council of Mutual Economic Assistance).

The conditions mentioned above favoured the development of production which was old-fashioned, low value-added, energy and material intensive, requiring large capital outlays and large amounts of labour per unit of the output. This style of production was very harmful to the natural environment and health of human beings. Furthermore, the dependency of many types of production, even specific types and complete branches of industry, on the very absorptive and not very demanding CMEA markets, especially the countries of the former Soviet Union, was very strong and was unfavourable to the development and modernisation of Polish industry.

After 1989 the situation changed, and the conditions mentioned above, as well as the resulting development constraints, disappeared. The collapse of the old economic relations (with the 'East'), together with the appearance of new production and trade connections with developed European countries and the world, created the opportunity and at the same time the need for far reaching structural change in Polish industry together with its deep profile restructuring.

The profile of Polish industry at the beginning of the economic transformation process (1989) was characterised by an unfavourable, relatively large share of traditional branches like mining, metallurgy, light industry and food industry. Modern branches of industry like the machine, high-tech precision, electrotechnical, electronic, chemical and printing industries had a relatively small share in total production.

Other European countries of the Communist bloc had a similar industrial structure. Table 1 shows the difference to developed European countries, USA and Japan.

Assessing the differences in the industrial profile in Poland and the other mentioned countries from the point of view of the size and type of production factors engaged in the individual branches of industry and the economic results (output/input), the structure of Polish industry is less favourable because of, among other things:

- high capital intensity due to the large share of incredibly capital intensive industries like mining and metallurgy;

Table 1. The structure of industrial production in 1989 (in % of total production, current prices)

Industry	Poland	Czecho-slovakia	Hungary	FRG	France	Spain 1988	Great Britain 1988	Italy 1997	USA	Japan
Mining	5.5	5.1	5.8	1.8	1.8	2.0	4.4	1.1	—	—
Electricity	4.1	4.5	8.6	7.8	5.4	9.8	7.2	8.2	—	—
Manufacturing, of which:	90.4	90.4	85.6	90.3	92.8	88.2	88.4	90.7	100.0	100.0
– Metallurgical	10.3	11.2	10.5	5.6	6.8	6.4	5.2	7.7	5.0	7.5
– Machinery and metal	25.2	28.2	24.8	42.3	34.3	26.1	32.8	26.8	40.2	49.3
– Chemical	12.6	13.2	16.3	18.6	17.2	15.8	15.8	18.8	19.0	14.1
– Wood, paper, printing	5.2	5.6	4.7	6.4	9.3	8.3	10.7	8.2	13.0	9.2
– Light industry	11.7	8.0	7.3	4.0	5.6	6.7	5.0	12.5	5.1	4.4
– Food	21.2	18.9	17.9	10.3	15.3	20.0	14.0	11.4	14.0	10.6

Source: *Rocznik Statystyczny GUS* (*Statistical Yearbook GUS*) 1992, p. 528.

- an above average use of materials, especially in the metallurgical industry, fuel production and the food industry;
- high energy intensity, resulting from the mining, metallurgy and energy sector;
- high propensity to import, due to the large share of the metallurgical industry (iron ore) and light (cotton, leather) industry.

It has to be mentioned that the branches whose share in Polish industry was relatively large in 1989, especially mining and metallurgy, are characterised by the use of large amounts of production factors, which are permanently in short supply in Poland: capital for investment and certain raw materials and semi-manufactured materials that have to be imported.

An unfavourable tendency was the small share of those branches of industry that are 'carriers' of modernity and progress, like the electrotechnical and chemical industry and paper and printing. These industries are characterised by relatively small use of basic production factors, resulting in an above average economic surplus in relation to the costs of production.

In this situation it seems obvious that there is a need for (intentional and conscious) restructuring of Polish industry in the direction of industry which makes less intensive use of production factors, is more modern and competitive, and can be described as the economic and social "locomotive of development". Different branches and groups of the electrotechnical and chemical industry are commonly considered to be such industries. However, the structural changes in Polish industry up to now do not show such a trend.

2. Investment in the Polish economy during the transformation period

Investment is an indispensable basis for sustainable growth, modernisation and economic restructuring, industry included. Diversification and improved quality of production would be impossible, and progress and change in production techniques and technology would be unimaginable without investment. Investment is an essential factor in structural economic change.

Investment in the 1990s in Poland has taken place on a large scale. The temporary decline in investment during the first phase of the transformation (1990-1992) turned out to be much lower than the decline in other macroeconomic indicators, in particular GDP and capital accumulation (see Table 2).

Table 2. GDP, capital accumulation and investment – 1990-1998 (constant prices)

Variable	1990	1991	1992	1993	1994	1995	1996	1997	1998
1990 = 100									
Gross Domestic Product	100.0	93.0	94.8	98.1	103.0	110.1	116.7	124.6	130.6
Capital accumulation	100.0	79.9	69.0	77.5	84.2	104.4	124.7	150.5	171.3
Investment	100.0	95.9	96.3	98.5	106.5	124.7	148.6	181.6	209.4
Previous year = 100									
Gross Domestic Product	88.4	93.0	102.6	103.8	105.2	107.0	106.0	106.8	104.8
Capital accumulation	75.2	79.9	87.0	112.8	109.0	124.1	119.5	120.8	113.8
Investment	89.9	95.9	100.4	102.3	108.1	117.1	119.2	122.2	115.3

Source: *Rocznik Statystyczny GUS* (*Statistical Yearbook GUS*) 1993, p. 130, 248; 1999, p. LI, LVIII, 514, 540. Own calculations.

Since 1994 a very dynamic and continuous increase in investment can be observed, much higher than the growth rate of Gross Domestic Product and capital accumulation. During the period 1990-1998 GDP in Poland increased by 30.6%, capital accumulation by 71.3%, while investment increased by 109.4%.

The share of investment in GDP, after an initial decline from 19.6% in 1990 to 17.5% in 1992 and 16.1% in 1994, reached a level of 18.1% in 1996 and 20.5% in 1998.

Investment per capita (constant prices) was in 1998 106.2% higher in comparison to 1990, and the gross value of fixed assets increased by 22.7% during this period.[2] The data presented here seem to indicate that Poland has been rebuilding the development potential of its economy, which is in particular visible in the years 1994-1998.

In the investment profile, investigated at the highest level of segregation (according to economic sector), significant changes have taken place of an often debatable nature (see Table 3).

The following trends should be emphasised:

a) a systematic and deep decline in the share of agriculture and forestry in total investment from about 15-18% during the period of central planning and over 14% in the last full year this system still functioned to merely 2% in 1998;

b) a large and continuous decline in the share of housing construction in total investment from about 20-25% during the years of "real existing socialism" to 6-8% in the period 1996-1998;

[2] *Rocznik Statystyczny GUS* (*Statistical Yearbook* GUS), 1998, p. 514, 522.

Table 3. Structure of investment in Poland according to sector – 1988-1998

Section symbol	Section	Share in total investment (in %)							
		1988	1990	1991	1992	1994	1996	1997	1998
A	Agriculture, hunting and fishing, forestry	14.4	11.7	4.4	3.2	3.0	3.6	2.9	2.0
B	Industry of which:	31.5	35.0	38.6	39.6	43.4	42.4	38.9	36.9
C	– Mining			4.1	4.4	4.3	2.8	2.3	2.0
D	– Production activities			23.9	22.7	24.8	26.2	25.5	25.8
E	– Electricity, gas, water			10.6	12.4	14.3	13.4	11.1	9.1
GH	Trade, servicing, hotels and restaurants	3.0	3.6	5.0	6.6	7.4	8.2	9.5	10.3
I	Transport, storage, communication	8.6	7.1	7.5	8.7	9.7	12.0	12.6	11.7
J	Financial mediation			2.5	3.6	4.7	4.7	6.0	7.3
K	Real-estate services of which:			28.7	24.1	14.9	11.0	11.5	13.1
	– Housing construction	21.6	25.5	27.8	22.2	12.5	8.0	8.0	8.3
M	Education	2.9	2.8	2.8	2.5	2.2	2.5	2.7	2.6
N	Health care and social welfare	2.9	2.3	2.2	2.2	2.6	2.9	2.7	2.5

Source: *Rocznik Statystyczny GUS* (*Statistical Yearbook* GUS) 1989, p. 198; 1992, p. 234; 1997, p. 484; 1999, p. 516. Own calculations.

c) at the same time a considerable increase has taken place in the share of total investment in: industry; trade, servicing, hotels and restaurants; transport and communication;
d) new items appeared, attracting an increasing share of total investment, like financial mediation, real-estate services, renting and activities connected with doing business;
e) for decades there was under-investment in the non-productive sphere, the so-called social infrastructure (science, culture, education, health care, social welfare, sports, tourism), a situation that has not improved – on the contrary in many fields there has been a strong regression.

The direction of change in the investment profile assessed from the point of view of improvement of and increase in the competitiveness of the Polish economy, as well as the needs of society and the processes of further development of civilisation of the country can be considered as very disturbing.

Another point of dispute seems to be the very large share of industry in total investment, in some years attracting 40% or more of total investment in the country. During the whole post-war period the industry has always absorbed a significant share of total investment in Poland, but this never reached such a level as in the 1990s. Industry attracted:
- about 37% of total investment in the years 1950-1955, the period of the 6-year "plan of socialist industrialisation";
- about 34% of total investment in the decade 1961-1979, a period characterised by huge and capital-intensive investment in raw-material extraction (the brown coal fields of Turoszów and Konin together with large power plants, mines in the newly developed hard coal field in the Rybnik Coal Field (*Rybnicki Okrąg Węglowy (ROW)*), sulphur mines, copper mines and copper works in the Legnica-Głogów field;
- about 36% of total investment in the decade 1971-1980, under the conditions of investment voluntarism and the so-called "open plan" with huge investments in the Katowice steelworks, Ursus, Factory of Small Capacity Vehicles (*Fabryka Samochodów Małolitrażowych*, currently "Fiat" in Bielsko-Biała and Tychy), and many other large undertakings.

Against this background, the approximately 40% of total investment in industry should lead to a large increase in the production potential of Polish industry, a fundamental modernisation and a significant improvement of competitiveness at an international level. The observation that those effects have not happened can be explained, in the opinion of the author, by the defective structure of industrial investment after 1990.

3. The profile of industrial investment during the transformation period

Total investment in Poland between 1990 and 1998 amounted to 423,224 mln zloty (current prices). 39.6% of this total, 167,600 mln zloty, was realised in industry. Analysis of the investment profile for industry shows a large difference in the pace and direction of investment in sections or branches of industry.

Research into the dynamics of investment confirms the very clear acceleration of the pace of growth of industrial investment in the period 1994-1998 mentioned earlier. In the years 1990-1998 industrial investment (in fixed prices) increased in total by about 102.6%, which means an average yearly increase of about 13%. After a temporary decrease in the level of investment in the years 1991-1992, a steady growth has taken place, at a particularly high rate, since 1994 (an average yearly increase of about 17%).

The growth of investment in the years 1990-1998 shows a very different pattern in individual sections of industry:
- the lowest (25.9%) in mining;
- slightly higher than average in production activities (107.2%);
- the highest in electricity, gas and water supply (118.7%);

while the average increase in investment amounted 102.6%.[3] The difference in dynamics in investment in different sections and branches of industry is even more visible when making a detailed analysis of tendencies of change in individual years (see Table 4).

An analysis of Table 4 leads to the following observations:

1. Investment in mining increased significantly in 1991 and 1992, as well as in 1994 and 1995, with only a relatively small decline in 1993 and 1996.
2. Investment in electricity, gas and water supply shows a steady and significant increase during the period 1991-1997. Only in 1998 the investment outlays decreased in comparison to the year before.
3. The production of coke, oil products and derivatives shows a large and constant increase in investment outlays between 1991 and 1998 (with 1992 as an exception). As a result, the level of inputs formerly defined (by KGN – National Economic Classification) as the "energy and fuel industry" has been growing at an unprecedented rate.
4. The following industries show a dynamic growth in investment outlays:
   - construction materials;
   - tobacco products;

[3] *Rocznik Statystyczny GUS* (*Statistical Yearbook* GUS), 1999, p. 515

Table 4. Investment dynamics in different sections and branches of industry in the years 1991-1998 (fixed prices, previous year =100)

No.	Section or branch of industry	1991	1992	1993	1994	1995	1996	1997	1998
1.	Total industry	97.1	98.3	100.7	120.7	115.0	120.0	113.8	111.2
2.	Mining	117.5	103.5	87.8	115.8	102.7	96.0	100.2	103.1
3.	Supply of electricity, gas and water	131.3	116.1	106.6	103.7	116.3	112.0	103.9	95.9
3.1.	of which: supply of electricity, gas and hot water	135.3	106.2	112.7	102.8	124.5	115.1	101.4	100.5
4.	Production activities	84.2	88.9	99.7	132.7	116.2	127.5	119.8	117.9
4.1.	Coke, oil products and derivatives	132.0	94.7	134.4	141.5	106.3	154.2	101.2	148.6
4.2.	Metal	95.1	92.5	78.2	131.3	125.1	143.4	76.1	97.2
4.3.	Metal products	83.1	90.7	115.0	168.6	72.7	152.0	130.8	111.6
4.4.	Machinery and appliances	109.3	64.1	93.0	140.3	126.5	113.4	118.5	93.8
4.5.	Office equipment and computers	52.2	55.1	451.6	74.2	93.3	88.4	122.0	119.4
4.6.	Electrical machines and appliances	76.1	85.5	91.0	108.7	121.2	129.5	122.3	97.8
4.7.	Radio, television and communication	102.4	261.9	88.3	100.6	80.0	189.0	98.4	140.0
4.8	Medical, high-tech and optical instruments	61.7	98.0	96.0	145.2	129.1	126.0	122.7	100.8
4.9	Motor vehicles, trailers, semi-trailers	54.9	39.2	77.4	101.7	170.1	177.1	242.2	152.4
4.10	Other transport equipment	84.3	58.2	143.2	179.0	79.8	98.0	104.9	105.0
4.11	Chemicals and chemical products	90.2	67.8	104.4	135.0	127.2	112.3	134.2	111.7
4.12	Rubber and plastics	100.1	149.2	140.8	103.9	156.6	138.1	122.5	117.0
4.13	Other non-metallic products	105.8	93.9	119.0	165.4	112.6	130.5	121.5	142.4
4.14	Textiles	66.1	75.7	128.0	147.3	94.1	104.8	109.3	144.0
4.15	Clothing and furs	40.2	165.2	87.9	118.3	102.1	95.0	110.2	88.3
4.16	Leather and leather products	70.6	131.2	65.1	135.2	126.8	107.6	118.8	70.4
4.17	Food products and beverages	94.3	97.7	79.2	120.3	130.2	120.1	104.0	98.5
4.18	Tobacco products	256.1	62.4	210.9	55.8	126.5	238.7	119.5	71.9

Table 4. Cont.

No.	Section or branch of industry	1991	1992	1993	1994	1995	1996	1997	1998
4.19	Paper and related products	63.1	105.8	209.8	139.9	91.9	122.5	111.4	112.8
4.20	Timber and wood products	56.1	142.4	124.4	164.1	132.7	96.4	179.0	151.8
4.21	Publishing and printing	96.5	177.5	135.0	152.2	67.2	146.6	151.7	107.9
4.22	Furniture, remaining production activities	59.6	116.8	99.7	189.8	125.8	95.3	122.8	137.2
4.23	Waste management	60.8	38.2	97.2	250.7	56.4	101.1	232.7	115.6

Source: *Rocznik Statystyczny Przemysłu* (*Statistical Yearbook for Industry*) 1997, p. 165, *Rocznik Statystyczny GUS* (*Statistical Yearbook GUS*), 1999, p. 518.

- paper and related products;
- rubber and plastics;
- motor vehicles (cars).

5. Clearly lower dynamics in investment outlays can be observed in the following industries:
   - metal;
   - machinery;
   - office equipment and computers;
   - electrical machines and appliances;
   - radio, television and communication;
   - light industry (especially clothing and leather).

The difference in the pace of investment growth in different sections and branches of industry discussed above is confirmed by studies of the **branch structure of investment outlays** in the years 1990-1998.

Research indicates a very high and steady share of the energy and fuel industry in total investment. This share that has always been high (over 20% of the investment outlays in industry) and even exceeded the level of 40% of total investment in industry during the transformation period (see Table 5).

The second group of branches, whose share in investment in Polish industry is continuously rising, is the non-metal industry (mainly construction materials) – from 4.0% to 6.4% of total investment in industry during the period in question. Such a tendency means the continuation of the disadvantageous, input-intensive and old-fashioned structure of Polish industry. These tendencies are reinforced by a significant decline in the share of investment in the most desirable and modern branch of industry (electro-machinery) and stabilisation (no growth!) in the chemical industry, especially in branches producing modern, high value-added chemical products.

The direction of investment in the Polish industry, and as a consequence the change in its profile, should unambiguously be assessed as being negative from the point of view of its competitiveness on foreign markets as well as the internal market. This means:

- an increase in the share of the traditional, input-intensive, energy and fuel, non-metal, and paper and wood industries which (in addition to the fact that they do not belong to the modern branches of industry) are a burden to the environment;
- a significant decline in the share of the electro-machinery industry, including modern branches like the machine tool industry, office equipment and computers, electrical machines and appliances, medical, high-tech and optical instruments, automation, electrotechnics, telecommunication;

Table 5. The structure of investment in industry according to branch

No.	Branch of industry	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
1.	Energy and fuel	24.3	21.7	30.6	35.2	37.7	40.8	40.4	38.2	31.9	30.5
2.	Metallurgical	6.7	9.4	9.7	8.8	6.4	5.3	6.0	7.4	7.2	4.0
3.	Electro-machinery	23.5	25.0	17.7	14.8	13.9	12.5	12.3	13.3	17.0	17.8
3.1.	Metal	3.4	3.5	2.7	2.8	3.0	2.7	1.8	2.2	2.6	2.5
3.2.	Machinery	6.6	4.0	3.5	2.7	2.4	3.0	3.3	3.0	3.0	2.5
3.3.	High-tech precision	1.8	1.0	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.5
3.4.	Means of transport	7.9	13.2	8.2	4.3	3.8	3.0	3.7	4.1	7.5	9.2
3.5.	Electrotechnical and electronics	3.8	3.3	2.8	4.3	4.1	3.2	2.9	3.4	3.3	3.1
4.	Chemical	9.8	10.5	10.9	9.2	9.6	9.1	9.3	9.3	10.8	10.3
5.	Non-metal	4.0	3.4	3.5	3.5	4.1	4.6	4.6	5.0	5.4	6.4
6.	Wood and paper	4.3	5.0	3.2	4.1	6.1	6.8	6.2	5.6	7.3	10.9
7.	Light industry	7.7	6.4	3.7	4.1	4.2	3.9	3.5	2.9	2.8	2.8
8.	Food	18.0	16.9	19.3	18.4	15.9	13.6	15.2	15.7	14.6	11.9
9.	Other branches	1.7	1.7	1.4	1.7	2.1	3.4	2..5	2.6	3.0	5.4

Source: *Przemysł GUS*, Warszawa, 1990, p. 179; 1993, p. 133; 1994, p. 147; 1997, p. 166, *Rocznik Statystyczny GUS* (*Statistical Yearbook GUS*) 1999, p. 516. Own calculations.

– lack of development of a modern chemical industry and increase of its importance in the Polish economy.

The direction of change in the structure of investment in Polish industry in the 1990s is opposite to the processes taking place in the contemporary world and unknown in post-war Europe, Poland included. The share of the electro-machinery industry in total production in Poland rose from about 16% in 1960 to 26% in 1970 and 31% in 1980,[4] after which it declined to the level of 21% in 1993[5] and indicates tendency to decline further.

This process, described in the literature as **the "reversal" of the structure** of Polish industry, is especially visible when the analysis of the problem is transferred from a highly aggregated level of sections and branches of industry to the level of specific branches, or the most important industrial products. Such an analysis discloses the deep recession that has taken place in branches and types of modern high-tech industries.

4. Changes in the employment and production structure of industry

Due to the lack of available detailed statistics regarding investment and even the size of production expressed in fixed prices, data concerning employment and the level of production of the most important products in units and/or tonnes can give an indication of the deepness of the recession.

Table 6 shows that the large decrease in employment in the period of peak unemployment in the years 1990-1993 concerned, to a large extent, the electro-machinery industry, in particular the modern branches: electrotechnical, electronic and high-tech precision industries.

Employment in computer science, electronics and telecommunications decreased by significantly more than 50% between 1989 and 1993, the first years of the transformation. This implies a deep recession in these branches of modern industry and loss of productive capacity. This conclusion is confirmed by the data in Table 7. The visible recession in production in the electro-machinery industry concerns most of the products of the different branches and groups of this industry. A few exceptions (the production of TV sets and cars) do not change the general conclusion.

Particularly striking is the large decline in the production of specialist (trade specific) machines and appliances for the most important types of

[4] *Rocznik Statystyczny Przemysłu* (*Statistical Yearbook for Industry*), 1981, p. 75.

[5] *Rocznik Statystyczny GUS* (*Statistical Yearbook* GUS), 1994, p. 311.

Table 6. Changes in average employment in selected branches of the electro-machinery industry*

No.	Section of industry	1989 (empl. × 1000)	1993	
			empl. × 1000.	1989 = = 100
	Industry total	**4050.6**	**2759.7**	**68.1**
1.	Electro-machinery industry	1900.7	768.1	40.4
2.	Machine industry, of which:	420.6	240.9	57.0
	– energy machinery and appliances	61.9	45.5	73.5
	– mining machinery and appliances	36.8	23.9	65.0
	– construction machinery and appliances	44.3	27.7	62.5
	– chemical machinery and apparatus	16.2	10.3	61.0
	– machine tools	30.5	17.6	57.7
3.	High-tech precision industry, of which:	71.8	34.1	47.5
	– automation	18.8	9.5	50.5
	– computer industry	12.1	3.4	28.1
	– measurement apparatus	22.5	12.8	56.9
	– medical and veterinary equipment	6.3	3.6	57.1
4.	Electrotechnical and electronics, of which:	243.9	123.6	50.7
	– machinery and electro-energetic appliances	46.5	26.4	56.8
	– electrotechnical products	50.8	29.2	57.5
	– electronics	110.5	45.4	41.1
	– telecommunications	19.1	6.8	35.6

* In firms with more than 50 employees.

Source: *Przemysł GUS*, 1991, p. 236; 1994, p. 220.

industry – food, textile, mining, road construction and repair and the almost complete disappearance of many products from the electrotechnical and electronic industries. Basically, this means the disappearance of this branch of industry in Poland despite the large level of production achieved before in the 1980s.

A significant recession is also visible in an overwhelming number of products of the chemical industry, with the exception of plastic and car tires. In this and many other fields of modern production, Poland became a large open market for foreign producers, effectively liquidating its own industry. The main reason for this, especially during the first years of transformation, was the lack of protection from the side of the state, the sign of which was the opening of borders and allowing an un-

Table 7. Production of the most important products of the electro-machinery and chemical industry in the years 1989-1998

No.	Product	Unit of measurement	1989	1990	1992	1994	1996	1998	Dynamics (%) 1998/1999
	Electro-machinery products								
1.	Machine tools for metal	th. t	**48.8**	**27.6**	**17.8**	**13.8**	**13.9**	**15.6**	**32.0**
2.	Mining machines and appliances	th. t	371	231	138	140	219	121	32.6
3.	Road, construction and melioration machines and appliances.	th. t	132	99.5	30.8	32.2	32.3	34.6	26.2
4.	Food industry machines and appliances	th. t	42.9	36.7	13.7	10.9	11.0	12.9	30.1
5.	Textile industry machines and appliances	th. t	12.4	9.2	1.6	1.0	0.9	—	—
6.	Chemical industry machines and appliances	th. t	23.7	21.5	14.9	12.4	23.5	21.4	90.3
7.	Electrical turbines	th. units	12581	10434	4918	5632	5633	4649	37.0
8.	Transformers over 20 kVA	th. units	14.5	10.8	7.1	5.6	6.6	5.4	37.2
9.	Cables and electrical conductors	th. t	255	201	174	162	221	262	102.7
10.	Electrical batteries	th. t	50.8	40.8	32.8	35.4	36.2	—	—
11.	Capacitors	mln. units	815	540	161	133	40	19	2.3
12.	Fixed resistors	mln. units	1035	763	166	3.5	2.3	25.6	2.5
13.	Semi-conductors, of which:	mln. units	373	208	41.6	9.9	8.2	2.4	0.6
13.1.	Transistors	mln. units	119	67.3	15.7	8.0	3.7	0.2	0.2
13.2.	Integrated circuits	mln. units	62.6	32.1	6.2	0.3	3.5	1.3	2.1
14.	Radio receivers	mln. units	2.5	1.4	0.3	0.3	0.2	0.2	0.8
15.	Televisions	mln. units	0.7	0.7	0.7	0.9	1.6	4.4	629
16.	Cassette players, Dictaphones	th. units	438	299	58.9	14.3	13.8	—	—
17.	Gramophones	th. units	245	127	23.7	133	8.6	—	—
18.	Buses	th. units	9.2	3.9	1.3	1.0	1.6	1.9	20.6

Table 7. Cont.

No.	Product	Unit of measurement	1989	1990	1992	1994	1996	1998	Dynamics (%) 1998/1999
19.	General passenger vehicles.	th. unts	285	266	219	333	441	592	208
20.	Multi element electrical circuits	kpl.	33	52	10	4	11	—	—
21.	Electric locomotives	units	64	20	18	5	2	—	—
	Chemical products								
22.	Sulphur (100%)	th. t	4864	4660	2917	2163	1783	1404	28.9
23.	Carbides (75%)	th. t	395	297	221	174	145	70	17.7
24.	Fertilisers (without calcium)	th. t	8209	5423	4547	5540	6625	—	—
25.	Ethylene	th. t	322	308	283	235	299	330	102.5
26.	Propylene	th. t	202	193	190	164	194	189	85.9
27.	Methanol (100%)	th. t	162	155	59	22	72	32	19.7
28.	Phenol	th. t	63.0	44.1	33.3	35.7	46.6	47.3	75.1
29.	Pesticides	th. t	45.6	19.7	21.8	20.7	27.7	29.9	65.6
30.	Plastics	th. t	721	627	650	651	804	940	130.4
31.	Synthetic rubber	th. t	125	103	88.9	83.4	106	95	76.0
32.	Chemical fibres	th. t	238	150	111	138	117	95	39.9
33.	Soap and washing powders	th. t	379	243	194	241	278	341	90.0
34.	Cosmetics and perfume.	prev. year = = 100	—	64.4	88.5	113.7	131.3	110.2	—
35.	Pharmaceutics	prev. year = = 100	—	74.3	66.0	106.9	109.8	91.9	—
36.	Tyres	th. units	6025	4704	5607	7612	10930	14410	239.2

Source: *Roczniki Statystyczne Przemysłu* (*Statistical Yearbooks of Industry*), 1994, p. 41; 1997, p. 45, *Rocznik Statystyczny GUS* (*Statistical Yearbook GUS*), 1991, p. 277; 1995, p. 383; 1999, p. 393.

controlled flood of cheap (and often low-quality) imported products onto the national market. An important point in this context is that the surprised native industry was not prepared for the competition it faced due to this lack of protection.

The simultaneous lack of a development strategy for Polish industry and the lack of an active industrial policy of consecutive governments of the third Polish Republic, including a lack of investment policy for industry, has resulted in a large degree of "reversal" of the structure of Polish industry. The reversal of the previous tendency in the transformation of the industrial profile and the liquidation of its effects will require great effort and large expenditures in the future. Such a reversal as well as a sustainable revival of the Polish economy, industry included, is possible and feasible. However, this requires a committed economic policy by the government stimulating such a development. For such a policy it is necessary to use proper economic, organisational and legal instruments and to stimulate the development of market infrastructure and other systemic operations, initiating and shaping a long-term development strategy.

As a consequence, similar tendencies of the "reversal" of structure also appeared in foreign trade (Table 8). The share of products from the electro-machinery industry in total Polish industrial exports declined from 37.6% in 1990 to 22.6% in 1997, while the share of products from the chemical industry showed a similar tendency (a decline from 13.4% to 10.5%). At the same time the share of products with a low level of

Table 8. The share of industrial branches in the value of total exports in the years 1990-1997

No.	Section of exports	% share in total exports			
		1990	1993	1996	1997
1.	Total exports	100.0	100.0	100.0	100.0
2.	Energy and fuel	10.3	9.5	6.9	—
3.	Products of the metallurgical industry	9.9	14.6	—	14.9
4.	Products of the electro-machinery industry	37.6	25.8	23.4	22.6
5.	Products of the chemical industry	13.4	9.8	7.7	10.5
6.	Products of the non-metal industry	1.1	3.3	—	7.8
7.	Products of the wood and paper industry	2.2	8.3	—	6.6
8.	Products of the light industry	4.6	15.3	—	13.9
9.	Products of the food industry	7.4	9.1	—	7.7

Source: *Rocznik Statystyczny GUS* (*Statistical Yearbook GUS*), 1991, p. 379; 1994, p. 421; 1997, p. 440; 1998, p. 417.

processing and low value added increased (metallurgical, non-metal, and wood). These changes have driven the profile of Polish industry towards a structure that is typical for raw material exporting countries, away from what is characteristic for the industrial countries. Thus, this was a move back from the previously achieved level and structure of exports of industrial production.

The changes in the profile of Polish industry should not be considered as a restructuring process. Those changes have taken place under the influence of unidentified forces and circumstances that do not indicate intentional action. The changes did not fulfil any of the basic conditions for restructuring: it should be judged that they did not have an intentional nature, that there was no policy, and that they were introduced without the application of suitable economic mechanisms.

These changes probably took place in an accidental and spontaneous manner, under the influence of forces of inertia and different sectoral lobbies, using the lack of interest of the government in carrying out an appropriate industrial policy and the lack of a strategic development programme as an instrument for controlling and steering the development of industry.

The recession in the profile of investment, production and export in Polish industry is a very threatening phenomenon to the future of the national economy, especially with respect to the process of integration with the European Union. It increases the risk of subordination of our economy to the higher developed countries of Western Europe, and worsens our position in international trade and in the negotiation process with the EU.

As a conclusion, it is necessary to bring to a stop and reverse the unfavourable structural changes in industry. Within the current structure and in the light of current tendencies, Polish industry is not capable of generating fast growth of production and exports. Changing the trends is essential, as is a real, feasible and deep restructuring of Polish industry.

The small increase in investment during the last years under investigation (1997-1998) in the electro-machinery and chemical industry, together with a simultaneous decline of investment in the energy and fuel industry may be a sign that the transformation of the profile of Polish industry is going in the desired direction.

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