2007

Competitiveness of the European Graphic Industry

Prospects for the EU printing sector to respond to its structural and technological challenges

Ernst & Young
La Qualité par principe™

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Part 1 – Summary of our methodology and scope of the study

Objectives of the study

Phase 1
Diagnosis

- Collect and organise the main documents dealing with the European printing industry and its environment.
- Identify the impacts on the sector.
- Set up a forecasting diagnosis describing the possible future of the sector.
- Determine the economic and international challenges for the sector.
- Identify and explain the structural and technological challenges of the sector.
- Identify the technological opportunities for the European printing industry to evolve and improve its competitiveness.

Phase 2
Assessment of impacts

- Measure and evaluate threats and opportunities.
- Measure and evaluate the foreign structural changes that are likely to threaten the European printing sector.
- Measure and evaluate consequences resulting from possible technological improvements.

Phase 3
Strategic plan

- Identify development of strategic priorities
- Identify efficient innovation levers for the sector.

Outline of our approach (1/2)

The study lasted 8 months and was monitored by a steering committee formed by the European Commission.

This steering committee met three times during the course of the study in order to validate the work in progress for each of the following phases:

1. Diagnosis
2. Evaluation of impacts
3. Setting-up of a strategic plan

European Commission would like to thank all the members of the steering committee for their participation in the production of the content of this report, including the following :

- **Ms Beatrice Klose, Intergraf**
- **Ms Anne-Marie De Noose, Intergraf**
- **Ms Martina Flink, Intergraf**
- **Mr Nicola Konstantinou, UNI-Europa Graphical**
- **Mr David Mahon, FAEP - European Federation of Magazine Publishers**
- **Ms Sophia Chrysopoulou, EPC/European Publishers Council - Europe Analytica**
- **Mr Rick Stunt, ENPA Newsprint**
- **Ms Helene Juhola, ENPA Federation of the Finnish Media Industry**
- **Mr Isidore Leiser, Stratus Packaging**
- **Mr Stephan Schumacher, Bertelsmann AG**

The main actions launched during this study were allocated to the diagnosis phase:

- **A workgroup with the British Federation**
- **Four workgroups in four European Countries** :
    - A workgroup bringing together French Printers in Paris
    - A workgroup bringing together Italian Printers in Milan
    - A workgroup bringing together German Printers in Frankfurt
    - A workgroup bringing together British Printers in London

- **Interviews with stakeholders** of the graphic industry, mainly clients of printers, in order to gain a deeper understanding of the industry's main market stakes

  The evaluation of impacts phase was composed of three milestones:

- A **technological seminar** led by the EFPG (French Engineering School dedicated to the paper and graphics industries), bringing together academics, suppliers and technological experts in the graphics industry. This seminar was fruitful in that it identified the main impacts on the competitiveness of the European Graphics Industry that could be brought about by technological improvements expected in the future.
- About **30 interviews with European experts**
- A **quantitative survey**, the aim of which was to provide statistics relating to the main impacts identified in the previous phase. The survey consisted in the setting-up of an online questionnaire circulated to a list of printers provided by national federations. Nevertheless the survey did not obtain the adequate number of responses enabling the mathematically reliable exploitation of figures for statistical use. In agreement with the steering committee, the results of the survey have not been mentioned in the report hereafter.

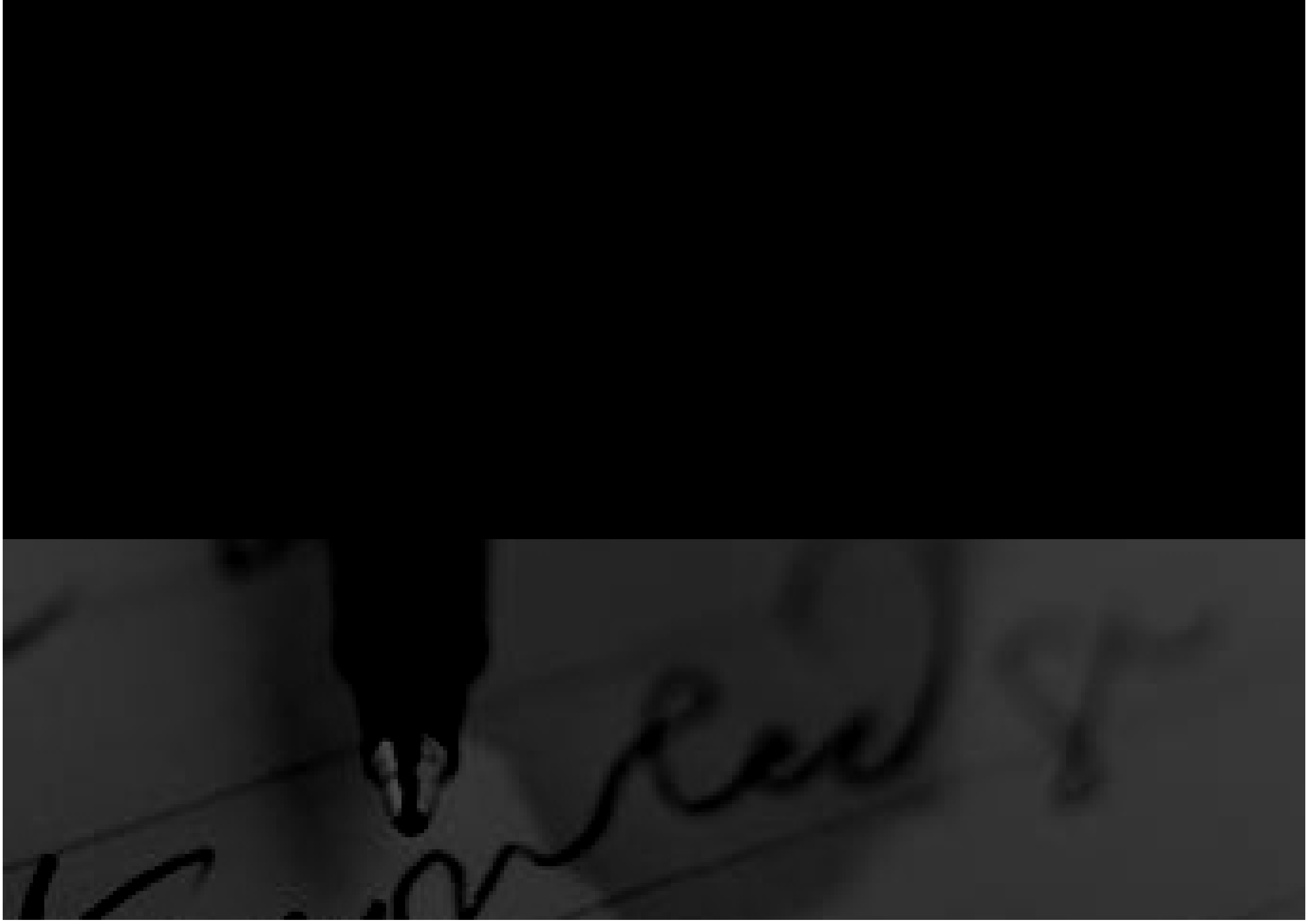
  The last phase dealt with a proposition for a strategic plan to support the European graphics Industry. A **strategic seminar** teaming the steering committee and representatives of national federations took place in Brussels on 2 May in order to submit and validate the plan of action developed. The different points of view of those present concerning the diagnosis were also collected during the seminar.

The scope of the study was defined at the first steering committee meeting:

- The study will focus on activities listed under the NACE code 22.2.
- Due to conflict between diverse data sources, Eurostat Database has been taken as a source of reference, whenever information is available.
- Accounting for around 80% of the whole European Graphics Industry's turnover, number of employees and number of companies, the following countries have been considered as representative of the European sector: Germany, the United Kingdom, France, Italy, Spain, Belgium and the Netherlands. Most of the qualitative or quantitative analyses have focused on this country panel.
- These countries will represent EU27, but sometimes EU15 whenever the distinction is pertinent.
- The findings and conclusion of the study are particularly relevant for sheetfeld offset printing, which is currently the widest used printing process, and partially for weboffset, rotogravure, digital printing and packaging printing.

Part 2 – A day with Mr Print :

a short story illustrating the daily and structural problems faced by a European SME manager …



It is early one chilly morning and Marc Print shivers as he pushes open the door into the reception area at his printing business. He has got out of bed on the wrong side this morning, and the very idea of an appointment with his banker does not really thrill him.

« Les Ets Printeur », Marc's printing company, is located in a bleak industrial estate. The workers didn't really appreciate the move five years ago, to a location further away from their homes, and with public transport always either on strike or running late. Marc had warned them that they would have to travel by car anyway due to their hours and shifts. So they all moved with the company – what other work would they have found nearby?

Marc walks to his office carrying his briefcase. He first goes to the planning department. At this hour, there is hardly anyone there except for people working in production and planning.

Standing in front of the wide blackboard on which the planning has been drawn up, he listens to his young planning manager who is reporting on events which occurred during the previous night.

"Roto number 3 broke down at 20hrs yesterday. The head foreman tried to solve the problem himself but in the end he had to to call the maintenance team who diagnosed that the strain controller was deficient. Since all these machines are stuffed with electronics, they had to wait until the next morning for the electro mechanical technician to arrive. Since then everything has been fine, the press is running at 40 000 rpm. We still have delays on remaining jobs, we won't be able to do the short prints for the county council, you know the monthly edition. I'll have to put the print for Legrand first. It will be stapled on the press, and the job has to be delivered today"

It has always been the same story, the same thing, ever since Marc has worked in the company created by his father 40 years ago. Of course the presses are different from in the past, even the preparation of the presses has changed from when the operators used to cut the films with stanley knives to insolate them. Now the company is using CTP (computer to plate) in pre-press. However, technical problems still occur regularly in the production process. There have always been dissatisfied customers about delays, although we try the best we can to satisfy them. We have to pamper them otherwise they go elsewhere. If they knew how hard and complicated it is being a printer…

Before leaving the planning department, Marc takes a look at the work load. There is just enough to fill the next two or three weeks, not more. The salesmen will need to be shaken up a little bit; just as well he's seeing them on Monday for a business meeting.

Going back to his office, he finds that his assistant has just arrived.

"Any appointments scheduled for this morning?"

"Yes, Marc. This morning, there is a meeting with the worker representatives. I have put all the information you need in the file with the agenda, and comments from Philippe. Then, this afternoon, you know …"
Of course he remembers, the bank…

Philippe, the staff manager, is a great person, devoted and highly competent. He does not hesitate to reprimand or to say no, but he is always ready to listen, and he is very humane. That counts, in a small company.

Marc goes into his office; he has to study the file for the meeting with the trade union.

”It’s been two years since we’ve been given a rise. The break time could be included in the working hours.” Of the three employees on the other side of the table, Karine is the most virulent and the one who has been with the company for the longest time.

Marc thinks for a few seconds. He had promised himself that he would not give way at all. It is not possible, the company’s results are too poor.

He does not have to deal with the hardest trade representatives; he knows some of his colleagues who do…

At the same time, he quite understands the workers. He has not been able to maintain their purchasing power, and rises in wages have been kept for the most deserving. The problem is, those who are claiming for a wage rise are the operators, the ones who are already the most well paid. And if he gives them what they’re asking, he will be forced to give something to all the others, otherwise things will go badly, Karine had warned him.

He knows all the workers very well, the ones who have been with the company for longest already worked for his father. In most cases, he also knows their families whom he meets at Christmas celebrations.

“So what do you say?” Karine says to Marc who gives a start, surprised by her tone.

Karine works in prepress (equipped with CTP and CAP). That has always been the way of things – the union members often come from prepress and maintenance. Well things don’t change.

The phone at the end of the table rings. Pierre answers it and passes it to Marc: “Press no. 3 has broken down again”

Marc takes the phone. “Yes, just a minute, I’m coming, we’ve almost finished.”

Marc speaks calmly to Karine, aware that everybody is watching him: “It’s an emergency, we’re going to have to stop the meeting. But I have understood your problems and claims. I propose that the break time should indeed be reckoned as time, but as part of the modulation hours, not the regular working time. Philippe and I will make you a proposal for the next meeting. Is that OK?”

He stands up, looking round at everyone for their tacit consent. Karine nods in answer; they have reached an understanding.

It wasn't actually what the union members requested. But this way, the company will grant additional holidays to the workers, during slack times, not when there is a full workload. Otherwise he would have been forced to hire temporary workers or have people work overtime.

So, he has given way, but it will not affect the final accounts, and the union can return to its troops and claim victory.

"I forgot to tell you, Marc, but this morning I called Legrand's purchasing department."

A pause.

"And?"

Marc and Antonio are having their second coffee, sitting at a small round table, in the huge, noisy room at "la Brasserie du Commerce". Lunch is often an opportunity for Marc to talk with the company's executives, to cheer them up in times of stress. This is not usually the case for Antonio, the best salesman and the one generating and managing the portfolio with the highest turnover. Antonio is still as enthusiastic as during his first days with the company, which is maybe why he has this lasting and good relationship with his customers and prospects. But this time, he seems to be worrying about something.

"Yes, and?" he repeats.

Antonio sighs and continues.

"Don't you remember the bid invitation which was sent last month? We worked on a proposal for two days. There were about thirty references with different versions. We had to make a proposal for all of them, because Legrand then only wanted to deal with one printer. So we had to subcontract part of the production that we couldn't do ourselves and we made a global offer. Since the market is national, we had to include the transport from all over the country."

Antonio is obviously trying to gain time. Marc remembers all these estimated costs very well, he had worked on the proposal himself during the Easter weekend. Is he trying to tell me that we have lost the market? Legrand is our second or third most important customer. It would be a hard blow for the company if that's the case. No, it's not possible; we can still try to negotiate. To think that we already reduced our prices by 5% last year!

"Do you mean our offer hasn't been accepted?"

"Not entirely. In fact, the decisions are no longer being made at national level. You know that Legrand is a subsidiary of an American group who also owns stores in other European countries. Starting from this year, all bid invitations are to be centralised in England. Today they are working with about ten printers; only three of them will remain at European level. The competitive bidding has been cancelled. We will be consulted three or four months after the summer holidays. My purchaser, who I've known for ten years now, won't be part of the new organisation, he didn't want to work with the English purchasing team."

“So you will have new negotiating partners. We cannot afford to lose this market. We must be one of the three; it’s the opportunity to increase our volumes considerably, isn’t it?”

Marc knows he will be playing double or quits. There is a chance of being among the happy three, just as there is a chance of being definitively ruled out. The game is going to be tough and tight.

“I know, we’ll do our best. But you know… I don’t speak English,” Antonio says.

Yes, Marc knows that very well, it’s becoming a real issue. Not only because none of the salesmen speak English (Marc will deal with the customer himself, it won’t be the first time), but above all because few of the plant’s employees speak any foreign languages. Customers, and mostly the major ones, want negotiating partners who speak their language: a sales assistant, a manufacturer, or even somebody in charge of production or a rotary press operator…

“If necessary, I’ll take over. Did you get any valuable information out of your former purchaser?”

“Yes, they’ve decided to include various kinds of services in the consultation. The proposal will be judged as much on the printing as on those services. He told me about the archiving of files in the production flow process and also last-minute changes on CAP, finished-product stocking, routing services for their registered customers, and even stocking/packaging of gifts, gifts they offer with their loyalty card. All of this with quality audits and performance indicators, you see what I mean? We’ll be able to manage all this, but our people will need special training for these services to meet their requirements.”

Antonio sighs.

Marc agrees with him. Printers are going to make more profits with services rather than presses. Customers are ordering printed matter in the same way as if they were buying electricity or telephone services – it’s the quality of the service that counts.

“Thank goodness they haven’t opted for inverted auctions. There is nothing better than a faked lottery.“

Eric sits before his boss. He has been working for the company for 15 years. From warehouseman, he went through the supply unit and is now a purchaser. He knows all the paper references inside out and he has already shown his purchasing talents when it comes to dealing on tariffs and discounts.

“Marc, we have a problem. The paper for Legrand’s print, you remember the national 32 pages, we won’t be delivered today. The machine setting is scheduled after tomorrow.”

“What’s their argument?”

“They’re out of stock.”

“Do we know why?”

Marc knows very well that a paper supplier cannot run out of paper in the case of a standard reference such as this.

“He didn’t want to say. That they had computer problems, that they underestimated their needs. I had heard that there were strikes in Finland last month. But I don’t believe them, I think they had low stocks and they preferred to deliver the paper to one or two of our colleagues without warning us.”

“I’ll try to call them back, one never knows; in case it doesn’t work, do you have an idea?”

Marc’s workers are used (mostly the management team) to making proposals whenever there is a problem to be solved. This has given them a sense of responsibility. They now show real creativity in the face of adversity. His role is then to arbitrate and judge the financial impacts of the various choices he is being given. Or anticipate their impact on any other of the company’s departments. Of course, he contributes his own experience and expertise, but this way of managing enables him to assess the maturity of his troops.

“We can try to get an emergency supply from another company. Their depot can deliver 24 hours a day; the print will be delayed by the same amount of time. I don’t know if it’ll work and we still won’t have the best price”

“I’m not really keen on that solution. Our selling prices are already too high and we’ll ruin the remaining margin we could have made. Is there nothing left from last month’s printing?”

“Not that much, just enough for 20% of the printing. We could maybe use a lower grammage, we have enough in stock.”

Marc reacts right away. “No way, we’re in negotiation with them now. If they take a sample to control, things will get worse. You remember we asked them two years ago to allow us to use a lighter paper just for once. They refused; it’s not mentioned in the specifications.”

It had to happen just when we’re dealing with Legrand, at a time when we have to be irreproachable with them. Paper manufacturers have merged, the market is now concentrated and our negotiating capacity has decreased significantly. Marc does not gave enough levers to balance the growing importance of the multinational manufacturing companies. He tries to deal as well as he can with the three or four major suppliers in the market.

“I have an idea. If Legrand has priority, we’ll use the paper that ought to be used for central merchandising printings, it’s the same amount of paper. We’ll try to find a convincing explanation.”

Marc agrees with him. “You always find answers to all your problems…”

The banker is to arrive in a half hour. Marc is in his office, wondering if his accountant gave him all the information on results and cash flow predictions? Are the selling assumptions and margins realistic?

Marc would like to buy a new press, to replace the two oldest ones. They can still run for another 10 or 20 years, if they are well maintained, but the new press runs faster, and it will be equipped with the latest high tech options. He will sell the two old presses to someone who specializes in press refurbishment and will need them to sell either in Asia or Latin America.

The new press will produce as much printing matter as the two older ones. The shifts working on those two presses will be redeployed to night shifts. Marc prefers to keep them, it is hard nowadays to find good machine operators.

Marc has chosen his machine carefully. He remembers the numerous, long meetings he had with his salesmen, in order to be sure that the press would fulfil customer needs and requirements. The bank – which was already the company's bank in his father's time - will lease the press if Marc succeeds in being convincing on volumes and selling prices.

He knows that the banker will take advantage of the situation to ask questions on the business. The turnover had decreased slightly last year, for the first time in the company's existence, and the net result is barely balanced. Marc will have to be persuasive to justify the purchase of a new press. Can a banker understand the fact that investing could prevent the company from going bankrupt even though the context does not seem to be in favour of a new investment? His customers, although faithful to him till now, will be looking to the competitors for lower prices. And how can we make less expensive estimates while being unable to improve our productivity? How can we improve productivity without investing in new presses?

Marc knows that future of printing industry isn't only led by productivity but although by a thin management of the customer relationship. He's got some ideas dealing with services, delivery support, internalization of the quality processes, shipping and so on but he's convinced the future of the printing industry is tied to its origin. Indeed, it appears that printers have to become information providers, with some multimedia solutions and a strong focus on the customer's expectations. But what do Marc knows about his customers? Nothing. because he's often filtered by the purchaser of printing matters whom didn't know anything about printing industry constraints.

Marc got a lot of ideas about the future of his company, If, as Kipling says! But the banker isn't a 'if' man, is pragmatic and he will surely talk about the future of the company. Marc does not have a successor, an heir to whom he could have passed on the company. He feels responsible for the continuity of the company, especially towards the workers. But he is so involved in the daily management of the company that he does not spend enough time examining the different possibilities. Will he be forced to sell the family business? To whom and how?

His assistant interrupts. "The banker has just arrived"

Part 3 –
Summary of the analysis of the European printing industry

Part 3a –

The printers' point of view

Diagnosis of the European printing industry

European printing industry is highly fragmented and more than 85% of the industrial structure is composed by SMEs employing less than 20 workers.

The printing market should be considered to be a European market. Most of the major printers have, depending on their size, an export activity. Small enterprises are also concerned, as they are confronted with foreign competitors who are active in their markets. Globally this market is static and not really dynamic. Is there enough room for expansion for all the players? What kind of future could there be for small companies without significant structural changes? Are these companies too numerous and destined to strive for survival? The industry appears to be too fragile, too fragmented, to prevent the intensification of a restructuring process in most of the European countries. This restructuring would have an impact mainly on SMEs. Bearing in mind that a strong concentration process has already affected large companies in the past, the future restructuring would have an impact on SMEs.

Newcomers in the market have increased the competition:

Brokers do not yet have a large market share but they influence market orientations and impose new distribution margins and offer major clients new alternatives for sourcing.

New significant providers from emerging countries (Eastern and Central Europe, China) force printers to redefine their market position by integrating more services and building a closer relationship with their clients: data base management, on-demand printing, personalisation of products and services, etc., could contribute to consolidating customer links and giving access to attractive markets (protected in that way from foreign competition).

Entrepreneurs and managers in medium-sized companies are still much involved in the rationalisation of internal resources, resource-sharing and networking with other players or trade activities in order to improve margins.

These ways of organisational innovation could generate financial resources allowing the financing of development projects and acquisitions.

Most printers have the feeling that their business is structurally changing under the influence of powerful drivers : printed documents vs. internet and new media, economy of scale and global supply to satisfy some markets, industrial organisation and investment strategy, etc.

The crucial restructuring necessary to reshape the industry and be able to face new competition could require profound transformation and potentially significant cutbacks in terms of the number of companies and employment. To be efficient and fair, this restructuring should be accompanied at minimum by the harmonisation of the social, tax and regulatory framework.

Snapshot of the printers' view 1 /2
(summary of focus groups)

Industrial structure

The restructuring of the Industry is already under way (the number of companies is decreasing) but is not sufficient, especially regarding the situation of the smallest companies

The companies on the panel are currently focusing on capacity strategy:

- To optimize their capacity rate, they have price discount practices and they help to pull down the market price and disorganise relations with the clients. They contribute to increasing global capacity and sourcing alternatives for clients
- An alliance strategy could be considered to be essential but is most often perceived as a complex and uncertain issue as mainly family-owned companies are concerned.

Purchase and supply chain

Suppliers have reengineered their own organisation and have already managed their industry concentration, most of them (such as paper manufacturers) have consolidated their position within the value chain.

Raw materials constitute a global market affected by the emergence of a Chinese industry serving machines as well as, more recently, paper and inks.

Purchasing alliances are considered to be a relevant solution but are very difficult to implement.

Some customers, such as publishers, buy their paper direct from the manufacturers to take advantage of economy of scale, then distributing the printing to a panel of capacity printers.

•This could moderate the concentration of the industry as it prevents the smallest printers from bearing price pressure

•It could affect the efficiency of the printing process, as the quality of the paper is not optimal and not adapted to technical specifications.

Customers & Products

Printers would like to modify their relationships with their customers by making more value-added proposals:

- To integrate end-users' needs to develop appropriate solutions: sensorial functions (touch, smell, etc.), recycling or environmental issues, etc.
- To be a proactive player, by integrating creativity, design, communication expertise, publishing knowledge, etc.
- To use Internet and new communication media to facilitate on-demand printing (for instance, choice of a cover, volume options, graphic validation, etc.)
- To integrate more marketing, communication and relevant sales forces

  Some products, such as children's' books, colour books, agendas and diaries are supposed to be relocated, but for other family of products, services could be the main leverage to resist against foreign competition and demonstrate value added by proximity.

Snapshot of the printers’ view 2 /2
(summary of focus groups)

Technology

Technology is no longer a lever that could be used by the printers, as very few of them invest in process innovation or R&D, thus :

- It is not considered to be a basis for differentiation strategy and does not provide long-term competitive advantages
- Manufacturers propose global/generic solutions that do not allow any adaptation to specific fields of application

The key point is to develop the ability to integrate services relevant to the equipment (from prepress to delivery), the information system, secure access to communication networks, data base capability, etc. to provide a full service solution.

Employee training does not seem to be in line with the industry’s new requirements and technology developments: solutions have to be set up by teaching or training institutions, as well as by companies themselves.

Regulatory framework and external constraints

The regulatory system In which the printing industry operates is very complex and printing companies often have an impression of heterogeneous situations within the EU.

In addition to fulfilling legal requirements, printing companies are increasingly confronted with requests from customers to demonstrate their commitments towards ensuring environmental sustainability.

For imported products controls on the application of European Standards, affecting production processes, labour standards, environment protection would act as protecting measures.

Disparities regarding costs of work, as well as tax or social security contributions, exacerbate internal competition and reduce the benefit of a pan-European organization : that could make it easier for newcomers (the Chinese) to take up position in Europe.

Third countries

Imported products are said to match the standard required by European customers in terms of quality.

All printed products are not similarly affected by the same sort of competition scheme :

- China: colour books, children’s books, diaries, trade material and part of the packaging (following the relocation of related products)
- New Member States catalogues, some magazines, commercial and now books (black & white and best sellers)

Vulnerability in terms of relocation is mainly based on volume, market segmentation, delivery times, etc.

Part 3b – Strengths Weaknesses Opportunities and Threats analysis (SWOT)

Real Strength...

Considering the whole macro-economic landscape of the EU 27, the European graphic sector integrates all stages of the graphic industry value chain. Furthermore, eminent market leaders are well-established actors of the sector - although they might be dispersed - thus gearing up the sector while enabling a worldwide visibility.

The European graphic industry can supply a diverse and polymorphic offer of technologies and associated services. Those technologies, that are covering all the processes of the graphic industry, are responding to time and quality constraints coming from the market.

In addition, the European graphic industry has modern and efficient production facilities enabling them to remain competitive on its markets thanks to a massive investment policy and the use of Information Technologies.

Being the cradle of modern printing, Europe kept a tradition of research and innovation in that field. Therefore research and training centers focused on many aspects of the modern printing activity are remaining even though market demand is limited. Without a doubt it allows the graphic industry to benefit from the necessary developments and resources to sustain the competitive positioning of its market offer.

Finally, owing to a constraining regulatory landscape, industrials of the sector have put in place an efficient environmental policy that helped them to be classified world leaders in environment related matters. In fact the European law system is often a reference for any country's printing sector. This strength makes it easier for European products to be at the level of any environmental standard throughout the world.

- All the value chain actors (raw materials, machines, training and research organizations, etc.) are represented at a significant level
- A complete range of services covering all requirements thanks to the European market, due to the presence of all the technologies and processes
- A dense and reactive network of small companies responding to niches requirements or local needs
- A globally modern and efficient production tool
- Most leaders are committed to environmental and sustainable policies, which may in turn be deployed at the whole industrial level

… and weaknesses to overcome…

As for most of the European manufacturing industries, the graphic industry consists of a minority of large companies and a majority of small family businesses. The latter are facing most challenges and lacking the financial capacities allowing their managers to support a long term strategic vision. As a consequence, this atomization slows down an effective collaboration between companies. Most often the owners or managers are mainly focused on internal competition without anticipating the evolution of the competition at a global scale.

A second impact of the companies' small size is their weak capacity to invest in non productive activities for example research and development or marketing. In fact, investments are firstly dedicated to production equipments fostering a capacity based competition. As a result this situation cause an under utilization of the equipments, difficulties to position the different local competitors without real differentiation and thus a competition based almost exclusively on price.

The recent past years have been marked by an intensive concentration of the main client industries (editors, retailers). Therefore their negotiation power has increased since they can gather their commands and achieve to reach a critical size in the client portfolios of a high number of printers. This strong concentration has of course a direct impact on negotiations focused on prices generating a consistent price decrease.

This concentration effect exists on the suppliers' side as well. There are very few paper producers and printing machinery producers today. Thus printers are under pressure from lower sales revenues (growth volume is more than compensated by price decrease) and higher buying prices generating automatically margins dilemma. This phenomenon pushes the printers in a vicious cycle of value loss since their reaction is to pursue their investments in production installations in order to lower their costs.

- Average size still too small and divided. Most businesses are family-owned, have a weak financial structure, little structured strategic vision and a reluctance to invest in innovation
- Overcapacity and low capacity use rate
- Most of the companies have poor international experience, except for some leaders: such a diversified industry structure does not facilitate potential collective action plans
- Weak power position, confronted with strategic large international suppliers and concentrated customers, generate a passive attitude regarding pressure on prices, margin crunch and unstable relationships with other stakeholders within the value chain.

… in order to catch available opportunities..

The European regulatory framework, which is often criticized by printers, could nowadays represent a strong opportunity because it could limit, for the moment, the access to the market of printed products coming from outside Europe. Regulations could be considered as an opportunity if they apply in the same way to all the printed goods exchanged in the EU 27 territory. Strong regulations, especially on environment or social matters, stimulate European printers to compete on all global markets where the regulatory limitations seem less important than those existing in Europe. That is why the perceived most threatening countries could offer international growth opportunities for the graphic industries, working under their capacities in their interior market.

Small size companies could take advantage of their agility and low cost structure and this allows some of them to be present on niche markets which remain profitable and not exposed to low cost countries competition. In order to develop offensive strategies on these niche markets (security print, comprehensive communication solutions…) some prerequisites are often required: strong customer relationship, high availability or flexibility and high quality level. Such opportunities are not available for all companies but could be a basis for growth leverage for the European graphic industry.

Development of new technologies and new communication media with multimedia content could be as a paradox one of the main opportunities for the graphic industry. Since these kinds of communication supports are available almost everywhere around the world, they are not an occasion to build an international competitive advantage. Thanks to them nevertheless, companies can propose a diversified offer, produce more services and customer relationship, and so create more value. This evolution could be a driver to enhance work force qualification and training level, in order to accelerate the switch from a production based industry to a multimedia conception business and propose to the client an integrated and value based offer.

- Several differentiation strategies are possible according to size or activity of companies : proximity or niche-markets for medium-sized companies, international development (through acquisitions or relocations) and integration along the value chain for the others
- Regulations could contribute to slow down imports of products even if they could not be considered as entry barriers
- “Service-orientation” is a growing trend, allowing printers and their partners to respond to new expectations from customers
- Development of multimedia technologies could generate new answers to the customers communication issues by building a multi media communication solution.

… And to resist to threats

Some of the graphic industry’s markets are definitely international and have to face a strong and diversified competition from countries having lower labor force costs. This competition has been sustained by international investments which have contributed to the development of an integrated industry : machine manufacturers and suppliers (paper and inks) and also European customers expanding in these new countries.

So the graphic industry of these countries (national or international) has benefited from a lower labor force cost to serve fast growing internal markets and exports goods sensible to labor intensive operations. As an example, China nowadays exports printing machines and at the same time books and other printed products. The Chinese printing Industry is not a global threat for the European Graphic Industry but a real peril for specific products presenting special features : large part of manual operations, long delivery time, and weak customer relationship…

The European graphic industry is suffering most often from the uniformity of its offer and has to cope with few differentiation leverages. Since most of the companies seems to be disengaged from research in the graphic industry, it seems that innovation and developments are stimulated exclusively by suppliers. These suppliers are covering a global market and offer the same solutions throughout the world at the same time and thus the European Industry does not have any more this competitive advantage.

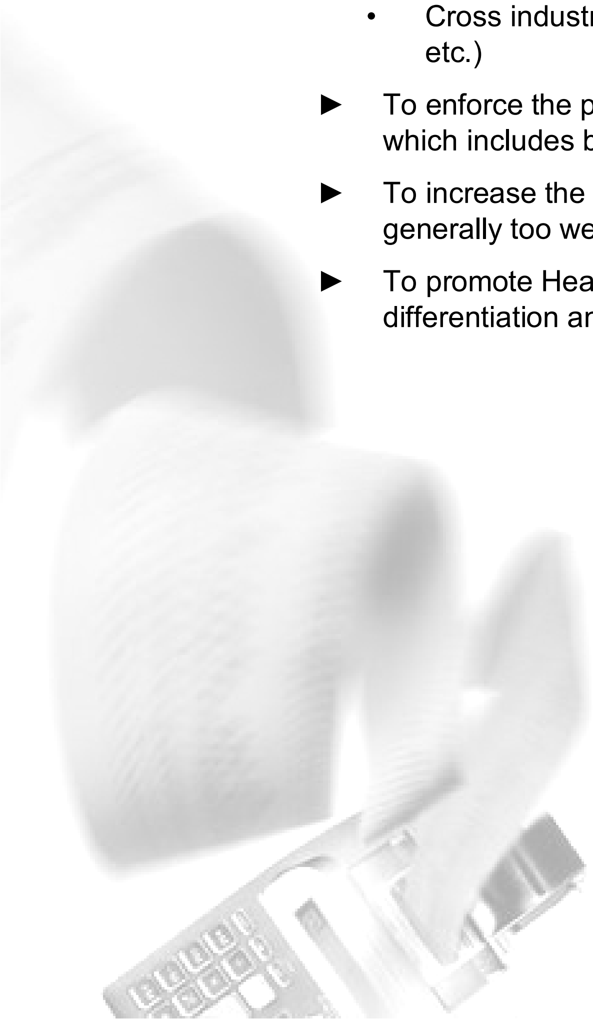
As many printers do not leverage the innovations proposed by their suppliers and are most often not able to develop by their own customized solutions for their clients, they could be reduced to suppliers of production capacities and loose a large part of the control of their prices and margins. The uniformity of services and technologies (fostered by growing influence of brokers agents) forces the companies to differentiate only on prices. This could accelerate price wars and cause collapse of the weakest companies.

- Growing presence of third country printers in the European markets, also gaining credit in terms of quality and potentially in managing environmental constraints
- Relocation of customers’ activities in emerging countries concentrating their investments in these areas where they could find alternative local sourcing
- An ongoing, intense price war within the EU and the difficulty of building sustainable and qualitative differentiation
- The printing industry is relatively disconnected from R&D which could jeopardize structural innovation

Part 3c – Five structural challenges for the European printing industry

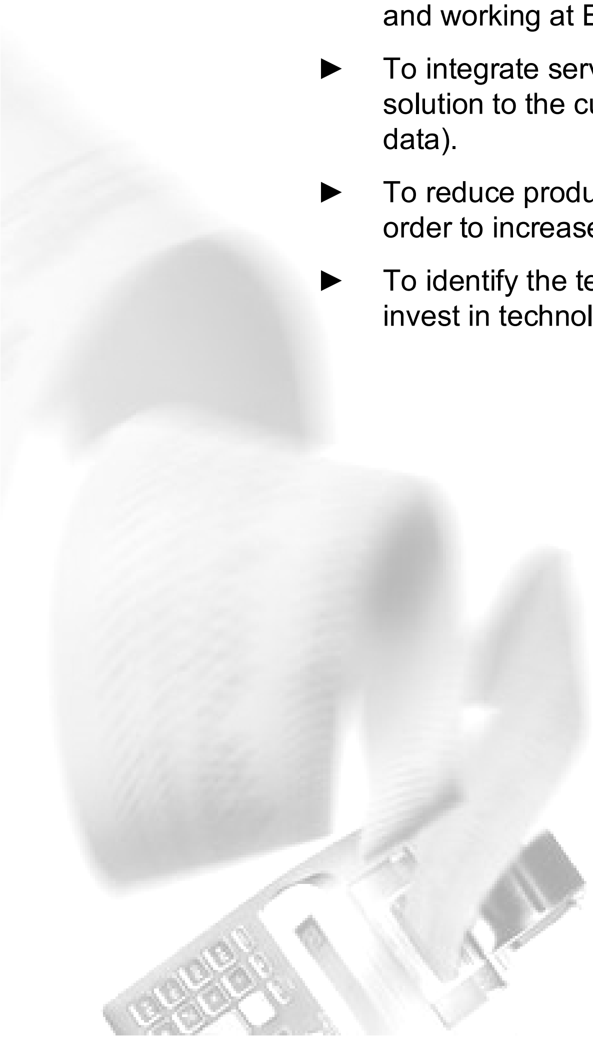
1. Strategic challenges

- ► To mutate from a commodity industry into an added value industry
- ► To improve the management of human resources and investments, and have better control over all the financial issues.
- ► To anticipate and prepare for the transfer of small and family-owned enterprises.
- ► To rationalise investment strategies in the printing industry to prevent the acceleration of a vicious cycle of overinvestment.
- ► To foster the restructuring of the industry by supporting some of the essential concentrations and clustering initiatives
    - Procurement platform
    - Commercial alliances
    - Cross industry operations (packaging, publishing, communication, etc.)
- ► To enforce the printing industry position in an evolving value chain, which includes brokers and new media in particular.
- ► To increase the profitability and financial structure of the firms, which are generally too weak to support substantial growth.
- ► To promote Health, Safety and Environment strategies as a way of differentiation and a new basis for value recognition by the end-user.



2. Technological challenges

- To get involved in the research on technology which is not actually driven by printers but by suppliers (consumables, software, equipment, etc.), machine manufacturers and customers.
- To orientate technological developments towards final customers' expectations more than only towards workflow management and the improvement of productivity.
- To selectively promote CTP solutions
- To develop standards, and particularly communication standards, for the printing industry's entire value chain. Standardisation seems to be the key issue for the European Printing Industry, making it possible to improve the flexibility of the printers.
- To set up a network dealing with technological aspects (and standards) and working at European level.
- To integrate service management and to offer a global multi-channel solution to the customer (who could provide some multi-format entrance data).
- To reduce production costs by the automation of existing processes in order to increase flexibility and enable specialization.
- To identify the technical requirements of certain niche markets, and invest in technologies allowing specialization.



3. International and European challenges

- ► To analyse the scope of the challenge resulting from the development of the printing industry in low production costs countries in term of :
  - market opportunity
  - Increased competition
- ► To reduce competition distortion factors within EU-27 countries through increased harmonization in the implementation of EU legislation
- ► To develop and maintain a stimulating competitive environment inside the EU via efforts towards
  - Reducing tax, social security and regulatory heterogeneous situations
  - Ensuring conditions for adequate implementation of rules, and suitable penalties if needed
  - Proposing a European sustainability production charter : “Produced in the respect of European legislation and best practices”

- ► To rationalise investment strategies which are currently not contributing towards ensuring competitiveness for the European Graphics Industry
  - Overcapacity in Europe and particularly in West-European countries
  - Lack of European local printers’ network :
    - EU regional subsidies, particularly from new European Member State, should not be used for the financing of large printing plants targeting to serve neighbouring markets
    - Inadequate investment strategy is leading towards an unbalanced situation intra Europe
- ► To face the consequences of internationalisation, and resulting increase in demand of raw materials :
  - Prices
  - Size of suppliers
  - Trade negotiations
- ► To develop added value strategies towards printed products with a high sensitivity to relocation (books, calendars, etc.)
- ► To assess the competitive advantage of the printing industry in new competing countries, and to develop defensive and proactive responses.

4. Market challenges

- ► To develop, give value to and integrate non industrial competencies such as marketing and sales in order to promote new solutions in line with customers' needs, and overall, to promote strategic visioning in order to underline key priorities for SME management:
  - Being closer to key clients and improving customer relationships, management tools and personalization supports (data mining, CRM, etc.)
  - Setting up an organization to anticipate market and technology trends in order to offer the customer prospective advisory services
- ► To adopt a value-added positioning and avoid the capacity logic as an inevitability
- ► To integrate a customer-oriented way of thinking
- ► To integrate service management and to offer a global multi-channel solution to the customer (who could provide some multi-format entrance data).
- ► To achieve flexibility with the production facility, i.e. able to give adapted response in terms of deadlines, quality and prices (not the same for each customer)
- ► To make time-to-market the main competitive advantage for products such as magazines or promotional material.
- ► To use a network of local printers, serving their own geographical area in order to decrease transportation costs and time to market
- ► To propose a global offer, integrating design, communication, prepress, shipping, etc.
- ► To develop customisation solutions (formats, size, colours, content, etc.).

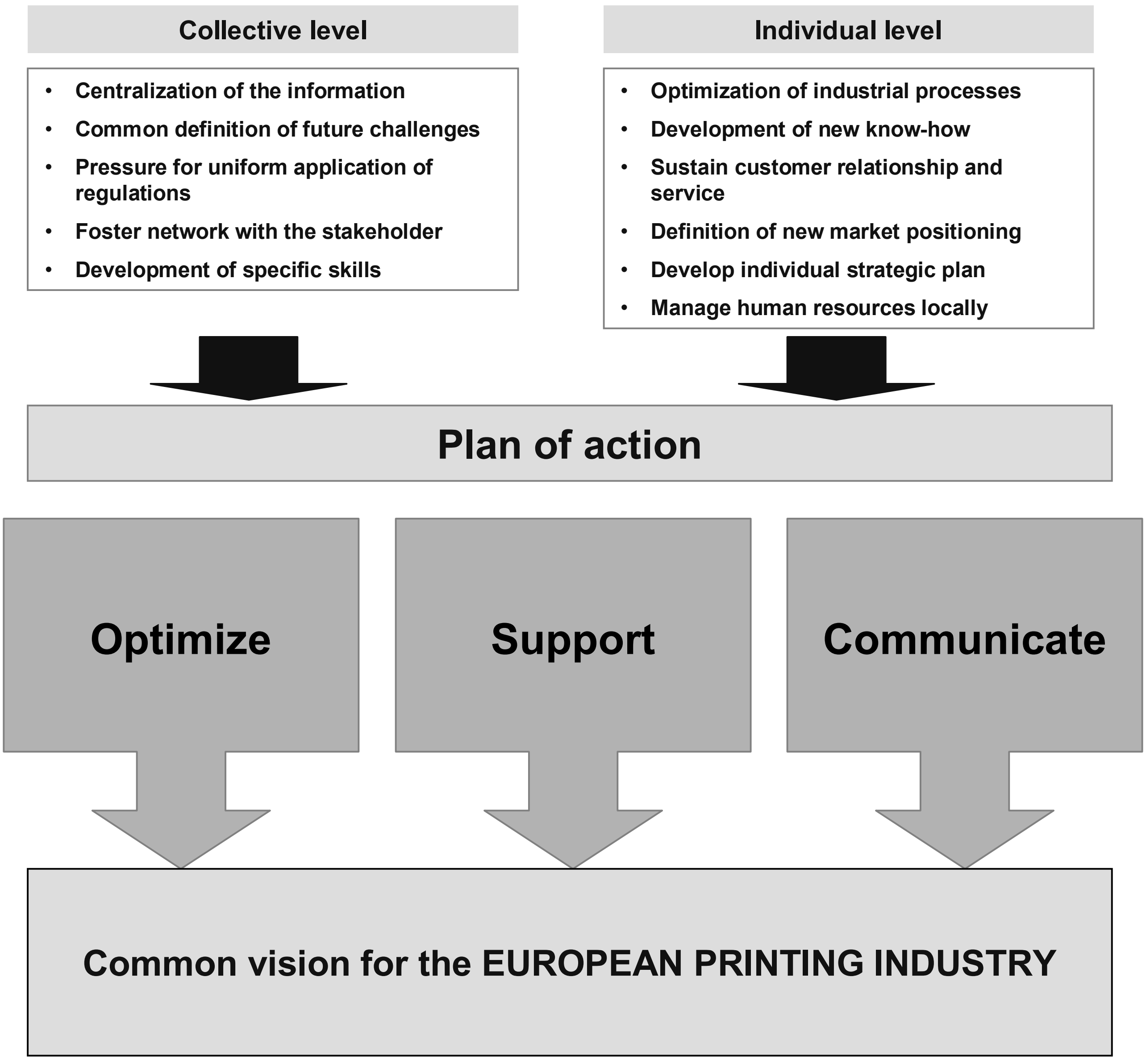
5. Communication challenges

- ► To promote the leadership status of the European graphic industry and the dominating position it should have due to all its assets
  - Supporting the development of differentiating projects, especially in environmental sustainability
  - Sustaining initiatives to encourage shared knowledge and technological expertise between printers and the main European suppliers
- ► To integrate the fact that public opinion supports environmental and ethical topics (production process, supply chain, deforestation, carbon tax for transportation, etc.)
- ► To maintain paper as the most important and popular media
- ► To promote and encourage compliance with the regulations for all printed products from any origin, making this visible for the public

Part 4 – Proposals for an action plan dedicated to the European printing industry

Part 4a – structure of the plan

Structure of the action plan



A six points approach

1. **Managing production costs**

→ Promote best practices in management and operational performance

2. **Find new growth basis**

→ Develop value-added services for customers

3. **Support European printers and develop EU Printing Industry**

→ Intensification of the actions directed towards better harmonisation of regulations within Europe

4. **Invest in human resources for the future**

→ Invest in human resources and develop new skills

→ Ensure a culture of partnering within the industry

5. **Make printing industry a reference in term of HSE performances**

→ Improve health, safety and environmental performances

6. **Improve the image of the printing industry with all its bests practices**

→ Define a European printing industry quality charter for printed products

→ Enlighten public decision-makers on the impacts of their actions for the printing industry

Part 4b – Details of the actions

Promote best practices in management and operational performance

What

•Benchmark the best practices in terms of workflow management and productivity plans from other industries

•Elaborate and promote programs and methods aiming to help SMEs to plan and manage their investments, raise quality, reduce costs and improve delivery times by reducing waste in labour, materials and time

•To raise quality and to reduce costs and to improve the production by reducing waste, raw material and production time

•Ensure the availability of skilled people and relevant tools in order to drive and optimize workflow management and operational excellence

How

•By producing a snapshot of processes or production management systems and decision-making tools (business planning, cost control, etc.) adapted to each segment (enterprise size and activity sectors)

•By proposing solutions in answer to the Basel II framework, particularly concerning investments in production equipment. Prevent SMEs from getting caught in the vicious cycle of overinvestment in order to limit the price war and over-productivity phenomena

•By participating in the development of specifications for future communication standards and equipment, used for the management of workflows in the printing industry.

•By ensuring prospective discussions and communication between training centers and printing industry organizations in order to adapt supply and demand

•By attracting more young people into the printing industry by presenting its various aspects and the career opportunities that it offers to students and young people

Who

•Banks and leasing organizations

•National printing organizations and Intergraf

•Training centers

•Universities, technological experts and suppliers

To do next or to pursue

•Organise a meeting with printers, suppliers and dedicated universities in order to define new standards for the management of the printing process workflows and to contribute to the future development of Management Information Systems

•Promote best practices across Europe, share tools and methods and demonstrate the relation between the adoption of best practices and the improvement of competitiveness

• Adapt training programs (for managers and executives) in terms of cost and methods for each kind of enterprise

2

Develop value-added services for customers

What

•Help to develop and bring to market innovative printing solutions and services to facilitate customer differentiation and development

•Provide current and relevant information about the technological future of the printing industry

•Promote programs and tools to help companies develop effective sales and marketing strategies: how to improve understanding of customers’ markets and how to build tailored and innovative services

•Help companies to improve the use of digital workflow and to become multimedia information providers, including digital assets management, web design, CD and DVD production, print management

How

•By establishing a knowledge transfer network between companies identified by national organisations as ready to join work groups and to share initiatives and experiences (focus on technology, R&D, marketing and innovation), gradually involving other stakeholders such as universities, business schools and research centres in the network

•By securing funding (existing grants) for collaborative research and development projects and helping companies to build adapted development plans

• By creating a bridge between IT or New Media organisations and printers, to facilitate the transfer of know-how to printers and the mobility of human resources (transferring from one industry to another)

•By developing a common patent policy

Who

•European Commission

•Intergraf

•National organizations (printing, publishing, information technology, etc.)

•Printers

•Suppliers

To do next or to pursue

•Identify universities, business schools or research centers able to take the leadership of the project

•Give support to set up a knowledge transfer network at the start

•Organise a technological seminar meeting at least once a year

•Circulate the conclusions of this meeting widely through the European printing industry with the support of an international printing association

3

Intensification of the actions directed towards better harmonisation of regulations within Europe

What

•Ensure that European legislation is applied in comparable way in all the European countries

•Ensure that all printed products in circulation in Europe comply with the regulations, particularly concerning the environment or production processes.

How

•By participating in legislative decisions and the proposal of a European decree for the harmonisation of regulations

•By annually collecting the views of printers on their legislative environment and comparing with the national point of view

•By benchmarking the toys sector, for example, in order to evaluate the impact of an EC product directive on the market concerning European production on the one hand and the relative cost of imported products on the other

•By developing a charter of printed products allowed in Europe and ensuring that all the products in circulation in Europe comply with this charter

Who

•European organizations

•Intergraf

•National organizations

To do next or to pursue

•Pursue lobbying actions

4

Invest in human resources and develop new skills

What

•Benchmarking of best practices in training by market segment and by country at European level

•Program for developing the availability and mobility of skilled people for the European printing industry and for facilitating the integration of skilled people (especially in non-industrial functions) in SMEs

•Ensure the participation of the labour force representation in the next strategic plans

How

•By launching a survey in order to

- •Identify social practices inside the European Graphic Industry
- •Identify the offer and needs in terms of training

•By organizing a European workshop with professional organizations presenting the results of the survey and identification of best practices: then the unions should be involved for the validation of the main results and a first round of discussion should be opened on social issues at European level

•By ensuring access to adapted training solutions for SMEs, including the development of e-learning tools or other media, to encourage flexibility and reduce the cost of training sessions

•Propose financing solutions to reduce or share (part-time) the costs of hiring non-productive staff (marketing, sales, R&D, etc.) for SMEs

Who

•Professional organizations

•Unions

•Training centers and teaching institutions

To do next or to pursue

• Promote national agreements between printers and unions representatives (if representative enough) for a flexible implementation of HSE programs

•Raise funds (or identify existing grants at national level) and launch a selection process to identify providers for training media for SMEs with the capacity to develop a web-based learning platform

•Develop work-related training and qualifications that mirror the needs of sector employers and maximize individual potential

4

Ensure a culture of partnering within the industry

What

•Provide consolidated data at national and European level based on relevant and homogeneous statistics

•On a regular basis and at national or European sub-area level, organise brainstorming sessions or strategic seminars with printers in order to encourage the forming of a common vision and cooperation

•Define a sub-contractor policy for the entire European Graphics Industry

•Enhance relationships between printers and the machine-manufacturing, paper and ink industries by organising prospective sessions

How

•By defining relevant indicators describing the European printing industry and the specificities of each country, pointing out relevant key performance indicators

•By identifying enterprises serving the same market in terms of geographical areas and products and stimulating and supporting any cluster initiatives at European level (in particular for governance)

•By organising workshops with printers and representatives of the main markets to define key indicators and if possible legal agreements to set up a more sustainable relationship

•By organising, with printers at regional level, the mapping of their equipment and capacity in order to optimize the utilization rate of their production facilities by stimulating co-operation and subcontracting relations

•By stimulating printers to take part in collaborative R&D programs with technological or industrial suppliers in order to anticipate and prepare technological developments

Who

•Eurostat and national statistics offices

•Intergraf

•National printing organizations

•Printers

•Suppliers (leaders and their organizations), R&D centres

To do next or to pursue

•Develop structured processes for the annual collection, treatment and presentation of relevant data, at European level

•Set up an agenda of meetings for printers (country by country)

•Identify and propose accessible R&D programs

•Promote and defend an ethics charter to describe what the relationships between printers themselves and between printers and customers or subcontractors are supposed to be

5

Improve Health, Safety and Environmental performances

What

- Evaluate the link between health, safety and environmental issues towards the whole value chain of the printing industry
- Develop and maintain a set of standards concerning those key points
- Develop skills to manage health, safety and environmental issues, particularly management skills
- Prevent health and safety risks
- Benchmark the best practices relating to health, safety and environmental issues in the European printing industry.
- Implement environmental standards in the European industry

How

- By helping training centres to develop training to answer these issues
- By defining certain common and quantitative objectives at European level for health, safety and environmental issues
- By developing appropriate health, safety and environmental performance measures for the printing industry
- By giving advice on health and safety, ensuring that accidents are avoided and risks carefully assessed and minimized
- By promoting industrial initiatives meeting Health, Safety and Environmental objectives

Who

- Intergraf
- Unions
- Printers
- Training centres

To do next or to pursue

- Produce a print-specific guide on health, safety and the environment
- Set up an expert committee on HSE issues. This committee must be able to give quick and operational advice to the whole European printing industry

6

Define a European quality charter for printed products

What

- Develop a charter describing how products printed in Europe respect European and national legislation
- Identify and develop low carbon footprint products, taking the entire value chain into account (paper, ink, print, shipping, etc.)
- Communicate to final consumers on this charter

How

- By communicating to customers on this charter: publishers, retailers, etc.
- By developing an environmental checklist
- By identifying the suppliers in all the links of the value chain: paper supply, ink supply, print processes, shipping, selling, etc.
- By evaluating the carbon foot print for each link of the value chain and defining certain threshold criteria for all of them
- By defining, for each product, a maximum carbon footprint
- The charter should also consider pulp and paper production criteria

Who

- Printers
- National and European organizations in the entire printing industry (paper, ink, printing, etc.)
- Customers

To do next or to pursue

- Define and promote the criteria for the charter
- Communicate on the environmental advantages of the label
- Demonstrate the competitive advantage of this label over Chinese products

6

Enlighten public decision-makers on the impacts of their actions for the printing industry

What

•Ensure that most of all the decisions taken at Forest-Based Industry level are positive for the entire European Printing Industry

•Work closely with governmental development agencies in order to influence local and national decisions

•Report on the grant schemes, especially those managing EU funds, in order to ensure that supported investments, at European level, do not contribute to competition distortion

How

•By improving three plans for communication on the printing industry to:

- •the European Commission,
- •national governments,
- •public opinion.

•By illustrating the employment sensitiveness of the industry by segment and country and demonstrating the impacts of public policies (national or European) on global European competitiveness

•By developing scenarios at European level taking into account the impacts of the new distribution of the industry (West vs East) within Europe

Who

•Intergraf

•National organizations

Part 5 –
Detailed analysis of the European printing industry

Part 5a –
The printing industry context

EU printing industry key figures

Printing Industry (NACE 222) Printing Industries and service activities related to printing	2000	2001	2002	2003	2004 (est)	2005 (est)
Number of enterprises	123 439	125 563	NA	124 649	124 000	123 483
Annual growth since 2001 as %					*-0,4%*	*-0,4%*
Turnover (M€)	104 463	105 457	104 262	97 000	100 000	98 245
% of total EU manufacturing	*1,8%*	*1,8%*	*1,8%*	*1,7%*	*1,7%*	
Annual growth since 2001 as %					*-1,8%*	*-1,8%*
Added Value at factor costs (M€)	43 868	43 510	42 569	39 000	40 000	39 298
% of total EU manufacturing	*2,9%*	*2,8%*	*2,8%*	*2,6%*	*2,5%*	
% of turnover	*42,0%*	*41,3%*	*40,8%*	*40,2%*	*40,0%*	*40%*
base 100 in 2000	*100*	*99,18*	*97,84*	*91,62*	*102,56*	*98,24*
Employment	961 200	947 919	914 000	881 000	850 000	819 662
% of total EU manufacturing	*3%*	*3%*	*3%*	*3%*	*3%*	
Annual growth since 2001 as %					*-3,6%*	*-3,6%*
base 100 in 2000	*100*	*98,62*	*95,09*	*91,66*	*88,43*	*85,27*
Added value per capita (Eurostat k€)	46	46	47	44	48	48

Important : It is not easy to get relevant statistics on the European Graphic Industry. Indeed, the atomization of the sector, the number of activities and the different markets served do not allow a harmonization, at European level, of the data. Thus, those figures are given to illustrate the trends and size of the printing industry, they are based on Eurostat Database and Ernst&Young appreciation.

Data zone EU25

Source : EUROSTAT

A small-sized, family-owned enterprise structure raising generic issues:

Constraints relating to company transfers in a short-term timescale and high volume of companies about to be sold

Little experience possessed by the managers/owners in prospective or strategic analysis, difficulty in building and sharing a common vision of the competitiveness stakes

Reluctance to cooperate at regional, national or international levels

Structural difficulties in reaching a critical size enabling balanced negotiation with major key players (customers and suppliers)

The European printing market : facts and figures

- **123 483 printing firms**, employing over **820 000** people in the 25 European countries
- The UK, Germany, France, Italy Belgium, the Netherlands and Spain account for more than **80%** of the overall Union turnover.
- These leading countries employ about **80%** of the Union labour force. They are the main players in the European Market in terms of market share and labour force
- They also represent more than **72%** of the overall number of companies in EU-25
- Some New Member States (Poland, Czech Republic, etc.) are growing fast in the European zone and gaining new market positions

growth by country, Nace 222, 2002 – 2004

Turnover

For the majority of the major printing countries, activity is decreasing. At the same time it appears that, for most of the Eastern countries, turnover is slowly and continuously rising due to the transfer of the production of certain kinds of products in these countries.

Italian turnover is still growing because of the positioning of the Italian printing industry in value markets, i.e. luxury books and brochures.

Belgium	-3%
Germany	-5%
Spain	4%
France	-6%
Italy	7%*
Netherlands	-8%
United Kingdom	-17%**

Number of employees

The printing industry has historically been a labour-intensive industry, with a strong relation between the trend in turnover and employment. Machinery design, digitalisation and computerisation, etc. have contributed to improving productivity very significantly and transforming this industry so that growth capacity is no longer linked to direct employment. Technical competencies are still a key issue for competitiveness but increasingly based on new know-how not directly connected to the printing process.

Belgium	-8%
Germany	-13%
Spain	-1%
France	-10%
Italy	-1%
Netherlands	-8%
United Kingdom	-9%

Number of enterprises

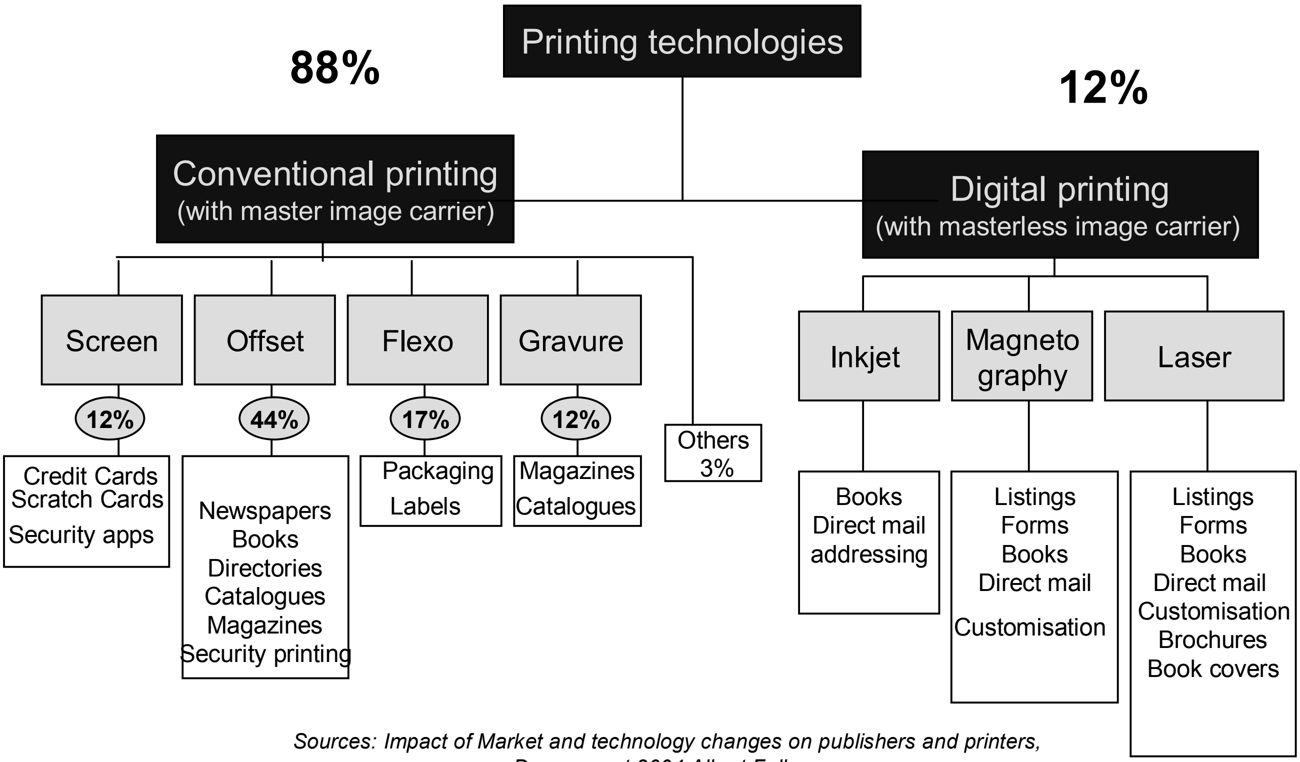
Small companies are still very numerous in all the countries but they are most often the most vulnerable and contribute to reducing the number of active players. The structural trend is less sensitive than the decline of employment and could be considered as an opportunity to reduce internal competition in local markets.

Belgium	nd
Germany	-13%
Spain	4%
France	6%
Italy	-0%
Netherlands	-7%
United Kingdom	-3%**

Source Intergraf – The evolution of the graphic industry – Publication year 2005

*according to the Assografici data the turnover's growth 2004 vs 2002 is 2,2% ** *growth 2002-2003 (2004 nd)*

A new split in printing technologies



Sources: Impact of Market and technology changes on publishers and printers, Dupra event 2004 Albert Follens

Traditional printing processes represent the large majority of the printed volume but are nevertheless strongly impacted by digitalisation all along the printing process and all the operations before and after printing. Technological developments have resulted in dramatic changes, reshaping the printing industry landscape. The industry tends to use a technology-push model emphasized by the continuous improvement of printing devices and the growing use of information technology enabling the handling of high-volume jobs and greater interaction with customers.

The shift between technology is not always determined by volumes (themselves determined by type of markets) and capacity expansion but more and more by flexibility.

These improvements have brought new opportunities for services, but have also increased market competition. Services themselves are increasingly less a differentiating advantage. Productivity and efficiency in the printing process are increasingly sustained by equipment that can be bought anywhere.

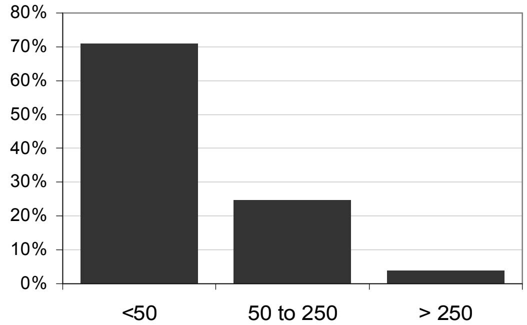
Markets determine materials and equipment but also organizational issues

	Circulation	Paper	Machine	Manufacturer's characteristics
Newspaper	Long runs	Uncoated paper	Coldset web offset	• One printer per town owning one or two presses • Specialist national printers, may own 10 presses • High degree of specialisation • 2000 coldset web offset printers in Europe
Magazines and catalogues	Long runs (300,000)	Poor quality paper	Gravure	• Printers typically own 4 presses • High investments • International coverage • Printers own both gravure and Heat set web offset so as to cover the medium and long runs segment
	Medium runs (around 10,000)	Coated paper	Heat set web offset (20% 8p, 50% 16p, 15% 32p, 10% 64p)	
	Short runs		Sheetfed offset	
General Printing (including promotional)	Long runs	Various	Offset Litho Web offset (50%)	•2/3 of very small sized companies (less than 10 workers) • Account for 2/3 of the production value of printed products • Printers own 2 or 3 presses • Local to International coverage depending on the size • High degree of competition and low margins
	Small and medium runs		Offset Litho Sheetfed (50%)	
Books	Long runs		Coldset web offset	• A few specialists • International coverage
	Short runs		Sheetfed offset	• A hundred firms in each country • Local coverage

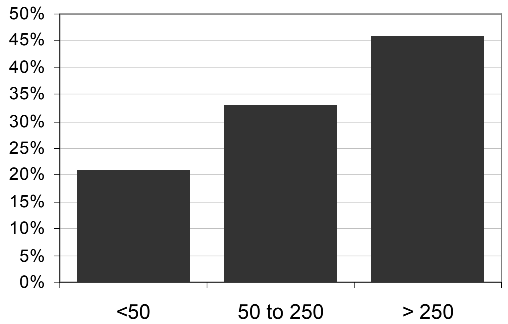
Each market served by the European printing industry has specific delivery, cost and quality requirements. These needs generate precise specifications, not only technical but also organizational. The former find solutions in terms of capacity, process, equipment and materials, the latter in terms of supply chain, location, customer relationships, alliances, etc.

The evolution of the different markets in terms of growth, cost pressure, globalisation, product substitution, etc. within the EU, has had an a strong impact on the structural evolution of the printing industry: concentration (mergers, acquisitions, liquidation), relocation management, integration of new activities, etc.

Company typology by size and turnover



Breakdown of companies by number of employees



Breakdown of turnover by number of employees

Source Amadeus and E&Y

- The printing industry's demography shows 3 industrial groups (in terms of % of total EU enterprises, % of total EU employees):
  - •Very small enterprises, with less than 50 employees (70%, 20%)
  - •Small enterprises, with 50 to 250 employees (25%, 36%)
  - •Medium and large enterprises with more than 250 employees (5%, 44%)
- The scenarios are different for each group :
  - •Group 1: positioned in local/domestic markets, faced with strong competition from home and digital printing
  - •Group 2: precarious situation, investments and organisational choices could be determining, innovation/specialisation/niche strategies could protect or raise profit
  - •Group 3: integration, internationalisation and concentration, global competition especially from new Member States and Asia for certain markets (books, diaries, etc.)

This typology shows the difficulties tied to the representation of the Printing Industry. Situations are very contrasted and not only linked to size criteria

The analysis of the European Graphics Industry has to integrate all those composites for the determination of the action plan.

Foreign Direct Investment in the European printing industry

- 96 Foreign Direct Investment (FDI) projects in 2001-2005 (more than 50% in France & the UK)
- 39% of total FDI in Europe is by European companies
- The publishing industry accounted for 1% of FDI during this period
- The FDI Top 10 includes non-European companies
- Projects are in marketing, sales and headquarters …
- … and represent a large majority of new projects

TOP 10 investor countries

Country	Investment market share 2001 - 2005
USA	31%
Germany	17%
Italy	5%
Netherlands	4%
UK	4%
Japan	3%
Sweden	3%
Finland	3%
China	3%
Australia	3%
Total Top 10	**76%**

Main activities

Activity	2001	2003	2005
Manufacturing	71%	38%	24%
Sales & marketing	0%	38%	43%
Headquarters	14%	0%	22%
Contact centers	0%	13%	5%
Testing & servicing	0%	0%	3%
Logistics	14%	13%	0%

Project types

Project types	2001	2003	2005
New project	57%	75%	78%
Extension	43%	25%	19%
Co-location	0%	0%	3%

Source Ernst & Young : European investments monitor 2001 - 2005

The European graphic industry seems to be attractive for foreign investments, and activities currently financed are more related to sales, marketing and headquarters than to manufacturing and production capacities. The European printing industry seems to be more attractive for non-material goods than for industrial production. It is opening up the question of the competitiveness of the printing industry and the middle- and long-term objectives of all its representatives.

Key trends in the EU's major printing countries

France

- The print media market reached a peak level in the year 2000 with a production volume of more than 3300 kilotons. This production volume decreased to 3080 kilotons in 2005 indicating a structural change.
- The Market distribution is as follows: Advertising (22,4%), Commercial Print (17,1%), Packaging (13,5%), periodicals (13,4%)
- Keywords expressing the structural trends are :
  - A not very dynamic business environment
  - A significant change in consumer behaviour relating to printed products
  - The increasing presence of the Internet and TV in the advertising landscape
  - Print buyer's objectives to optimise their budget in the print market
  - Strong intra European competition (books, direct mail, etc.) especially with Italy and Spain
  - Growing competition from non-EU countries (packaging following relocation of the production of finished products, colour books, children's books, etc.)
- French printers ask for more social flexibility which seems to be the most discriminating factor in relation to their European competitors. The average tax and social contribution is also said to be a burden for competitiveness and to overload the cost structure.
- Faced with this situation, most of the industry players still seem to concentrate more on manufacturing productivity rather than on diversification, the integration of new technologies or customer services.
- The difference is quite noticeable between dynamic, growing and profitable SMEs and numerous small companies that no longer have the capacity to survive or to manage the transfer process. Alliances and cooperation exist in purchasing, for instance, but are not a natural choice for most of the French companies

Key trends in the EU's major printing countries

Italy

- The production of the printing industry dropped by 0,6% in 2005 compared to 2004. This is mainly due to the different dynamics in the book and periodical printing segment (+0,2%) and advertising and commercial printing segment (-1,4%).
- The industrial plant utilization rate is, according to Isae, 77,2% per year, with a 1,2% increase over the previous year.
- The proportion of stopped activities is increasing in the printing and publishing segment, with a jump of 6% from 2004 to 2005.
- On the foreign trade front, the 2005 results in value and per product show a slight drop in imports (-0,5%). The balance of trade is positive but has decreased by 4,4% since 2004. This is due to the reduction both in magazine exports (-11,4%) and books (-2,9%) mainly due to Chinese competition.
- The move towards new media, particularly TV for the advertising sector, is still unfavourable for the printing sector.
- Italian printers are facing the same constraints as their European colleagues (concentration of customers and suppliers, strong pressure on costs, overinvestment increasing tough internal competition) but they justify their competitive position in national or European markets by good ability to manage reactivity and customer relations.
- There is a wide range of sizes of company (a lot of small companies) and exposure to international competition is therefore not homogeneous.
- Italian companies seem to fear a lack of skilled labour for managing the integration of new technologies.
- Energy costs are considered to be a discriminating disadvantage.
- The main drivers for change are cooperation inside the industry to optimise reactivity and production capacity management and customer services

Key trends in the EU's major printing countries

Germany

- The economic situation of the German printing industry continued to evolve positively in 2005. After a lukewarm first semester, turnover and the production level, as well as utilization of production capacity, improved considerably. This brought the printing industry back to a satisfactory level in autumn 2005, for the first time after a five-year period of economic recession.
- Positive input came particularly from improved trends in the German economy, as well as from increased demand from the industry for custom publishing activities, a higher demand from industry customers and also higher advertising expenditure by the economic players.
- Turnover increased by 3,5% against the previous year. The economic recovery had started in 2004, after a severe recession over the previous three years, reaching a 10% drop in turnover. The first year of improving trends led to a 0,7% increase. Positive contributions also came in 2005 from foreign trade and export orders, which increased by 3,8% against 2004. The proportion of total turnover represented by foreign turnover stabilised at 13,8%, the level reached the previous year. Investments increased significantly.
- 62,7% of the turnover for printed products related to the production of advertising material in 2005 (newspaper, free sheets, magazines, directories and miscellaneous advertising material). This represents a significant improvement in relation to the very bad past years.
- The share of turnover from printed advertising material improved by 1,8% in 2005. All significant printed advertising products were able to benefit from the positive trend in the recovering advertising market: sales catalogues (+2,1%), magazines (+1,6%), free sheets (+5,6%), etc.
- Book printing succeeded in moving away from continued decreasing trends and increased by 1,1%.
- Gravure is one of the strengths of the German printing industry, naturally positioning it in the magazine and catalogue markets.
- The first level of competition is from former eastern Germany which benefits from the European subsidies granted for the purchase of machines. The direct effect is to push prices to the bottom.
- The second level is with the setting-up of German factories in the New Member States (particularly Poland & the Czech Rep.), for specific products such as calendars and catalogues.
- The third level is China. The segments most threatened by Chinese competition are children's books and “gift” books, not only "low cost" but also "high tech“ segments.

Key trends in the EU's major printing countries

Spain

- The last available figures for the trends in the level of employment in Spain are for 2004. The number of employees between 2003 and 2004 increased by 3,69%.
- The trends in foreign trade show that Spanish exports have declined by 5,1% in comparison to 2004 while imports have risen by 4,5%. The trade balance has therefore decreased by 11,65%.
- The trends in the advertising market can be summarized as follows:
  - Total advertising investments have increased by 6,8%
  - In particular advertising in magazines has increased by 1,9% and exterior advertising by 4,1%.

Key trends in the EU's major printing countries

Belgium / Netherlands

Belgium

- There is an obvious trend towards ever further digitalisation in the Belgian graphics industry. More generally, there is a general trend towards hybrid firms that combine digital printing and screen printing through mergers and takeovers.
- The level of employment in the printing industry has been decreasing since 1990. This is due to the appearance of new technologies, less demanding in terms of human resources. The trend is for a slight but constant rise of white-collar workers in the sector, while the number of blue-collar workers diminishes fast.
- In the last few years, the Belgian printing industry's large trade surplus has diminished constantly and turned into a small deficit at the beginning of 2006. In addition, the production of labels is being relocated to Belgium's neighbouring countries as well as to Eastern Europe, particularly Poland and Romania.
- A constant problem in the last few years has been the very strong price competition in the Belgian graphic market. Prices remain very low, causing severe problems for a large number of companies. Since 2000, the sector has seen quite a large number of bankruptcies and an overall restructuring of the graphic sector, but apparently the number of remaining companies is still too high. An increasing number of takeovers and mergers can therefore be expected in the coming years.

Netherlands

- In 2005 turnover from printing and allied activities rose by 0,3%, because prices dropped by 0,4% and therefore the demand for printing and allied products increased by 0,7%.
- Almost half of printing offices keep themselves in work with new media. 41% of the companies do digital printing, 25% use large scale plotters and 21% offer printing on demand applications. One third of the companies take care of supply, handling and logistics. Another third are active in graphic design and advice on communication. All the companies offer this as a new service to their customers. Half of the companies say that the development of new services and products is important to acquire new customers. It is remarkable that a lot of customers are not aware of the possibilities of a new media or that they do not see how it could be applied in their company. This represents a change of opportunities for printers.
- The printing industry as a whole can be competitive with other media. More than half of the companies (source: national printing federation) said that they are using their own strength in order to cope with competition from low wage cost countries. Within the sector itself, overcapacity combined with stagnating demand causes strong competition, endangering the survival of many printing companies.

Key trends in the EU's major printing countries

United Kingdom

- The printing industry continues to be characterised by consolidation and polarisation. This implies that firms are going bust, while mergers and bigger firms take over their companies. Generally it can be said that small companies are managing to survive and that it is the medium-sized companies that are more concerned by this phenomenon, while the large companies keep growing.
- Employment levels in the industry have being falling for some time and the downward trend is likely to continue as cost pressures force companies to exert more control on wage bills and as technology and process improvement result in greater efficiency in the production process.
- A combination of a 1,3% fall in exports and a 2,4% rise in imports has led to a 12,2% fall in the trade balance, which still remains positive at 810 M€. Other important factors are that the USD exchange rate has become less favourable and that the development of new economies such as China is causing fierce competition. Another factor is that the European economy suffers from restricted demand from many EU countries due to its diminishing level of competitiveness in the printing industry.
- Total new media marketing expenditure in the UK economy in 2005 grew by 80% compared to 2004 and has been estimated at over 1,5 billion pounds for 2005. It now accounts for nearly 10% of all direct marketing expenditure. This substantial growth is expected to continue in 2006. Furthermore, printing companies continue to look towards areas other than traditional printing such as web design, web and database management, call centres, mailing services, variable data printing and new technologies.
- Emerging economies in new Member States and Asia, and their ability to offer relatively cheap production capacity, pose a threat to the European and especially the British market. Rising energy costs have a dual impact : directly on the printers' production and indirectly via their suppliers. In addition, printers have often been unable to increase prices to reflect greater costs. New technologies allow printing companies to develop and take up digital printing and other efficiency-gaining technologies and practices. Also the creation of so-called 'super-sites' is an important topic. It implies personalised production on a large scale, also known as 'Greenfield' production sites.

Turnover per Capita variations between major printing countries, a distortion factor.

Country	France	Germany	Netherlands
Hours per day	7	7	7
Hours per week	35	35	36
Hours per year*	1 526	1 547	1 657
Average	1 668	1 668	1 668
Difference/Average	-142	-121	-11
Average yearly turnover per capita (k€)	126	121	140
Turnover per working hour (€/h)*	82,6	78,2	84,5

Country	UK	Belgium	Italy
Hours per day	8	7	7
Hours per week	38	37	40
Hours per year*	1 703	1 695	1 742
Average	1 668	1 668	1 668
Difference/Average	35	27	74
Average yearly turnover per capita (k€)	103	187	145
Turnover per working hour (€/h)*	60,5	110,3	83,2

Sources: Ernst & Young - Intergraf

*The indicated hours are theoretical and have been calculated subtracting, from the yearly hours according to C.A., the holidays by law or by C.A. and the public holidays. The yearly effective hours of work can in fact differ from the theoretical ones.

Within Europe, the biggest differences in terms of productivity per capita seem to be mainly due to the number of hours worked per year according to domestic social regulations.

This parameter also to be considered in conjunction with the average cost of work.

This is one of the most discriminating factors explaining internal competition inside the EU.

EU: a proactive environmental regulatory policy

The major impacts from printing processes are covered by European legislation, applicable throughout the Union. However, European legislation has to be implemented via national legislation and is subsequently subject to national control procedures.

European environmental legislative background

The main legislative instruments regulating the printing sector are the Solvent Emission Directive (SED) 1999/13/EC, and the IPPC directive (Integrated Pollution Prevention and Control). The SED sets emission limit values for waste gases and fugitive emission values. The IPPC directive aims at reducing, preventing and controlling pollution in an integrated way using “best available technique” requirement (BAT). Printing installations are included in the BREF (Bets Available Techniques Reference Document) on surface treatment using solvents. It should be noted that the IPPC/BREF provisions for both heatset and gravure printing were established according to modern high-performance technology.
Both the SED and IPPC relate to heatset offset and gravure, but not sheetfed offset. Both Directives have an impact on the environmental permit needed by these two categories of installations. Both Directives have flexible provisions on how the target should be achieved.

Voluntary additional schemes : EMAS and Eco Label

An environmental management system is defined as the part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.
ISO 14001 and EMAS (Ecomanagement and audit scheme) can be seen as two systems with a common basis, the greatest difference being that according to EMAS companies have to produce an official, assessed environmental statement. It also has more explicit demands as regards the preliminary environmental review.

Environmental Efficiency of EMS implementation: the Swedish case

A survey of 180 companies that had implemented EMS for 3 years (1998-2001) revealed the following: half of the environmental objectives and targets would also have been achieved without EMS.
Environmental improvements are mainly technology-driven, e.g. CTP in pre-press and solvents with varying levels of volatility.
The environmental performance of EMAS-registered companies seemed to be better than the one of exclusively ISO 14001 companies. Companies using environmental indicators to follow up environmental objectives and targets seemed to achieve a better environmental performance than the others

EU: a proactive environmental regulatory policy (1/2)

Economic efficiency of EMS implementation: the Swedish case

Stakeholders such as customers, insurers and shareholders increasingly require proof of legal compliance and sound environmental practices.
Poor environmental performance has an increasing financial cost. The cost of waste disposal to landfill, producer responsibility waste recovery and energy costs are driving environmental improvements in companies.
There is concern that poor environmental performance will damage corporate reputation and branding.

Improved environmental performance as a market driver: the Swedish case

Half of all the environmental objectives and targets generated payback through cost savings or increased revenues. The largest cost savings were made through reduced expenses for energy, waste treatment and raw materials. Most of the companies reported that their market position had improved. On a long-term basis EMS printers would ensure the more systematic development of environmental issues.

Diverse schemes still prevail in the legislative landscape

Environmental regulations among EU members rely on national implementation and control policies. Diverse situations still exist in regulations and in eco taxes:

- In Germany, some stricter threshold values for compliance have been introduced for exhaust air, sewage and waste.
- In Scandinavia, market pressure from both private and public print buyers remains quite strong
- In Denmark, governmental regulations are issued, based on “social” concerns rather than established scientific evidence, e.g. toluene threshold values on post-office premises where printed products are stored, or softening agents in PVC)
- In Belgium, taxes on direct-mail advertising, presented as an undesirable form of printed matter
- In France, special tax on non-requested addressed and non-addressed mail (0.15€/kg)
- In Hungary, a fee on printed advertising material.
- Printing companies are also affected by a certain number of additional “eco taxes” affecting some parts of activities :
    - Levies for waste water treatment (in Finland 1.95€/m³ incl VAT)
    - Duty for electricity produced by heating oil (climate change duty)
    - Duty on energy efficiency
    - Contribution to collection of waste paper, varying schemes across Europe.

It must be expected that in the near future there will be an EU Ecolabel Scheme for printed products. It will cover all the printing processes and in order to satisfy the criteria, printing companies will have to use all possible ways to reduce VOC emission, including the use of Isopropanol in dampening solutions in offset printing which, for many printers, still appears to be a difficult target to achieve.
The major environmental impacts of printing processes are covered by European legislation (Regulations, Decisions or Directives), applicable throughout the Union. However European Directive needs to be implemented by national legislation and is subsequently subject to national control procedures.

EU: a proactive environmental regulatory policy (2/2)

Printers tend to refer to heterogeneous legislative treatment throughout Europe, likely to reinforce national disparities. A clear distinction should however be made between environmental constraint resulting from EU and/or national legislation affecting printing processes in a very specific and technical way based on performance of printing equipment, which prevent the introduction significant divergences through the national implementation processes. Only sheetfeeld offset printing is not covered by common EU legislation. A specific process analysis would therefore moderate this judgement. Heatset offset and publication gravure printing are covered by very technical EU requirements leaving little room for implementation disparities.

On the other hand national governments tend to apply also called “incentive policies” aiming at promoting reductions in environmental impacts through “green taxes”. The major disparities across European countries result from these levies.

The impression about heterogeneous treatment is further amplified by the fact that new Member States have been given the opportunity to negotiate in their Accession agreement implementation deadlines for European Legislation.

Direct impacts of the enforcement of EU legislative regulations

Over recent years there have been considerable changes in EU environmental legislation. Printers are compelled to address legal obligations such as compliance with effluent discharge and greenhouse gas emission. Integrated pollution control will eventually oblige the industry to comply with stricter guidelines on pollution control with the threat of heavy financial penalties resulting from non-compliance.

Environmental awareness in the printing industry

The industry in Europe has, over the past year, developed an integrated approach to environmental requirements. Printers are aware of the long-term benefits such as a company's reputation vis à vis its customers, especially in countries where environmental awareness is high. But on the other hand, the increase in legislative pressure is leading to additional costs, competitive disadvantages in the global market from a short-term viewpoint and the threat of heavy financial penalties resulting from non-compliance with regulations.

Gap between the EU environmental policy and the printers' ability to comply

There is still a gap between the EU's regulatory requirements and the ability of the printers to implement those regulations. The printers believe that a voluntary approach would enable the parties involved to set up projects according to their specific abilities and needs. As a result, this would be a smooth and effective way of achieving targets, enabling cost-efficiency and somehow guaranteeing no negative interference with competitiveness.

Implementation of legislative requirements: the Polish case

The costs involved for printers having to comply with the SED Directive 1999/13/EC was estimated at 1.5 million euros. According to a rough estimate, the impact of expenditure on the reduction of VOC emissions in relation to total turnover exceeded one percent.

Direct economic effects of the implementation of regulations

For the Polish industry, the most important macroeconomic effect is the possible decline in employment (together with the implied social costs for unemployment benefits, training costs, creating jobs), as well as in exports and turnover as a consequence of the rigorous and rapid implementation of the SED Directive.

Need for longer transition time for compliance Directive

The importance of all these costs in the impact on competitiveness in the domestic and foreign markets, on exports and on employment, is worsened by the direct application of the compliance with the SED. A longer transition period for compliance, at least for fugitive emissions which are difficult, could be more appropriate for the industry.

Medium-sized and large printing firms most impacted

It is the medium-sized and large companies of high technological level that are most endangered by legislative regulations. Small printing companies are below the threshold of VOC consumption and are therefore not directly impacted by the Directive.

Effects of EU legislation on the global market

On a short-term basis: unfair competition

Labour costs are high in the EU, reflecting not only salaries and wages, but also the costs of the high level of European health and safety standards and welfare systems.
They are 20% higher than in North America and about 100% higher than in Asia. The impact in labour-intensive sectors such as printing is considerable, and companies involved in the areas concerned are less competitive globally.
On a short-term basis environmental obligations are still seen more as a cost-increasing factor than as a factor to enhance competitiveness.

The case of the American chemicals sector compared to EU

The European chemicals sector appears to be at a comparative disadvantage relative to the US chemicals industry, due to both higher regional energy costs (Kyoto emission limitations) and the likely adoption of European regulations. Impacts on this industry are indirectly related to printing which uses large amounts of chemicals. With the tightening of regulations, introducing a new chemical substance in the EU market takes three times longer and costs 10 times more than in the US.

Europe: the global regulator

North America considers that the EU acts as a market maker rather than as a market facilitator due to the advent of products with environment-related quality labels. The EU has always pioneered environmental matters. The American industry is aware that regulations in force in Europe will somehow be enforced in North America with the same economic impacts on their printing industry.

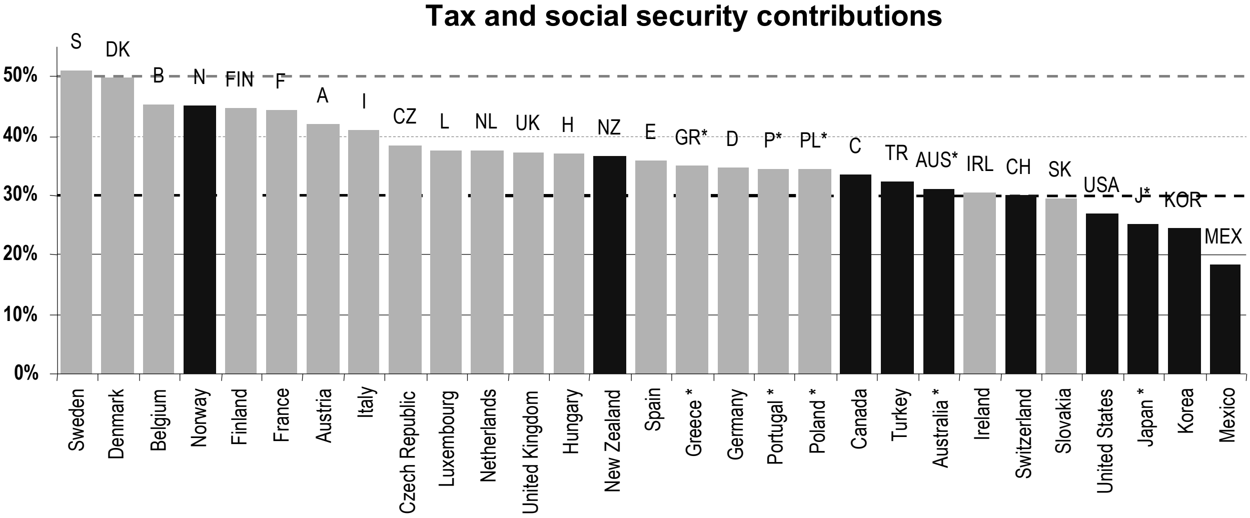
On a long-term basis: global market differentiation through environment-friendly printed products

With the advent of the environmental protection concept, EU companies would be able to differentiate their products and thereby effectively try to compete against lower priced foreign exports. Price competition can be offset by strategies that closely couple the product and image value of products. In the local European market, with the increasing awareness of environmental issues, customers are asking for green products. This means that products manufactured without any enforcement of an environmental policy could face a competitive disadvantage in the European market and foreign markets willing to follow the European Model (example of China).

USA: lack of efficiency of the voluntary environmental policy approach

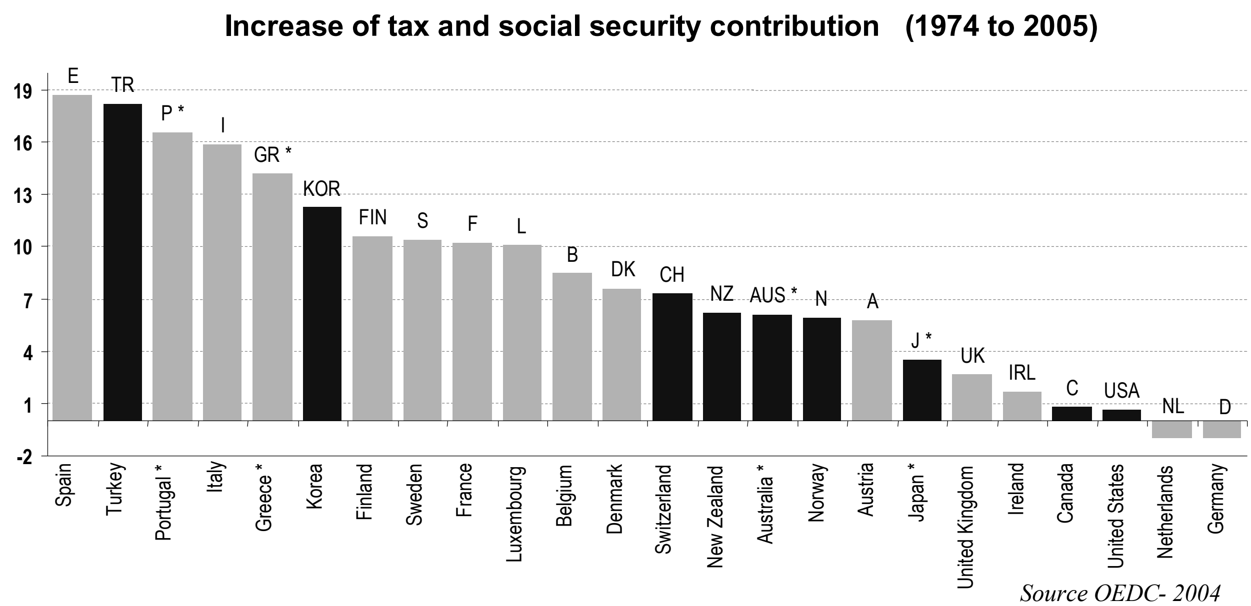
Most regulatory efforts have been made since the amendments to the Clean Air Act (CAAA) in 1990. Thresholds for waste and emissions differ from one state to another, with the exception of very large companies, the regulation of printing companies is done at state level. Agencies such as EPA and state agencies rely on voluntary programs emphasising technical information and direct assistance to encourage the spread of pollution prevention technologies in small companies. Programs implemented by agencies are considered to lack efficiency which has become a major concern for printers. As environmental regulations are strengthened abroad and demand for green products increases, they fear a loss of global competitiveness.

A diverse social and tax landscape



Source OECD - 2004

- The considerable gaps between the countries can be explained by the tax and social security contribution policy over the last 20 years, but the spread actually remains very considerable (20%).
- The competitive position of the Union members is very varied in this field and could foster internal competition in Europe:
  - Investment attractiveness seems more encouraging for Eastern countries
  - Labour costs and flexibility (a major requirement for the printing industry) are not favourable for the Nordic countries, Belgium and France
  - Social security contributions remain at a relatively high level in Eastern countries but based on lower wages



Source OEDC- 2004

Decreasing and non-uniform trade union representation

Country	Representation of unions in the graphics industry (% of total employees)	
	1994	2004
France	14,3%	7,3%
Germany	64,6%	56,3%
Italy	40,0%	26,8%
Netherlands	65,0%	75,6%
Spain	17,7%	13,0%
United Kingdom	52,0%	42,7%

Source UNI Europa

- For historical reasons, the influence of trade unions differs considerably between European countries
- Globally the trend shows a continuous decrease
- Their contribution to industry strategy discussions therefore varies in each country and could have an impact on social dialogue conditions.
- According to the UNI Europa Survey on demographical changes in the EU's printing Industry, the main barriers to the recruitment of union members are:
  - High membership fees
  - Growing individualism – young people do not see any benefits from being a member of a union
  - The formality of trade union practices
  - Employer opposition

The constant decrease in the representation of trade unions has to be considered as a weakness. Indeed, in an evolving technological landscape, human resources (in terms of skills and volume) are preponderant and weak union representation could modify the negotiation balance within the sector, moving towards a more defensive position than a proactive one.

Part 5 b – Industry & organisation

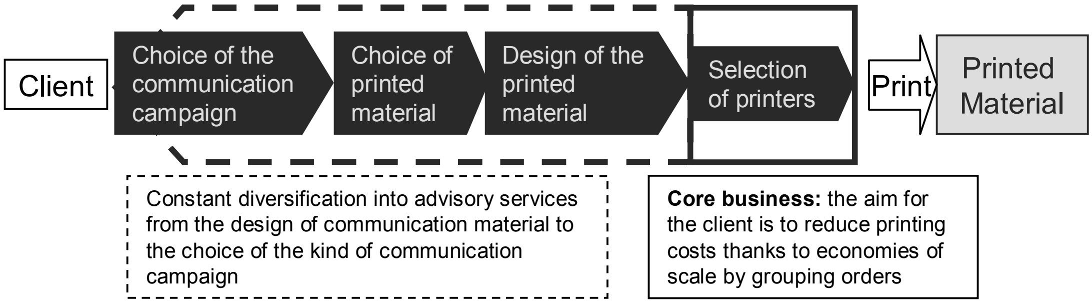
How brokers are modifying the value chain

The market

The European brokers market is assessed at around 50 billion €. With a turnover reaching 50 M€, Altavia is the European leader with 0,1% of market shares.

The job and the position

The print broker's job is evolving from furnishing printing capacities to designing communication materials and advising on communication. Brokers have a portfolio of print capacities and delivery times which have become the main discriminatory argument between printers.



Main Clients

The broker's main clients are the **retail sector** players

Requirements

Reactivity is the main requirement for the retail sector when launching a communication campaign. Although annual communication schedules are fixed at the beginning of the year, retailers must be able to seize the opportunities of launching unexpected promotional campaigns decided by their clients. Brokers must then be able to offer printing solutions within a six- hour time limit.

The short deadlines require the local printing of advertising material and thus strongly reduce the risks of the relocation of printed advertising material.

Concerning Mail Order Selling, the requirements seem to be fairly similar since catalogues must be printed within very short time limits (time schedules from the launch of a new collection to the printing of catalogues are very tight).

Modification of the value chain:

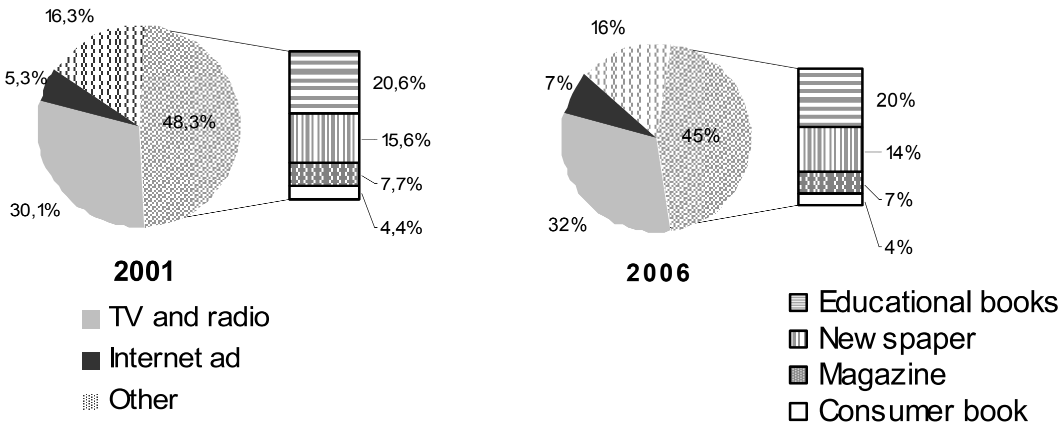
→the sharing of the printers' gross margins

→lower value added for printers in the value chain who have become merely capacity suppliers

→the opportunity to increase the printing machine utilization rate

New media are modifying the customer's expectations

Global entertainment and media market by segment, in value. E&Y adapted and updated from 2002 data



•*Direct Marketing*

Catalogue operators have become multi-channel marketers, embracing e-commerce, **changing catalogue frequencies** and **page counts**. They are using **direct mail** to find, inform, and satisfy their customers.

•*Newspaper VS on-line content*

Though newspaper circulation is still quite high, it is nonetheless **declining**, affecting newspaper insert circulation. There is an increase in providing on-line content via computer or other devices such as e-books. Forecasts suggest that this trend will continue.

•*More printing on desktops and copiers*

There may also be more printing on desktop printers and copiers at the expense of commercial print. This is partly driven by the electronic distribution of documents, but also because of the **falling costs**, greater **ease** of **use** and rising quality of both **office printers** and **copiers**, and **graphics and publishing software** is making this option more feasible. This area of printing will grow from **5** to **10%** of total printing paper consumption.

•*Internet creating demand for print?*

On the other hand there are examples of the Internet used as a marketing tool to create demand for print. (On-demand digital printing blogs offering a complete range of services, print and mail solutions for small business owners).

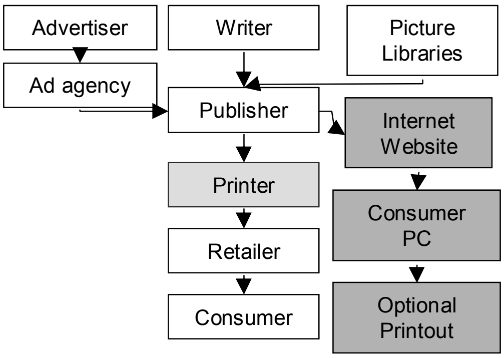
Telecommunications and information technology has:

→Contributed to the relative decrease in the importance attached by end consumers to printed media

→Modified the expectations of some market segments. The printer has to offer global solutions for the circulation of the customer's content, including printed products.

The Internet supply chain

Magazines & daily press

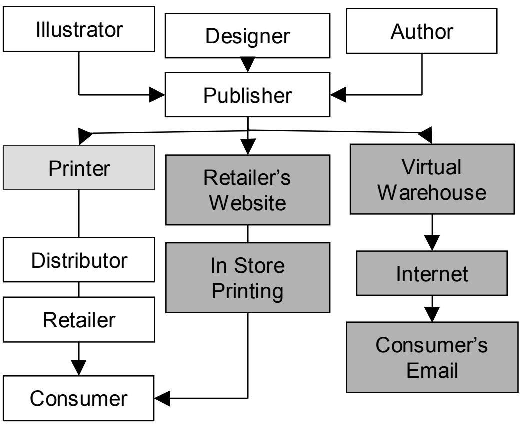


As explained previously, the development of the Internet offers new ways for the consumer to reach information through online services proposed by publishers.

The “Internet supply chain” is currently a real threat for the printing industry since the traditional printer is no longer involved in the supply chain.

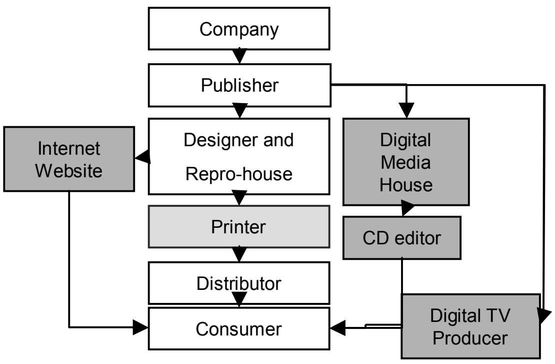
For that reason, a constant decrease in production value for newspaper and magazines can be observed.

Books



The printing of books is impacted by two major effects: growing competition from Asian “low cost” countries, to which the printing of books has been relocated. The book sector relies on revenues from book sales and does not receive any additional advertising revenues, contrary to the magazine and newspaper sector. Thus, reducing the cost of production is the only way to improve benefits, which explains the relocation of this activity. New technologies offer new ways of selling books such as “In-Store Printing” which enables the printing of the books at the place of sale and the “Virtual Warehouse” in which the consumer receives the book bought by e-mail.
These two effects may explain the constant decrease in production values for book printing in Europe.

Printed advertising materials



In the catalogue segment, the Internet and more generally e-commerce represent the main threat for the printing industry. Thanks to the Internet, a company is able to present its products and articles directly to the customer through its website without having recourse to the circulation of catalogues.

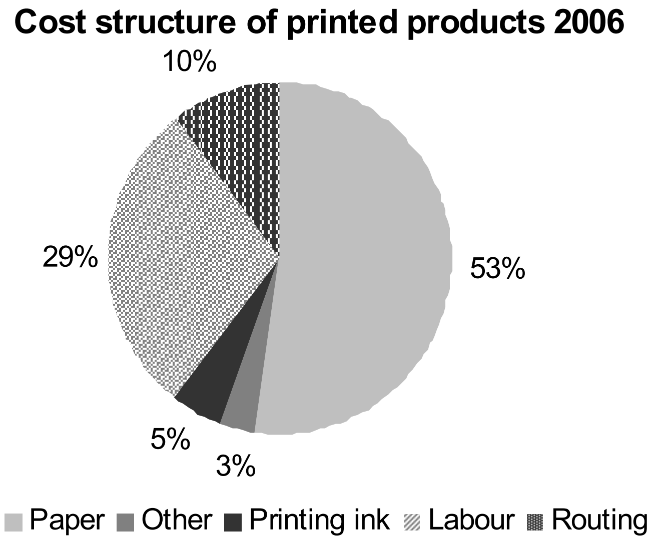
Nevertheless, targeted marketing will still require the use of a physical material (catalogue for example) addressed to the final targeted customer, which proves to be the most efficient communication method.

Internet and global network :

→Increasing the final customers expectation in term of delivery time, customization and accessibility of the printing products

→Modifying the printer’s position in the supply chain

Relative cost structure in Europe
(not including investment depreciation)



Source Ernst & Young

The analysis of the cost structure of printed products manufactured in Europe shows the importance of raw materials and labour costs in the cost structure.
As the raw materials market is a global market, this cost factor is not a real lever for competitiveness. Under the pressure of demand from emerging new printing countries, especially Eastern and Far Eastern countries, the raw materials market appears to be less and less predictable. Indeed, the demand from these countries for raw materials is now rocketing, sustaining price instability. Moreover, these countries are bulk buying which is increasing their negotiation lever. As European printers are used to purchasing individually, they cannot negotiate better prices.

Customers focus on prices, a key factor impacting the purchase decision. So for some products, taking all the costs into consideration (logistics, transportation, non-quality, etc.), it appears that the price difference is less than 5%. Other costs, especially energy, are relevant and could become a real competitive disadvantage for some countries such as Italy.

Labour costs account for around 1/3 of the cost structure. They represent one of the most sensitive levers for increasing the competitiveness of the European printing industry. But these costs are closely related to the fiscal and social policy of each European state.
The position occupied by services are also an important issue : 10% is an average and a more precise study shows that firms which add/consider services as a key competitive factor are in a better financial situation. Services seem to be the only way of enabling the printing industry to reduce the gap between a basic manufacturing industry and a high value added industry.

Driving the investment strategy

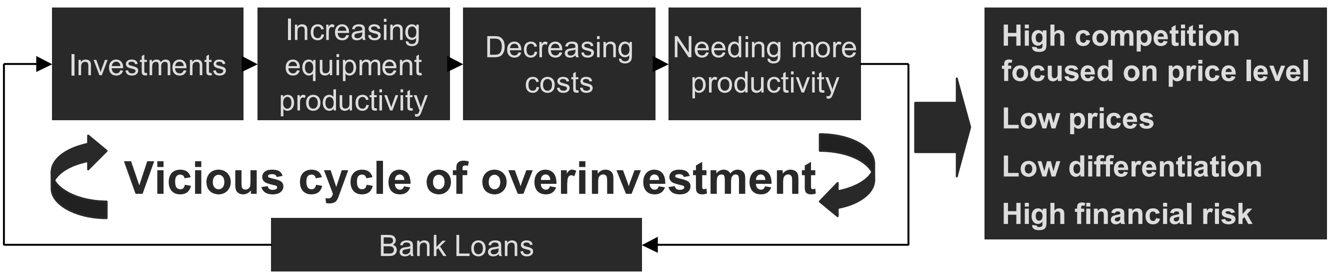
Utilization of production capacities

France	80%
Germany	82%
Italy	75%
Spain	73%
Belgium	85%
UK	80%

Source : Intergraf – The evolution of the European Graphic Industry – Publication year 2005

Printing companies tend to manage their development by investing their resources (in equipment and machinery) as far as possible to enhance their assets' capacity and productivity. The more productive the assets, the more they can afford a cut in prices to improve their market share: however, at some point the cut in prices will lead to a decrease in profit and companies will opt for new investments to achieve efficiency and boost their profits again. This Vicious Circle will be strengthened by the banks' reluctance to finance investments and unless companies are able to provide guarantees and a proven attitude to generate future revenues and positive cash-flows (strategy, vision and business plan), they will be forced to close or earn profits close to zero.

The overinvestment cycle is a key factor in understanding the structural challenges of the printing industry, especially concerning the workflow and the industrial organization of the firms.



A strong focus on prices and productivity:

→increasing equipment capacities

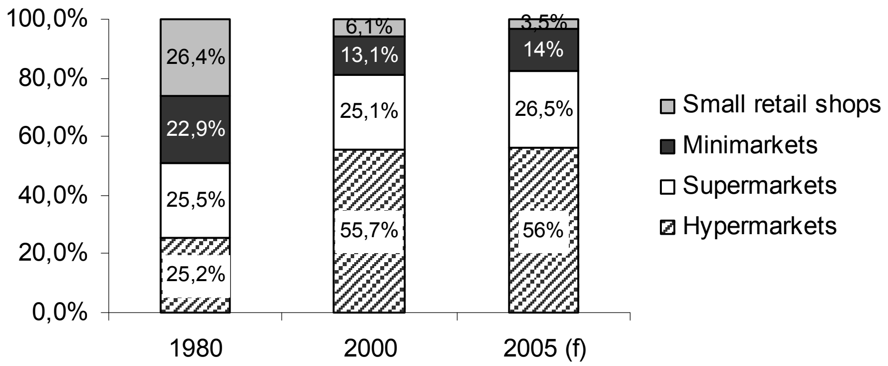
→lack of R&D and low differenciation between printers

→weakness of the financial structure of the printing industries

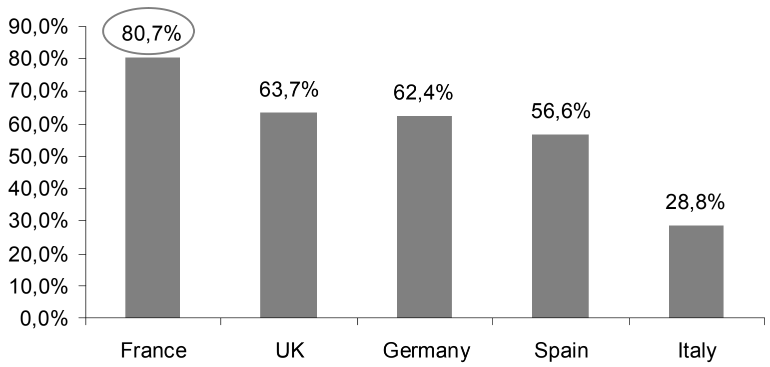
Part 5 c – Markets, customers and products

Mass retail : an increasingly concentrated sector

Market shares (in value)
of the different sized retail outlets



Market shares of the five biggest groups in 2001



Source: Eurostaf 2003 - Eurostaf is a market and statistics data provider, subsidiary of Les Echos Group. Les Echos Group is owned by the Pearson Group.

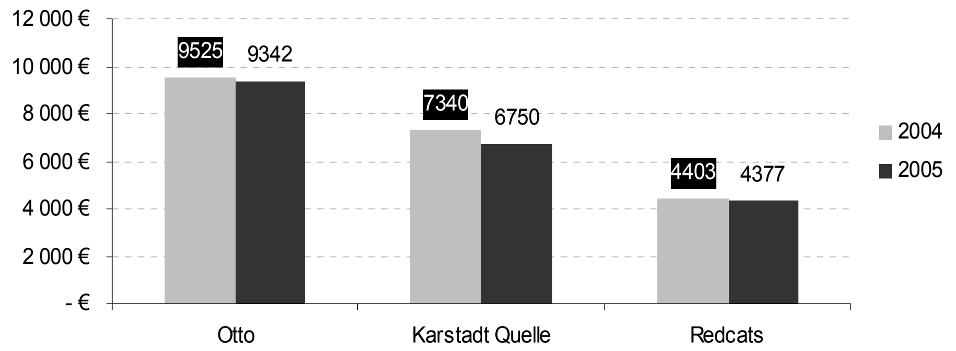
The mass retail sector has undergone a massive phase of concentration over the 1980-2000 period that has led to the disappearance of almost all small retail shops.

The concentration of the sector is particularly significant in the three main European markets, France, Germany and the UK, where the majors hold more than 60% of the market shares.

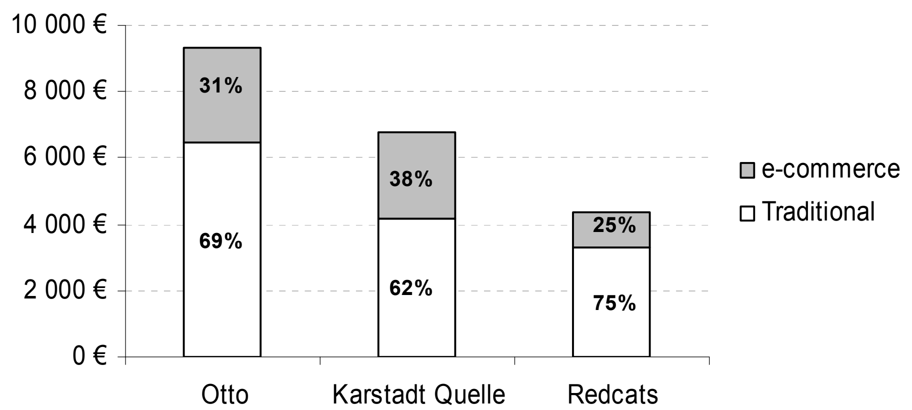
The consequence for the printing industry is that printers will be faced with the increased negotiation power of the retail groups, weakening the revenues of the printers.

Distance sales: a concentrated sector

Revenues of the main leaders in distance sales (in Millions)



Revenues per retail channel in 2005 (in M€)



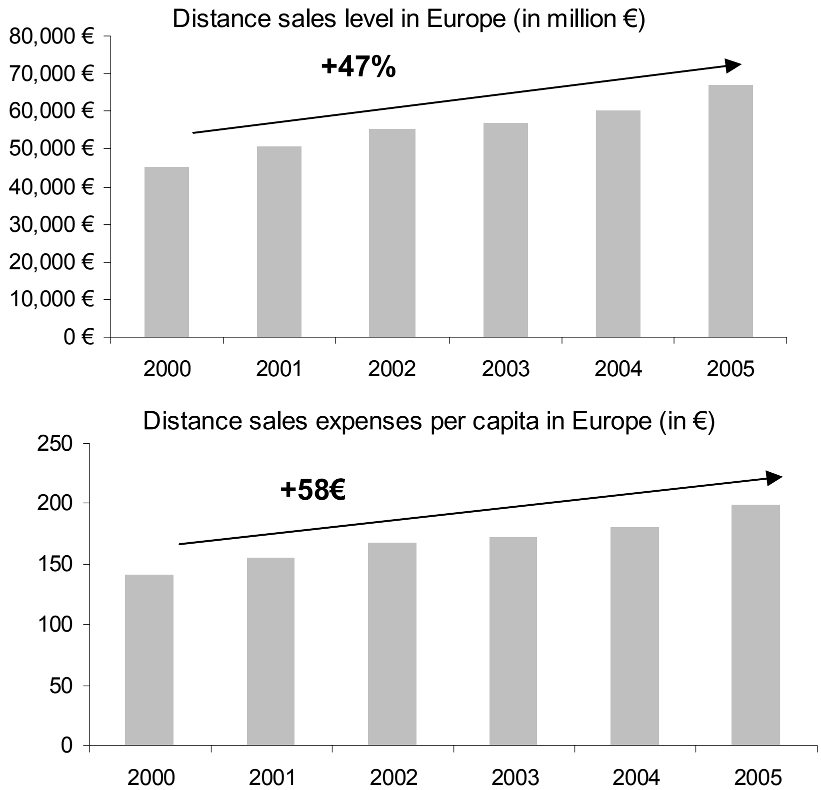
Sources: Financial reports of considered groups

The three main leaders in the mail order segment represent 30% of market shares in a market reaching 68,5 billion € in 2005 (NB: the revenues of Otto include its three retail channels including stores).

Their revenues decreased between 2004 and 2005, -2% for Otto, -8% for Karstadt Quelle, -1% for Redcats.

This fact may have major impacts on the margins of printers of catalogues, which may decrease under commercial pressures from the leaders. The place occupied by e-commerce in the revenues of the main leaders remains considerable. Printers may in the near future be obliged to find new diversification levers so as to reduce the importance of catalogues in their revenues.

Distance sales: a growing sector...



Source: EMOTA

The European distance sales market grew by 47% between 2000 and 2005, representing an annual growth rate of 8%.

Expenses per capita also increased by 58€ between 2000 and 2005.

Despite a collapsing German market (dropping from 5,1% between 2000 and 2005), the distance sales market has succeeded in growing in Europe, mainly driven by:

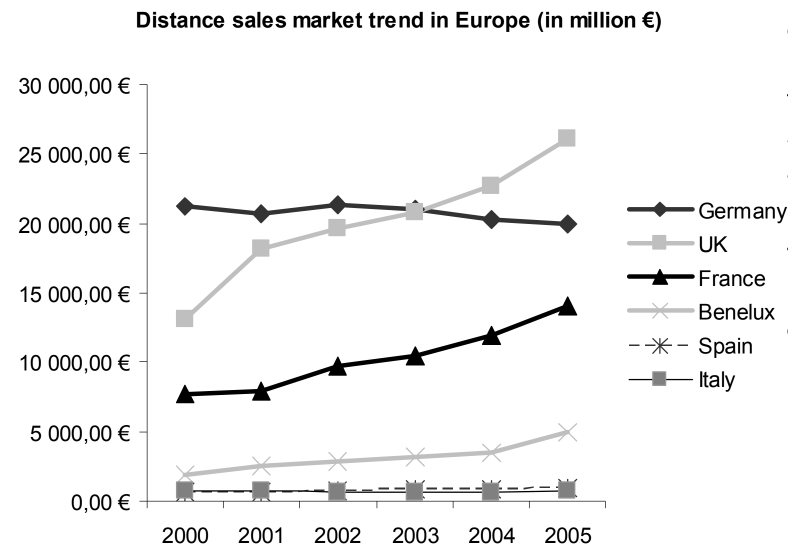
• the economic recovery, impacting the average consumption of individuals, particularly in Great Britain (+214€ spent on Mail Order items between 2000 and 2005) and in Spain

• the established customer loyalty in this kind of consumption, particularly in Germany which used to be the biggest market in terms of total sales through Mail Order Selling

• the sudden booming of e-commerce, accounting in 2006 for 28% of sales in this segment. This on-line media enables better and more direct communication and dialogue with customers, allowing a multi-channel approach. New sectors have broken through, such as the selling of food items and financial services

Traditional printed media such as the catalogue remain the centrepiece of information at the disposal of the customer to help him or her to decide, free from any outside pressure, telephone and on-line communication giving supplementary information and direct contact.

...thanks to the Internet



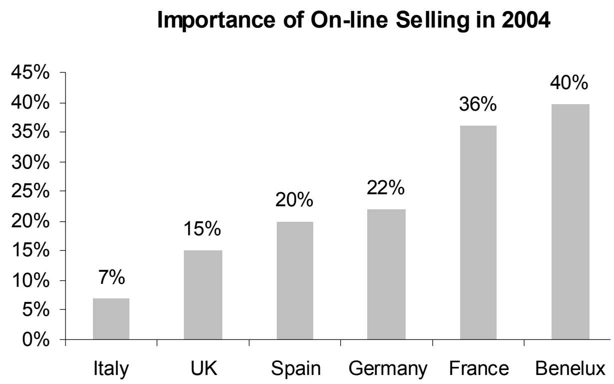
Source: EMOTA

The Distance sales sector is growing in each of the panel countries except for Germany where the sector is going through a recession phase, driven by a structural crisis that started 10 years ago, causing financial difficulties for the leaders.

The UK became the largest European market in 2003 thanks to the dynamic growth of consumption.

In France, the renewal of the sale process and sale catalogues have boosted the activity of the leaders.

In Italy and in Spain, the market remains low compared to the major European markets; Mail Order has not yet been fully adopted by the population as a traditional way of buying.



Source: EMOTA

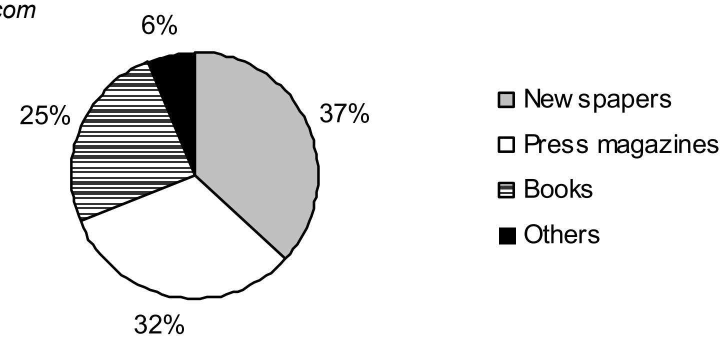
The Internet is one of the main drivers of the Distance Sales sector, accounting for almost 23% of total sales for the European panel in 2004 (28% in 2006).

This trend represents the main threat for the printing industry, since the catalogue may no longer remain the main material used for this selling process.

Publishing

The publishing sector in Europe in 2001 (in production value)

Source: euractiv.com



Newspapers account for 37% of the production value in the publishing sector in Europe, with a production value reaching 43.234M€ in 2001.

The sector remains heterogeneous, given the importance of the Press & Magazine segment as well as the Book segment.

The table below shows that each sector is characterized by different cost structures as well as revenue structures. For instance, the book sector relies only on the selling of books, while the newspaper and magazine segments rely both on product sales and advertising revenues.

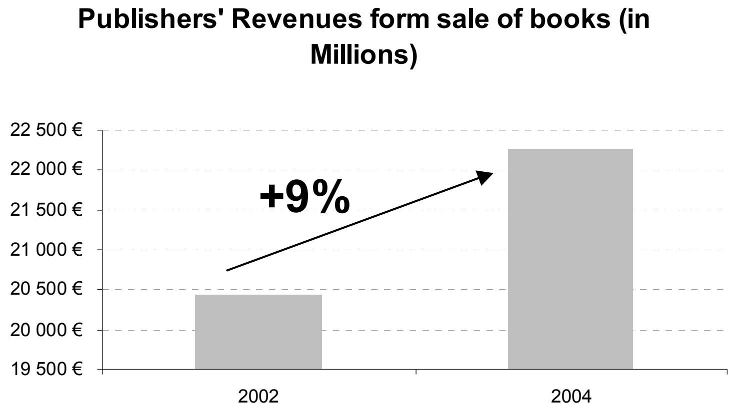
The publishing sector is complex to manage because of its diverse structure in which each segment ? Represents a significant share of has a great importance in the production value but relies on specific competitive advantages.

Cost as a percentage of total costs

Sector	Paper and Printing	Content (Acquisition and editing)	Distribution	Marketing and administration
Magazines	29,5%	20,5%	23%	27%
Newspapers	32%	31%	15%	22%

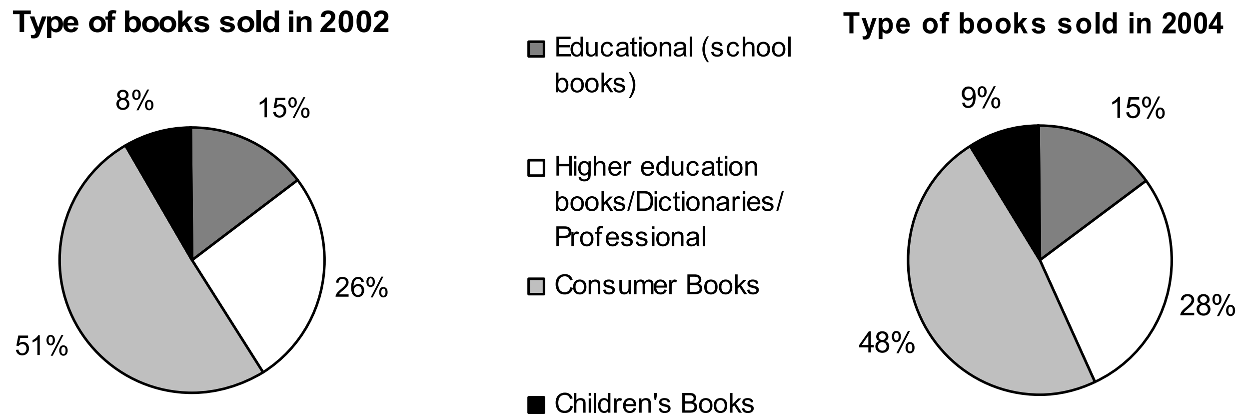
Source: European Commission, Strengthening the Competitiveness of the EU Publishing Sector

Book publishing: a drop in international sales...



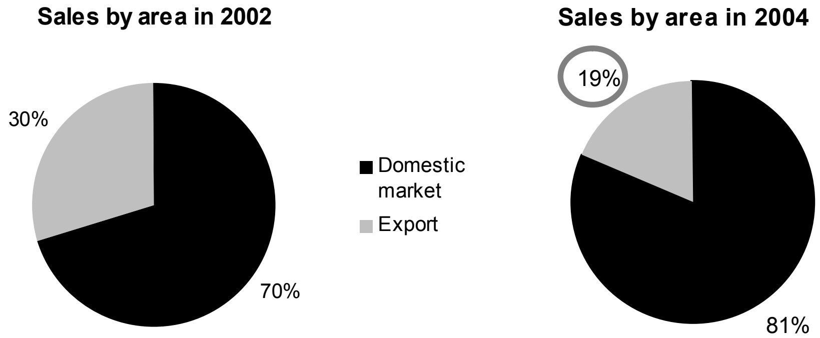
Publishers' revenues in Europe have risen by almost 9% in the two year period between 2002 and 2004. This growth is mostly explained by the integration of 7 new countries into Europe (Czech Republic, Cyprus, Estonia, Hungary, Lithuania, Poland, Slovenia), modifying the scope of the study.

Consolidated data on the 17 country scope (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, UK) are not available for 2004, but we can suppose that the book market has not grown during the two-year period in EU17.



The market has been quite stable concerning the type of products sold. Consumer books (including children's books) represent 57% of the books sold while educational books represent 43% of the books sold.

The process of relocation from Europe to Far East countries that is occurring in the book segment threats then both educational books as well as consumer books.

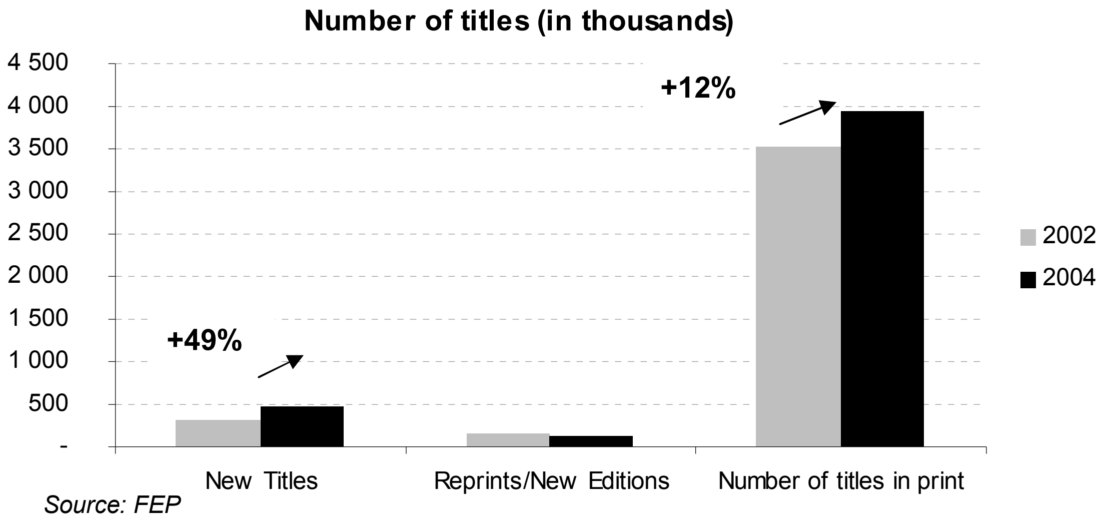


The sales per area graphs show that book exports decreased in Europe by almost 11 points between 2002 and 2004 (an average annual decrease of 18%).

This decrease may be explained partially by the fact that the 7 new European countries accounted for a considerable share of international trade.

Source: FEP

... an increase in titles, but a decrease in employment...

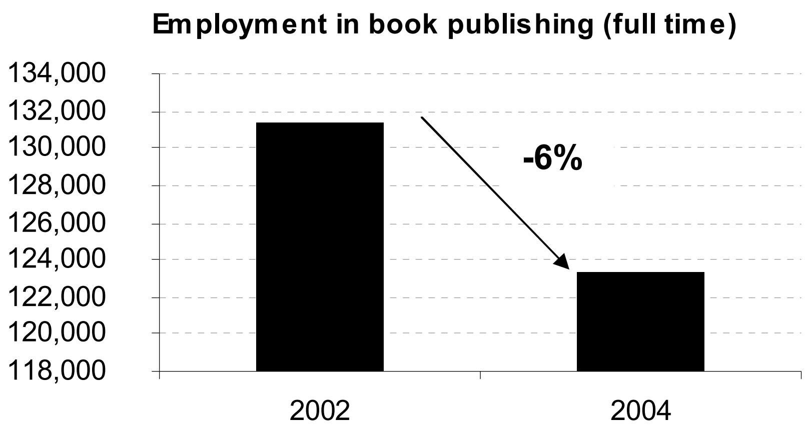


Source: FEP

The increasing number of titles in print in Europe between 2002 and 2004, shows that the book segment remains attractive.

The attractiveness of the sector is all the more valid since the number of new titles grew by 49% during the same period.

Nevertheless, the most significant growth of revenues for publishers is generated by children's books (an average annual growth rate of 8% between 2002 and 2004) where the threat of relocation is greatest.



Source: FEP

The decrease in employment in the publishing sector is the result both of concentration effects and the intention of companies to reduce their costs.

... and a concentrated and internationalised European Market

UK

The recent purchase in February 2006 of Time Warner Books by Hachette Books UK enabled the group to achieve the leading position in the UK in terms of market shares (16,2% in 2005).

The five leaders in Book Publishing hold 53% of the market shares. Among them, only one company is British: Pearson. The others are French (Hachette), German (Random House, Macmillan) or American (Harper Collins).

Germany

In Germany, of the 1,823 publishing houses only 65 companies (that is to say less than 4%) hold 71% of the market shares.

Foreign groups have also grown in Germany where the number of subsidiaries of foreign groups among the top 100 book publishers increased from 5 to 13 during the five-year period starting in 2000.

France

In France, the six major groups in book publishing hold 61,3% of the market shares . Among them, three are French-owned groups (Hachette, Editis, La Martinière Groupe), one is German (France Loisirs owned by Bertelsman), one is Italian (Atlas Group) and one is Belgian (Media Participations).

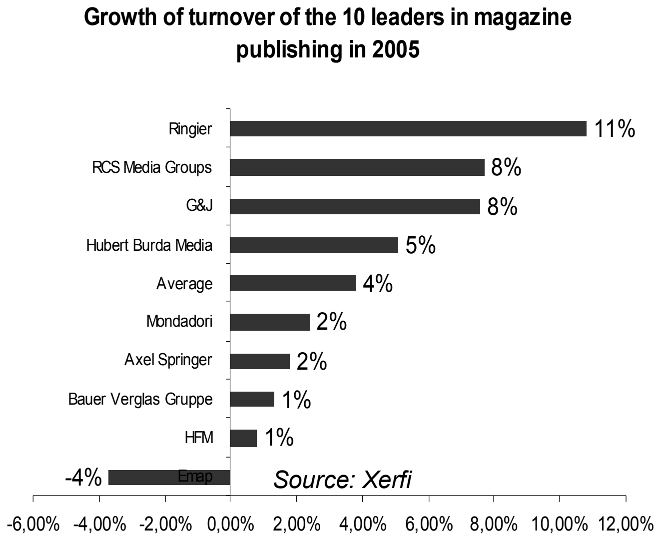
Spain

The publishing houses of the four biggest publishing groups in Spain hold more than 50% of the market shares.

Book publishers have thus gained competitive power thanks to their ownership and thanks to their size in terms of market shares, which may cause a reduction in the operational margins of printers in the book segment.

The race for profitability may also encourage relocation from Europe to low-cost countries.

Magazine groups are still growing thanks to increasing investments in advertising...



Despite a morose economic climate having brought about a decrease in investments in advertising, the leaders in the press & magazine sector have been able to increase their turnover, thanks to:

• their reactivity, by quickly giving up non-profitable titles

• the extension of their range of products, by multiplying the number of new titles and particularly targeting female readers, one of the most dynamic segments

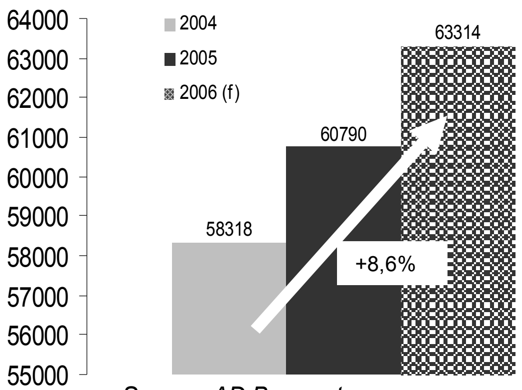
•internationalisation, by launching the best-performing titles in new countries

The consequences for the printing industry are multiple:

• a possible reduction in the run length by the multiplication of new titles targeting a more specialised category of readers

• the development of digital printing technologies, accompanying the phases of internationalisation of some titles

Expenses in advertising in the Euro zone (in M€)



Source: AD Barometer

There was an 8,6% increase in expenses in advertising between 2004 and 2006, synonymous of an average annual growth rate of 4,2% within the EU5 zone: Great Britain, France, Germany, Italy and Spain.

This increase is due in particular to the recovery of economic growth worldwide and in Europe, and in a more obvious manner to the outstanding development of the Internet.

Some business sectors have contributed to the increase of advertising expenses, such as telecommunications, services to individuals, the financial sector, as well as the transport and energy sectors.

On the other hand, the food and beverages business, and more generally the mass retail sector, has reduced its investments in advertising as a consequence of the reduction of margins caused by the development of “low-cost products” and global competition.

...in an evolving advertising market in each major European country...

Dynamics of advertising expenses in some business sectors

Decrease in advertising expenses	Stagnation in advertising expenses	Growth in advertising expenses
• Mass retail: Food and Beverages, Cleaning products, Beauty products	• Automotive • Retail • Fashion	• Telecom • Financial services • Luxury

Source: AD Barometer

Two main factors explain the sudden recession of advertising expenses in the mass retail sector:

• the development of the "low-cost" trend, the low-cost products taking market shares to the traditional labels, for people are more interested in the quality/price ratio

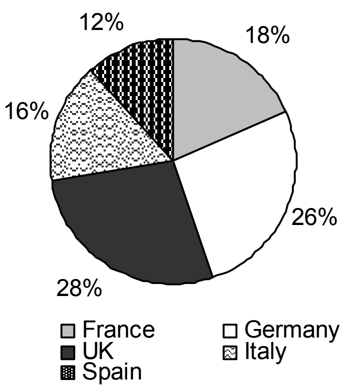
• the global concentration in the sector which consequently reduces the number of potential announcers

The consequences are considerable for the printing industry:

• A possible reduction of margins for magazine publishers that would imply the disappearance of titles and thus reduce the activity of some printers

• A possible impact on the mass retail sector that could also reduce its advertising policy, and the broadcasting of printed advertising materials (flyers, brochures)

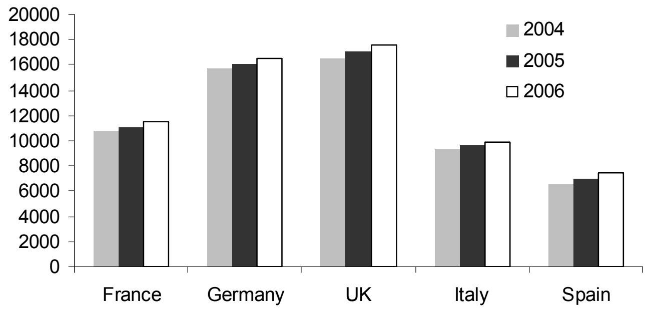
Investments in Advertising in 2006



In 2006, the EU 5 zone spent around 63.314 M€ on advertising.

The UK is the leading country, accounting for 28% of investments with nearly 17.512 M€ spent. Germany spent 16.556 M€ on advertising and accounts for 26% of total EU5 investments.

Trend in Advertising Investments (in M€)



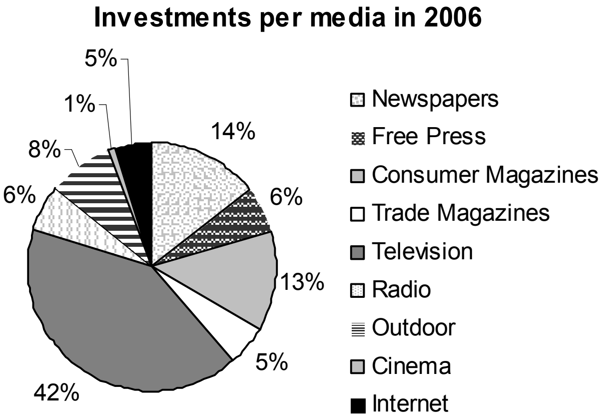
Source: AD Barometer

Advertising expenses have been growing in each of the five countries considered.

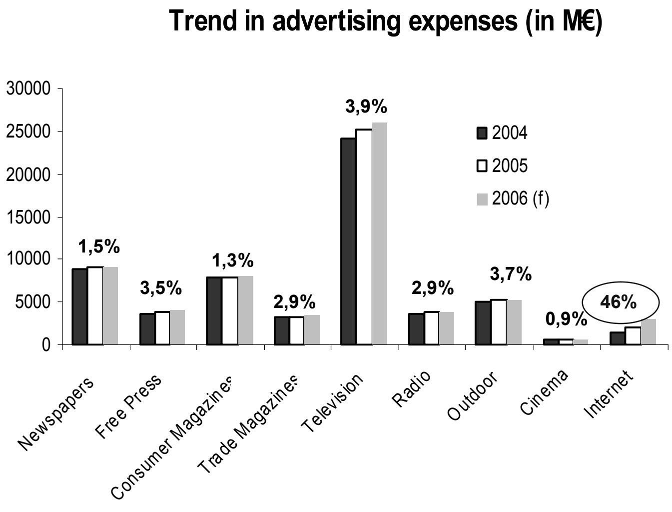
What is noticeable is the outstanding average growth rate of advertising expenses in Spain, reaching 7% annually, 4% more than the average growth rate for expenses in the other four countries.

This growth might be explained by the general growth observed in Spain, slightly higher than in the other European industrialised countries.

...which is nevertheless shifting to the Internet...



Source: AD Barometer



Source: AD Barometer

Television accounted for 42% of investments in advertising in the EU5 zone in 2006, and thus represents the most important media used in Europe in terms of expenses. This is particularly due to the high cost of TV advertising.

Paper-based advertising accounts for almost 38% of expenses in advertising reaching 24.424 M€ in 2006, within the EU5 zone.

It is to be noted that in 2006 Internet accounted for 5% of expenses in advertising, reaching 2.953 M€.

Paper-based advertising grew by 1,9% between 2004 and 2006, a lower level than global advertising expenses.

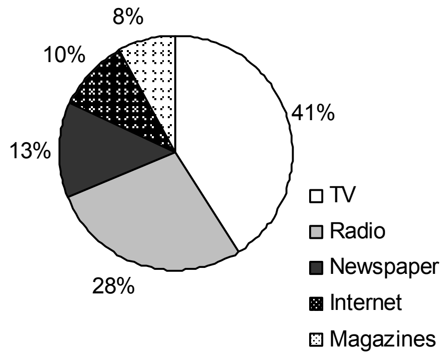
In terms of average growth, the annual average growth rate of Internet advertising expenses during the 2004-2006 period was outstanding, reaching almost 46%.

This therefore shows the great potential of the Internet as a means of communication, and how considerable a threat it is for the traditional media.

Internet may then be the cause of a shift from advertising through printed media to advertising on-line, following the main behaviour trends of a population used to obtaining information through the Internet.

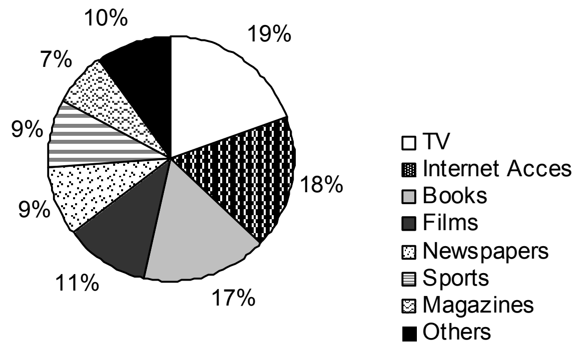
... in order to adapt to an "on-line" population

Allocation of media time by Europeans in 2003



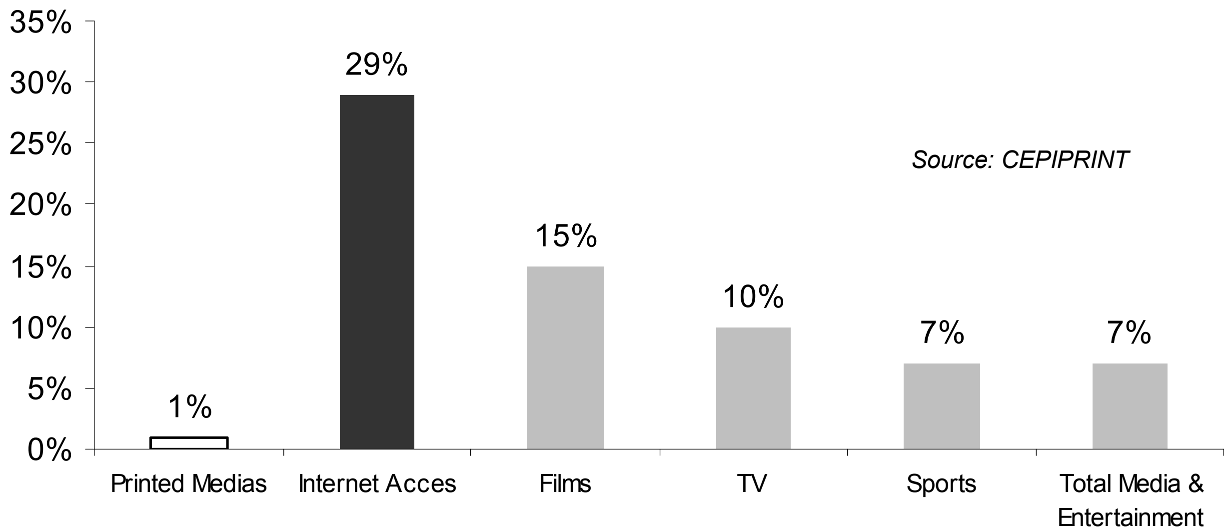
Source: European Commission, Strengthening the Competitiveness of the EU Publishing Sector

Expenses of European Consumers in 2004



Source: CEPIPRINT

Growth of turnover of advertising market between 2000 and 2004

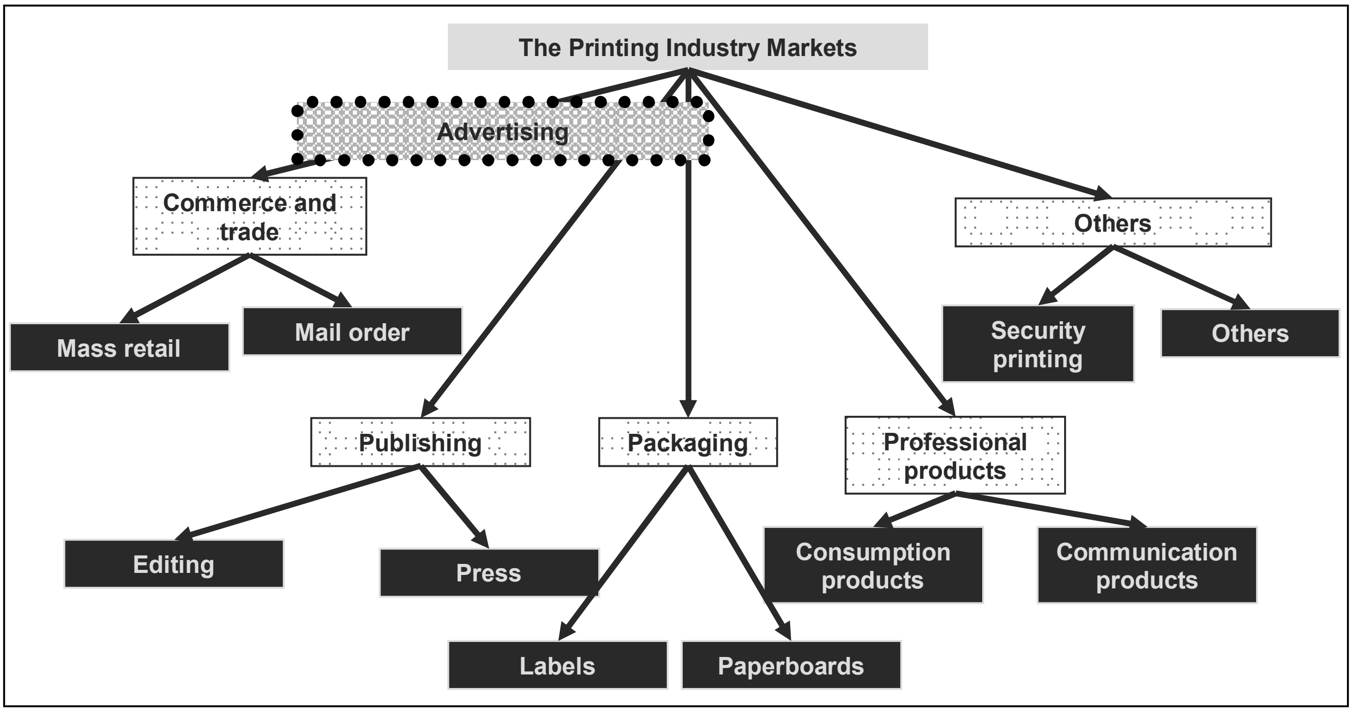


The development of the Internet is the cause of a major cultural shift of the population's habits, slowly but constantly giving up the use of printed media (books, magazines and newspaper).

This shift partly explains the outstanding rise of advertising via the Internet, as well as the development of e-commerce for the Mail Order Selling sector.

The Internet represents the main threat for the publishing industry and consequently for the printing industry, since the selling and production of printed media may eventually cease.

Advertising, a key position in the market structure

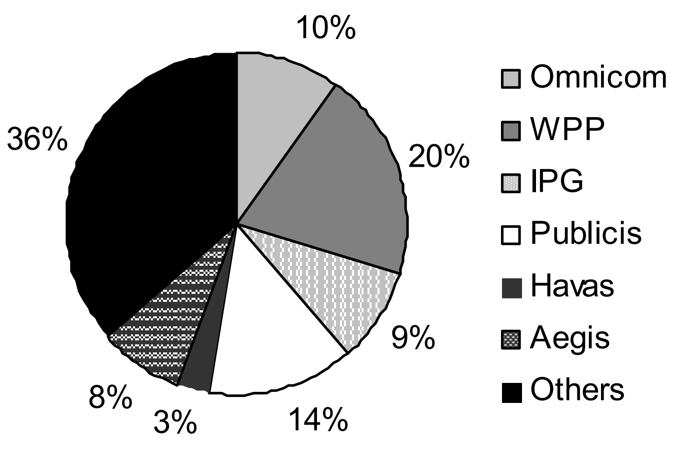


Advertising occupies a key position in the printing industry's global value chain. At least three main markets are dependent on advertising, in terms of strategy, channels used or investments.

Advertising, a key but consolidated position in the market structure

Groups / Publishers	Turnover	Media Bought	Ad agencies
Omnicom (US)	8.400 M€	22.880 M€	OMD / PHD
WPP(UK)	7.900 M€	44.600 M€	Mindshare, Mediacom
IPG (US)	5.000 M€	21.800 M€	Initiative, Universal Medias
Publicis (France)	4.100 M€	31.820 M€	ZenithOptiMedia, Starcom
Havas (France)	1.500 M€	7.290 M€	MPG
Aegis (UK)	1.300 M€	18.370 M€	Carat / Vizeum

Volume of media bought



Source: Ad Barometer

The concentration of the sector in media agencies reduces the number of publishers within the press magazine and newspaper segment.

The world market is dominated by 6 Media Groups, American, British and French, holding almost 65% of the market shares.

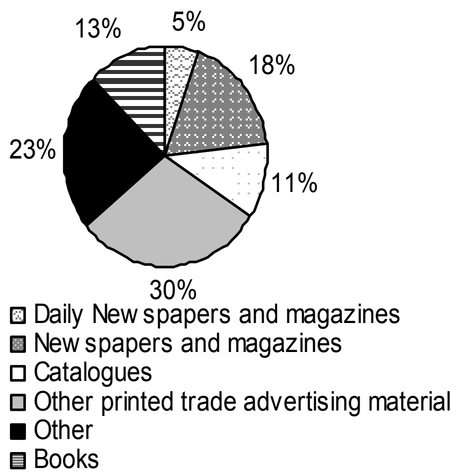
As a consequence, pressure on prices is expected to increase since publishers will gain more negotiation power.

There is thus a threat that printers may be subject to additional pressures from their Ad agency and publisher customers.

The concentration of the sector has two consequences. The positive one is the reinforcement of the players and the increase of their investment capacities; the negative one is the lack of diversity and the increase in risk because market orientation depends on a few decision-makers.

European graphic industry : activity by products and forecasts

Distribution of the production value in 2004



Source: Intergraf

The total production value in Europe reached 44.388 M€ in 2004. This figure does not represent the whole printing industry, some sectors having been excluded such as stationery, the printing of stamps and all the services related to the activity.

The printed materials used for advertising account for 30% of the production value in the printed industry within the six zones considered (France, Spain, Benelux, Germany, Italy, UK). This sector is particularly significant in the two main markets, Germany and the UK.

However the recent threat of the Internet, offering new methods of marketing, may cause changes in the distribution of the production value.

Estimated Development of Print Products Across Europe

€ billion	2005	2010	2005-10 (%)
Directories	928	745	-19,7
Office stationery	2,188	1,927	-11,9
Catalogues	6,766	6,15	-9,1
Newspapers	6,845	6,634	-3,1
Security	1,908	1,971	3,3
Books	8,341	8,688	4,2
Commercial/promotional	6,151	6,417	4,3
Magazines	15,636	16,654	6,5
Advertising	24,461	27,616	12,9
Printed Packaging/Labels	43,94	51,201	16,5
Other	25,844	30,334	17,4
Total	143,007	158,337	10,7

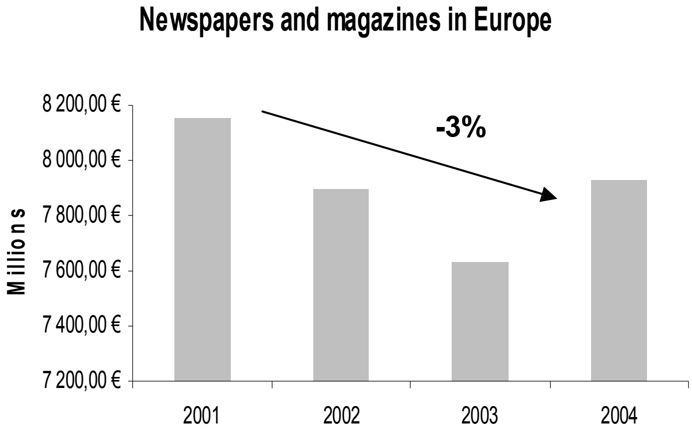
Source PIRA

Except for print products for advertising, all the main products of the printing industry will be facing a strong decrease over the five next years.

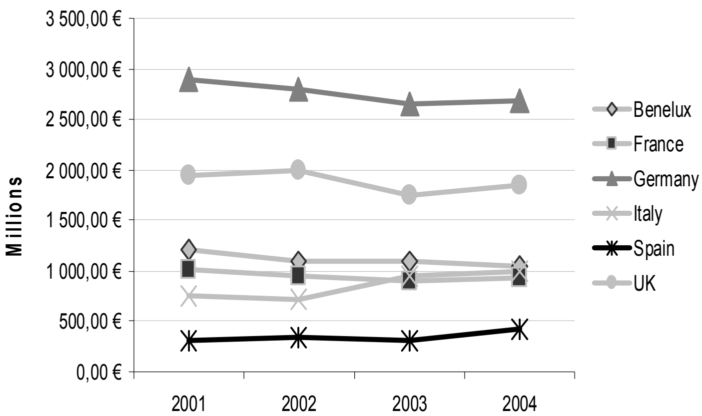
Catalogues, Books and Commercial products are particularly concerned.

This decrease is due firstly to the competition from new media and secondly to the competition from low wage cost countries, especially for books, catalogues and magazines.

Magazines and newspapers (dailies excluded)



Source: Intergraf



Source: Intergraf

The magazines and newspaper segment (dailies excluded) experienced a 3% decrease between 2001 and 2004 despite a 4% growth rate between 2003 and 2004.

Of the six major European magazine markets, Spain and Italy recorded an increase on that segment, but their market size remains very low compared to Germany which has experienced a 7% decrease.

The European magazine sector has suffered a depressed trend over the last ten years, characterized by a drop in sales and a decrease in prices.

The morose economic climate within this period is the major cause of this situation, forcing the companies to cut their communication budget and to choose other communication media such as the Internet, impacting advertising revenues for the magazine publishers.

The situation seemed to improve in 2006, driven by the recovery of the economy enabling larger communication budgets. Moreover, the press magazine sector does not suffer from the competition from the Internet and the free press which impacts the daily press sector more.

Main trends for this segment :

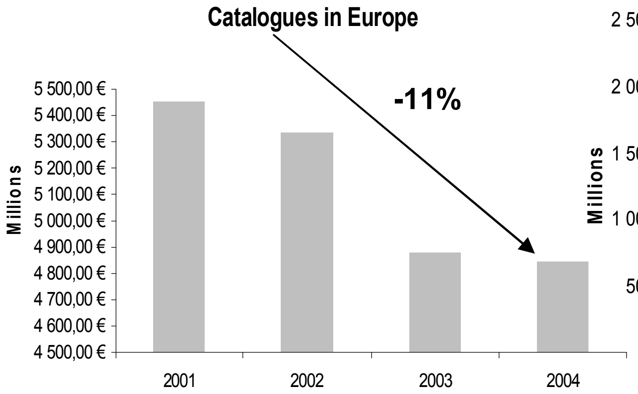
The consumer needs more titles and more specialized content with the consequence of the reduction of the size of the sets.

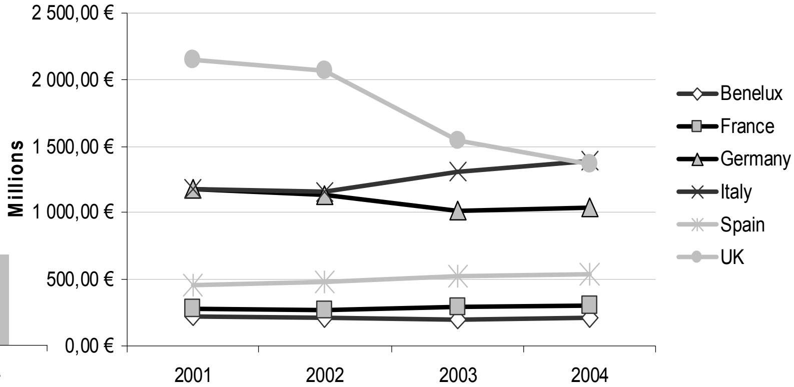
As Germany has the most important installed base of publication gravure, it is the European leader in this segment.

Differences are marked by country, especially as regards the opportunity for publishing groups to use TV ads.

The threat from the Internet is strong, especially for news magazines.

Catalogues





Source: Intergraf

Publication gravure as the main printing process

Gravure remains the main printing process for long-run catalogues but offset is also used for short-run catalogues. The ECI (European Color Initiative) standard is applied for every European catalogue gravure printer.

Cost structure

The average cost for a catalogue is 3,42€, 65% for its manufacture (printing included) and 35% for its circulation.

High quality requirements

The catalogue is the centrepiece in the mail-order selling process:

• the catalogue remains the unique selling material, since the customer will only use the printed material to select a purchase

• imperfections are not tolerated for the manufacture and printing of catalogues whose quality tends to rise year after year (higher quality of paper, quality of pictures and images)

Localization requirements

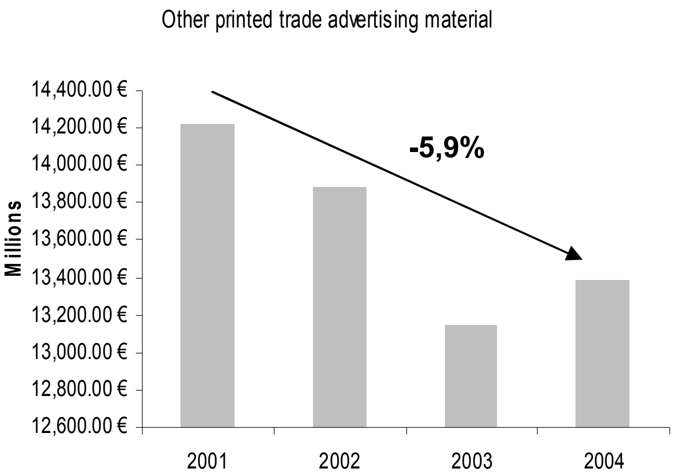
A regular time schedule, that does not allow European firms to have their catalogues printed outside Europe:
• the dates for printing are decided a year before
• six months are required from the design to the manufacture and reception phases
• the catalogues are printed 2 months before their circulation
• it takes six weeks to print and assemble the series of catalogues

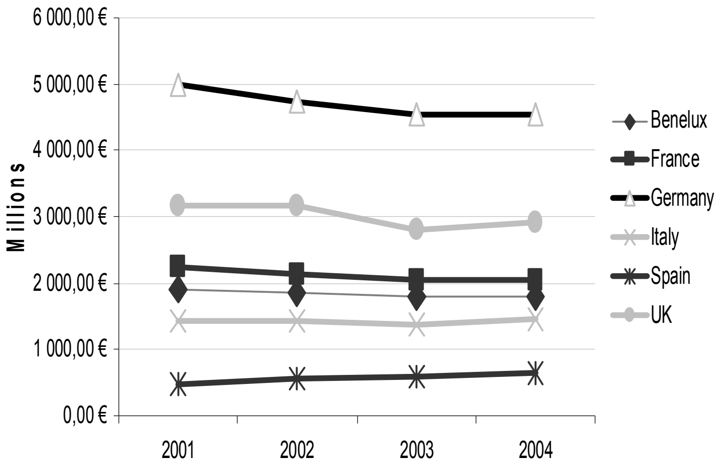
Main trends for this segment :

Catalogues are not likely to be affected by relocations, since the major European mail order selling companies will still need European printers to manufacture their catalogues.

The considerable drop in the production value of catalogues in Europe (-3,5% average annual growth) is the direct consequence of the development of e-commerce in the Mail Order Selling sector.

Other printed trade advertising materials





Source: Intergraf

Printed trade advertising materials experienced a 6% decrease between 2001 and 2004.

This decrease is due to a slight decrease in each of the six countries considered for the study, that can be explained by a morose economic climate, forcing companies to reduce their advertising expenses.

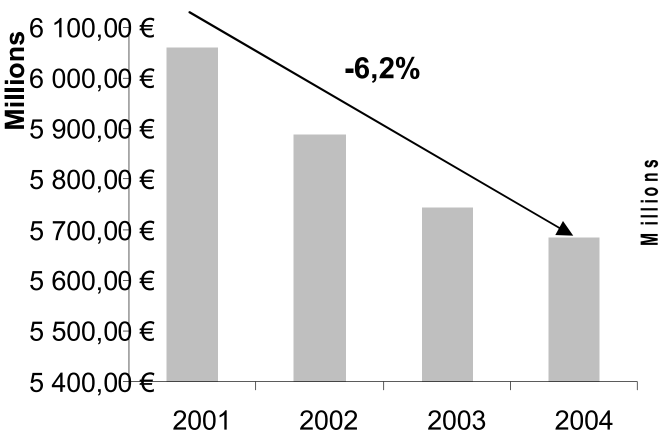
The concentration of players among the main announcers may also have caused a reduction in prices and consequently in the production value.

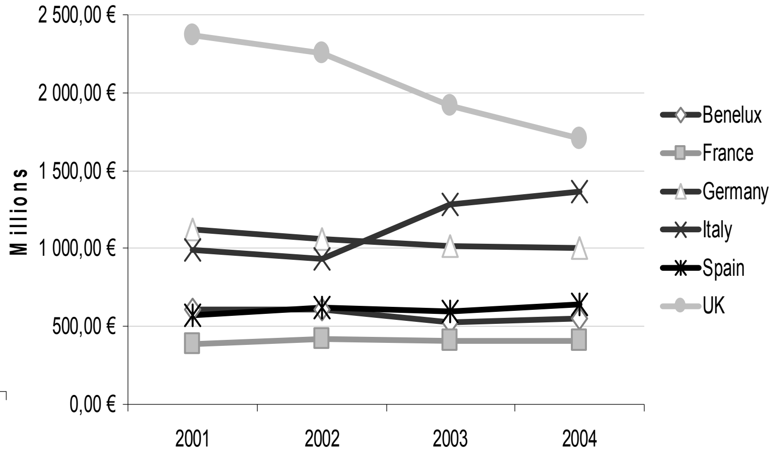
Main trends for this segment :

The customer expects the printer to provide services related to the printed product. Indeed, delivery time and price are not considered as a competitive advantage, but only as a minimum. Thus, to increase differentiation from low wage cost countries, printers have to improve the level of the related services delivered, i.e. customization, shipping, archives, etc.

Books

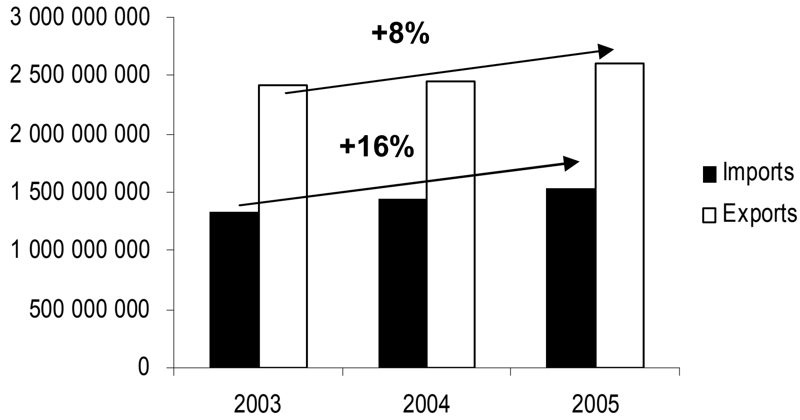
Books in Europe





Source: Intergraf

Books: trade balance in Europe (in €)



Source: Intergraf, based on Eurostat datas

The 6,2% decrease in the production value of books is mainly due to the considerable drop that occurred in the UK between 2001 and 2004.

Other countries have managed to stabilize their production value and Italy's is even growing.

In 2005, the trade balance was 1,08 billion €, representing a 0,8% decrease in the two-year period from 2004 to 2005).

Imports of books (all types of books included: books in loose sheets, other books and children's books), have been growing twice as much as exports. The level of exports is such that the trade balance remained constant within the period.

This trend shows that book production is likely to be relocated outside Europe. Books are a special activity sector where revenues depend on book sales only (contrary to the magazine or newspaper sectors where revenues depend on both sals and advertising).

Thus, making a profit on the book segment is possible by decreasing costs (ink, paper, wages, etc.). Relocating the activity to low-cost countries, for example in the Far East, remains the strategy for some book publishers. That may partly explain the constant increase in book imports.

Main trends for this segment :

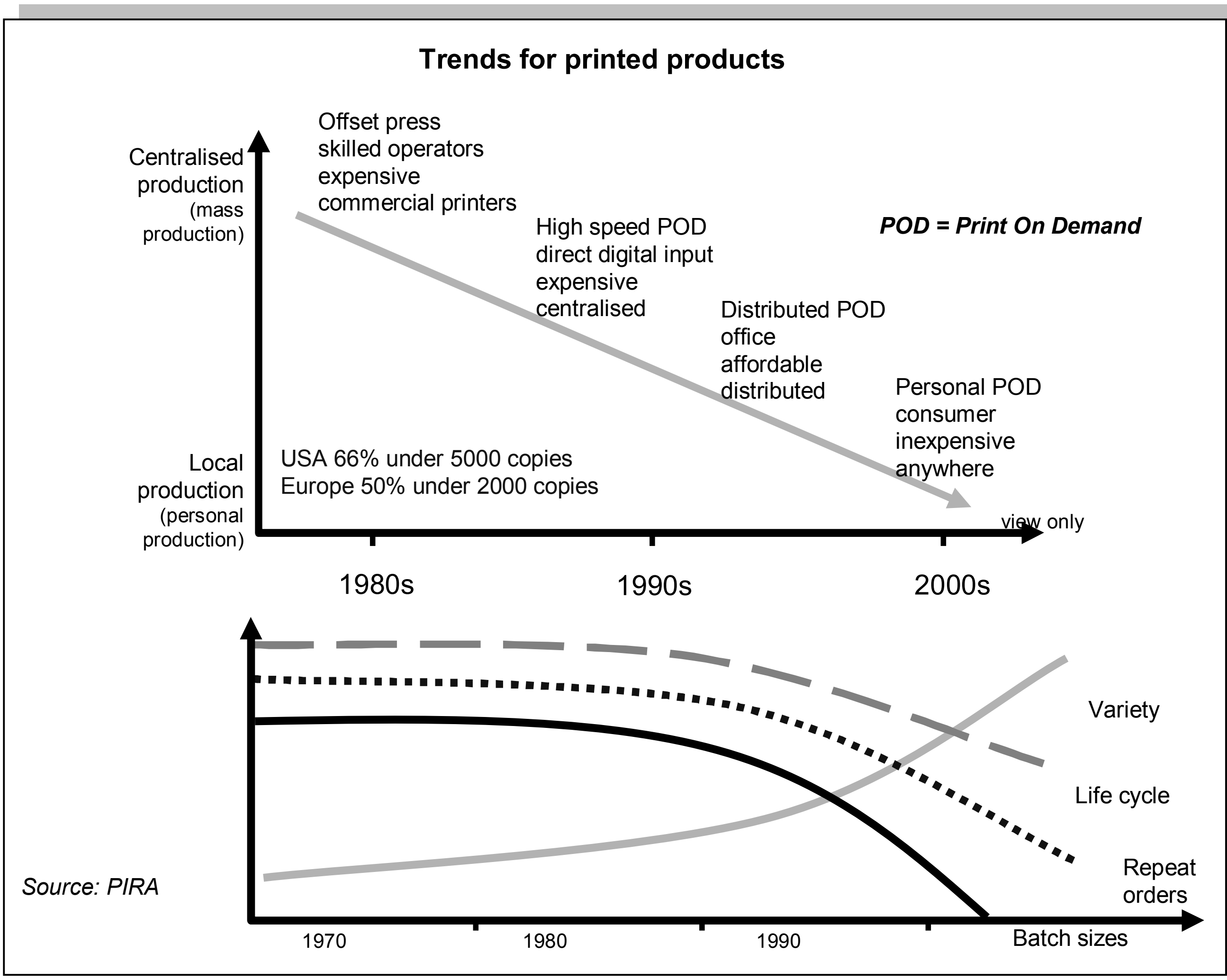
•Continued increase in the number of titles and reduction of the runs

•Continued slow growth in demand

•Increase in digital printing of books

•Strong competition from Far East countries, in colour books, children's books and educational books

The future of printed products



The development of Internet as an information media and the boom in personal and inexpensive printers support the growth of home printing. This fact is slowly but profoundly modifying the expectations of customers with regard to printed products. Key words are : shorter time to market (which is localising the markets), mass customisation (including integrating communication within the workflow), increase in the range of products (formats, substrates, etc.).

Part 5 d – Technological developments

Variety in offer of printing companies is driven by their technical equipment

	Offset	vs Gravure
+	• Dots structure handles small lettering well • Cheaper for smaller books and print runs • More vendors with high-speed, large-format offset presses from which to choose	• Can print more pages per impression • Provides deeper, richer colors • Greater colour gamut • Precision registration of inks achieved quicker • Averages fewer breaks than offset
-	• Maximum density of ink is only 260% • Requires additional plates for longer runs	• Cannot print below a 2% dot • Cost-prohibitive for smaller quantities • Fewer vendors to choose from,

	Digital	vs Screen
+	• Supports resolutions needed for halftones • Generation of press proofs requires a degree of accuracy and repeatability achieved easily with digital • Suited for customised jobs and short runs	• Enables small text in graphics printing • Offers a much better, brighter lasting result • Can be used to print both clothed and non clothed items • Preferred for jobs > 100 copies (cheaper process)
-	• Expensive	• Process-colour screen printing is more technically demanding and must be practiced daily to achieve the best results

	Digital	vs Offset
+	• Wide range of colours • Short turnaround time at a local copy shop	• Colour accuracy • Wide range of paper to choose from • Less expensive for quantities > 1000 copies
-	• Paper choice limited for digital printing • Full bleeds can be more difficult/costly to achieve • Needs regular calibration (colour effects often vary)	• Cost varies depending on the number of colours in the job. • Not suited for print on demand: it needs a long setting-up time

The same technology is available everywhere. There are no entrance barriers in Europe and no competitive advantage based on technology can be expected.
The key issue is indeed the speed with which one develops new applications integrating new technologies : then the integration capacity becomes a key advantage.
Agility and flexibility could be considered to be the future of the European printing industry.

Technology alone is not a competitive advantage for printers

Estimated development of Print Processes Across all Europe 2005 – 2010 and drivers for new technology development - source PIRA

€ million	*Split 2005 (%)*	*Split 2010 (%)*
Total	*100.0*	*100.0*
Sheetfed offset	*19.0*	*18.7*
Heatset web offset	*18.8*	*18.6*
Coldest web offset	*15.9*	*14.8*
All offset	*53.7*	*52.2*
Gravure	*10.5*	*9.7*
Flexo	*21.8*	*22.6*
Letterpress	*0.2*	*0.2*
Digital	*7.9*	*8.6*
Other	*5.9*	*6.7*

Source: PIRA

Developments are being driven by customer demands for:

- More efficient production of shorter print runs
- Improved quality
- Lower cost units
- Faster turnaround
- Improved customer service
- Unique or additional features or services
- Effectiveness at conveying message
- Precision with which intended audience can be targeted
- Increase in number of types of delivery channel
- Ability to measure results
- Speed of response
- Ability to combine promotion with sales transaction

No changes are expected for the next five years on the utilisation of print processes. On the one hand, offset technologies and gravure will decrease and on the other hand flexo and digital will increase. So these fluctuations are related to the dot percentage and are not really significant.
Definitively, choosing between two technologies is often a matter of:

- **Quality**

High resolution, brighter result and better finishing, deeper and richer colours, density of inks, greater colour gamut

- **Quantity**

There are specific thresholds beyond which a process becomes cost effective

- **Time**

Some processes need a longer set-up time making them less suitable for customized services for instance. Time generally depends on devices

- **Costs**

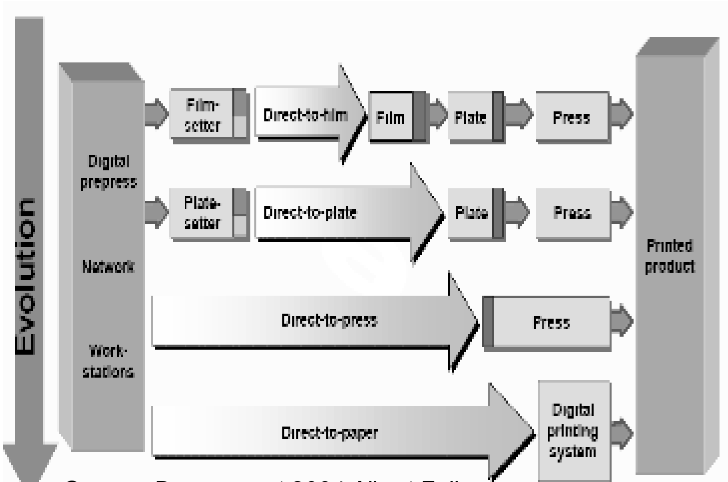
Some processes are more technically demanding, meaning greater costs in labour maintenance

Roadmap for technology adoption in the printing industry

	Today	In five years
Sheetfed offset	Range from A4- ultra large format 8-12 unit B1 & B2	Same range, increasingly multi-unit with coaters
	Most plates produced by CTP with violet light & thermal imaging	Potential for on-press re-imageable plates
	Make-ready takes 15 minutes	Full JDF set up for 12 unit press in 5 minutes, 10 minutes for sheet size /colour differences Increasing use of web / sheeter infeeds Re-imageable plates, retro-fittable to presses. Automatic sheet monitoring through pattern recognition to detect defects
		Closed loop colour control Offset at the touch of a button for B1 printing
		Many machines incorporate inkjet print capability
Heatset offset	Set up aids link key setting to prepress data or plate scanners CTP plates provide good register New presses have plate loading & closed loop colour control	JDF presetting reduces make-ready to <10 minutes Variable cut-off in 16 & 32pp common Re-imageable plates for very quick make-ready
	16, 24, 32 & 48pp now joined by single web 64pp, 72pp & 96pp	Larger formats, faster linear speeds Wider multi-web presses, 192pp delivered as finished products
	Solely web offset printing, some coaters & specialists have inkjet printing in-line for personalisation / numbering	Hybrid press lines include an inkjet unit for multi-language/edition changes
	Presses deliver reels, & folded sections for binding, limited in-line finishing	Growth in in-folder finishing (stitching & gluing) to deliver finished products from press
Flexo	New presses use direct drive, gearless technology Move to common impression for high quality colour in conversion lines Unit presses including hybrid lines	Widespread acceptance of standard prepress & predictable high quality reproductions 10-12 colour presses common
	Digital prepress & direct engraving of plates in-the-round improves quality & turnround New laser engraved anilox provides high resolution & high ink transfer capabilities	Digital prepress, gearless CI presses, radiation curing inks
	Stack, unit & common impression cylinder presses	Unit presses with other print technologies & CI for highest quality predominate
Gravure	Lower digital cylinder preparation costs competes with offset & flexo in long (& repeating) runs	Attacked by more flexible heatset web & improved quality flexo, gravure squeezed & further marginalised with decline in high run-length high pagination printed products
	Publication presses 4.3m width, 15msec-1 web speed	5m wide presses, 20-25msec-1 web speed for a small number of publication printers for low unit cost high circulation high pagination titles
	Environmental concerns relating to solvent-based inks	

Source: PIRA

Digitalization is modifying the value chain



Source: Dupra event 2004 Albert Follens

Prepress

The trend is towards the complete digitalisation of the **prepress** stages. **Less hardware** and more numeric information handled on **digital media** (DVD, CD..) or increased exchange of data through **networks**.

Presses

Technology improvements on **presses** involve **automation**, **speed**, **reduction** of **setting-up times** with features such as **automatic plate changing and blanket washing** dramatically reducing **job changeovers** and thus increasing **productivity**. The overall print manufacturing process still depends on extensive manual intervention by **skilled operators**.

Technology Adoption Roadmap for Digital

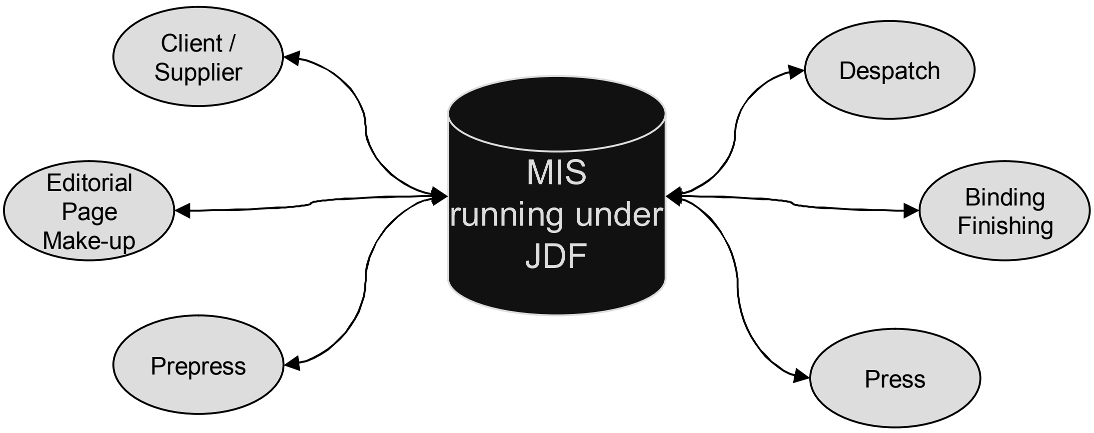
Today	In five years
Sheet fed mono laser 190ppm Web 1,000ppm	Sheet fed laser 250ppm at 1,200dpi Web 2,500ppm
Inkjet Kodak VersaMark 2,000ppm at low resolution	Inkjet high quality commercial web machines capable of 20,000ppm (initially in 1 colour as hybrid presses)
Solvent, water-based & UV curing inks. UV predominates to give high quality colour	Cost of UV inks will drop with increased competition & a larger market
Transactional & direct mail printing by mono laser & inkjet overprinting preprinted base stock	Full colour inkjet directly printed to avoid the need for preprint
Web to print applications appearing. Separate wide format industrial print sector	Very sophisticated web to print producing complex direct marketing pieces that can be e-mailed or remotely printed & mailed

Source: PIRA

The digitalisation of the prepress stage makes it easy for non professionals to perform a part of it, especially with the availability of the necessary software. This means less business for printers.
On the other hand, digital printing systems with their versatility have the ability to address a wider range of markets. They allow more customisation services and therefore create new business opportunities but also new challenges for the printing industry. But they remain expensive for long-run prints which require traditional printing processes.
Printers are faced with these challenges and must have the ability to absorb all these changes meaning hiring people with the necessary profiles, changing or adapting their business models relying on the capacity of their printing machinery (fast presses, long runs, etc.).

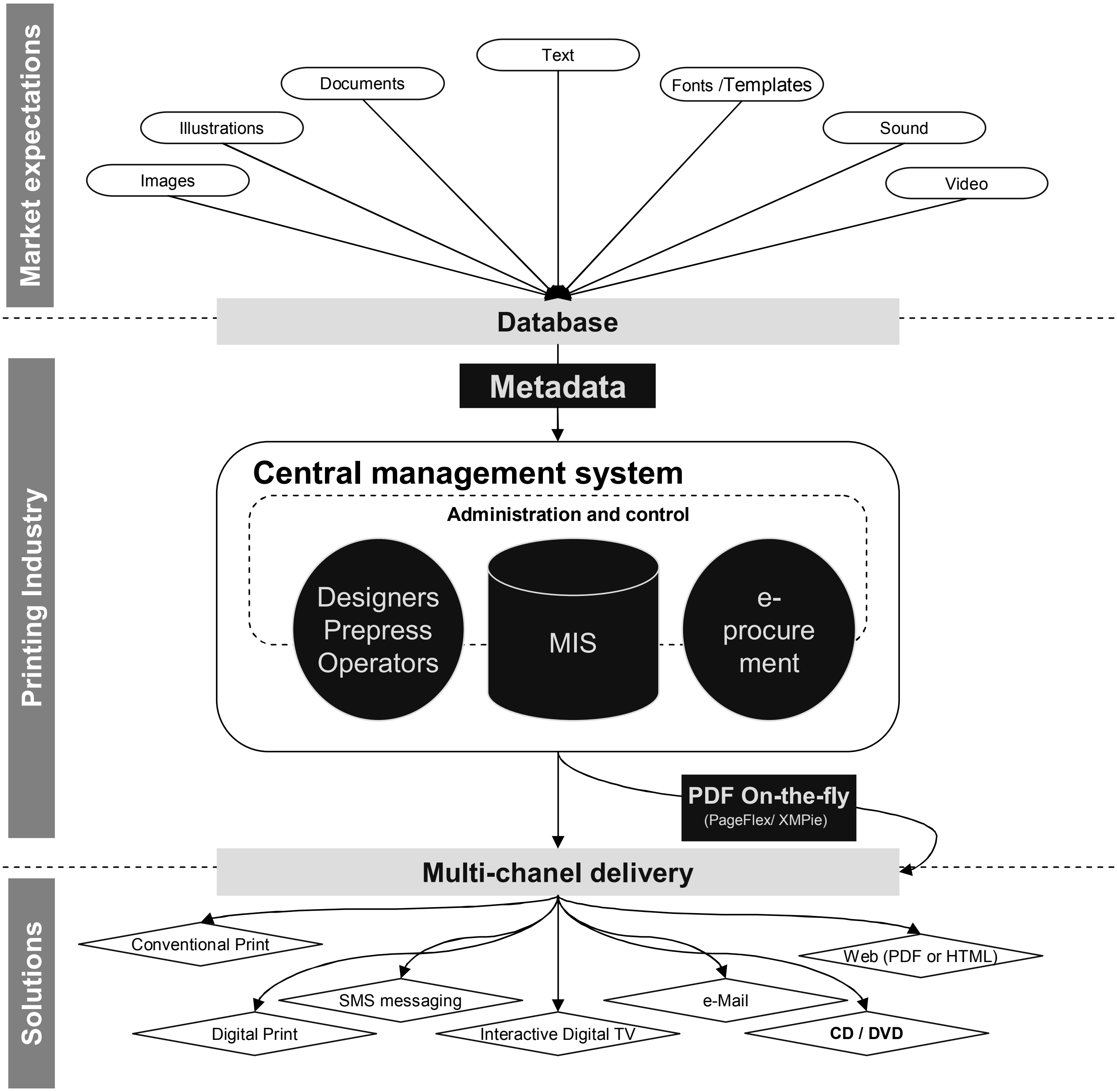
The way to standardisation

- In the last 20 years the printing industry has allowed prepress, software development, publishing and design to leave its scope of activities. Thus the graphics industry has been developing new workflows, automation, new value chains, new services around the printed product (such as the Internet, etc.), which is modifying the printer's job description.
- Technology changes faster than the amortisation of machines: thus, automation allows for lower production costs and provides specialisation. Therefore, new business models become possible, such as the integration of more services (for example, maintaining a database as well as printing for personalised printing applications).
- The speed with which one will integrate new technology will be increased if standards are developed : the whole printing industry must promote new technical standards, define how a company is competitive, define quality.
- In this respect, no printer should expect his customers to change their workflows : the printer will always need to adjust to his customer's specificities. However, new formats allow the integration of some management control components such as the JDF (Job Description Format) or JMF (Job Management Format).



- JDF is an extensible format. It defines both JDF and JMF files. In practice, JDF-enabled products can communicate with each other either by exchanging JDF files, typically via "hot folders," or the net or by exchanging JMF messages over the net.
- As is typical of workflow systems, the JDF message contains information that enables each "node" to determine what files it needs as input and where they are found, and what processes it should perform. It then modifies the JDF job ticket to describe what it has done, and examines the JDF ticket to determine where the message and accompanying files should be sent next.
- The goal of the JDF format is to encompass the whole life cycle of a print and cross-media job, including device automation, management data collection and job-floor mechanical production process, even including such things as bindery and assembly of finished products on palettes.
- The future of the printing industry is linked to JDF development, but it is impossible today to know when this format will become a standard. It depends on the ability of printers to use new Management Information Systems based on this language. The relative cost of this equipment is presented as the main factor explaining the lack of forecasting on this subject.

Information technologies have to enable printers to assume their original role : the mass circulation of information



The future of the printing industry seems to be more tied to its origin than ever. Indeed, it appears that printers have to become information providers, with some multimedia solutions and a strong focus on the customers' expectations.

Part 5 e –
The printing industry in China

The Chinese printing market: facts and figures

Number of graphic arts and printing enterprises	**163 600**
Number of Printing Houses	**92 400**
Number of Reprographic shops	**71 200**
Total number of employees	3 000 000
Total production value (2003)	24 billion €
Average printing production per capita	17.5 €

Publication printing	9 950
Package printing	31 300
Other printing sectors	51 150
Total	**92 400**

State-owned printing enterprises	7 000
Collective enterprises	24 000
Foreign invested enterprises	2 200
Limited & joint-stock enterprises	17 000
Private enterprises	36 000
Others	6 200
Total	**92 400**

Source: FAGAT, The current status and perspective of China's Printing Industry (2004)

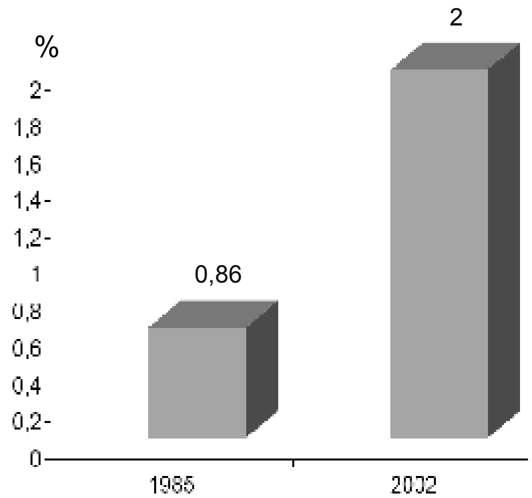
In 2003 the number of printing houses in China was estimated at 92,400 among which 40% were privately owned, 26% belonged to collective enterprises and 18% were joint-stock enterprises. With an average of 18 employees per company, the number of small companies exceeded that of larger companies. With more than 140,000 book titles, 8,000 news magazines and 2,000 newspaper titles, publication printing with 24% and package printing with 34% have the biggest market share in value of the Chinese printing market. The country shows two digit growth rates per capita in paper consumption and strong perspectives for the development of print over the next years. China is the third most important market for German presses, Heidelberg earns some 10% of its total sales in China (3.5 billion €).

The gross product value of the Chinese print industry comes primarily from prepress, book publishing, newspaper publishing, packaging, and foreign-trade printing. The total usually excludes print equipment and paper products. Packaging printing ranks first, constituting about 35% of China's total print gross product value; with book publishing second, adding up to one-fourth of the total; third is newspaper printing, accounting for 16%. These three sectors account for over 75% of the total.

Though foreign-trade printing experienced a 31.8% increase last year, packaging, book, and newspaper publishing were still the top three sectors in the Chinese print industry. Book publishing ranks second. Its annual growth is 16.68%, and its product value rose from 37.7 billion RMB (4,5 bn€) in 2001 to 75 billion (7,3 bn€) in 2005.

In 2004, there were 94,300 various printing enterprises in China, an increase of 1,900 compared to 2003, and a growth rate of 2.05%. Those newly established enterprises were, for the most part, private and foreign invested companies and the enterprise ownership mix did not change appreciably, with state-owned printing enterprises comprising 7.63% of the total.

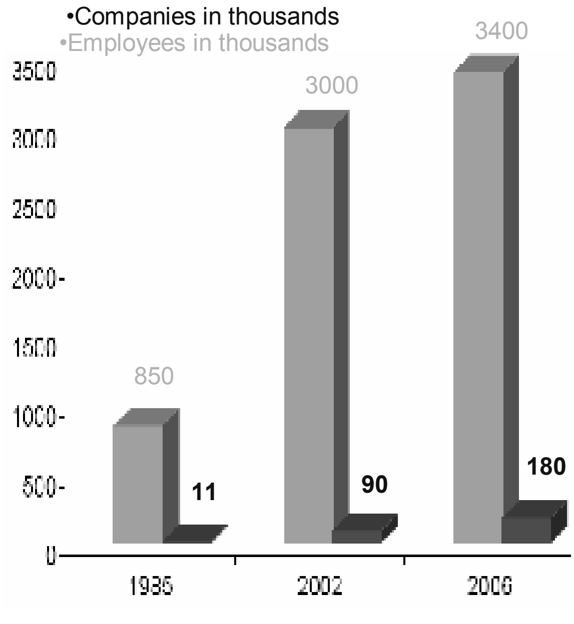
Facts and figures: sustainable growth of the Chinese printing sector



Contribution of the printing industry to the GDP

The Chinese printing industry is growing at a much higher rate than more mature economies such as North America, Japan and Western Europe. The average growth from 1999 to 2004 is assessed at 19%. (*info trends cap venture)*

China is one of the most dynamic print markets in the world. From 2001 to 2005, the Chinese printing industry grew at an average rate of 14.6%. The production value created by the printing industry in 2003 set a new high at just over 2% of China's GNP. In 2005, the value of goods and services produced increased by 10.7% as compared to the previous year, totalling 310 billion Yuan (35 bn €).



Contribution of the printing industry to the GDP

European paper manufacturers are exporting increasingly to China (64% from 2000 to 2005), meanwhile the paper consumption per capita increased from 28 kg to 42kg/capita. The overall increase in consumption from 2000 to 2004 represented 18 million tons (from 36 million tons to 54 million).

The number of graphic arts and printing companies has increased to reach 180,000 in 2006. Meanwhile the number of employees has increased at a slower rate.

In 1985 there was an average of 77 workers per company, in 2006 the average number of workers per company was only 19.

The number of small companies largely exceeds that of large companies. The impact could be a limitation of economies of scale for the Chinese printing industry.

Source: Intergraf, The printing industry China and the EU, China Printing Association

Structure of the Chinese printing industry: foreign investments are fuelling the market

A mixed situation across the whole Chinese territory

The development of the printing industry in China has been fuelled by its dynamic economy and the proliferation of foreign companies. China's printing industry was dominated by state financing, but now investors are more diversified. When classified by enterprise type, state-owned and collective printing enterprises comprised 21.87%, private enterprises constituted 74.71% and foreign invested enterprises accounted for 3.42%. However, this collective data does not reflect the make-up of the individual regions. Because the coastal areas opened up faster, the proportion of private enterprises and foreign-founded enterprises is larger in these areas.

An increase in the settlement of foreign printing companies

Regarding foreign investment in the print industry, former policies have been eased and the ability of the industry to attract foreign capital is gradually improving. From 1999 to 2001, a total of 43 enterprises with foreign investors were approved and established. In 2002, there were a total of 98 enterprises created with foreign investment, with a total investment of 500 million US dollars. In 2003, 84 more enterprises were approved with the same investment amount. In 2005, of the top 100 printing companies in the country, 62 had foreign financing, 18 were owned by the state, two were privately owned and 18 were joint stock companies.

A domestic market technically and financially fuelled by foreign investments

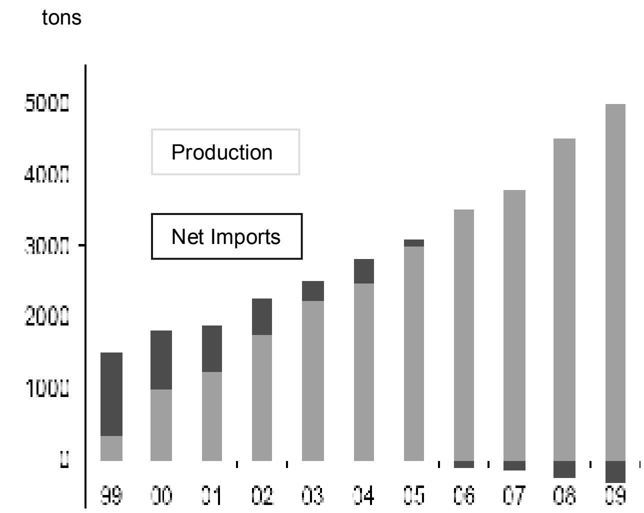
With China's accession to the WTO, international capital increasingly entered the country's printing industry. Statistics show that China approves the establishment of nearly 100 foreign printing companies every year with a total number in the country exceeding 2000.

The development of the domestic printing industry largely benefited from foreign capital. Foreign printing companies have brought advanced technologies, equipment and management expertise. The cooperation between international companies and domestic ones leads to joint venture benefiting from complementary advantages.

Foreign investments seem to drive the most profitable et productive enterprises

Though foreign-funded enterprises make up a relatively low percentage of the total numbers, the scale of investment is generally large. Take Beijing for example: 6 new foreign invested enterprises were approved in 2005, comprising only 4.8% of the total of 125 approved enterprises, but their registered capital investment was 146 million Yuan ($18.54 million), making up 42.82% of the total. By looking at the top 100 print enterprises in China in 2005, with annual sales income greater than 155 million Yuan, we can clearly see that foreign investment is penetrating deeply into the robust Chinese print industry.

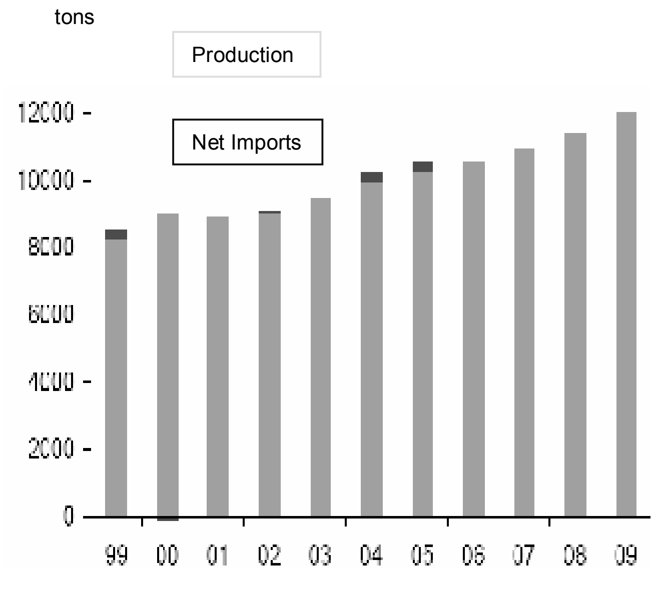
Structure of the Chinese printing industry: paper production



WFC paper supply/demand in China

The Chinese paper market is evolving rapidly and the country is increasingly adding fibre growing and processing capacity. Meanwhile China is consuming a large and growing quantity of recycled fibre. China is positioning itself to become a significant producer in the global market.

Uncoated fine paper or office paper meets the rapidly changing and highly demanding needs of modern offices. Products include document printing paper, digital paper, envelope paper, business forms, and paper used in school notebooks and writing pads.



WFU paper supply/demand in China *Source: UPM*

Wood-free coated (WFC) and wood-free uncoated (WFU) are made from chemical pulp.
WFU are mainly used for photocopying and printing for office business purposes as well as stationary and exercises books. WFC are used for multicolour printing and primarily used for advertising purposes, manuals, books, promotional material and high quality catalogues and magazines.
WFC demand is increasing by an average of 10% each year and is expected to reach 5,000 tons in 2009. The internal market demand for WFC, which has been met by imports and local production as from the early 90s, is expected to be entirely met by local production. China will soon start exporting the surplus production.
The WFU demand growth rate is lower at an average of only 4% per year.

Structure of the Chinese printing industry: paper consumption

China fiber consumption 2004

Source: UPM

China's fibre consumption was 50 million tons in 2004. There is a forecast growth of printing and writing papers based on imported fibres. The production of pulp in the local world-scale pulp mills still has a some good years ahead, due to the slow development of wood pulp.
China has become a major player in the recovered paper market. It imported more than 9,3 million tons in 2003. The demand for recycled newsprint and office paper is relatively low, the recycled grades in highest demand in China are mixed paper and corrugated containers both of which are used for packaging.

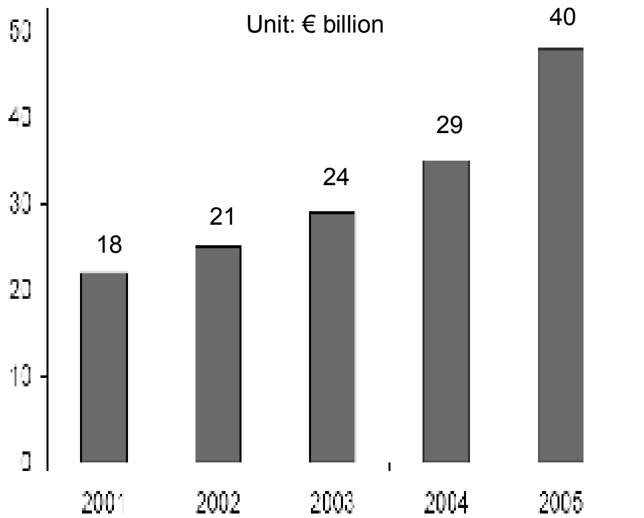
A specific buying strategy to keep paper prices low

China purchases significant quantities of recovered fibre. This position as a large scale buyer gives China a significant degree of influence on recovered fibre prices. Chinese buyers tend to shift between grades (old corrugated containers and mixed paper) and regions to keep prices from becoming too high. As imports of recovered paper to China are expected to continue to rise in the next years, China is likely to become more dependent on the major suppliers such as the US.

Future: A self sufficiency policy to satisfy the local market

To address its growing need for fibre, China has developed a major forestry and pulp mill capacity plan. The objectives of this plan are to encourage the development of 12.5 million acres of plantations with fast-growing species. China intends to switch from a non-wood to a wood fibre base, the most likely reason being that there are insufficient agricultural residues and delivery infrastructure to supply the large scale production facilities that are planned for China. China's imposed ban on logging in natural forests limits internal supply. Further, the plantations currently being planned will not be in a position to supply fibre until several years from now. On a short-term basis, the increase in pulp and recovered fibre imports will affect global fibre markets.

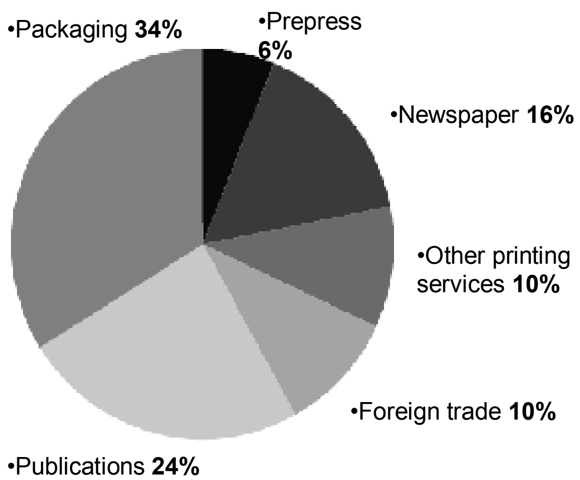
A printing market dominated by packaging



Industrial output value of China's printing industry

In 2005 the industrial output value of the Chinese printing industry reached 40.4 billion $. From 2001 to 2005 there was a **118%** increase in the Chinese printing industry output.

The products contributing to the high Chinese growth rate are: children's books, greeting cards, text books for export. Cigarette, liquor, cosmetic and pharmaceutical packaging for the internal market.
For exports, the main shipping method is still by sea. The delivery time from China to Europe is roughly 4 weeks.



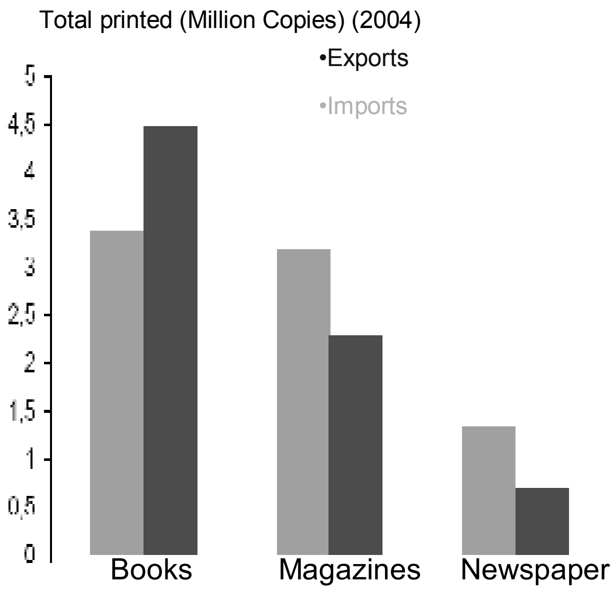
Market share in value of the Chinese printing industry in 2005

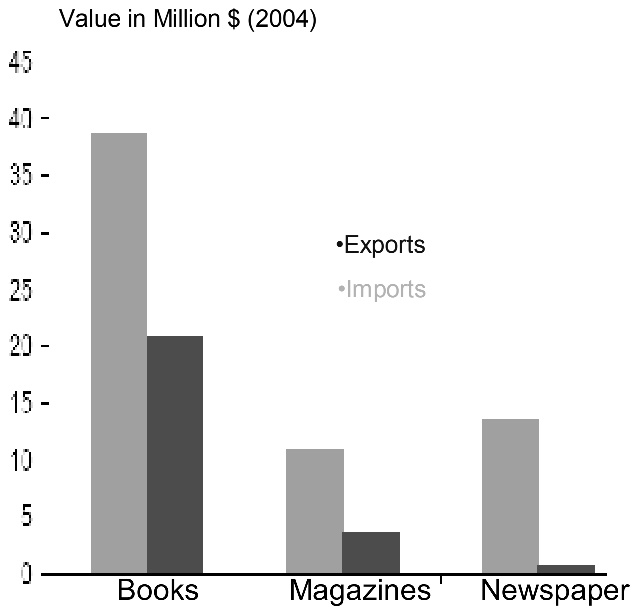
Source: Trade council of Denmark, Market analysis of China's Graphic Industry

Packaging represents the largest market share in value (14 billion $ output value in 2005). This is mainly due to the packaging of industrial and high tech goods produced in China and an increase in local market demand.

Of the top 100 printing companies, 63 produce printed packaging products, and 31 companies are involved in magazine and book printing.

Main printed products in import and export





Source: Trade council of Denmark, Market analysis of China's Graphic Industry

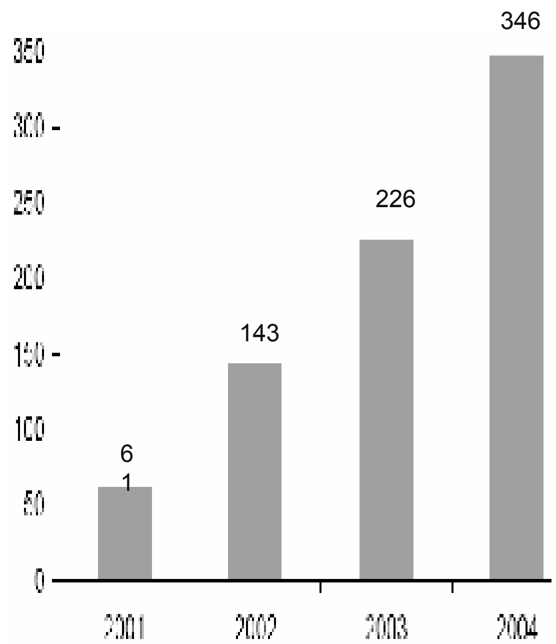
The graphic products made in China are mainly exported to Japan, Singapore, Malaysia, South Korea, Hong Kong, Taiwan, United States, Australia, France, Britain and Germany.

The import tariff on printed books, brochures, leaflets and similar printed matter is zero. There is no import tariff levied on newspapers, journals, periodicals, or on children's picture, drawing and colouring books (*according to the Import Tariff of the People's Republic of China).*

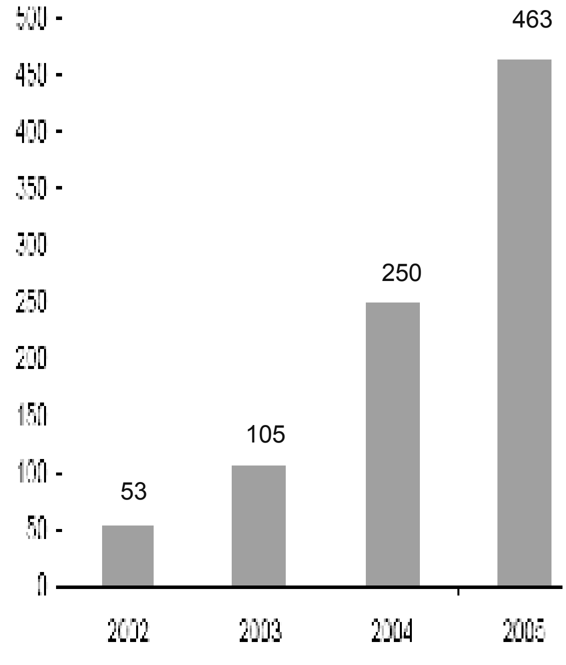
Books represent the main Chinese imported and exported printed product in both value and volume. In terms of value there is a trade deficit of 15 million € meanwhile, the volume of exported books being greater than the volume of imported ones.

This trend could account for a lack of quality production in the Chinese printing industry (equipment, etc.) and/or unsatisfied demand in the Chinese market leading to imports of high value added books.

A constant upgrading in printing technologies used by China



CTP System installation in China



Digital System installation in China

The Chinese printing industry has been widely adopting the more advanced technology based on computerized laser typesetting and offset press. There has been wide-spread use of CTP, digital colour proofing, commercial web-fed press and sheet-fed 8 colour.

There were 346 CTP installations in 2004. With an average growth rate of 30%, CTP installations are expected to reach 600 in 2006 representing an overall number of 1,825 CTP sets. But imports are still relied on for CTP equipment, although some local companies are conducting research work.

Digital Equipment is mainly imported and some software such as RIP (Raster Image Processor), MIS (Management Information Systems) and ERP are self developed. A total of 871 digital sets have been installed.

There are four major trends in digital printing in China:

- Franchise is becoming one of the most important business modes
- Profit is increasingly generated by providing customers with value-added services
- Quick response and network services based on digital, network and database technologies are becoming one of the core competitive advantages for digital print enterprises
- Digital printing is increasingly integrated into traditional printing, becoming another value-added service of the traditional printing industry

Source: Haixiang Shen, President of China Printing Corp, Current China Printing Market and Technologies

Constant upgrading of printing technologies used in China

Local presses supported by import duties	The demand for large newspaper presses is still mainly satisfied by imports, but local press manufacturers are gradually extending their position and thus creating competition for foreign vendors. The Chinese government supports the development efforts of the domestic industry by means of high import duties for presses and an authorization process, which mainly allows imports only in cases where the demand cannot be satisfied by the domestic market.
Latent danger of technology copying	Foreign press manufacturers also have to deal with the latent danger of high tech developments being copied within a relatively short time-frame and then reproduced. The Chinese strategy of absorbing knowledge in order to create their own knowledge represents a risk for foreign manufacturers.
From "quality printing" to a finished quality product	There is a growing need in the business for ever shorter production times. Printers have the right automated post press solution for increasing customer requirements. A clear shift can be observed from focusing on "quality printing only" to a combination of "quality printing and product finishing". The Chinese publishing and printing market used to be focused exclusively on print quality with little attention accorded to the appearance of the finished newspapers, magazines and books. Trendsetting printing and bookbinding companies focus their marketing and sales efforts by promoting their internal capabilities when it comes to finishing printed products. Modern solutions, such as automatic signature recognition systems for complete products, are in demand.
Chinese ink industry	With an ink production capacity of 250,000 tons in 2003 the country is number four worldwide. There are around 400 ink manufacturers, 40 of them being foreign or joint venture companies. Most of the companies are working with imported technology. China planned to export 40,000 tons of ink in 2006, generating some 96 million Euros.

Emergence of Chinese presses: the technology and quality gaps are being steadily bridged

No	Company	Sales (Mio €)
1	Beiren Printing Machinery Holdings Ltd	89,1
2	Shangai Goss Printing Machinery Ltd	30,2
3	Shangai Shenweida Machinery Ltd	21,8
4	Shangai Guanghua Printing Machinery Ltd	20,0
5	Jiangxi Zhongjing Group Ltd	19,5
6	Shanghai Yahua Printing Machinery Ltd	18,0
7	Shangai Beiren Printing Machinery Ltd	16,7
8	Shangai Ziguang Machinery Ltd	16,6
9	Jiangsu Changsheng Group	13,0
10	Wenzhou Shenli Group Ltd	10,8

Source: Premedia News letter 2005

The 58 largest Chinese press manufacturers generated a turnover of 634 Million € in 2003. Most manufacturers are making profits.

Printing plates are limited to the lower and middle level of quality only. China still depends on imports, especially for thermal or silver plates, needed for CTP. Most imports come from Japan. In 2003 sales of local presses grew by 19.7% compared to 2002, meaning more competition for foreign manufacturers.

Although the quality of the locally manufactured presses ranges in the lower and middle level, the demand of most Chinese printing houses is satisfied by local manufacturers.

However, the demand for large newspaper presses is still met by imports.

2% of the printing machinery which is imported produces 60% of the printed production. The Chinese printing industry still highly relies on imported modern machines.

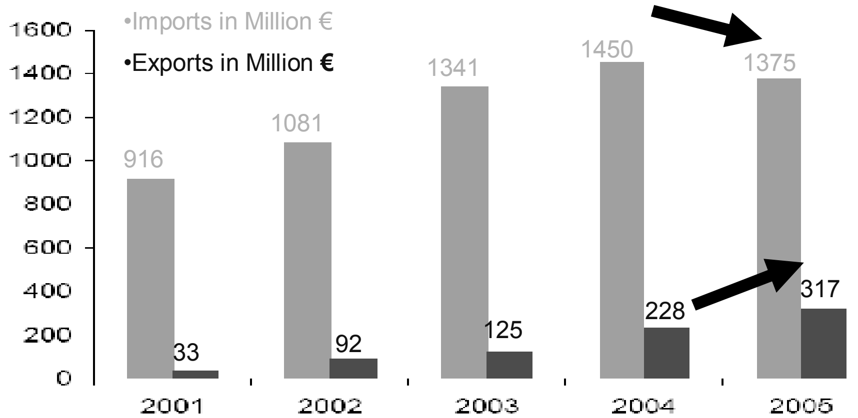
The common belief that printed products produced in China are of lower quality could be wrong. The imported machinery is comparable to the that of the Western countries. Printers are investing in state-of-the-art equipment, from preproduction to bindery.

An important feature is that each person is specifically trained to do the task they do: pressmen, bindery, truck drivers, etc. Companies can afford to have a ‘single-skilled’ labour force which leads to good quality control.

While a few Chinese printing plants still have outdated equipment, many have completely new, up-to-date equipment. In the past 10 years, the Chinese government has focused on updating printing plants to more modern specifications. Operators print by adhering to specific numeric parameters on state-of-the-art equipment rather than running by eye in less sophisticated operations.

Evidence of the quality of printed products from China is the large number of exported photography books and packaging jobs.

Imports and exports of printing equipment: a shifting trend



Import and export of printing equipment in China

Source: Trade council of Denmark   Market analysis of China's graphic industry

In 2004, the import value of printing equipment reached the maximum 1.45 billion €, with a total value of 226 million € in exports

In 2005 the import value of printing equipment was 1.37 billion €, with a total export value of 317 million € indicating a still large but decreasing trade deficit compared to 2004.

Currently, high-grade offset presses account for the majority of imported printing equipment.

The volume of imported offset presses reached 1,385 units in 2004 (worth 683 million €) accounting for 47% of the total import value of printing equipment. It reached 1,187 units in the first eleven months of 2005 (worth 310 million €) and accounted for 52% of the total import value of printing equipment.

Meanwhile imported printing materials mainly covered high-grade printing ink and film.

Of the exported printing equipment, the majority are medium- and low-end products with low-level technical characteristics and prices.

Exports by China's printing and printing equipment industries have three major characteristics: dispersed export countries and regions, a small volume of exports and a high growth rate. This indicates that exports of printing equipment are still at an early stage, but with a shift in the trade balance, prospects for future development are promising.

Chinese industrial working environment: a slow but continuous improvement trend

Improvements due to global consumer pressure

With the advent of ISO 9000 and increased scrutiny by global consumers and lobbyists, many export-processing industries are improving working conditions and making their products more competitive. However companies that are already struggling to maintain their market share will probably continue to cut costs in any way they can, at the expense of worker and consumer safety. Due to the absence of real environmental legislation, ISO Standard 12647 for offset printing is now used in China. Companies are interested by ISO certification as a communication tool about environmental awareness.

Steps taken by the Chinese government

The Chinese government has taken steps to increase worker safety to deal with the rising number of accidents, especially those related to the work place. Foreign law firms are to provide legal services in the health and safety area. The government is trying to involve foreign companies in introducing state-of-the-art safety management and health protection systems.

Enforcement of social related law for workers

China enforced the “Occupational Injury Insurance Regulations” as part of an effort to step up assistance to employees who suffer work-related injuries or contract occupational diseases. Under the new regulations employers are required to contribute from 0.3% to 3% of total payroll to a locally managed occupational injury compensation fund. The amount is determined by each locality based on a specific industry’s injury risk.

Incentives for foreign investments

Chinese WTO membership has resulted in more and more international companies investing in the Chinese market. Total investment in the graphics industry has exceeded 1 billion $. China currently has 2,200 foreign-invested printing enterprises.

Investors are free to choose their geographic location in one of the different economic zones. Some zones promote certain industries (e.g. hi-tech) while others provide trading options and duty-free imports for export processing (Free Trade zones). Economic development agencies may offer foreign investors services taking care of everything related to setting-up in China.

Wage costs remain low and geographically dependent

Average yearly salaries for production managers by region in Euros

Classification		Beijing	Shanghai	Guangzhou	Chongqing
Foreign Enterprise	(European/American)	10206	14 375	14981	6445
	(Non European/American)	8408	14 220	14 820	5314
Joint Venture	(European/American)	9526	11 850	12 350	6016
	(Non European/American)	7108	10010	10 433	4489
Private-owned Enterprise		6806	9586	9991	4300
State-owned Enterprise		6992	9847	10263	4416
Average		7726	10881	11340	4879

Average yearly salaries for unskilled workers by region in Euros

Classification		Beijing	Shanghai	Guangzhou	Chongqing
Foreign Enterprise	(European/American)	1228	1281	1391	896
	(Non European/American)	1012	1056	1147	739
Joint Venture	(European/American)	1146	1196	1298	837
	(Non European/American)	855	892	970	624
Private-owned Enterprise		819	854	928	598
State-owned Enterprise		841	878	953	614
Average		929	970	1053	679

Source: Trade council of Denmark, Market analysis of China's graphic industry

It is of course difficult to compare these figures with European ones, but it is interesting to focus on per capita print value.
Indeed, if the United Kingdom or Germany figures are near 300€, the Chinese figure is only around 15€.

The future of the Chinese printing Industry

- Since 2006, China’s production of paper, ink, and machinery has exceeded local consumption and the quality of Chinese machinery is not so far from that of European machines.

- The local market is skyrocketing and the potential is very high (factor ten in volume).

- The Chinese customer portfolio is international and Chinese industry is now able to manufacture every kind of printed product because the technological gap with the European industry is not so wide. This is due to the fact that all the Western machine manufacturers have a subsidiary or a joint venture in China.

- Regulations on environmental and health and safety issues exist, but there is not sufficient verification of the application of these regulations.

- There are currently 12 universities dedicated to graphic arts in China, and more than 16,000 students in printing technologies. The training of skilled workers and managers in the printing industry is a priority for China. The same commitment is not evident in Europe.

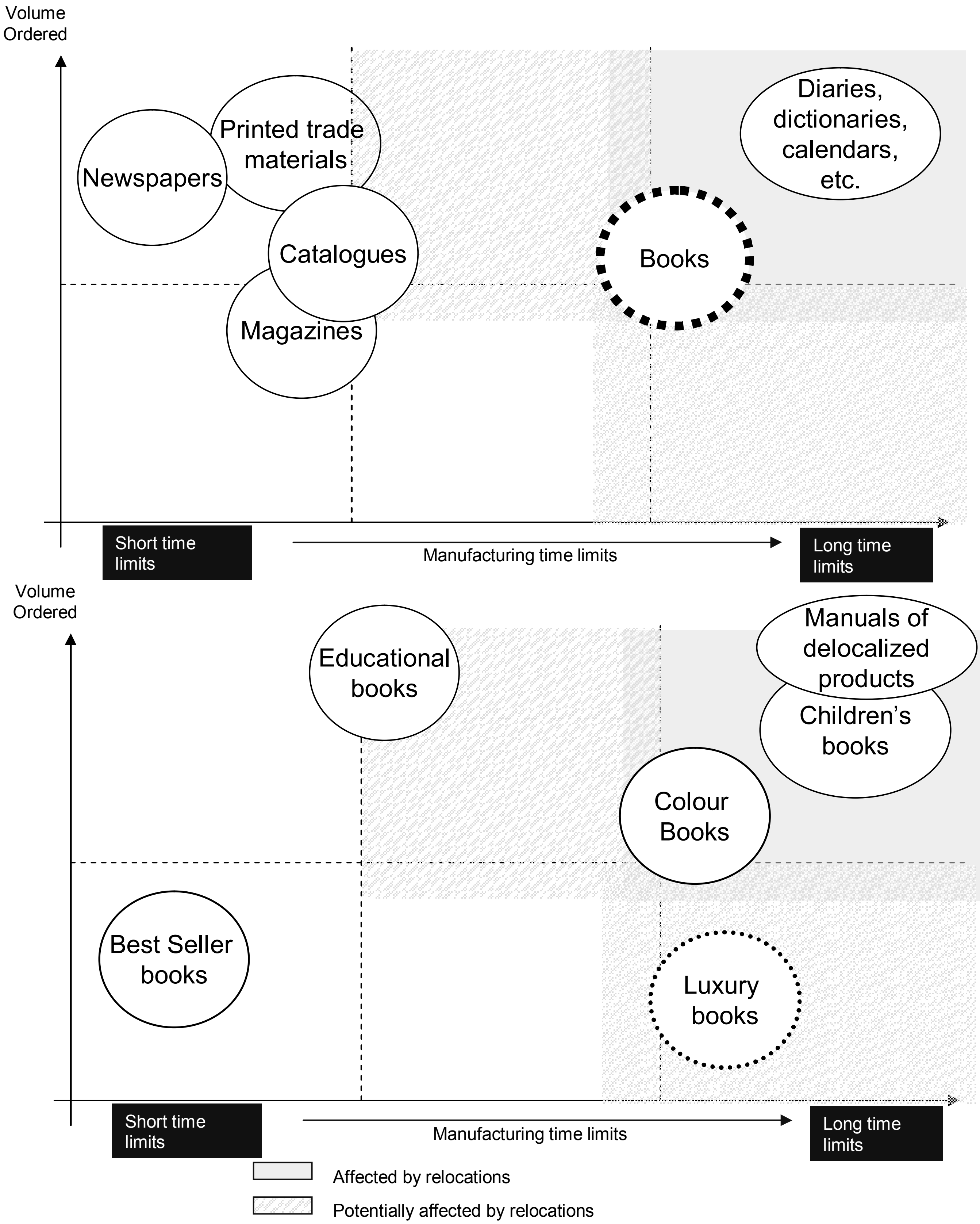
- Overseas printing may not remain as inexpensive as it is currently. As the market booms and demand for skilled workers increases, many of them will hop from job to job seeking better wages. Eventually the labour costs will increase in China, but this will not result in European printing industry employees making less and European companies charging less.

- The shifting trend from labour-intensive to technology-intensive, the constant improvement of professional technological competence and the ever-growing consumer demand, are positive features for the Chinese printing industry. On the other hand, owing to mistakes in the orientation and interference from localism, it is bearing the drawbacks of scattered distribution, unbalanced development… which remain considerable shortcomings.

- The growth of the Chinese market represents significant opportunities for equipment suppliers. For print service providers it is a source of new competition and opportunities for partnerships.

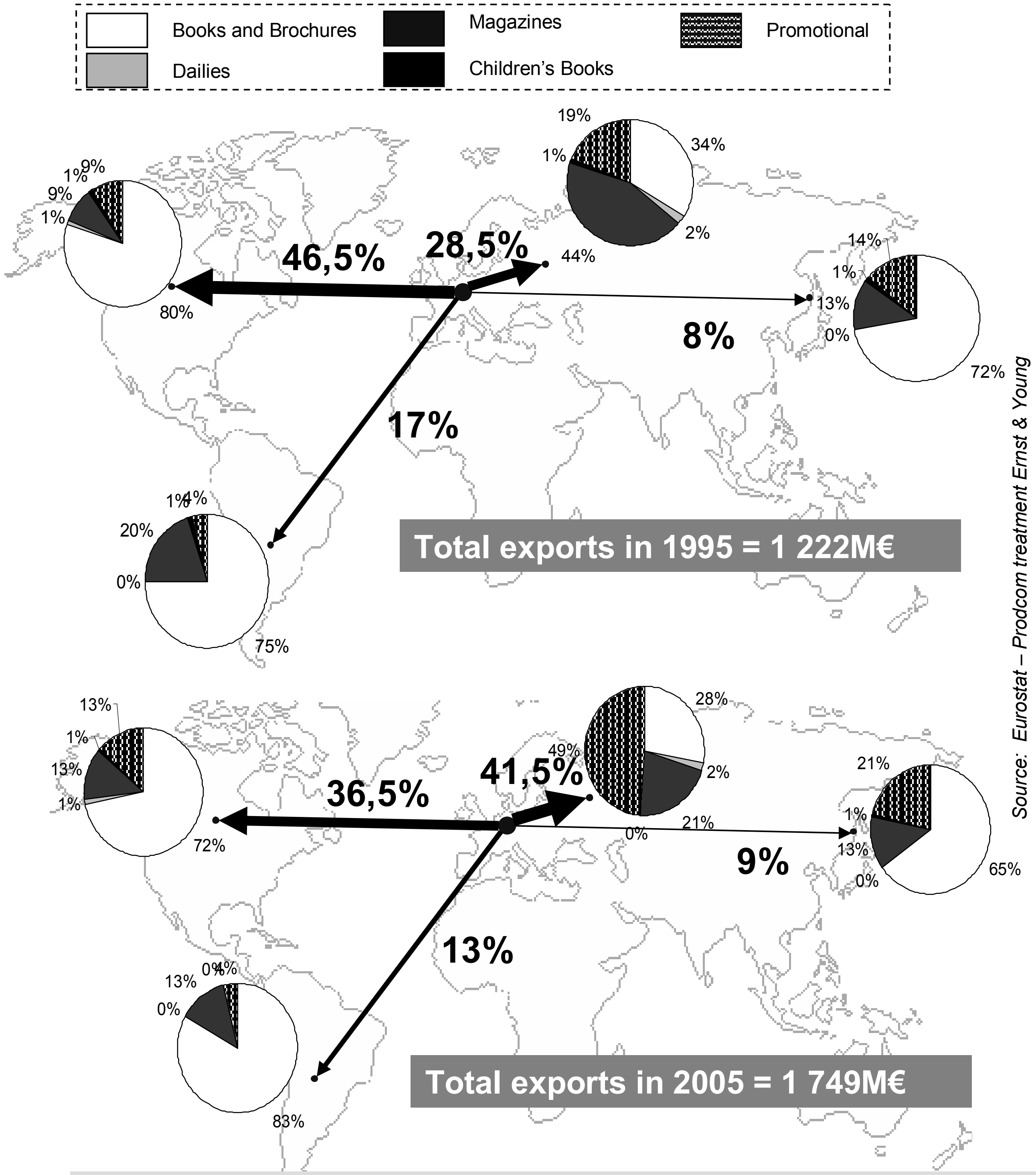
Part 5 f – International exchanges and relocation of the production areas

Products affected by relocation



Source: Ernst & Young

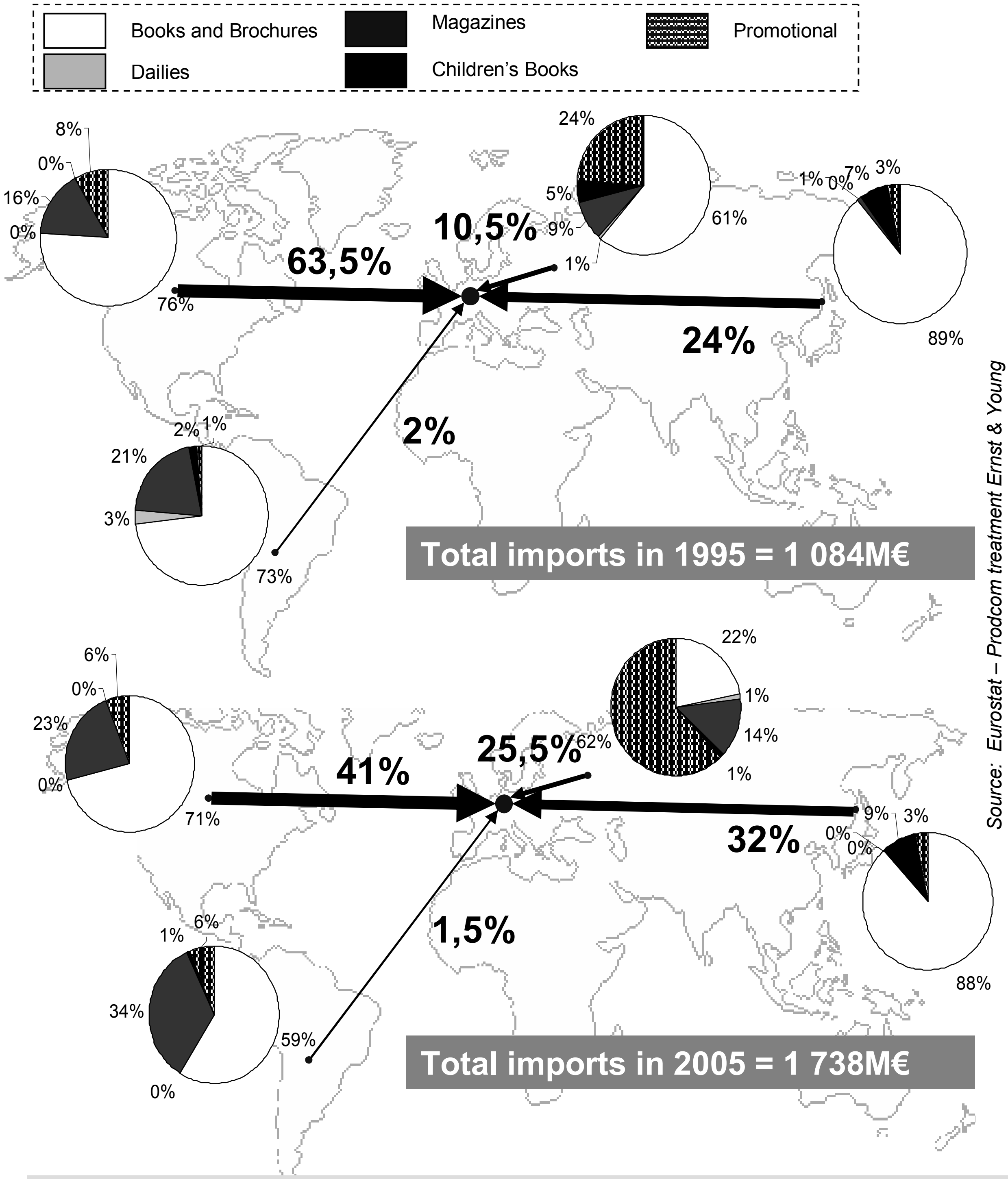
Trend in exchange flows – exports



The trend in the European trade balance during the last ten years, particularly the exports flows, highlights the growing place of new Member States as major partners of the European printing industry.

In addition, promotional products seem to be the most exported products towards those countries, which could be explained by the close relationship between economical growth and consumption of promotional printed products.

Trend in exchange flows – imports

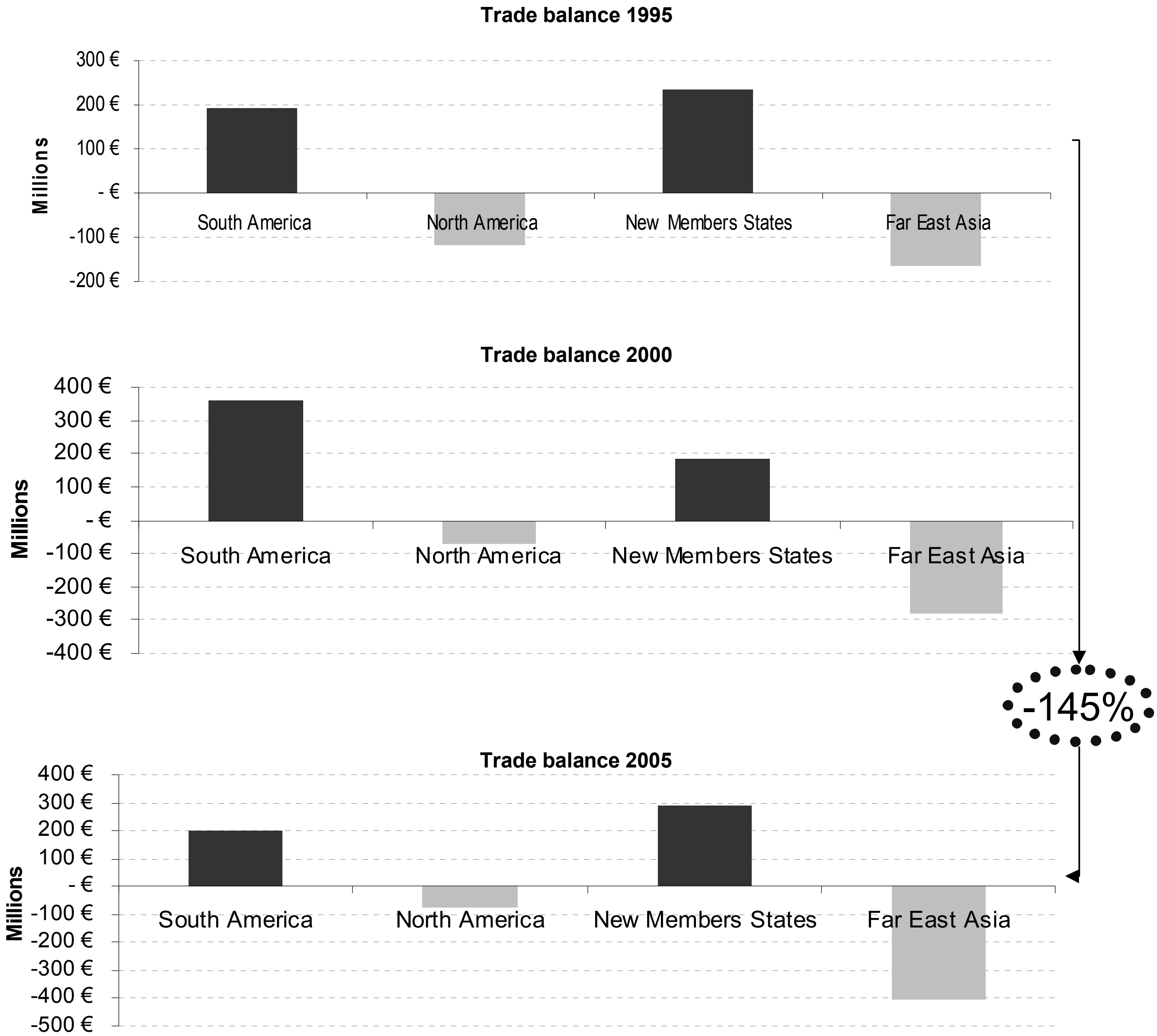


The analysis of the growth of imports in the last ten years (60% for imports and 42% for exports) and the origin of imported products leads to two conclusions :

The first is the profound modification of the suppliers mapping, from North America to China and new Member States.

The second is the specialisation of the production zones, Asia being recognized for books and the new Member States for promotional material.

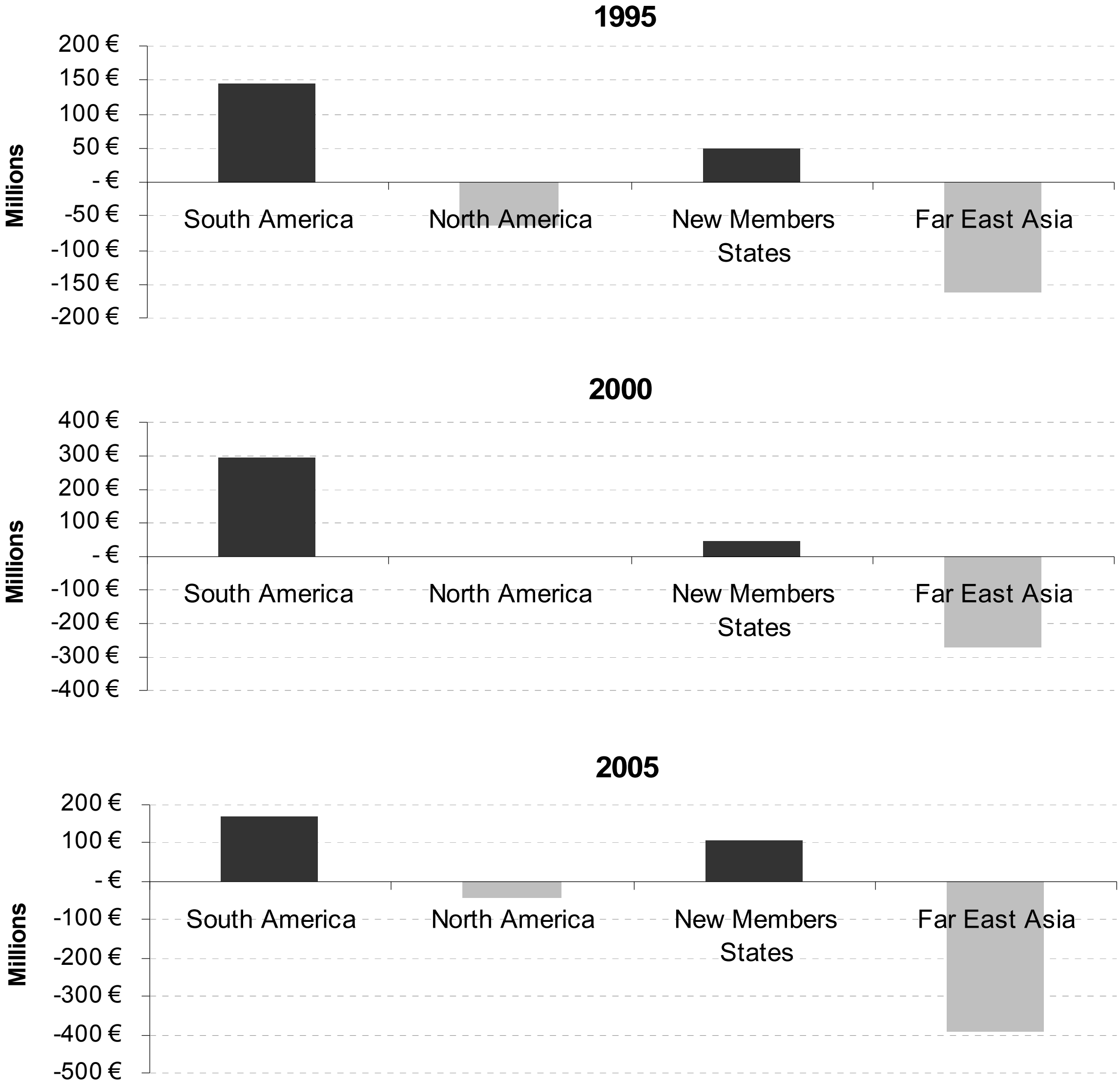
Trade balance between EU 15 and other geographical areas



Source: Eurostat – Prodcom treatment Ernst & Young

- The analysis of the trade balance emphasises what the graphs above show: while trade exchanges between EU15 and new Member States and South America remain positive, the trade balance between EU15 and Far East Countries is constantly decreasing, due to more imports of books and children’s books.
- While exports of paper-based products have increased by 68% within the ten-year period between 1995 and 2005, imports from Far East countries have increased by 117% within the same period.
- Trade between EU15 and North America remain balanced as regards paper-based products.

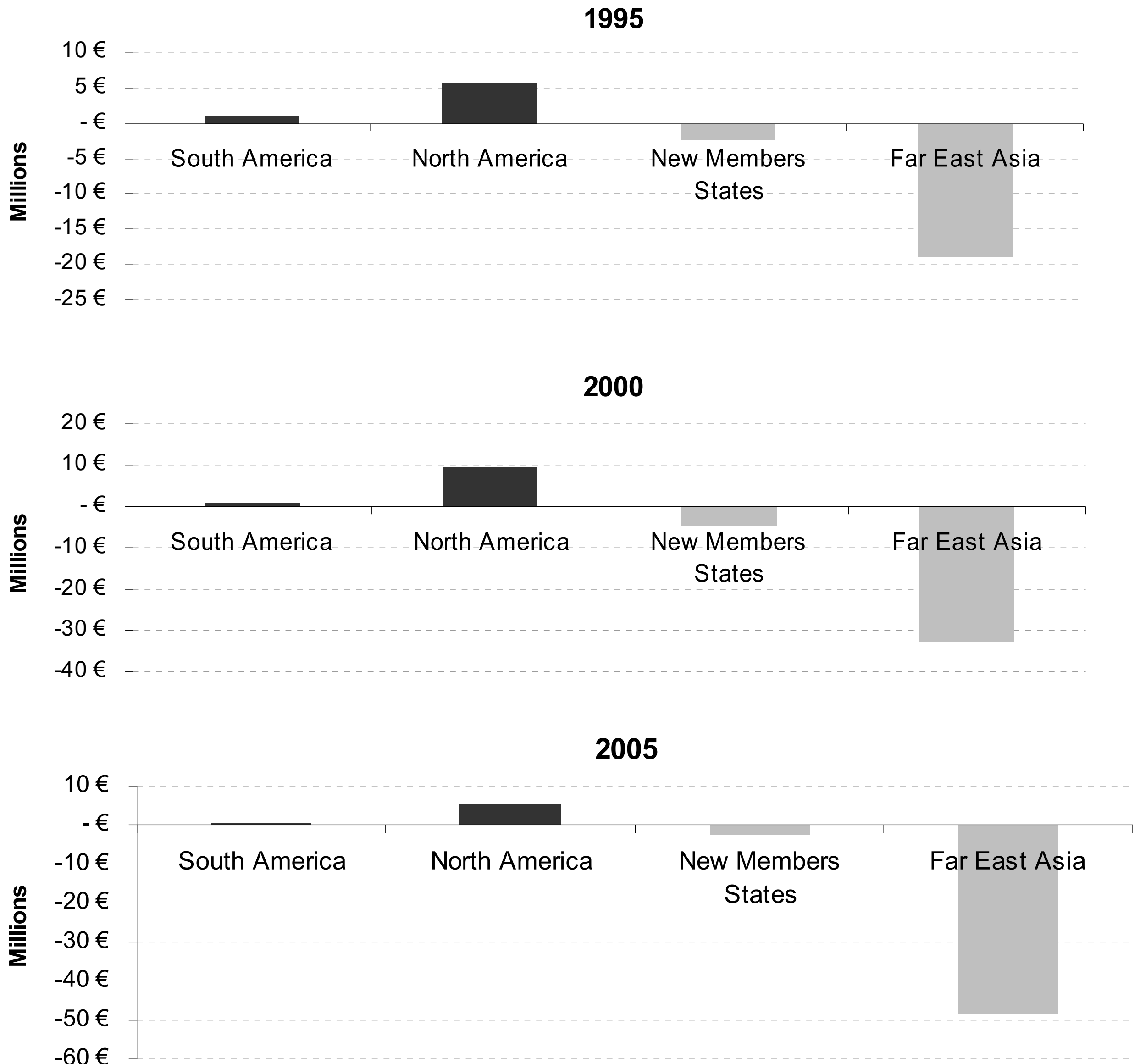
Trade balance in critical market segments: books



Source: Eurostat – Prodcom treatment Ernst & Young

- Far East Asian imports into Europe have been increasing faster than exports from Europe in the Books and Brochures segment.
- Books and Brochures is a segment with long production-runs long production forecast times.
- Thus, contrary to the daily paper segment, the time schedule for the book segment is so that publishers can order the printing of books in far away countries and receive the ready-to-sell books on time.
- Moreover, Far East Asian countries have very low production costs (due to low wage rates) and are a suitable location for publishers to have their books printed.

Trade balance in critical market segments: children's books



Source: Eurostat – Prodcom treatment Ernst & Young

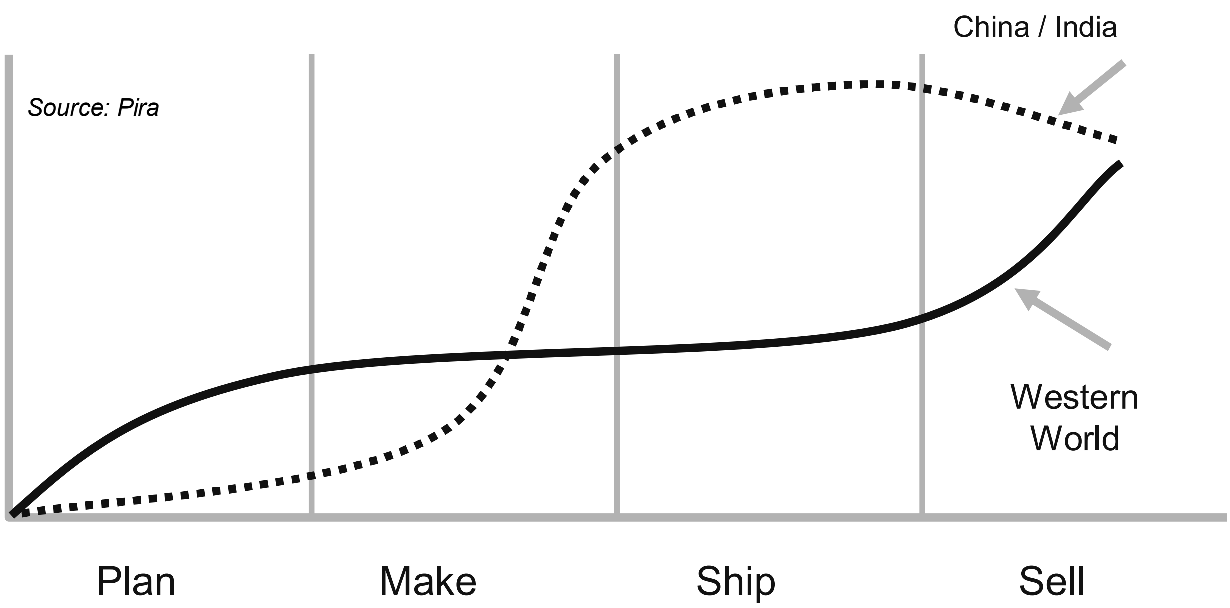
- Far East Asian countries have reached a quasi monopolistic status in the production of children's books for Europe. In fact, the volumes sold to Europe in 2005 were seven times higher than the volumes produced in Eastern Europe.
- This phenomenon is the consequence of the relocation of this activity to "low cost" countries, particularly China. Time limits are long enough to enable a publisher to have the books printed and then transferred back to the selling place on time.

Country specialisation and competitive advantage

Areas	Transport	Delivery	Cost
new Member States	Road Rail	1 to 4 days	Low
Asia	Road & Ship	3 to 5 weeks	Medium

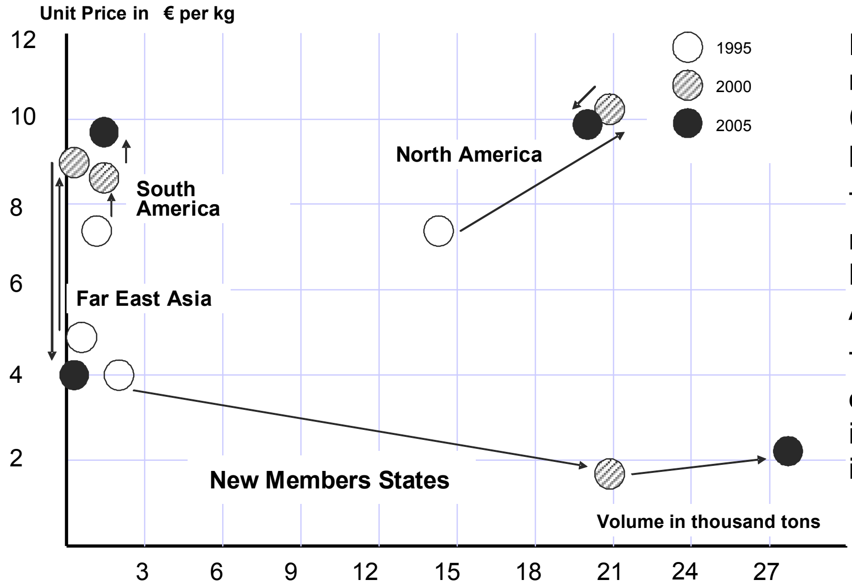
Source: Ernst & Young

- The transfer of production to the East has several reasons and consequences that oblige clients to balance their choice.
- First, as regards costs, the further East production is located, the lower the wage costs but the higher the transport costs.
- Second, as regards delivery times, the further East production is located, the longer the delivery times because of the transport delay.
- Thus, it is not possible to locate all the production of European printed products in those countries, but only some kinds of products. The most threatened products are the ones with a long time to market, and a sufficiently high proportion of manufacturing in the cost structure to ensure that low wage cost countries have a real competitive advantage over the European printing industry.



New Member States : the advantage of proximity

Evolution of the production by area : magazines

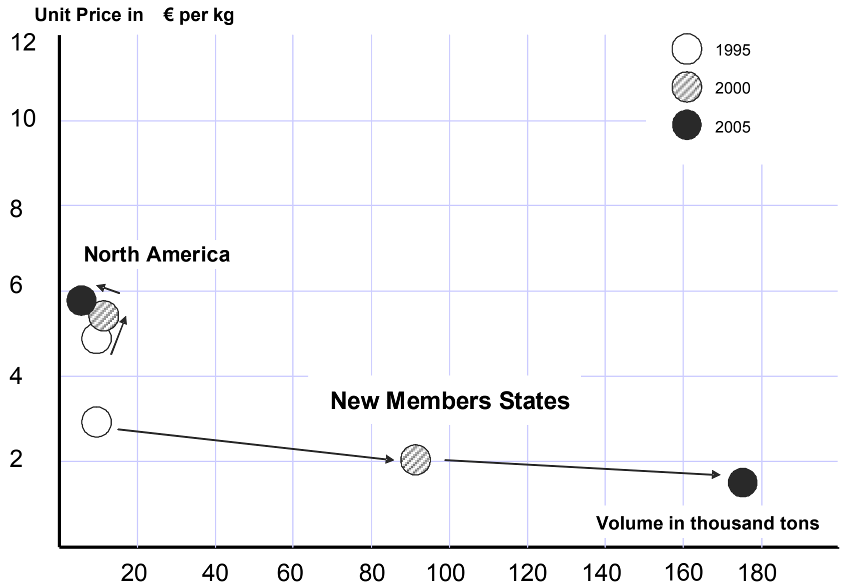


In 2005 new Member States were the main exporters of Magazines in Europe (in volume), increasing their volume of production by 1000% in ten years

The short time limits are the main reason for the predominance of new Member States compared to Far East Asian Countries.

The rise in orders enables economies of scale and consequently a decrease in production costs that remain very low in new Member States .

Promotional materials

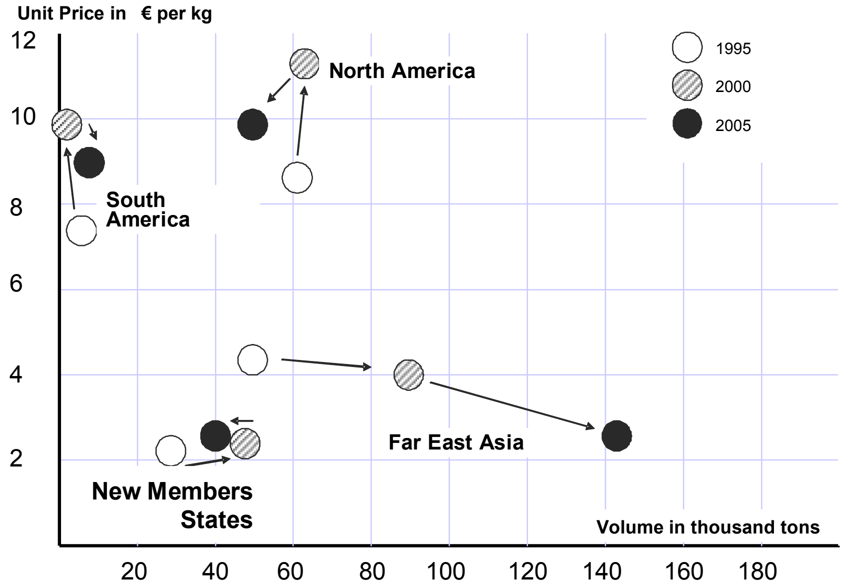


Source: Eurostat , Comext – treatment Ernst & Young

In the same way as for Magazines and Newspapers (Dailies excluded), short time limits are the main reason explaining the absence of Far East Asian Countries as importers of promotional materials.

Asia and China : Manufacturing costs

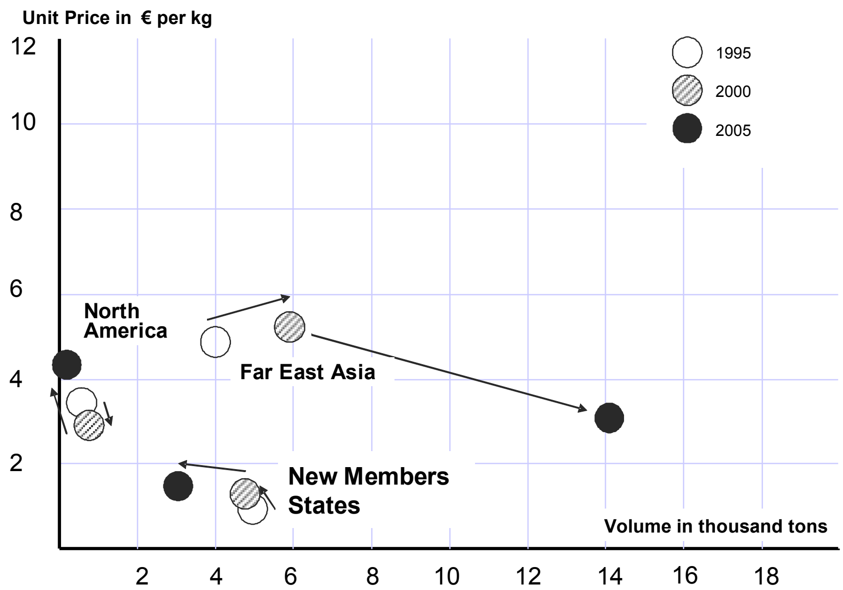
Trend in the strategy by country and area : books



While production costs have been increasing in North America and new Member States , production costs in Far East Asia have been constantly decreasing.

Far East Asian Countries have very low production costs and thus remain a suitable location for publishers to have their books printed.

Children's books



Source: Eurostat – Prodcom treatment Ernst & Young

Production costs in the children's books segment appear to be high in Far East Asian countries. Nevertheless the quality of the products compared to other countries is far more attractive for publishers (plastic items, transfers, etc.)

Sensitivity to relocation of printed products

<table>
<tr><th>Product</th><th>Time to market</th><th>Quality needed</th><th>Price positioning</th><th>Sensitivity to relocation</th><th>Competitive advantage of EU printing Industry</th><th>Competitive advantage of Chinese printing Industry</th></tr>
<tr><td>B/W Books</td><td>Short
Medium</td><td>Low</td><td>Low</td><td>Depends on time to market</td><td>Localised markets</td><td>Price</td></tr>
<tr><td>Manuals of delocalized products</td><td>Medium – Long</td><td>Low</td><td>Very Low</td><td>High because this product is following the relocation of delocalized products</td><td>-</td><td>Proximity of the primary market</td></tr>
<tr><td>Best seller books</td><td>Very short (intraday is possible)</td><td>Low</td><td>Medium</td><td>Low</td><td>Localised markets</td><td>-</td></tr>
<tr><td>Children’s books</td><td>Medium
Long</td><td>Medium</td><td>Low
Medium</td><td>High</td><td rowspan="2">-</td><td rowspan="2">Price of manufacture</td></tr>
<tr><td>Educational and scientific books</td><td>Long</td><td>Medium</td><td>Low
Medium</td><td>Medium</td></tr>
<tr><td>Luxury books</td><td>Long</td><td>High</td><td>High</td><td>Low</td><td>Know-how
Customer relationship</td><td>-</td></tr>
<tr><td>Calendars</td><td>Long</td><td>Medium
High</td><td>Low</td><td>High</td><td rowspan="2">-</td><td rowspan="2">Price
Volume</td></tr>
<tr><td>Directories</td><td>Long</td><td>Low</td><td>Low</td><td>High</td></tr>
<tr><td>Promotional material</td><td>Short
Medium</td><td>Medium
High</td><td>Medium</td><td>Medium</td><td>Related services</td><td rowspan="3">Price when delivery time is high</td></tr>
<tr><td>Magazines</td><td>Short or medium</td><td>High</td><td>Medium</td><td>Depends on time to market</td><td>Know-how, machinery</td></tr>
<tr><td>Catalogues</td><td>Medium</td><td>High</td><td>Medium</td><td>medium</td><td>Machinery, time to market</td></tr>
</table>

Source : Ernst & Young interviews 2007

Books as the most threatened segment

	2003	2004	2005	Trend
Production value of books in UE 25 in million EUR	7 325	7 433	7 586	+10,7%
Value of imported books extra UE 25 in million EUR	1 325	1 440	1 533	+15,7%
Market share of imported books in relation to UE 25 production value of books	18%	19%	20%	+11%
Total value of books imported from China in million EUR	222	291	351	+58,1%
Market share of books imported from China in relation to total imported books	17%	20%	23%	+35,3%
Market share of books imported from China in relation to total UE 25 production value of books	3,0%	3,9%	4,6%	+53,3%

Books are under code de 22223100	**% of book printing turnover in total UE25 de2222 turnover**	**Books production value in 2005 (M€)**	**% of value of Chinese books in book turnover**	**2003-2005 growth of total value of Chinese imported books**
France	4%	413	7%	39%
United Kingdom	13%	1 703	7%	37%
Italy	13%	1 404	1%	99%
Belgium	10%	264	6%	87%
Germany	7%	1 022	4%	80%

Source : PRODCOM

Books are incontestably one of the market segments most threatened by the Chinese printing industry and the growth rates are extremely worryng.

However, best seller books and black & white books are less affected by this threat. In fact, these products are ‘hot’, that is to say that the delivery time is very short, because retailers do not want to manage stocks and therefore just-in-time supplying is necessary.

This naturally favours local production and limits the possibility of third countries getting the market.

Part 6 – Appendix

General context

Basic and general structural statistics of major printing countries

	Fr	Ger	Sp	It	UK	B	N	Total
Population '000	60 028	82 502	42 000	57 478	59 554	10 200	16 224	328436
GDP (Md$)	1656,8	2334,8	1050,0	1528,9	1780,7	301,9	405,6	8431,2
GDP/capita (k$)	27,6	28,3	25	26,6	29,9	29,6	25	25,7
Value added in industry as % of GDP	21,50	22,70	29,10	26,60	25,30	24,70	24,60	24,66
Exports of goods and service (Md$)	392	750,7	155,7	294,5	308,7	255	264,3	2430,8
Average annual growth - previous 5 y	4,20%	6,70%	7,40%	3,90%	2,40%	7,20%	5,70%	5,60%
Imports of goods and services (Md$)	398,3	603,9	208	291,4	387	234	233,8	2369,7
Average annual growth - previous 5	5,50%	5,10%	9,40%	6,30%	4%	7%	4,60%	5,90%

Source : Intergraf – The evolution of the European Graphics Industry – Publication year 2005

Turnover – NACE DE 222 - 27 countries

Reminder : NACE de 222 : Printing and services activities related to printing
Nace 2221 : Printing of newspapers
Nace 2222 : Printing n.e.c
Nace 2223 : Bookbinding
Nace 2224 : Pre-press activities
Nace 2225 : Ancillary activities related to printing

Country	2002	2003	2004
Austria	2 015	1 960	1 964
Belgium	3 774	3 572	3 659
Bulgaria *	141	147	172
Cyprus	84	80	87
Czech Republic	812	905	Nd
Germany	20 472	18 176	9 500
Denmark	1 624	1 508	1 497
Estonia	90	95	Nd
Spain	8 117	7 977	8 425
Finland	1 502	1 416	Nd
France	13 994	13 319	13 137
Greece	Nd	Nd	Nd
Hungary	840	886	946
Ireland	745	724	652
Italy	12 583	12 889	13 430
Lithuania	92	91	Nd
Luxembourg	Nd	152	Nd
Latvia	92	97	Nd
Malta	85	Nd	Nd
Netherlands	5 477	5 068	5 065
Poland	Nd	Nd	Nd
Portugal	1 391	1 317	1 395
Romania *	331	385	474
Sweden	2 936	2 842	2 917
Slovenia	Nd	Nd	Nd
Slovakia	185	185	Nd
United Kingdom	21 073	17 522	Nd
EU-27	***98 455***	***91 310***	***Nd***

Source Intergraf – The evolution of the graphics industry – Publication year 2005
** Source Eurostat*

Number of employees – NACE DE 222 - 27 countries

Reminder : NACE de 222 : Printing and services activities related to printing
Nace 2221 : Printing of newspapers
Nace 2222 : Printing n.e.c
Nace 2223 : Bookbinding
Nace 2224 : Pre-press activities
Nace 2225 : Ancillary activities related to printing

Country	2002	2003	2004
Austria	16 066	15 196	14 572
Belgium	21 309	20 067	19 585
Bulgaria *	7 895	7 952	8 549
Cyprus	Nd	1 573	1 491
Czech Republic	18 457	20 274	Nd
Germany	186 432	165 511	161 553
Denmark	14 025	12 590	10 728
Estonia	2 489	2 336	Nd
Spain	84 949	82 864	84 311
Finland	12 390	11 951	11 462
France	115 796	109 811	104 070
Greece	Nd	Nd	Nd
Hungary	23 683	25 437	21 936
Ireland	7 936	7 456	6 450
Italy	93 673	94 903	92 428
Lithuania	3 515	3 628	3 840
Luxembourg	1 140	1 287	Nd
Latvia	4 193	3 716	Nd
Malta	1 111	Nd	Nd
Netherlands	39 383	36 532	36 198
Poland	34 684	39 549	41 816
Portugal	22 857	24 762	24 425
Romania *	15 238	16 749	19 012
Sweden	22 606	Nd	19 986
Slovenia	6 058	5 682	Nd
Slovakia	5 046	3 863	4 476
United Kingdom	171 728	170 058	156 611
EU-27	***932 659***	***883 747***	***Nd***

Source Intergraf – The evolution of the graphics industry – Publication year 2005
** Source Eurostat*

Number of enterprises - NACE DE 222 - 27 countries

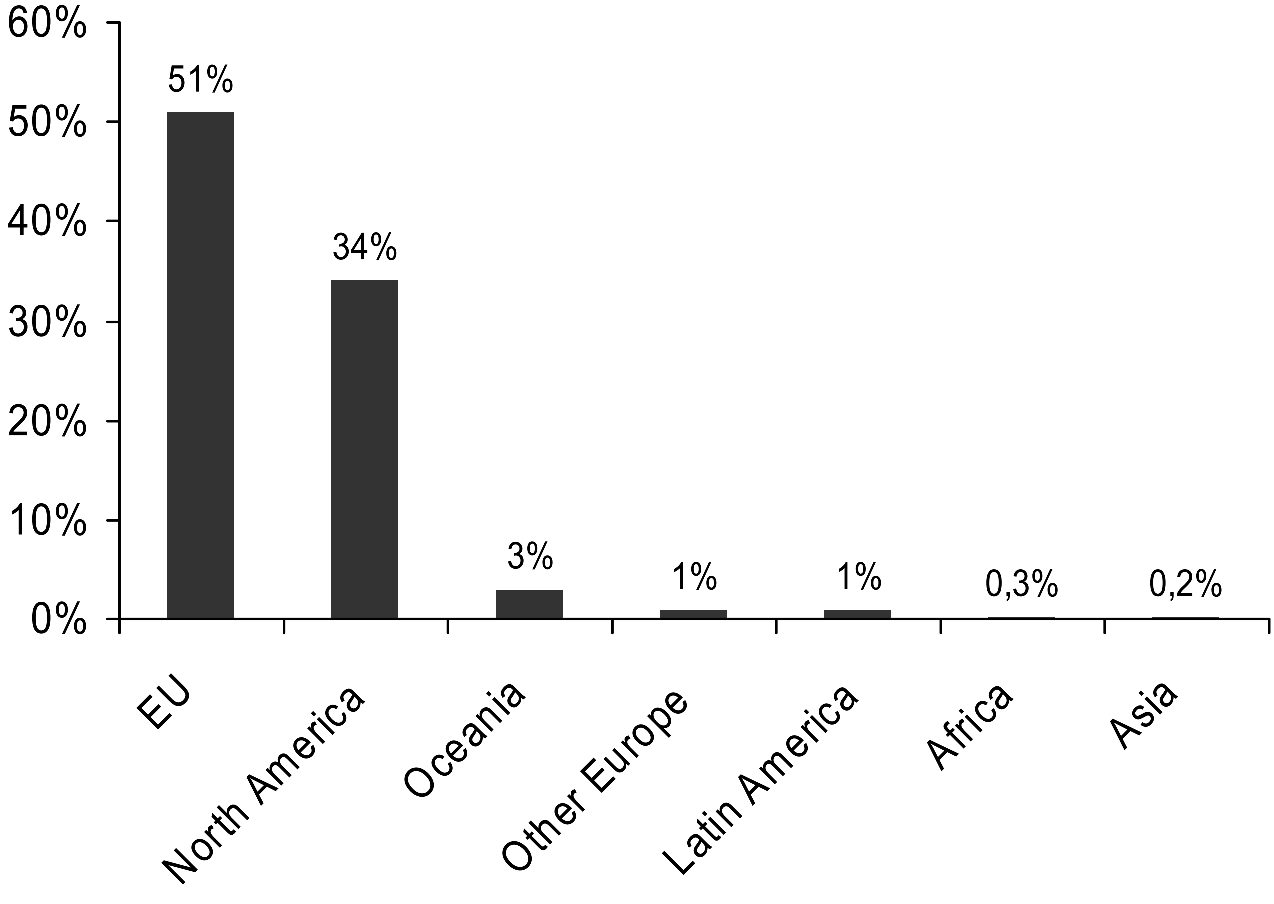
Reminder : NACE de 222 : Printing and services activities related to printing
Nace 2221 : Printing of newspapers
Nace 2222 : Printing n.e.c
Nace 2223 : Bookbinding
Nace 2224 : Pre-press activities
Nace 2225 : Ancillary activities related to printing

Country	2002	2003	2004
Austria	1 088	1 095	1 070
Belgium	Nd	3 748	Nd
Bulgaria *	786	818	815
Cyprus	316	318	322
Czech Republic	5 675	6 100	Nd
Germany	12 934	12 574	11 294
Denmark	1 473	1 352	1 252
Estonia	168	168	Nd
Spain	14 445	13 958	15 070
Finland	1 276	1 237	Nd
France	16 766	17 986	17 852
Greece	Nd	Nd	Nd
Hungary	*4 322*	*4 487*	*4 540*
Ireland	380	391	357
Italy	20 262	19 603	19 355
Lithuania	291	295	284
Luxembourg	77	84	Nd
Latvia	298	324	Nd
Malta	201	Nd	Nd
Netherlands	3 915	3 665	3 635
Poland	11 146	10 426	Nd
Portugal	2 987	3 237	3 251
Romania *	1 330	1 662	1 945
Sweden	3 683	Nd	3 673
Slovenia	1 133	1 093	Nd
Slovakia	245	201	200
United Kingdom	18 777	18 283	Nd
EU-27	***124 244***	***123 105***	***Nd***

Source Intergraf – The evolution of the graphics industry – Publication year 2005
** Source Eurostat*

Origin of pulp and paper

Certified forest as a percentage of total forest area by region



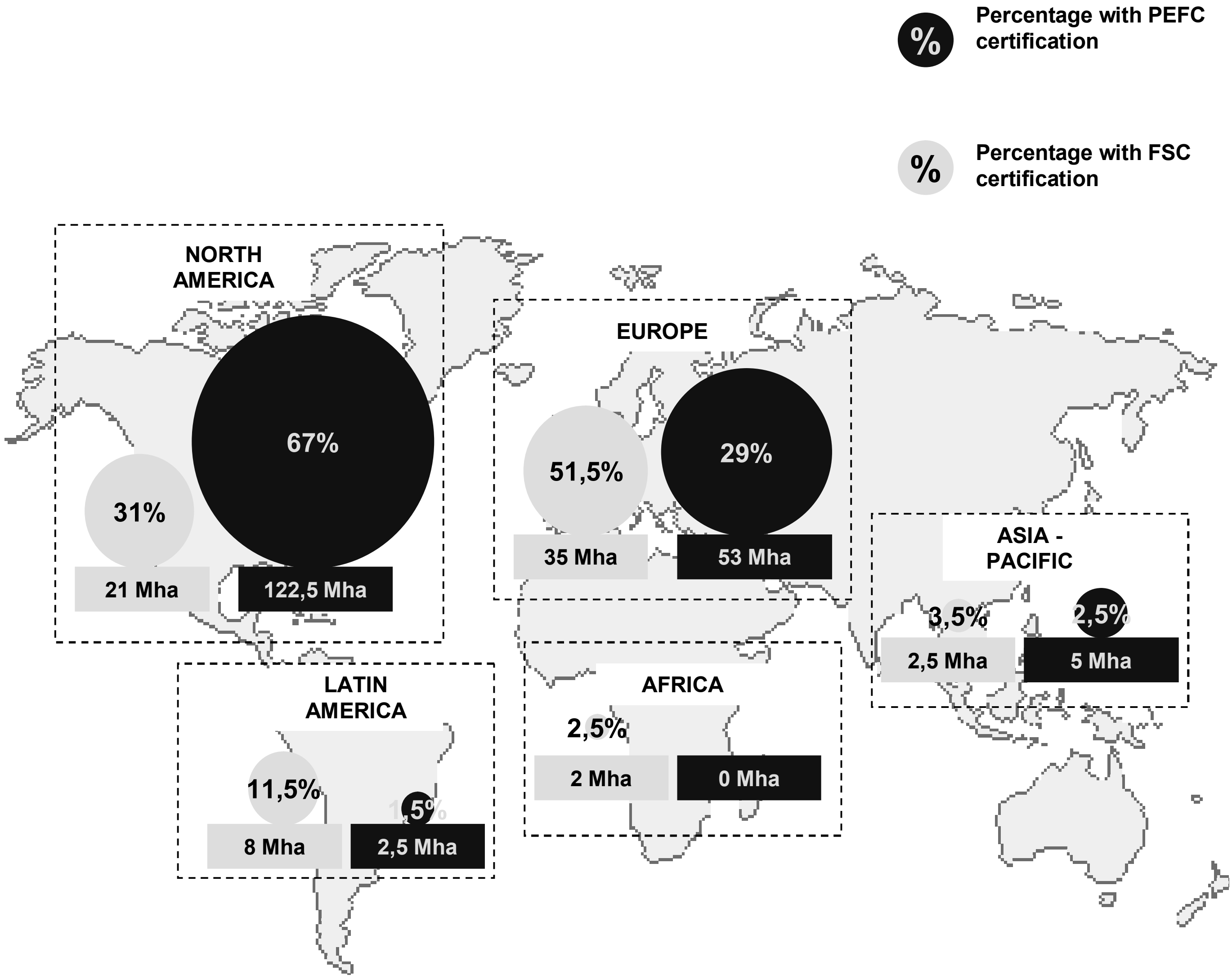
Source: Kraxner and al. 2006

Forest certification is not uniform throughout the world, with areas such as the EU or North America showing a 30% to 50% rate of certification, and the other regions below 5%.

Africa and Asia in particular show very low rates of certification, having only recently become aware of the stakes of forest certification.

Latin America is mostly composed of forest (Amazonia for example) which explains the very low rate of certified forest.

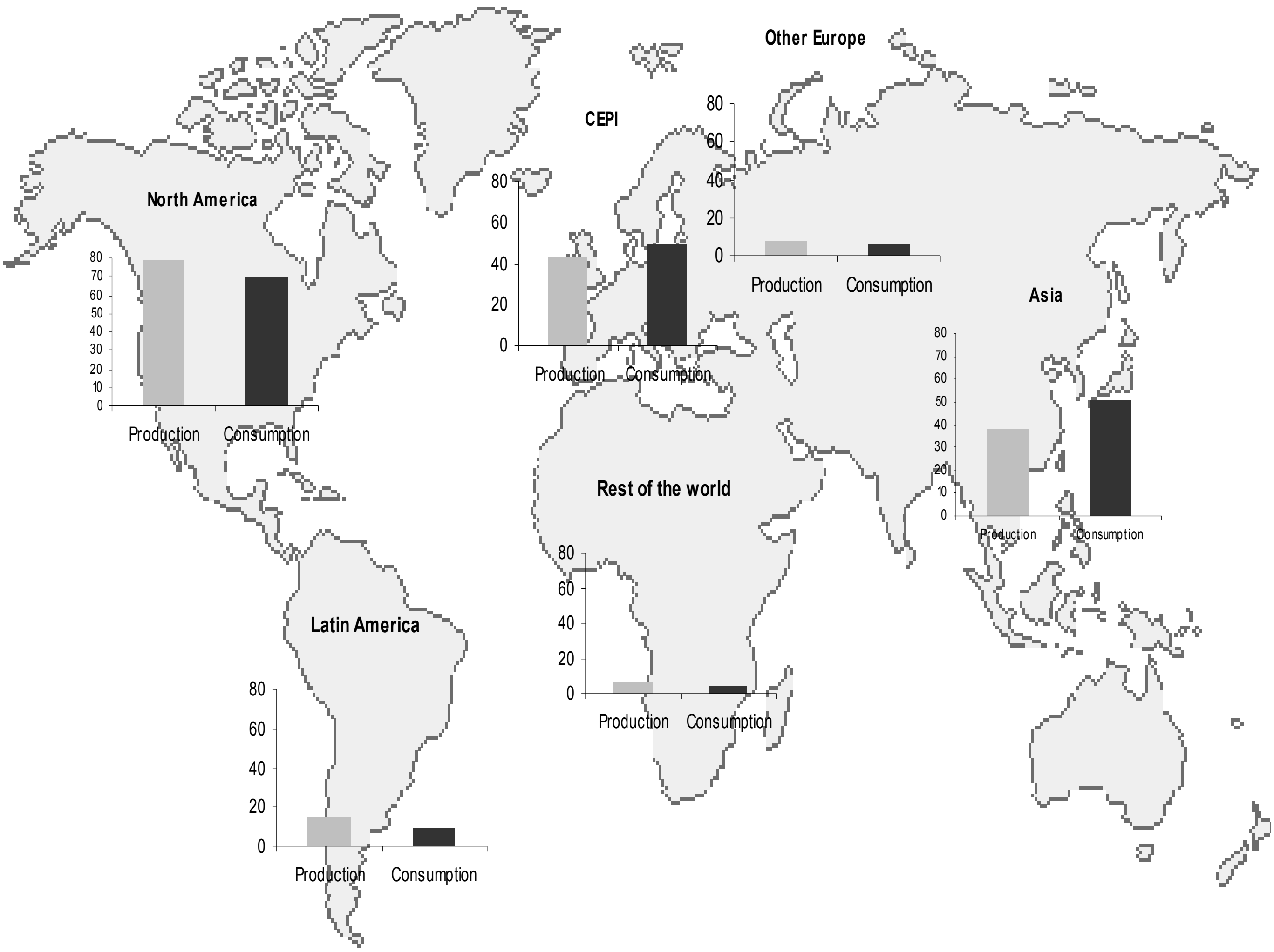
Certified Forest in the world, mainly in Europe and North America



Source: FSC, PEFC, 2006

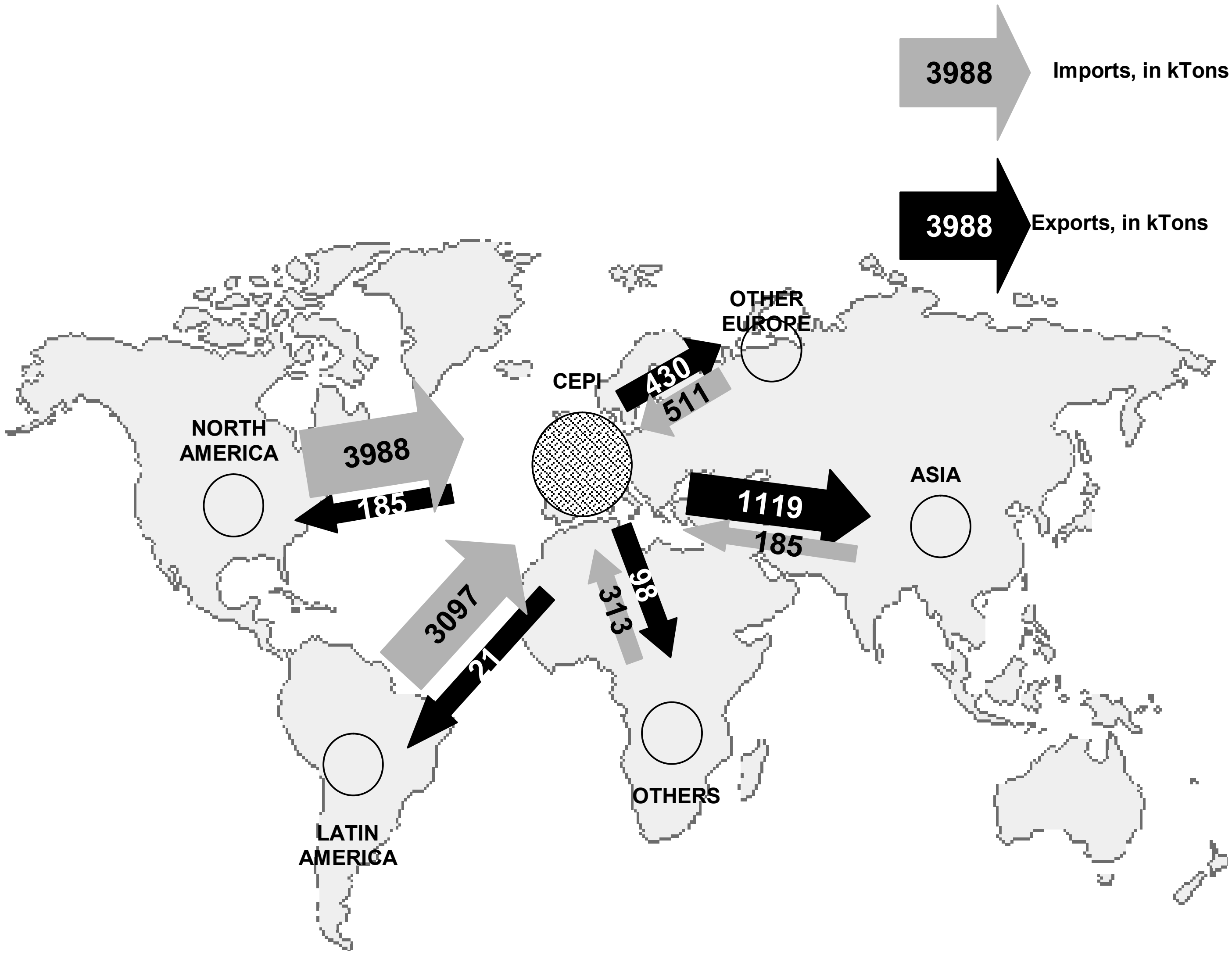
Asia and CEPI countries do not meet their own needs of pulp ...

(figures in MTons)



Source: CEPI, 2004

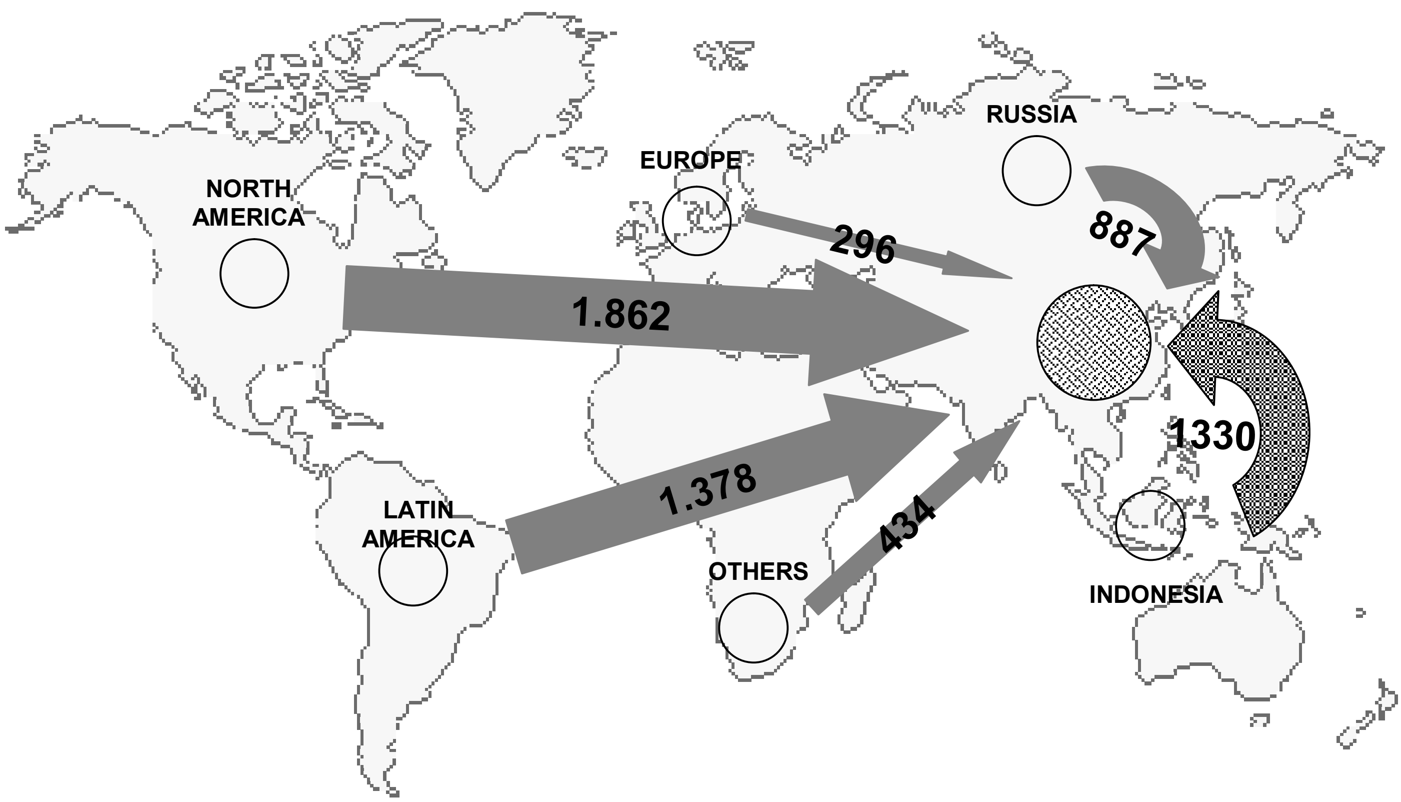
... and resort to import ...
(in kTons)



Source: CEPI, 2004

... particularly China for chemical pulp

(in kTons), in 2005

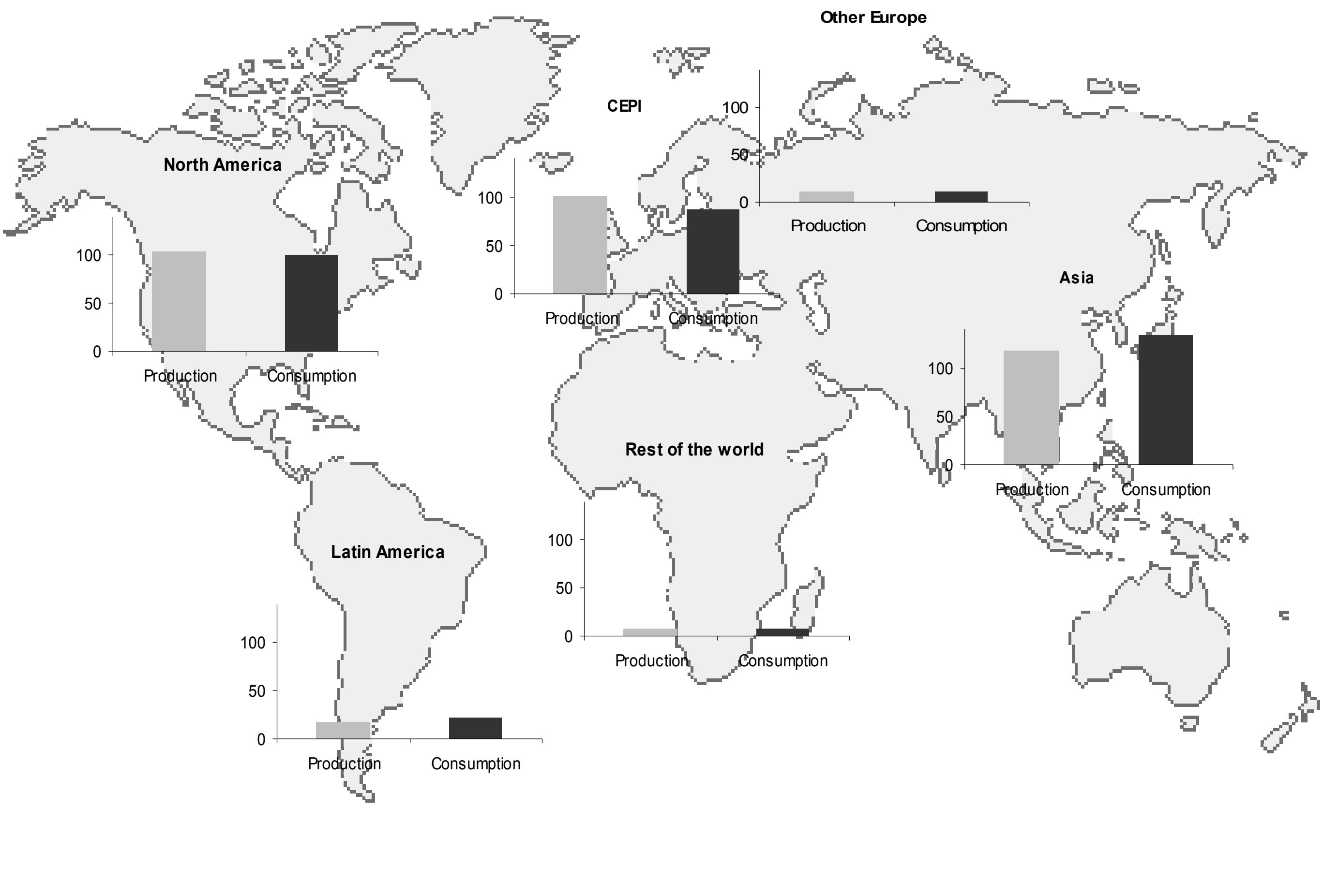


Source: Global Trade Atlas, China Import Data

Pulp can be considered as a global market

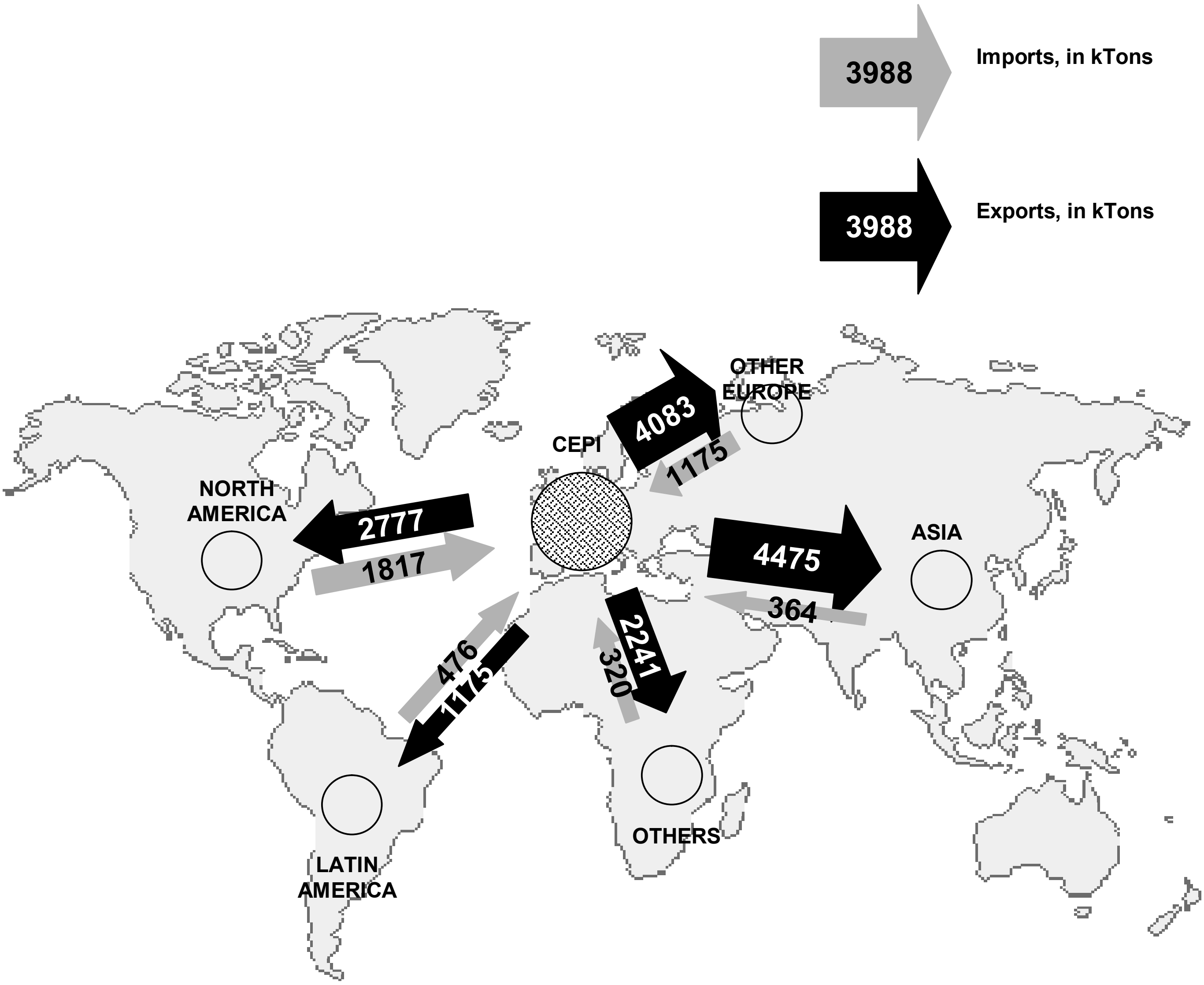
- The CEPI countries, as well as Asia, consume more pulp than they can produce. Thus these areas have to import pulp to meet their demand.
- Pulp is therefore a global market, characterised by import and export flows worldwide, implying increased competition for pulp producers in Europe.
- In particular, imports account for almost 11% of the CEPI countries’ pulp consumption. North and Latin America provide nearly 90% of the imports.
- Asia has recourse to importing to meet 25,5% of its pulp needs. China in particular imports almost 6kTons of chemical pulp, mainly from North America, Latin America and Indonesia.
- Indonesia provides 21,5% of the chemical pulp imported into China. However, the certified forest map shows a very low proportion of certified forest in the Asia-Pacific area, which might pose the problem of the origins of the pulp imported by China and particularly the origin of the wood used for the manufacture of chemical pulp.

Production and consumption of paper, all categories included *(in MTons)*



Source: CEPI, 2004

CEPI countries : trade of paper, all categories included *(in kTons)*

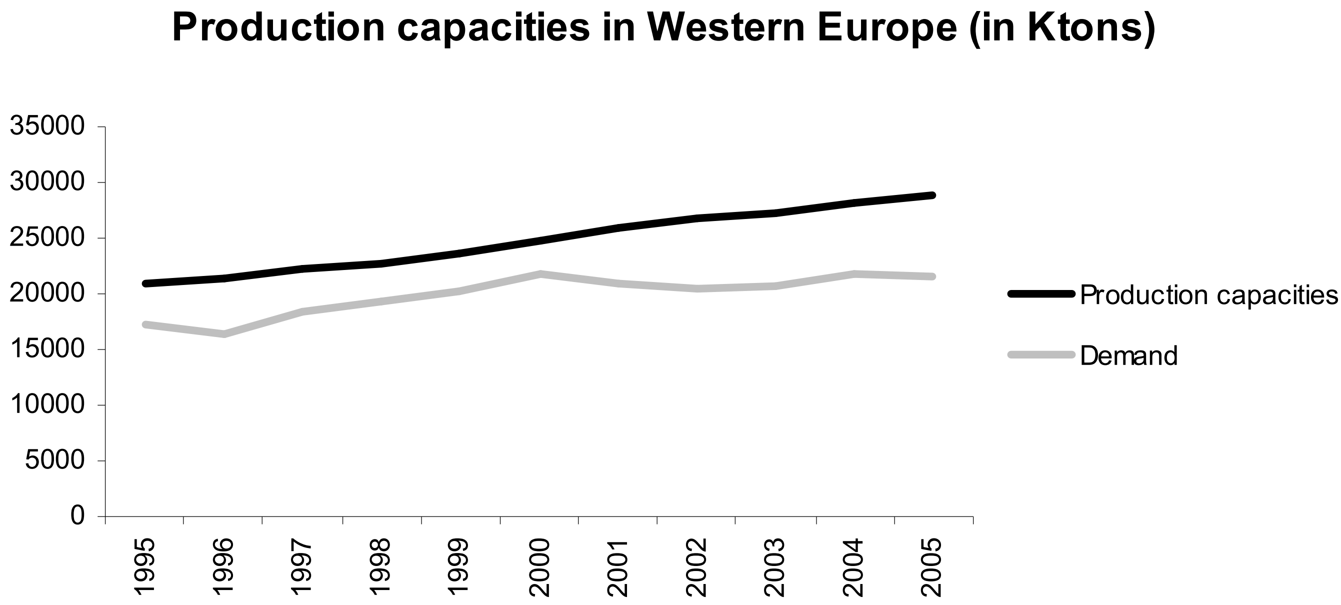


Source: CEPI, 2004

Paper as a global market

- Similarly to pulp, paper can be considered as a global market. Asia for example imports in order to meet nearly 11% of its paper needs. CEPI countries in particular account for almost 31% of paper imports (all categories included).
- Although its pulp trade balance is positive, Latin America still needs to import 17% of its paper consumed. In fact, the infrastructures for paper production are not as developed as the pulp manufacturing plants. Nevertheless, Latin America remains a serious future threat for paper manufacturers given its high production potential.
- As a consequence, competition in the paper sector could increase under pressure from Latin America, which could prove to have positive effects for printers by contributing to a reduction in paper prices.

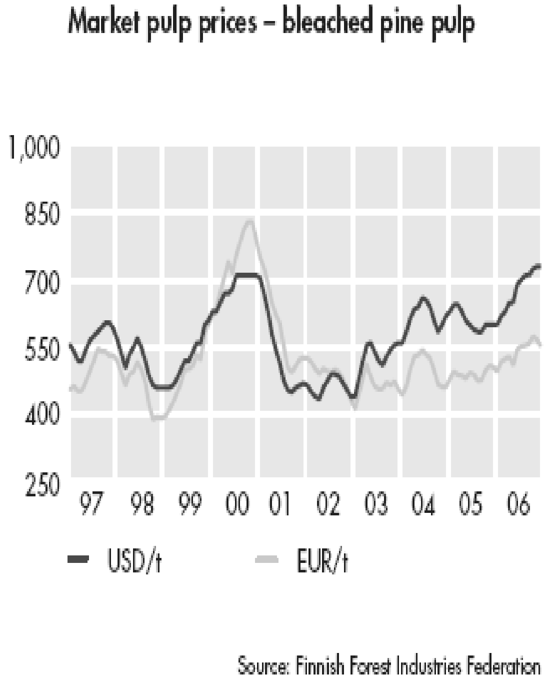
Europe : Deliveries compared to Production capacities

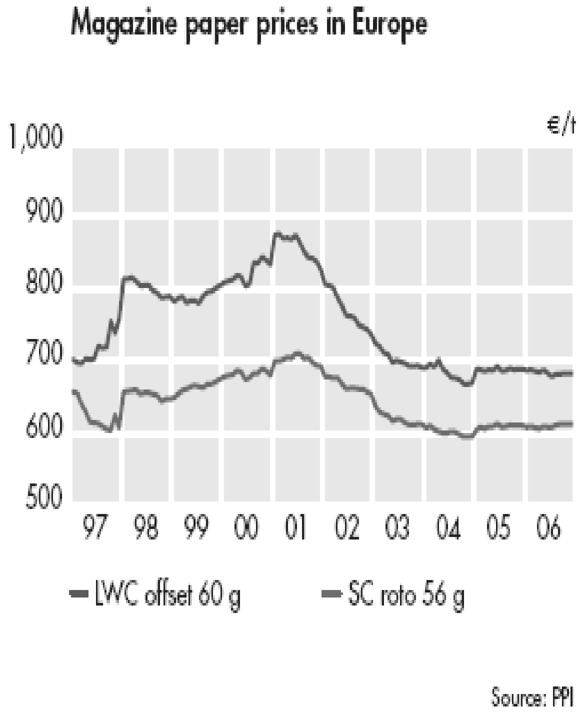


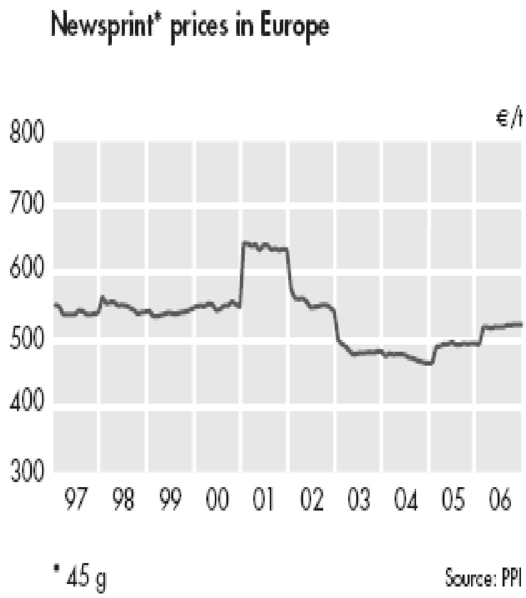
Source: CEPI Print

- Production capacities in Europe exceed demand. Moreover, since 2001, the gap between production capacities and demand has been increasing, revealing overcapacity in paper production
- As a consequence, competition on prices has increased thus favouring the printing industry
- Nevertheless, in 2006 some mills closed down, reducing production capacities by 700.000 tons, in order to adapt to demand. Prices are thus likely to rise in the future.

Index of prices



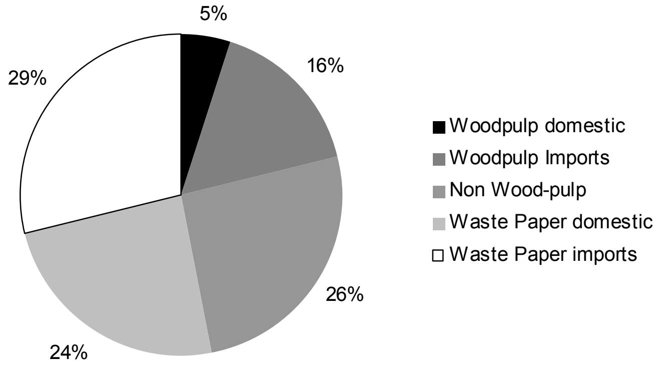




- Both pulp and paper are cyclical markets driven mainly by the trend of the GDP in the main economies. The constant growth until 2001 can be explained by the favourable economic climate worldwide.
- The September 11 bombings generated a slump bringing about a global economic recession. Overcapacity in the production of pulp and paper made prices go down.
- The cyclical effects make it more difficult for printers to forecast and to adapt to the trends in the price of paper.

53% of the fibres produced from recovered papers

Fibre sources for paper production



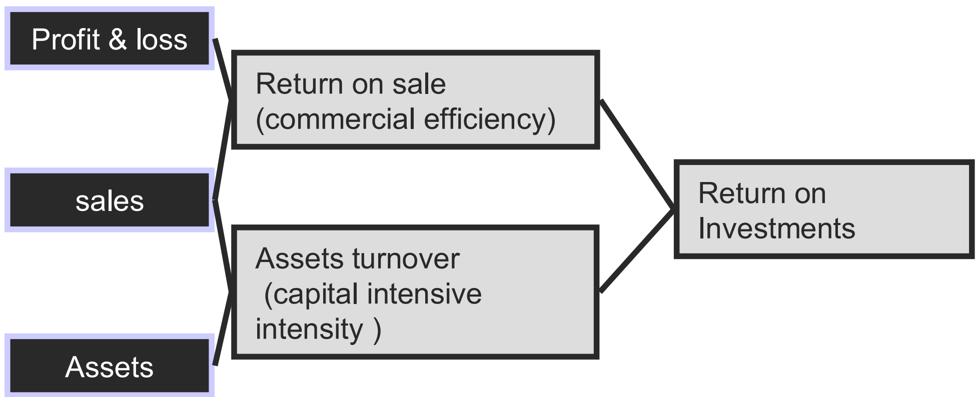
Source: China Paper Almanach

- The major share of the fibre used for paper manufacture in China comes from imported paper.
- The Chinese are able to produce almost 53% of the fibre used by recycling paper, compared to 50% and less in Europe and in the United States.
- Moreover, the Chinese still rely on imports as a source of fibres, given that almost 45% of the fibres used are imported in the form of wood pulp or waste paper.
- A few issues may be considered:
  - How to ensure accurate traceability of the fibre used?
  - How good is the quality of the paper produced from waste paper?
  - Are the Chinese printers able to maintain a high productivity rate given the possible low paper quality?

Comparison of financial ratios

Standard European company model : comparison of financial ratios (1/2)

- Methodology



- Standard European company model*

	Western European Companies	new Member States Companies
Assets	5 121 k€	2 434 k€
Sales	6 498 k€	2 682 k€
Profit & Loss	104 k€	142 k€
EBIT	199 k€	199 k€
Employees	44	73

* Average based on an extract from Amadeus database, FY05, only companies with a turnover > 1,5 € million and total employees < 500. Western Europe : 29 countries new Member States : 19 countries

Standard European company model : comparison of financial ratios (2/2)

	Western European Companies	new Member States Companies
Return On Sales	1,6%	**5,3%**
Assets Turnover	**1,27**	1,1
Return On investments	2,0%	**5,8%**
EBIT/Turnover	3,1%	**7,4%**
Turnover/capita	**147k€**	36k€

Those comparison ratios highlight the differences between two economic models.

- Western Europe favours investments in assets and particularly in production equipment because of high wage costs which have to be compensated for by an increase in equipment productivity (raw material prices are global with non-significant differences between European countries, so the difference observed in the EBIT/Turnover ratio is due to salaries and other production charges). The weakness of the Return on Investment ratio poses the problem of the investment capacity of the companies and makes it difficult to write any scenario.
- The printing industry in new Member States is partly equipped with the second-hand machines of Western European printers. Thus, productivity and asset turnover are not high. East European printers could reduce this gap thanks to low wage costs. The Return on Investment is high (near 6%) and still attractive for foreign investors. A possible scenario would be investments being maintained at a high level in Eastern Europe, increasing the productivity and competitiveness of those countries. The only unknown factor is the trend in wage costs, how long will it take for salaries to reach the Western European level?