Polish printing in the transition period[1]

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In 1989 the Polish printing industry ceased to require industrial licensing. At that time 54 state-owned enterprises operated, and they were subject to central ministries (the Ministry of Culture, Ministry of Defence, Ministry of the Interior, Ministry of Finance). In addition to this, 16 were owned by RSW "Prasa-Książka--Ruch" and 40 co-operatives. Only about 1,500 printing houses belonged to private owners, who received licences from the Ministry of Culture to deal with the printing businesses. The past quarter of a century was a period which could be characterized by massive reconstruction of the printing industry and technological modernization.

Methodology

The goal of the project is to look at companies operating in the printing sector in Poland. This included companies involved in printing (using different technologies), preparation of production (pre-press services) and bookbinding workshops (post-press or finishing processes). A significant part of the printing sector comprises are of small and medium-sized enterprises[2].

The analysis of the development of the printing sector in the period 1989–2014 was based on available statistical data of the Central Statistical Office (GUS) and the REGON Register of Entrepreneurs. The query of that data was supplemented by the results of the survey, which the author conducted among printing companies in the years 2004–2005.

Small and medium-sized printing companies operating in Poland were subjected to an empirical study. The study was carried out in the form of questionnaires, which were sent to companies (small and medium-sized printing companies) randomly selected (systematic random selection). All of this when taking into account the distribution of their occurrence in the various regions of Poland[3].

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[1] This article is the first publication within the research project carried out in the Institute of Journalism at the University of Warsaw: *The dynamics of changes in the printing industry between 1989–2014 and the perspective of its restructure in the years 2015–2025.*

[2] *Article 2 of Annex I to European Commission Regulation (EC) No 364/2004*: A medium-sized enterprise is one that employs fewer than 250 employees, its turnover is less than 50 million euros and the balance sheet total does not exceed 43 million euros. Small enterprises, in turn, employ fewer than 50 employees, have a turnover not exceeding 10 million euros and their balance sheet total is also less than 10 million euros. The European Union distinguishes also (like in Polish statistics) micro-enterprises, which employ fewer than 10 employees, and their annual turnover and balance sheet total do not exceed 1 million euros.

[3] Respondents were generally reluctant to complete the questionnaires. In many cases, confirmed in direct conversations, they questioned the purpose of the study and its usefulness to businesses. They declared outright that the time to complete the survey is wasted time. Very often only the account of the author's personal experiences in economic activity convinced the respondent to participate in the study.

The pilot survey was conducted in November 2004. A questionnaire was sent to 994 of the 19,175 printing companies in Poland, whose addresses were from *Panorama Firm (Panorama of Companies)*. Only 153 correctly completed questionnaires were obtained. Respondents answered questions related to the use of the Internet, spreadsheet software and management support software. Interviews with managers of the surveyed companies that were simultaneously carried out at this stage established scope of subsequent research. The main survey was carried out in 2005. In this part of the research 420 printing companies took an active part in the survey.

The collected data and survey were complemented by four measurements of the economic situation in the printing sector, carried out for the first time in February 2012. The second study was conducted in September 2012. Another part of the research was conducted in April 2013 and repeated the following year – in April 2014. The first piece of research involved 177 printing companies and the second – 330 companies accordingly. In the third phase 356 companies were surveyed, while the fourth phased involved 320 enterprises[4].

The survey questions focused on the current situation of the companies, as well as on the three-month period preceding the date of the study and the three-month perspective after that date. Questions were answered by company owners or managers. As much as possible, the same entities were selected to participate in the study.

Previous studies

In Polish literature, there are few publications on the economic related issues in the printing sector (W. Cetera, 2007, 2008, 2009). It is the rich American literature that is noteworthy. The results of many years of research of the printing sector are presented in publications of the Printing Industry Center in Rochester (USA). In studies of B. Pellow, M.J. Pletka and H.A. Banis (2003), F.J. Romano and M. Sooma (2003, 2004), S.R. Kadam, M.A. Evans, S. Rothenberg (2005) and P. Sorce (2002) one can find issues related to economic and organizational sphere of printing.

Globally, there is a lack of literature concerning the transition of the economy from a socialist system to a free-market model, in particular taking into account changes in the printing industry.

Apart from that, there were attempts of periodization of the transition period. M.J. Stankiewicz (1999) and S. Sudol (2000) completed their study in 1998[5].

The nature of changes in the printing sector

Changes in the printing sector in Poland occured quickly after 1989. In 1991, the Central Statistical Office (GUS) reported that among all printing companies, 5,263 were private establishments. However, just four years later, in 1995, statistics showed as many as 11,510 privately-owned printing companies, which means a more than twofold increase in the years 1991–1995.

The specific nature of production of printing companies was also changing. In 1994, among

[4] The survey covered small and medium-sized printing companies. In each of the studies the employment structure was shown to be similar. Most companies (about 60%) did not employ more than 9 employees. About 28% had between 10 and 49 employees, and more than 12% of the companies employed between 50 and 249 employees.

[5] They distinguished the following periods: the phase of "strategic shock" (1990), the phase of adaptation during the recession (1990–1991), the phase of adaptation during the initial economic recovery (1992–1993), the phase of active business strategies (1994–1998) and the last phase – of deteriorating profitability (since 1998). Subsequent periods were supposed to be added by economic life.

10,639 printing companies there were 123 companies printing mostly newspapers, 7,399 printing houses that dealt with other types of printed material, 636 companies involved in the preparation of publications for printing and 1,235 bookbinding workshops. This branch included also companies reproducing sound recordings (246), video recordings (122) and computer media (113). The group of companies not classified into any of the above mentioned categories included 765 companies.

In relation to the printing industry, looking in 2014 at the process of transition from the perspective of 25 years, one may be tempted to conclude that this was a period of fundamental change; although the printing industry has a long-standing tradition, its current structure was basically established at that time. First years of the transition processes were characterized by intensive development of the printing businesses. It was based on the increasing demand for printed advertising and job printing, etc. The developing market of manufacturing companies consisted of more and more orders for these services. In addition, the poorly computerized banking and insurance services were associated with the need to use multi-million dollar circulations of company prints. Spending on advertising was also increasing. Not without significance was the development of the uncensored publishing market that offered the reader a growing number of magazines and books[6].

During the first years of the transition period printing companies were established practically everywhere. Several large companies started operating for example in garages. Initially, competitive advantage was based on technology. The mere fact of having printing capabilities was in the first half of the nineties a sufficient condition for the functioning of a printing company. The systematic increase in the number of companies in this sector lasted until 2005 and was mainly related to the increase in the number of printing houses (Figure 1).

In the period of transition, there was a huge technological gap between Polish businesses and European countries[7]. New printing technologies, however, were expensive, and Poland was not a manufacturer of printing machines. The equipment was imported from Czechoslovakia (later – Dominant and Polly machines from the Czech Republic and the GDR, and later on Germany). The top brands of offset presses (Heidelberg, Manroland, Ryobi and Shinohara) were practically unattainable for Polish printers. The vast majority of printing equipment came from decommissioned state printing houses, and later from the Western European secondary market.

For the printing sector, there was no doubt that the first decade of transition ended successfully. According to the data of the Polish Classification of Business Activities (PKD) in 1999, 16 498 companies had been operating in this sector. These companies were engaged in the printing of newspapers, bookbinding, preparation of materials for printing, reproduction of video and audio recordings and reproduction of computer storage media. The greatest number of subjects was classified as "other printing business". This group consisted of printing houses engaged in the printing of books, job printing and packaging[8]. In the first

[6] B. Dobek-Ostrowska, *Miejsce i rola mediów masowych w procesach demokratyzacyjnych* [w:] *Media masowe w demokratyzujących się systemach politycznych. W drodze do wolności słowa*, red. B. Dobek-Ostrowska, Wrocław 2003; Tejże, *Przemiany polskiego systemu medialnego w Polsce po 1989 roku* [w:] *Współczesne systemy komunikowania*, red. B. Dobek-Ostrowska, Wrocław 1997.

[7] *Innovation in Europe Results for the EU, Iceland and Norway*, European Commission 2004

[8] According to the classification of the Central Statistical Office, printing businesses (PKD 22,2) are those whose core business is the printing of newspapers, printing activity "not classified elsewhere", bookbinding and pre-press and

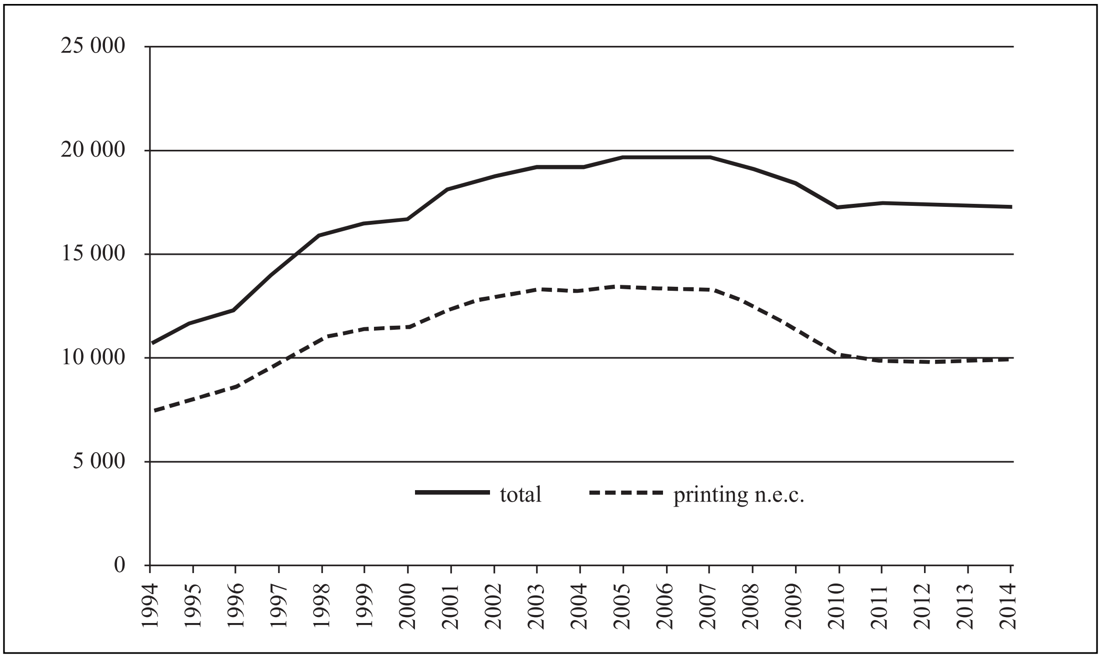

Figure 1. The number of printing companies operating in the years 1994–2014

Source: own calculations based on the data of REGON

decade, a 54 per cent increase was noted in the number of companies that are classified as "other printing business", which included virtually all printing houses engaged in printing.

Looking at the effects of transition on the printing industry from the perspective of 25 years, one may conclude that this was a period of fundamental change. Although the printing industry has a long-standing tradition, its current structure was basically established at that time. In 1989, 73,62% of companies employed less than 50 people. However, after 25 years later this group of companies included 98,11% of all printing companies (Table 1).

Table 1. The structure of the printing sector in Poland in 1989 and 2015

1989		2014	
Employment	[%]	Employment	[%]
<50	73,62	<50	98,11
51–200	17,99	50–249	1,11
201–1000	7,95	250–499	0,16
>1000	0,45	>500	0,08

Source: own calculations based on the data of the Central Statistical Office

The growth rate of the number of entities (y/y) remained at a high level, and in 1997 and 1998 reached 14,24% and 11,20% respectively

auxiliary graphics activities. The basis for the classification is the declaration of an entrepreneur made at the time of registration of the company. As a result, after a few years, the number of classification is not always in accordance with reality. One example is a newspaper printing house, which can execute other printing orders, another is graphic studios involved in pre-press also realising eg. Internet projects. Unfortunately, these changes are not noted in statistics and thus make it impossible to determine the changing areas of economic activity. Since 2010, the PKD 2007 classification is in force, which is why information about printing activities can be found in section 18. "Printing and reproduction of recorded media".

(Table 2). This trend did not change until 2005, when the number of printing companies was started to gradually decrease, reaching the dynamics of 8,80% in 2009. However, these changes, though less visible, applied to all companies in the Polish economy.

Table 2. Dynamics of changes in the number of printing companies in selected industry groups

Year	Printing [%]	Companies in total [%]
1995	9,38	6,18
1996	6,49	5,32
1997	14,24	7,55
1998	11,20	8,19
1999	4,06	11,97
2000	1,22	4,79
2001	7,72	4,41
2002	4,02	4,29
2003	2,52	3,27
2004	0,00	-0,13
2005	1,56	1,08
2006	-0,88	0,56
2007	-0,54	1,36
2008	-5,72	0,85
2009	-8,80	0,75
2010	-11,56	1,00
2011	-1,78	-6,25
2012	-0,72	0,15
2013	0,72	1,10
2014	-0,27	0,33

Source: own calculations based on the data of the Central Statistical Office

Taxonomy of changes

Following the changes in the number of printing companies, one can observe structural transformations occurring in the sector.

With reference to the changes (illustrated by the figures) in the printing industry in the years 1989–2014, the following periods might be distinguished:

- the period of rapid development of printing enterprises (1989–1995);
- the period of maturity and stability in the printing sector (1996–2004);
- the period of investments and strengthening competitive advantage (2005–2009);
- the period of reduction and restructuring of the sector (2010–2014 and beyond), [W. Cetera, 2014].

In the years 1989–1995 printing companies were established spontaneously primarily due to the availability of the means of production (printing machines and equipment).

Most printing equipment came from the secondary market – from liquidated print shops owned by large companies and social organisations. The machine operators "privatised" the machinery which they used and started their own businesses.

The demand for printing services increased much faster than supply. The available data shows that this was the time of above-average profitability in the sector. Among the characteristic features of that period was that the ability to print was the basis for competitive advantage and the guarantee of economic success.

In the following years, 1996–2004, the market added quality to the requirements set on printing production. Customer requirements increased. Companies offering multicolour printing on a single-colour machine were slowly disappearing from the market. Printing shops began to invest in equipment. The majority of the equipment was made in the Czech Republic, Slovakia and Germany. The customer expected a quality product made in a timely manner. During that period the number of sole proprietorships decreased. Keeping the proverbial garage company became impossible. Printing companies developed, creating customer service and sales departments, and they increasingly had to solicit customers. It became obvious that having only printing competences was not enough. At the same time, Polish companies were entering the markets of Western Europe, offering quality comparable to that of European companies, and low price of the service. Relatively low costs (among other things, due to low salaries of employees) were the basis of competitive advantage.

Without a doubt, 2005–2010 was a period of largest investments for printing. EU funds and open European markets after Polish accession to the EU were the driving force of the development of this sector. Companies received a substantial resource of new means of production. New technologies were also perceived as the source of labour cost reduction (more efficient machinery, shorter retooling times).

The investment frenzy of Polish printing companies was accompanied by radical changes in the European printing market.

This is also worth noting that change in reading habits and the increased use of electronic media – which significantly reduced the demand for printing – had a negative impact on revenues from ‘paper’ ads. At the same time, competitors from countries with low production costs, especially in Asia, were able to meet European quality standards and exert strong pressure on prices. As a result, for example, imports of printed products from China to the EU from 2000–2009 have more than quadrupled [W. Cetera, 2009].

The last years of the economic crisis had a major impact on the European printing sector, which is sensitive to fluctuations in the business cycle. As a result, the demand for printed products decreased and the financial institutions are more reluctant to lend to small and medium-sized printing enterprises (which are in the majority in the sector) that have lost liquidity. In response to these challenges, it is going through a profound transformation including also the liquidation of enterprises and downsizing. Opportunities arising from the development of technology and the implementation of new business models require new competencies, supplementing them with skills which current employees are often unable to present.

The development of electronic media and technologies supports building closer relationships with customers and creating greater added value through differentiating services, such as offering innovative processes and printing services together with database management. The integration of communication and multimedia services not only expands the range of products, but also increases the attractiveness of the sector both for customers and employees.

The last distinguished period began in 2010. The Polish printing sector faces radical restructuring. The changing structure of demand has started a process of change on the supply side of services.

Technology

Originally, competitive advantage was built especially in the area of technology. The overall economic situation was conducive to that – the mere possibility of printing was a sufficient condition for the success of a printing company.

Small and medium-sized printing companies between 1996–2003 increased their production capacity more than threefold[9]. The conducted survey shows that the largest increase was for full-size A1 and B1 machinery (Figure 2).

Small and medium-sized enterprises imported equipment from the European Union and the United States [W. Cetera, 2009]. They were mostly used machines (about 80%).

New technology resulted in a change in the structure of the printing market in the US. The production capacity of digital printing is used by: 20,2% finance and insurance sector; 18,4% industry; 15,4% trade; 13,6% education and also 13,6% of health care [P. Sorce, M. Pletka, 2004].

[9] The unit is printing performance – the author assumed that that is the number of printable A3 sheets in a given period of time.

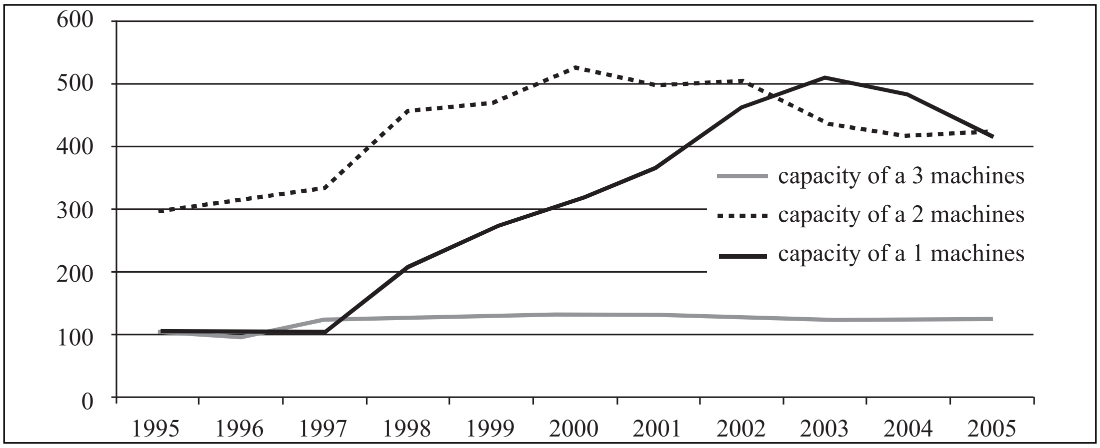

Figure 2. Increase in production capacity in surveyed printing SMEs

Source: own work

Digital printing houses (69,6%) are furthermore equipped with devices for offset printing, thanks to which they complete their offer of services in the case of large amounts of printing. Companies providing digital printing services most often began operations as offset printing houses (31,0%). Moreover they provided office services (11,7%) and photocopying services (9,4%), and they were also graphic studios (7,0%) [P. Sorce, M. Pletka, 2004].

Figure 3 shows the relationship between the development of this technology in the United States and increased spending on full-size printing machines in Poland.

At the same time in Poland, as a result of investments involving the purchase of printing machines, mostly offset machines, the potential of the sector and the competition increased. As a result, both prices of services and profitability decreased. Lower prices of services are part of the short-term competitive advantage. Earned income prevents future investments and morally used technologies will be non-transferable.

The source of realised investments in companies surveyed in the poll in 2005 was most frequently the purchase of new technology materialized in machinery and in production equipment – 62,1% of indication (Figure 4).

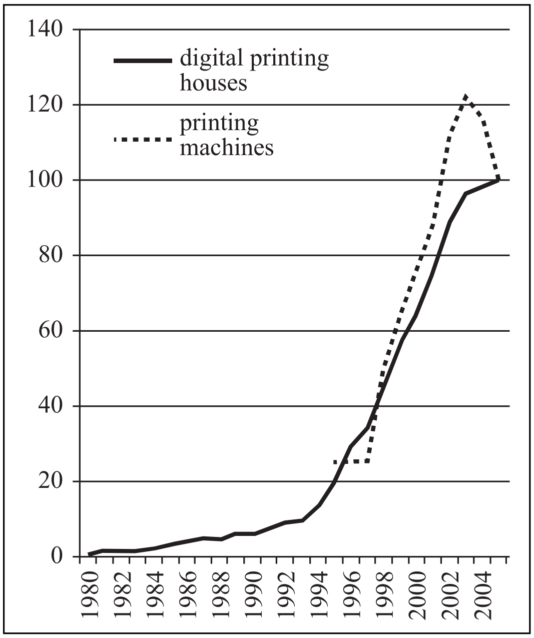

Figure 3. The relative increase in the number of digital printers in the US and the relative increase in the number of A1 / B1 offset machines

Source: own work

This was followed by: own ideas – 48,3%, industrial co-operation – 24,1% and copying foreign solutions – 16,1% of indications. The least significant sources of innovation in printing companies were purchasing a license – 3,5% and a joint venture agreement – 1,2%.

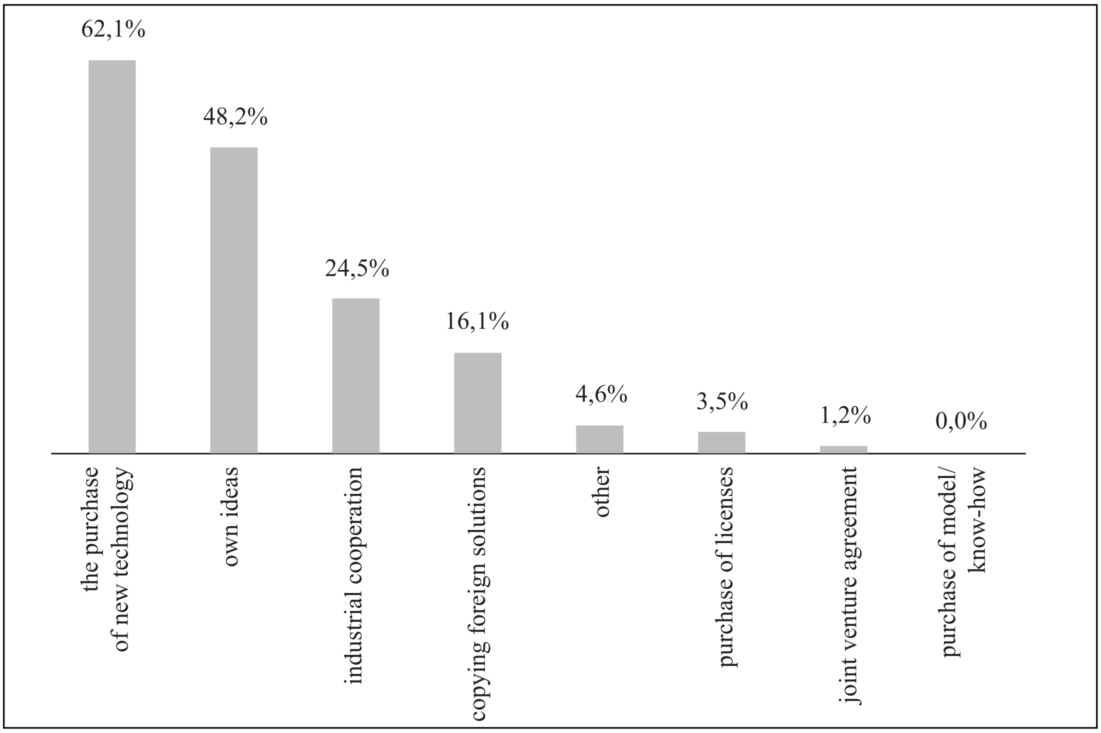

Figure 4. Sources of realised investments in the surveyed printing companies

Source: own calculations based on carried out research

When realising investments, most printing companies bought new equipment and thereby increased their production capacity. The "new" in many cases meant the first application of technologies that were formerly known abroad. Therefore "second-hand" machines were bought, which came from abroad, and which on the Polish market had innovation values.

Such investments created only a temporary competitive advantage in the local market. These technologies were in fact present on the European market for over a decade, and the increasing demands of the market in comparison to the quality of printing services quickly proved their insignificant value. Furthermore, the purchase of equipment from the secondary market outside Poland actually built a competitive advantage only on the local market, as in the country of origin it was already being replaced with new technologies that had better parameters. Besides their capacity was adjusted to the changing structure of demand in the printing market.

Cooperating institutions in the process of introducing innovation

According to 47,1% of managers surveyed in 2005 companies most often cooperated with suppliers of machinery and manufacturing equipment (Table 3). On that time 41,9% of managers indicated cooperation with customers and 24,1% with suppliers, 11 managers (12,6%) cooperated with consulting firms, agencies and local government institutions and competitors. Only 5,8% of companies cooperated with centers of technology and information transfer, and only 1 (1,2%) – with institutes of higher education and research and development units. No company cooperated with institutes of the Polish Academy of Sciences and incubators and technology parks. Cooperation with consulting companies was limited to the preparation of grant applications and business plans. In the case of the institute of higher education, new bookbinding technology was purchased from it.

Suppliers of new technologies, i.e. printing machines, with whom cooperation occurred most often, supported investment processes in printing companies for obvious financial reasons. At the same time, new customers of printing companies appearing on the Polish market had new production and quality requirements, and as recipients they were also involved (although less than suppliers) in investment processes realised in these companies. The second position of recipients, who create demand, among institutions cooperating in the process of realising investments, indicates their lack of appreciation by managers.

Table 3. Institutions with which the respondents cooperated with in the investment process

Institutions cooperating in realisation process of investments	2005 survey
suppliers	47,10%
recipients	41,90%
co-operators	24,10%
consulting firms	12,60%
local government agencies and institutes	12,60%
competitors	12,60%
centers of technology and information transfer	5,80%
other	3,50%
associating institutions	1,20%
institutes of higher education	1,20%
R & D institutes	1,20%
PAN (Polish Academy of Sciences) institutes	0%
incubators, technology parks	0%

Source: own calculations based on carried out research

Effects

Thus, there were negative processes in the printing industry. For example, during the entire period of transition the dynamics of work efficiency per employee, measured by the volume of production sold, represented values below the dynamics for the whole economy – (Table 4, Figure 5). As a result, in 2011, work efficiency per employee, measured by production sold, in comparison to 1995 which was adopted as the base year, was significantly lower in the printing sector than in Industry (about 20%!).

Table 4. Dynamics of work efficiency, measured by production sold per employee (year 1994 = 100)

Years	Industry	Printing
1994	100,0	100,0
1995	116,0	113,4
1996	129,0	118,3
1997	135,0	131,0
1998	151,0	157,4
1999	171,5	158,6
2000	179,4	168,1
2001	191,2	180,8
2002	209,8	166,7
2003	234,3	179,7
2004	243,4	197,4
2005	266,1	211,3
2006	282,6	249,1
2007	283,7	236,1
2008	286,8	234,5
2009	316,7	259,1
2010	338,2	265,8
2011	344,6	273,5

Source: own calculations based on the data of the Central Statistical Office

Despite undergoing significant changes thanks to which it attained a European level in terms of technology, the printing sector is

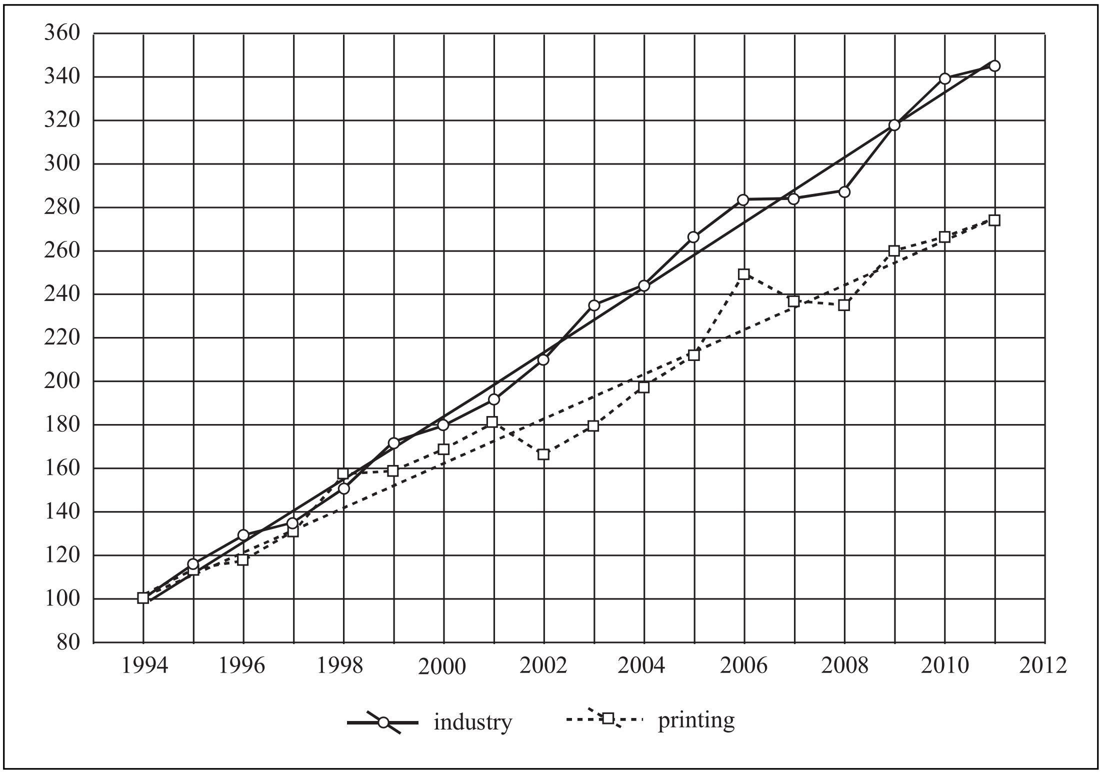

Figure 5. Dynamics of work efficiency, measured by production sold per employee (year 1994 = 100)

Source: own study

not performing in comparison to industry as a whole [W.Z. Tarnawski, 2000][10].

Currently, in the Polish printing industry there appear to be a lot of negative tendencies. Enterprises have excess production capacity[11]. It is accompanied by short-term production planning and falling prices of services. Most companies underestimated marketing and organisational innovations and too much importance is still attached to the technology. As a result, the financial situation of enterprises is deteriorating. Studies show that only 10% of companies are developing dynamically, responding to changes in demand.

The above-mentioned is also confirmed by the results of measurements of the economic situation in the printing industry – respondents pointed to excess production capacity (Figure 6). In April 2014, over 50% of entrepreneurs believed that half of their production capacity was unused.

[10] Similar processes took place in the paper industry: W.Z Tarnawski, *Popyt i podaż papieru na świecie i w Polsce – perspektywa 2010 [Demand and supply of paper in the world and in Poland – 2010 perspective],* the Association of Polish Papermakers, Łódź 2000.

[11] Business cycle research in the printing sector was carried out for the first time in February 2012 and for the second time it was organised in September 2012. Another was conducted in April 2013 and repeated the following year. The first piece of research involved 177 printing companies, the second – 330 companies. In the third one, 356 companies were surveyed, and in the fourth – 320 companies.

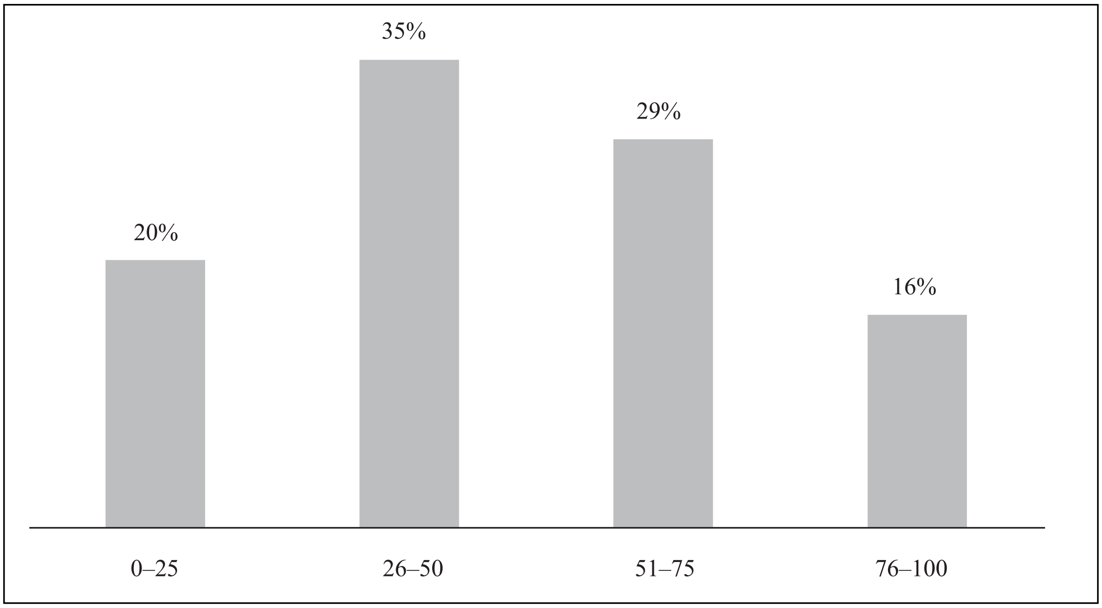

Figure 6. The percentage of used full production capacity of the company (staff, equipment, means of transport, area, machines etc.)

Source: own calculations based on carried out research

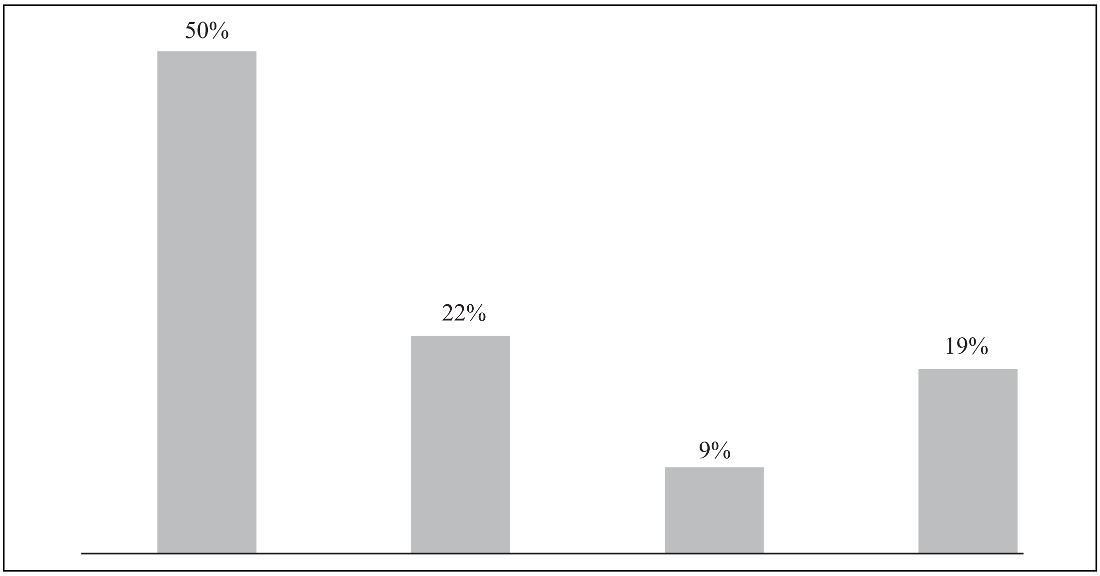

Figure 7. Guaranteed period of company's operation (in weeks)

Source: own calculations based on carried out research

The situation in the sphere of production is similar (Figure 6). This is an unfavourable situation for businesses. In the printing services market, the fact that only 19% of companies can see their production prospects covering a period longer than 27 weeks is very worrying. An obvious cause for concern is the fact that up to 50% of printing companies surveyed plan their production in a monthly perspective.

Conclusions

The coming years will reveal the new face of the printing industry. Unfortunately, Polish entrepreneurs are reluctant to base their decisions on economic analyses and are more willing to base their actions on their own experience. I have already pointed out this alarming tendency in 2007 [W. Cetera, 2007]. At that time, in the years 2002–2005, the Polish printing industry was developing offset technologies which in the global market were no match for digital technology. Managers of printing companies in Poland did not see structural changes on the demand side.

The current situation in the printing industry confirms the excessive growth of production capacity in relation to demand. It is accompanied by short-term production planning and falling prices of services. Most companies underestimated marketing and organisational innovations and too much importance is still attached to the technology. As a result, the financial situation of enterprises is deteriorating.

In the near term, the number of businesses will decrease significantly – unfortunately, more often due to bankruptcy rather than restructuring.

Even today, one can call for research to be carried out and its transfer to the business practice of the sector. Research should include conducting comparative analyses of foreign markets in terms of demand and supply of printing services, as well as issues relating to determining the optimal regulation of business with regards to technology, economy and law.

Managers of Polish printing companies did not take into account global market analyses. Macroeconomic processes were beyond the horizon of reflection and planning was most often limited to the short-term microeconomic perspective. In contrast to the situation in the European market, in Poland, even in 2009, printing production was still on the rise. Polish businesses used to win the competition with printing businesses from the countries of the ‘old’ European Union mainly due to lower prices. Competitive advantage based on this has, unfortunately, proved to be transitory, and investment processes taking into account the increasing integration of economies carry substantial risk.

Tendencies occurring in Europe could also be observed in the local market. This is illustrated quite clearly by the change of circulation of printed books and brochures (Table 5). A significant decrease in medium circulations while circulation is increasing is, from the point of view of the offset technology, which was the main subject of the investment, negative.

Changes taking place on the Polish market, especially the smaller circulation of printed publications, were compensated by higher exports of services. The majority of managers attaching too much significance technological solutions remained in the illusion of increasing sales of services. In the short-term, the sector

Table 5. Change in the structure of book production

Years	2006	2007	2008	2009	2010	2011
Published titles	19 920	21 810	21 740	22 480	24 380	24 920
First editions	11 990	13 260	13 280	13 310	13 430	12 180
Circulation [millions of copies]	133 6	146 4	145 7	144 4	139 2	122 4
Average circulation [copies]	6 707	6 713	6 702	6 429	5 710	4 912

Source: Central Statistical Office – statistical yearbook 2007, 2008, 2009, 2010, 2011, 2012 in the years 2005–2009 could even have been assessed as doing well.

The beneficiary of the transition period is the printing industry of countries of the "old" European Union, for whom the sale of morally used technology has sparked a restructuring of production and ultimately greater efficiency was achieved in this sector of the economy.

The development of specific recommendations addressed to managers and the science and government sector is the subject of future research and analysis.