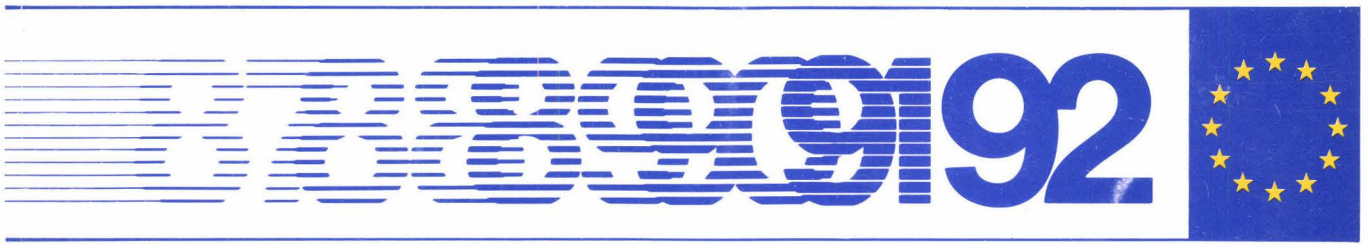
RESEARCH ON THE "COST OF NON-EUROPE"

BASIC FINDINGS

VOLUME 6



— TECHNICAL BARRIERS IN THE EC: AN ILLUSTRATION BY SIX INDUSTRIES

— THE "COST OF NON-EUROPE": SOME CASE STUDIES ON TECHNICAL BARRIERS

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by

Groupe MAC

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Technical Barriers in the EC:

An Illustration by Six Industries

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Technical Barriers in the EC :

Illustrations in six industries

Executive Summary

AND

FULL REPORT

GROUPE MAC

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I. INTRODUCTION : Context, objectives and methodology of this study.

This study was motivated by the following questions : what are technical trade barriers ? What are their origins ? Why do they persist? Who wins and loses from their existence? If the reader's first reaction to these questions is "why does it matter?", he is duly forgiven. The subject of technical trade barriers has heretofore been the domain of lawyers, bureaucrats, technicians, politicians, and has rarely been in the public eye. Until now.

Technical barriers are important. In fact, technical trade barriers are one of the greatest obstacles to the completion of the internal market in 1992. That is the true reason why this study was undertaken; to call attention to the nature and persistence of technical trade barriers in a theoretically barrier-free European Community.

To cite one piece of evidence, in a widely distributed business survey, the existence of technical trade barriers was ranked as one of the most important obstacles preventing the completion of the internal market.

COUNTRY	IMPORTANCE OF TECHNICAL TRADE BARRIERS (RANK)
GERMANY	1
UK	1
FRANCE	1
BELGIUM	2

Source : CEC : "Research on the Cost of Non-Europe"; The completion of the internal market: a survey of European industry's perception of the likely effects, forthcoming.

Such results illustrate that from the standpoint of completing the internal market herein lies a problem to be reckoned with.

This study is part of the European Commission's overall research program on the "Cost of Non-Europe." Other studies have identified and analyzed technical trade barriers, but they have done so while focusing on a single industry. In requesting this study, the Commission wished a horizontal view of this problem covering a variety of sectors in order to call attention to the problem, and to piece together some general conclusions.

The objectives of this study therefore are three-fold :

- identify, on a sectorial basis, technical barriers to trade;
- examine the similarities and differences of these barriers and evaluate their consequences for trade and other indirect effects;
- develop general conclusions as to the current importance of national technical disparities as an obstacle to intra-EC trade and to EC company competitiveness on world markets.

The sectors covered in the study were chosen based on the importance and frequency of technical trade barriers as well as the availability of data. The sectors are :

- Foodstuffs
- Pharmaceuticals
- Automobiles
- Building Materials
- Electrical Products and Machines
- Telecommunications Equipment.

Given the time constraints, the MAC Group conducted this study based on data previously collected during the relevant sectorial studies developed on the cost of Non-Europe, supplemented with 25 individual interviews within the Commission and with industry experts, observers and participants. The author also reviewed existing literature on the subject.

II. TECHNICAL TRADE BARRIERS IN THE EC

A. What are technical trade barriers and what are the benefits of their removal ?(1):

If an EC producer must alter his product to comply with industrial standards or legal regulations for commercialization in another EC country, and/or, if a producer must have his product tested and certified by the importing country, he faces a **technical trade barrier**. It is that simple.

There are three types of technical trade barriers. The first two concern the specifications of a given product and the third relates to the procedure by which product specifications are verified.

Differences between countries in industry standards, when imposed as a condition of entry, sale or use, create the first type of technical trade barrier. Here standards refer to voluntary specifications regarding product form, functioning, quality, compatibility and/or interchangeability. Standards are not legally binding and are defined by private individuals and organizations (ie. standardization bodies such as AFNOR in France,) in their own interest. The DIN system of standards used for building materials in Germany provides a good example of an industry standard. That these standards differ from the AFNOR standards in France prevents certain goods from freely moving between the two countries.

The precise way trade is hindered can be quite subtle in the case of technical standards. For certain building materials, French insurance companies will only pay for damages caused by the product in question if it meets the industry standard and has been approved as such. Architects, who can be held liable for damages, are therefore reluctant to use (foreign) products produced according to a different standard, even if their level of safety is the same.

The second type of technical trade barrier is caused by **differences in legal regulations**, where regulations are specifications similar to standards but differ in that they are legally binding often with the purpose of serving the public interest, in particular the objectives of health, safety, and environmental protection. The legal basis and the public interest of regulations distinguish them from standards. An example of a regulation is the pasta purity law in France, Italy and Greece which specifies that "pasta" must be composed of duram wheat only. A British-made pasta composed of both duram and soft wheat is prohibited from being sold in these countries under the name "pasta"--creating a formidable marketing obstacle.

By contrast to standards, the way in which a country's regulations prevent a good from being imported is unambiguous ; they make importation illegal if the good does not comply with them.

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(1) Based on CEC, "Research on the Cost of Non-Europe"; The economics of 1992 : an assessment of the potential economic effects of completing the internal market of the European Community, "European Economy", (see Annex)

/6/

The third type of technical trade barrier are **testing and certification procedures** that are designed to ensure conformity to existing regulations or standards. Technical trade barriers are created when an importing country requires an additional certification procedure to that required in the country of origin. Pharmaceutical certification procedures and the type approvals necessary for automobiles are examples of this technical trade barrier. The trade hampering effects include the cost, time, and effort producers must expend to comply with these procedures.

In addition to the obvious restrictions on trade, the existence of technical trade barriers deprives the Community--both producers and consumers--of important economic benefits, both direct and indirect. Economies of scale in production gained by the acceptability of a single product throughout the Community is one important direct benefit. A second benefit is linked to the reduction in raw materials and finished goods inventory storage costs that could be realized by companies who heretofore build and distribute heterogeneous products within the EC. Manufacturing companies serving different Community markets could be significantly and positively affected by a single, barrier-free market, and competitive pressures would ensure that a portion of these benefits are passed onto customers in the form of lower prices. Some of these direct benefits are quantified in the final chapter of this paper for the specific case studies.

Indirect economic effects of removing technical trade barriers include the increase in consumer choice, and a further gain in scale economies resulting from increased foreign sales. Industry restructuring is a third important indirect benefit as more efficient European producers displace higher cost locally orientated manufacturers; which in turn would have a positive effect on the competitiveness of selected EC industries in world markets.

B Why do technical trade barriers exist ?

As described above, technical trade barriers exist when differing national regulations and/or standards prevent the free movement of goods, or when countries impose duplicative testing and certification procedures for imported goods. The more compelling question is why do they exist? And additionally, what interests are being served in their continued existence?

Two fundamental reasons account for the existence of technical trade barriers within the EC. The reasons are themselves artifacts of the historical evolution of regulations and industrial standards and practices of the Community's twelve members:

- Historical and philosophical differences among countries on the essential requirements necessary to protect public safety, health and the environment

- Historical differences in standards and testing and certification procedures.

Differences in values between countries on the essential requirements. This is the most fundamental cause of technical trade barriers. Increasingly, member countries have similar if not identical views on how to protect public health, safety and the environment. Where differences do exist, however, barriers can be difficult to remove. Often, the only resolution of these differences is through direct political negotiation among the member countries.

An example of this type of trade barrier are safety requirements on electrical cutting machines used in industrial environments. German requirements differ from French requirements because of differing philosophies on how to protect the machine user. Dangerous moving parts on French machines are completely isolated from the machine worker, so he would be protected even in the case of gross negligence. In Germany, the philosophy underlying machine design delegates more responsibility to the machine worker. Moving parts are designed to minimize their danger and are properly indicated with signing, but they are not always completely isolated from the worker.

Historical differences in standards and testing and certification procedures. The second cause of trade barriers is when technical standards, defined and respected by manufacturers, trade organizations, insurance companies, and the like, differ between two countries. Users and prescriptors of the good in question then are reluctant to use a foreign product that complies to a different set of standards. Differences in standards--often the result of historical differences in the degree of industrialization among member states at the time of admission to the Community--therefore creates its own class technical trade barriers, albeit ones which are not based in law.

A good example of the second fundamental cause of technical barriers, which also makes obvious the difficulty or impossibility of their removal, is the custom of right-hand drive in the British Isles and the Republic of Ireland. It is not illegal to own and operate a vehicle designed for left-hand drive, but a hundred years of road design and consumer habits combine to make it impossible to penetrate the automobile market with left-hand drive cars. In this case, of course, it is unlikely the difference will ever be resolved.

Another example of this type of technical barrier are the DIN versus AFNOR versus BPI systems of standards for building materials in Germany, France and the UK, respectively.

The removal of technical barriers has been and will be accomplished easily for some and with much more difficulty for others. In examining the various sectors covered in this study, two reasons appeared that explain why certain technical trade barriers are difficult to remove :

- Protection of special interests
- Protection of a strategic industry

In each of these cases, the "official" explanation or justification of barriers is based on differences in values between two countries. However, looking behind the official explanations, one or both of these reasons can be identified.

"Protection" of special interests. This is perhaps the most common reason why technical trade barriers are erected and or why they are difficult to remove. Examples of this class of barriers abound. In Italy, duram wheat used in the production of pasta is produced by a relatively small but powerful group of farmers in the southern part of the country. Pressure exerted by this group has led to the continued enforcement of the pasta purity legislation in Italy. The "official" explanation of this legislation is to protect the consumer from poor quality pasta--something, it must be added, the consumer may do for himself by not purchasing it. Other examples include the restriction against the use of the sweetener aspartame in soft drinks in France--thereby protecting the sugar industry--and the individual approval required by European PTTs for telecommunications equipment--to protect domestic manufacturers.

"Protection" of strategic industries is the second common reason why barriers are difficult to remove. Many European governments use selective procurement and certification policy as well as incompatible standards to protect industries deemed of strategic importance. The pharmaceutical, automobile, and telecommunications equipment industries are all protected by member states, in part, through the erection of technical trade barriers.

As a case in point, the automobile industry Community Directives exist for 41 out of 44 essential requirements of an automobile. The three that remain are relatively unimportant in themselves: weight and sizes, tyres, and wind screens. However, certain member states are resisting the completion of these directives for fear of losing complete control on the inflow of extra-community imports.

C. How has the European Community approached this problem ?

Before going further, it will be useful to review the Commission's approach to the problem of technical trade barriers and clarify some of the jargon that has arisen on this subject. The reader may find that a basic understanding of the often misunderstood concepts such as "the new approach", "mutual recognition", and "reference to standards" will advance significantly his appreciation of technical trade barriers.

The principle of mutual recognition derives from the "cassis de dijon" ruling which is based on Article 30 of the Treaty of Rome(2). It simply means that a good lawfully produced and commercialized in one country of the EEC should be able to be freely transported and sold in another member country, without being modified, tested, certified, or renamed. Mutual recognition, therefore, is the first tool the Commission has at its disposal to ensure the free flow of goods.

The principle of mutual recognition breaks down legally and practically concerning each member country's obligation to protect public health, safety and the environment. Specifically, if one country maintains a different philosophy on how to protect health, safety and the environment, from another country, then it may prevent the free circulation of goods. This right is guaranteed by Article 36 of the Treaty of Rome(3), and is a genesis of technical trade barriers.

In those instances where two countries differ concerning how to protect safety, health and the environment, the only solution to ensuring free trade is for the member countries to agree to a **harmonized** set of regulations. Harmonization takes the form of **directives** which are legal, Community wide proclamations that state the measures with which a product must comply to be commercialized in any country of the Community. If a good is produced according to these measures no national legislation can prevent its commercialization in a given country (4).

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(2) Article 30 : "Quantitative restrictions on imports and all measures having equivalent effect shall, without prejudice to the following provisions, be prohibited between member states".

(3) Article 36 : "The provision of Articles 30 to 34 shall not preclude prohibitions or restrictions on imports, exports or goods in transit justified on grounds of public morality, public policy or public security ; the protection of health and life of humans, animals or plants, the protection of national treasures possessing artistic, historic or archaeological value, or the protection of industrial and commercial property Such prohibitions or restrictions shall not, however, constitute a means of arbitrary discrimination or a disguised restriction on trade between Member States"

(4) More recently, Article 100A recognizes the right of member states to adopt yet stricter regulations than those contained in Community directives when justified by Article 36 (ie., for protecting health, safety and the environment,) and thereby prevent entry of goods which comply to the Directive but not their own regulations. However, as no actions on this basis have been undertaken, the procedure and impact of Article 100A cannot be clearly evaluated.

Article 100A, paragraph 4 : "If, after the adoption of a harmonization measure by the Council acting by a qualified majority, a Member State deems it necessary to apply national provisions on grounds of major needs referred to in Article 36, or relating to protection of the environment or the working environment, it shall notify the Commission of these provisions. The Commission shall confirm the provisions involved after having verified that they are not a means of arbitrary discrimination or a disguised restriction on trade between member states ..."

From the 1960's to the early 1980's, the European Commission went about the process of developing "harmonization directives" in all areas where the principle of mutual recognition proved ineffectual. However despite the considerable efforts of the Commission, this proved to be a failure(5). Basically, directives got bogged down in defining technical product specifications, which, given the need for unanimous approval by the member states, delayed the approval process. As a case in point, the harmonization program for foodstuffs drawn up in 1973 listed far in excess of 50 directives to be put in place. By 1985 only 14 directives had been adopted.

Enter the **new approach**. In the often cited "white paper", simply entitled "Completing the Internal Market" the Commission described a new approach to the intractable problem of technical trade barriers. The new approach simply argues for a different orientation of directives--away from a detailed specification of technical standards, toward a simple outline of the principal features that products must have. These features were called the **essential requirements**, because they contain only what is essential for the protection of health, safety and the environment and exclude peripheral technical matters. In place of the detailed technical specifications, "new approach" directives include a **reference to European standards**, which are standards drawn up outside the Commission by European standardization bodies (eg CEN, CENELEC, CEPT, etc) and based on mandates included in the directives. Compliance with these standards ensures that the "harmonized essential requirements" are met, thus guaranteeing access to all EC markets.

In simple terms, Commission directives are no longer to include detailed specifications of how a product should meet an essential requirement, but simply state what that requirement is, and then refer to a European standard as a favored means of proving conformity. In theory, this reorientation should increase the speed and flexibility of the Commission and thus contribute to the reduction of technical trade barriers, which is the ultimate objective.

The new approach provides a number of benefits. It allows the Commission to delegate to standards institutes what the Commission is illequiped to do and what the institutes presumably do well: specify technical standards. Likewise, it limits the content of directives to a specification of the minimum essential requirements for protecting health, safety and the environment, that if met, guarantee a product commercial access to any country in the Community (though see (4) above). Such a narrower scope for directives should speed up the process by which they are written and approved.

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(5) See Pelkmans, Jacques, "The New Approach to Technical Harmonization and Standardization", Journal of Common Market Studies, March 1987.

In parallel with the new approach, two developments of this decade should considerably improve the Commission's ability to speed up the approval of directives and to slow down the creation of technical trade barriers. In reverse chronological order, the **Single European Act** of 1987 permits the Council to adopt Commission directives with a simple majority vote, rather than the previously required unanimity.

Second, the Mutual Information Directive of 1983 obliges member states to notify the Commission in advance of draft technical regulations and standards. It also gives the Commission the power to delay the implementation of national legislation by one year in order to prepare a directive to combat the trade restricting nature of the legislation.

Having now an appreciation of what technical barriers are, their origins, and how the Commission is trying to remove them, it is appropriate to examine next some of these barriers in more detail.

III. THE EXISTENCE OF TECHNICAL BARRIERS IN SIX INDUSTRIES

A. The incidence of technical trade barriers in six industries

Although the purpose of this exercise was not to develop an exhaustive picture of the existence of technical trade barriers in each of the six industries, discussions with industry participants and Commission officials allow the author to present a partial view as to the relative existence and incidence of barriers in each industry (see exhibit 1).

EXHIBIT 1

Industry	TYPES AND INCIDENCES OF TECHNICAL BARRIERS		
	Standards	Regulations	Authorization & Certification
Foodstuffs	0	XXX	0
Pharmaceuticals	0	0	XXX
Automobiles	0	XX	XXX
Building Materials	XXX	XX	XXX
Electricical Products and Machines			
Hi voltage	XXX	XX	XXX
Low voltage	0	0	0
Telecommunications	XXX	0	XXX

Legend : XXX high incidence/impact on trade
XX intermediate incidence/impact on trade
0 low/non-existence.

For each sector, the table shows the type of trade barrier (see chapter 2 above) and the relative incidence or impact on trade. While highly subjective, a few features of the table are of interest. Notably, the existence of regulations is more important in the sectors which directly affect human health and safety (eg, foodstuffs) compared to those where it is less of an issues, (eg, telecommunications and building materials.) Additionally, duplicative testing and certification procedures creates technical barriers in all sectors save low voltage electrical products, the latter benefiting from a directive on low voltage appliances (76-23-EEC.)

On a sector by sector basis, the types of barriers are quite different. In **foodstuffs** because of the extreme sensitivity of public opinion in this field standards are almost non-existent and regulations abound. This, combined with the diversity of the Community's culinary traditions, creates an environment favorable for the existence of trade barriers caused by differences in regulations. In a recent study on foodstuffs, the MAC Group identified over 200 technical trade barriers of the regulation type in just ten

product sectors, and this was not an exhaustive list (6). Interestingly, in foodstuffs, few barriers are created from certification and testing procedures.

Technical trade barriers caused by regulations fall into three general categories:

- product composition laws relating to use of a generic product name
- specific ingredient restrictions
- packaging and labeling laws.

Technical trade barriers in the first category are created when a member state restricts the use of a generic product name, such as pasta or beer, to products produced according to a specific recipe. If products do not comply to the recipe, they may not be commercialized under the given product name, which presents obvious marketing obstacles to the producer/importer. Though these barriers are flagrant, they are also increasingly subject to direct and indirect legislative action. The Cassis de Dijon and Reinheitsgebot court rulings have set powerful precedents in this area.

The second and third categories of barriers are the most troublesome from the standpoint of their removal because of the recourse member governments have to Article 36. Specific ingredient restrictions, as the term implies, are those laws that prohibit the use of additives in certain products. The prohibition of aspartame in soft-drinks in France is a good example. Aspartame is a sugar substitute used in diet soft drinks in many European countries and the US (where it received approval from the often stringent FDA). The use of aspartame in soft-drinks in France was illegal, ostensibly for reasons of protecting consumer health. Industry insiders admit,however, that this restriction was in fact the result of successful lobbying efforts by sugar producers and distributors.

Like specific ingredient restrictions, packaging and labeling laws also specify requirements, which if not met, prohibit the sales of a product in a given country. These laws are often justified as means to protect consumers and the environment. Restrictions against the use of plastic bottles for mineral water in over 150 Italian municipalities is justified, argue the local authorities, for air pollution reasons. However, substitute measures could achieve the same end (eg, a deposit/recycling program) and the restriction places foreign mineral water producers (mainly French) at a severe cost disadvantage compared to local producers. The infamous Danish returnable bottle law imposes a similar transportation cost disadvantage on foreign beverage companies. Partially as a result of this barrier beer imports into Denmark account for less that 0.1% of total consumption.

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(6) The MAC Group, "Research on the Cost of Non-Europe in the Foodstuffs Industry", (see Annex)

Due to the inherent critical nature of health and safety in **pharmaceuticals**, standards are non-existent (like in foodstuffs) and required technical specifications are upheld through national legislation. Twenty years of harmonization efforts by the Commission have fortunately given rise to eleven basic directives and two Council Recommendations, which have harmonized the criteria of drug quality, safety and efficacy. However, severe technical barriers remain in the testing and certification of drugs.

Each EC country requires a separate marketing authorization for pharmaceuticals. If a product is to be admitted to a particular national market is must first receive approval by the national registration authority. Therefore, in spite of the harmonization of approval criteria, differences exist in the authorization decisions made by national authorities. Price regulation and the placing of drugs on reimbursement lists are two other significant features in the Community's pharmaceutical industry, which,though not technical trade barriers in themselves, are used by member states to regulate the pharmaceutical industry.

Differences in standards play a small role too in the genesis of technical trade barriers in the **automobile** industry. Regulations play only a moderate role, given that 41 out of 44 "essential requirements" have been harmonized across the community. The most notable sticking point on regulatory differences are exhaust emissions, where Denmark remains steadfast on imposing stricter requirements than other Community members. It is, however, in the area of testing and type approval where the most important technical trade barriers exist in the automobile industry. More will be said about this below.

A recent study found that 70% of a sample of 50 **building material products** faced differences in norms--both standards and regulations--across the principal five countries in the Community(7) (8). These differences coupled with different certification and testing methods in each country plague the construction products industry with a seemingly disproportionate number of technical trade barriers. Northern European countries such as Germany, France and Great Britain suffer the greatest differences in standards and regulations.

Perhaps more than the other sectors considered in this study, the barriers against the use of foreign products are deeply entrenched and diffused among many participants in the building products industry. Because of the local nature of building materials and methods, craftsmen in one region may simply be unfamiliar or unsatisfied with products coming from another region, much less country. In France, Spanish roofing shingles are about 50% cheaper than domestic ones, owing to the geologic depth at which the slate is found in Spain compared to France. However, roofers in France are not familiar with using Spanish shingles because they have slightly different qualities which change how they are attached to the roof.

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(7) BIPE, "Le coût de la Non-Europe des produits de construction", (see Annex)

(8) The Commission is scheduled to submit to the Council later this year a draft "new approach" directive for buildings which should reduce technical trade barriers in the building materials industry. The directive seeks to harmonize seven essential requirements for buildings: stability, fire resistance, durability, energy economy, health/hygiene/ environment, user safety, resistance to noise.

Insurance companies also play a subtle role in creating technical barriers in this industry. Often, insurers will only insure various aspects of buildings if the building and the materials used in its construction comply with certain national standards. Architects and contractors, who could be held liable for accidents caused by faulty construction, resist using foreign products that do not correspond to the national standards, even though they may be otherwise suitable for the job.

Electrical products and machines must at a minimum be divided into two categories: low voltage products which are typically home appliances and high voltage products which are often industrial tools. Because of the low-voltage directive, technical trade barriers have been all but eliminated in this sector, which in itself is quite promising. Severe trade barriers remain however in the second product sector. These latter barriers, like building materials, are created by all three barrier types: differences in technical standards, regulations and certification and testing procedures. The case of wood cutting machinery will be discussed below.

Because **Telecommunications** equipment does not per se affect public health, safety or the environment,industry specifications are maintained through the respect of technical standards rather than legally based regulations. Moreover, these standards differ substantially from one country to another. However, due to the strategic nature of the telecommunications industry, and the fact that the state-controlled PTT is often the main buyer of equipment and thus can impose standards on the domestic industry, differences in standards and certification processes are only slowly being aligned. A recent paper developed for the Commission cites four main technical trade barriers in the telecommunications equipment industry(9):

- differences in standards
- over-specification of technical requirements
- excessively costly, complex duplicative testing procedure
- lack of clear administrative processes.

Apparently, both consumer premise equipment (eg PABX, telephones, etc.) and central office computers (eg public switching systems) are equally affected. The example of PABX will be discussed in some detail below.

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(9) Deutsches Institut fur Wirtschaftsforschung, "The Economic Benefits of a Common Concept for Telecommunications within the European Community" 1986.

B. Description of illustrative cases

This section examines technical trade barriers in more detail through six case studies,one for each industry considered. For each case study, we describe the technical trade barrier, evaluate it with respect to its origin and "justification", and present the potential economic impact of its removal.

Contained in the six examples are two cases of technical standards, two cases of regulations and two pure cases of testing and certification. Each case offers the reader a deeper insight into the causes and impact of technical trade barriers. Exhibit 2 presents the six barrier cases studies and their classification by barrier type.

EXHIBIT 2

TECHNICAL BARRIER	TYPE		
	STANDARDS	REGULATIONS	AUTHORIZATION & CERTIFICATION
Foodstuffs Pasta purity law		XXXX	
Pharmaceuticals Registration process			XXXX
Automobiles Type Approval			XXXX
Building Materials Building tiles	XXXX		XXXX
Electricical Products and Machines Wood cutting tools		XXXX	XXXX
Telecommunications PABX standards	XXXX		XXXX

Before describing these in more detail, it will be useful to briefly review a simple three criteria test used by the Commission to evaluate the justification--as guaranteed by Article 36-- of technical trade barriers imposed by member states to protect safety, health and the environment(10).

(10) A. Mattera, "les barrières frontalières à l'intérieur de la CEE et l'action menée par la Commission pour leur démantelement", Revue du Marché Commun, n°307, May-June 1987.

To wit :

- Criteria of causality : there must exist a direct cause and effect relation between the trade restrictive measure and the objective or "essential requirement" being pursued.

- Criteria of proportionality : the trade restrictive effects of the measure should not be disproportionate with respect to the objective being sought.

- Criteria of substitution : if another means exists to attain the objective that does not hamper trade, then this criteria is not met. The substitution criteria is perhaps the most important of the three.

Though these criteria were designed for evaluating adherence to Article 36, which necessarily concerns only legally imposed barriers to trade (i.e. technical regulations), they can be usefully applied to any technical trade barrier, including those caused by differences in standards. How then do each of these case studies stand up to the three criteria test ?

1. Foodstuffs

Composition rules are common in the European foodstuffs industry. Among the most significant from an economic standpoint are the so called pasta purity laws in Italy, France and Greece. This case study concerns the Italian version which was adopted as law in 1967.

Very simply, the law states that in order to use the generic product name "pasta", the product must be composed exclusively of duram wheat, as opposed to the less expensive soft wheat. Historically, the law was erected to help Italian duram wheat farmers (essentially in the South) secure a market for their product. The only other commercial use of duram wheat is for couscous, a market of considerably smaller size. Interestingly, before the law was erected, "mixed pasta" made with a combination of soft and duram wheat accounted for up to 50 % of Italian pasta consumption. After the law was introduced, this proportion fell to close to zero. This barrier falls under the category of a technical regulation (see exhibit 2) and like most foodstuffs it is not associated with a testing procedure.

With respect to the three criteria test, the case of the pasta purity law is quite clear from the author's perspective. First, causality ; it is not apparent that the consumer is "protected" by the pasta purity law. The consumption of mixed pasta does not pose a health risk and there is no reason to assume mixed pasta, which is typically associated with lower quality at lower prices, would "drive out" pasta made from duram wheat. In fact, industry experts believe a substitution of 10-20 % is the most likely scenario.

Second, proportionality ; the law effectively prohibits all imports of mixed pasta from other European countries where this form of pasta is consumed and produced (e.g. England, Holland, Germany.) Imports of pasta into Italy account for less than 0.05 % of total consumption.

Finally, substitution ; to the extent that consumers need to be "protected" from mixed pasta, this can be accomplished through labeling without the adverse trade hampering effects.

Thus the pasta purity law satisfies none of the criteria that could justify its existence from the perspective of article 36 of the Treaty of Rome. What are the "costs" therefore of this technical trade barrier.

Without repeating the analysis, the MAC Group has demonstrated the direct cost savings that could accrue to consumers from the removal of this law are the order of 20-60 million Ecu per year. These costs result from the savings that could be realized from the substitution of a lower cost ingredient, in this case, soft for duram wheat, in the production of pasta.

Indirect effects are likewise significant. In the short term, imports into Italy could increase dramatically, accounting for up to 5 % of consumption. This would then decrease as local pasta producers geared up their production facilities to serve the newly created product segment. In addition, the removal of the law could speed up the current industry consolidation taking place, ultimately helping extra-community trade in the process as larger more powerful pasta concerns are formed with an increased capacity to export.

2. Pharmaceuticals

From a technical barrier standpoint, testing and certification procedures are the most significant trade obstacles in the pharmaceuticals industry.

If a pharmaceutical product is to be admitted to a particular national market within the EEC it must first be approved by the national registration authority. Each authority is free to make its own decision. Closely linked to this are the pricing and reimbursement decisions that local authorities make on an individual drug basis. Drug registration, combined with pricing/reimbursement decisions, forms a potential barrier to the unification of the community pharmaceutical market. How does this barrier stand up to the three criteria test ?

From a causation standpoint, it can be argued that the testing and certification procedures do protect public health and thus pass the first criteria. However, testing and certification procedures fail the proportionality and substitution tests. Namely, the trade distorting effects coupled with the feasibility of either centralized testing (similar to the FDA) or a mutual recognition approach lead to a rejection of this barrier based on the criteria test.

The largest direct effects of the individual testing and certification processes are increased delays and administrative costs. At the present time no country can meet the official 120-day limit. The European average is in the 18-24 month range, but delays up to three years have been reported. The cost of delays and duplication for a company wishing to introduce a product across the community as a whole can be significant. One estimate has placed these costs on the order of 0.5-0.8 % of total industry costs within the community(11). Other industry observers have suggested that this could be an underestimate.

An indirect effect of this technical barrier is the continued fragmentation of pharmaceutical manufacturing throughout the Community. The high value per weight of the product lends itself to a strategy featuring centralized production and exports. However, currently some 250 pharmaceutical plants are scattered about the Community. Companies polled on this subject revealed that their direct investment in individual countries was practically a sin qua non of doing business. "If we were to close down our plant in--, we'd never get another price increase there." (11)

If however the industry could consolidate, the gains could be large. Benefits in terms of both labor and capital saved could amount to 0.3-0.8% of total industry costs.(11)

The overall implication is significant for the pharmaceuticals industry. Between 0.8-1.6% of total industry costs could potentially be economized if all technical barriers were removed.

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(11) See a study for the European Commission by Economists Advisory Group, "Research on the Cost of Non-Europe, The Costs of Fragmentation in the European Community's Pharmaceutical Industry and Market", (see Annex)

3. Automobiles

Like pharmaceuticals, the principal technical trade barrier within the automobile industry is in the area of testing and authorization procedures. Since the 1970's, the Commission identified and then went about the process of harmonizing 44 "essential requirements" that an automobile must meet in order to guarantee free shipment from one country in the Community to another. Today, EC directives exist for 41 of these requirements. The requirements which remain to be harmonized are tires, weight and sizes, and windshields.

The implication of this is that type approval from an EC standpoint is not feasible. Because directives do not exist for the whole gambit of essential requirements, type approval must take place on an individual country basis. In addition, neither the majority of industry members nor certain EC governments are in favor of trying to harmonize the remaining directives. Why would this be the case ?

Certain national governments, notably France, are concerned about controlling imports originating outside the Community. If local approval did not exist and if border customs checkpoints were eliminated, France would have more difficulty in stopping, say, Japanese imports from entering the country via a neighboring country. For this reason, some member governments are not supporting efforts to harmonize the remaining three directives. National manufacturers and their distributors are also concerned about extra-community imports. They have thus joined their governments in slowing down the harmonization process.

Examining the criteria test this author finds that none of the criteria is met. Given 41 requirements are already harmonized, type approval is not necessary for protecting health, safety of the environment (causality). It thwarts the free movement of goods across community borders (proportionality) ; and public health, safety and environmental requirements could be equally well upheld through finishing the harmonization task coupled with mutual recognition of testing and certification procedures (substitution).

If automobiles could be approved in just one country and then be freely exported to other countries, the direct cost savings could range from 14-22 million Ecus[12]. Indirect benefits include increased consumer choice, namely the freedom to purchase cars anywhere in the Community for domestic consumption.

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(12) Based on a study for the EC Commission by Ludvigsen Associates Limited "Research on the Cost of non-Europe - The EC92 Automobile Sector : Executive Summary", (see Annex)

4. Building Materials

Not unlike different recipes in foodstuffs, the fragmented nature of building materials used throughout Europe have contributed to a large, though predictable, body of technical trade barriers in this sector. Many examples exist where building material manufactures of one country, often working with standardization organizations, erect all three types of barriers to prevent competition from abroad. Building tiles provides a good example.

The market for glazed and unglazed building tiles is large, approximately 3.2 billion Ecus per year, owing to the common use of these products in both public and private buildings. The European market is dominated by Italy and Spain, who between them posses a 79 % share of the total volume of production (see exhibit 3).

EXHIBIT 3

PRINCIPAL PRODUCERS OF BUILDING TILES	1985 PRODUCTION (MILLION SQ. M)	SHARE OF EC PRODUCTION
Italy	300	58%
Spain	110	21%
Germany	40	8%
France	25	5%
Other EC	45	9%
Total	520	100%

Source : BIPE

In addition, the Spanish and Italian products are less expensive than their European competitors (see exhibit 4).

EXHIBIT 4

PRODUCING COUNTRY	PRICE INDICES (SPAIN = 100)*	
	GLAZED	UNGLAZED
Germany	193	249
Denmark	142	268
France	127	172
Holland	115	183
Italy	126	163
UK	98	116
Spain	100	100

Source : BIPE
Note : Price index based on 1980 export prices

In France, domestic tile manufacturers feeling pressure from Italian and Spanish competitors worked through AFNOR to create an especially stringent standard for tiles (UPEC). Any building material expert will admit this standard is overly restrictive with respect to the essential requirements it should be designed to protect.

Given this is a standard and not a regulation, non-standard tiles may still be sold in France but they may not be used in public works (about 40% of the market) and architects and building engineers are reluctant to use them. If an accident occurs as a result of the non-standard tiles, insurance companies could refuse damages claims.

The standard is coupled with a certification process, which reportedly can take from several months to a year's delay. Moreover, the product must be tested and certified on an annual basis. Together these technical barriers have effectively reduced the flow of tiles into France from its southern neighbors. Reportedly, similar standards and testing procedures are being developed in Germany, Holland, and the UK[13].

Like type approval for automobiles, the technical trade barrier for tiles fails all criteria and therefore is difficult to justify on legal grounds. While this particular example is a candidate for mutual recognition, other building material products, due to their safety and public health implications, could require a harmonization of standards.

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(13) A draft directive on construction materials should help to eliminate this trade barrier. See "Proposal for a Council Directive on the approximation of the laws, regulations and administrative provisions of the member states relating to construction products (Com (86) 756 final/3)

The direct costs of the trade barriers for building tiles are important. If these restrictions prevent Spanish producers from doubling their marketshare in France, (their current share is about 10%), they are costing French consumers about 3% of the value of their domestic expenditures on tiles, or $15 million.

Indirect effects could also be pronounced. Tile manufacturing lends itself to significant scale economies. In a barrier free EC, it could be expected that significant consolidation in the tile industry would take place. Centralized production units would serve distant markets through exports programs. Overall, this should exert downward pressure on prices, further benefiting consumers.

5. Electrical Products and Machines

Given the low voltage directive has all but eliminated technical trade barriers in household appliances, it is more revealing to draw a case from the high voltage sector. The case of wood working machines has been chosen, based on a recent paper submitted to the Commission(14).

Regulations for the commercialization of wood working machines, differ significantly in France as compared to Germany, Italy and the UK. In France, additional safety devices (protective hoods) are required and machines must be tested and approved through the Minister of Labor. In addition a separate testing and certification process is required. The testing procedure must be repeated for each type of machine to be imported and takes from six months to a year to complete. By comparison, similar tests in Italy, Germany and the UK take two to three months.

In this case, the three criteria test is less clear. It could be argued that protective hoods are necessary for the safety of the French workers. The fact that other countries do not require the same measures is a philosophical difference in the needed level of protection. One implication is that the simple policy of mutual recognition would not resolve the problem, and a harmonization would be necessary. However, the cumbersome testing procedure and delay cannot be readily justified by the criteria test.

EC suppliers of wood working machinery have reacted in different ways to this trade barrier :

- Many, notable UK suppliers, do not attempt to export to France,
- Italian manufacturers have modified their products and export only a standard model to France, thereby economizing on testing costs,
- German suppliers export only machines with an automatic feed mechanism, which circumvents the worker safety requirement.

It has been estimated that the direct impact of the French regulations and testing procedures increases the cost of imported machines by 20-30% of the machine's value. If technical regulations were harmonized at a "non-French" level, scale economy (indirect) effects on the order of 3-5 % of production costs could also be realized(14).

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(14) Gewiplan, The "Cost of non-Europe" some case studies on technical barriers.

6. Telecommunications Equipment

A recent paper by the DIW[15] presents convincing evidence on the existence of technical barriers in the PABX (private automatic branch exchange) market and it is to this topic that we now turn for the sixth and last case study.

The principal thesis is that the EC market for PABX is fragmented as a result of differing national technical and regulatory standards. This arises from two sources which correspond, once again, to differences in technical standards and a costly testing and certification program :

- differences in standards and over-specification of requirements,
- excessively costly, complex and duplicative testing procedure without clear administrative processes.

Despite efforts to harmonize standards, differences still exist across major EC members. In addition, standards are imposed "... well beyond those needed to avoid network damage"[15].

Besides differing standards, delays surrounding the approval process and the lack of a formal appeal procedure compounds the technical trade barrier ; foreign companies may not have enough confidence in the integrity of the approval process to even attempt to obtain approval for their products. Below is a table comparing the various delays and appeal procedures across major EC countries with those of the US[15].

COUNTRY	DELAY	APPROVAL	FORMAL APPEALS PROCEDURE
Belgium	3-6 months	PTT	No
France	12 months	PTT	No
Germany	6-12 months	PTT	No
Italy	6-12 months	PTT	No
UK	3 months (min)	British Approval Board	Yes
US	less than 10 weeks	FCC	Yes

(15) Deutsches Institut fur Wirtschaftsforschung, "The Economic Benefits of a Common Concept for Telecommunications within the European Community" 1986.

The three criteria test could be met, if indeed the network could be damaged by use of certain PABXs and thus jeopardize the public interest. Mutual recognition, for similar reasons, cannot be the solution, so a harmonization of standards appears too be the answer for removing technical barriers in this sector. As for testing and certification, a number of measures should be taken, among them, disassociating the PTT's from the direct approval decision, reducing the delays, and instituting a formal appeals process.

One direct impact of removing the technical barriers will be the reduction in costs incurred for PABX approval. However, the most important direct benefit of harmonizing PABX standards and eliminating the type approval procedure are the cost savings certain countries may enjoy as a result of importing lower cost equipment. The case of Germany provides a good example.

PABX manufactured prices are over twice as high in Germany as those in France. Yet, because a French manufacturer would have enormous difficulty in obtaining approval in the Bundespost, PABX exports from France to Germany are almost non-existent. The following table shows price differences for small to medium PABXs, and the direct cost savings that could accrue to German consumers if the German market were open to lower-priced French products.

PABX	VOLUME IN GERMANY (000 Lines)	PRICE/LINE (DM)		POTENTIAL COST SAVINGS (*) (000 DM)	AS % OF MARKET VALUE
		GERMANY	FRANCE		
2-29 lines	54.1	875	323	1493	3.2%
30-50 lines	133.2	826	302	3489	3.2%
51-100 lines	106.1	777	268	2700	3.3%
Total PABX	293.4			7682	3.2%

Source : Industry statistics, 1985 ; furnished in confidential interview.

* Assumptions: French manufacturers obtain 10% share of market ; one half of the price difference remains after the export market opens.

The table suggests that a direct cost reduction of over 3 % of total expenditures on PABXs (equipment only) could be realized if French manufacturers could capture a 10 % market share in Germany.

Indirect benefits are equally compelling and include :

- reducing the current fragmentation of the PABX industry allowing it to enjoy the significant scale economies in production and r&d,

- increasing the incentive to experiment, which will aid the inovativeness of the European industry,

- reducing entry barriers to encourage start-ups of small firms wishing to attack selected market niches.

All these features should increase specialization among current producers, encourage trade, and strengthen the EC industry with respect to global competitors.

IV. CONCLUSIONS

- The elimination of technical trade barriers is a sin qua non condition for creating a single EC market in 1992. Businesses polled on the subject view technical trade barriers as one of the two most severe obstacles to trade within the Community.

- Significant technical trade barriers exists in each of the six sectors considered in this study. Of the six specific technical trade barriers examined, none indisputably met, in the author's view, all three criteria which "justifies" a technical trade barrier.

- All member countries have similar goals for protecting health, safety and the environment. Differences on how these goals should be reached accounts for a large reason why the technical trade barriers exist. Two additional reasons explain why certain technical trade barriers are especially difficult to remove :

  . protection of special interests,

  . protection of a "strategic industry".

- In theory, the principle of mutual recognition and the (ongoing) harmonization of essential health, safety and environmental requirements should eliminate technical trade barriers. In practice, this has not yet been the case. Because of the manoeuvres of member countries, the inherently slow process of adopting EC directives, and uncertainties businesses have about legal recourse, technical trade barriers have proved extremely difficult to overcome.

- The new approach to removing technical trade barriers, and the harmonization of standards that it promotes, should speed up the process of removing technical trade barriers.

- Removing barriers will generate economic benefits to both producers and consumers throughout the Community. In the six sectors studied, the existence of technical trade barriers reduces consumer choice, delays the introduction of new products, and causes higher relative prices for similar products.

The "Cost of Non-Europe":

Some Case Studies on Technical Barriers

GEWIPLAN

THE "COST OF NON EUROPE":
SOME CASE STUDIES ON TECHNICAL BARRIERS

FULL REPORT

THE "COST OF NON EUROPE":
SOME CASE STUDIES ON TECHNICAL BARRIERS

FULL REPORT

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Content

I. GENERAL INTRODUCTION

1. Preface

The EC Commission's 1985 White Paper on "Completing the Internal Market" highlights the removal of technical barriers to trade as one of the central issues to be resolved if the community is to realise its goal of a single internal market without frontiers by the end of 1992. But information on the costs of technical barriers tends to be anecdotal and impressionistic. The present study aims to provide concrete detail about the extra costs imposed on European business in five product areas for four countries. The report covers a number of specific products in the following areas: low voltage products, wood-working machines, fire protection products, lifts and weighing equipment. Information on production, trade and the regulatory environment was examined for the UK, West Germany, Italy and France.

The report begins by discussing a number of general conceptual issues. However, in view of the specificity of each study, the data gathered in each case are left for further analysis by readers and the present report does not offer generalized conclusions.

2. Definitions

Regulations are defined as technical standards, technical regulations and technical certification.

Technical standards are voluntarily agreed codifications of the form, functioning, quality, compatibility and/or exchangeability of methods, products, processes and services. The features distinguishing them from technical regulations consist of their non-binding character (in terms of public law) and the self-interest of all participants.

Technical regulations are specifications as to form, construction, performance (etc.) of products, service and sometimes even of processes and methods, included or referred to in public law, with the purpose of serving the public interest, in particular objectives of health, safety, environmental and consumer protection. The legal basis and the public interest constitute the properties that distinguish technical regulations from standards.

Technical certification comprises an array of arrangements such as technical inspection, testing and comparisons, for the purpose of identifying conformity to given standards or regulations. The evidence is usually found in testing reports. For simplicity, products may carry and marketing may employ approval signs and conformity of certification marks.

It is useful to distinguish four categories of standards dependent on their function:

- information standards are a prerequisite for (technical) communication in that they carefully describe dimensions,

terminology, criteria, measurement units and other functional and conversion systems;

- variety reduction standards aim to reduce the (unnecessary) number of components or parts or processes (or products on services);

- compatibility standards are concerned with the compatibility of components, complementary products, processes, protocols or services or the interchangeability among (competitive) parts or products;

- quality standards define minimum requirements for reliability, durability, etc., of materials, processes, products or services, including aspects of safety, health and environmental protection.

The four categories of standards may or may not be related to technical regulations and technical certification. They may be operational, in principle, at four levels: the firm, the country, a region of several countries and the world.

3. Reasons for regulations

In all countries relevant to the study there is a considerable catalogue of regulatory measures for which there are a number of influence factors, for example:

- A considerable amount of national regulations is based on the correcting of undesirable market results.

- National regulations which were enforced in crisis situations remain in force when the crisis is over.

- Demand for regulation is repeatedly created by economic, technical and social change but out-dated regulations are not successively withdrawn (sediment forms on the regulations with the corresponding staleness).

- National intervention is frequently accompanied by a certain self-dynamic. What is meant is the often complained about perfection of law which is created if administrations fill the demand for current regulation without consideration of the loop-holes in the law which appear later and which then have to be removed.

- Once installed, some regulations have unintended consequences which have negative/undesirable effects on those concerned. In this way there is yet again a need for new regulations if, for certain reasons, the existing regulations cannot be abolished.

The fact that regulations exist is irrelevant - relevant are the effects.

Several effects can be differentiated:

- In many cases, the original standardization was thoroughly in the interests of those it addressed. In the field of economics, regulatory intervention which restricted competition was principally welcomed by those concerned; such as a national regulation of commercial road haulage which prevented competition which endangered the existence of firms.

- Thoroughly more negative is the corporate interest lobby concerning standards which increase costs without bringing them themselves or the branch as a whole, any immediate benefit e.g. as is the case with environmental protection. However, in this case it must also be taken into consideration that certain environmental standards, or safety standards will become mandatory conditions for all firms within a branch, and therefore the companies concerned (at least in the domestic market) need not necessarily fear competitive disadvantages. However, competitive disadvantages could arise in international trade.

- Lastly there is also the case of relatively interest-neutral regulations in which nations merely stipulate that which was more or less the previous practice.

Existing regulations represent a possible trade barrier, however, of greater importance are the individual national differences.

These national differences primarily exist in the areas of technical certification. Varying testing regulations for example, lead to varying demands on products causing consequent product modification, as is the case with fire protection materials. This example also shows that evaluation of the impact of a harmonization of regulations often requires product specific considerations.

4. The position of the EC

The European Community has refined its approach to technical barriers in recent years. The Treaty of Rome from the outset outlawed all measures equivalent to quantitative trade barriers (Article 30) and Article 100 gave the Council of Ministers power to harmonize national legislation, including technical regulations where this was necessary for the creation of the Common Market, but until recently progress has been slow. This was largely because the Commission and the Council became involved in excessive technical detail in drawing up harmonization directives.

The "Cassis de Dijon" judgement of the European Court of Justice in 1978 based on Article 30 enunciated the principle of Mutual Recognition. Anything lawfully produced in one member state would be acceptable in any other. Such a concept had already been essentially embodied in the 1973 Low Voltage Directive (see below). The principle of Mutual Recognition is however subject to qualifications, on grounds for example of public health, by Article 36. There is still an important domain for community-wide harmonization. Since 1985 the Community has adopted a new approach to harmonization. Harmonization directives no longer spell out product design in detail, but simply specify the essential features, notably for safety purposes, leaving manufacturers to decide how they will meet the requirements in detail. Where standardization is needed beyond what can be contained in a Community directive, there is "reference to standards". The task of laying down detailed norms compliance with which will satisfy the requirements of the directive is then delegated to the European standards bodies CEN and CENELEC. The Commission is also generally promoting the work of these bodies.

Two further legal developments strengthen the Community's hand in the sphere of removing technical barriers. The 1983 Mutual Information Directive requires member states to notify the Commission of draft technical regulations, which may be blocked for a year if they create trade barriers; and with the Single European Act, the new Treaty Article 100a facilitates the adoption of harmonization directives by majority voting in the Council of Ministers, though subject to Article 36.

The Community has thus developed a wide and flexible range of instruments for dealing with technical barriers.

II. OBJECTIVE AND METHODOLOGY

1. Objective

The task of the analysis is twofold: to identify the existing regulations which impeed a free flow of goods; and to evaluate the costs of a non-realisation of a domestic market; i.e. the benefits which could be achieved through a domestic market. In this respect, it is not the regulations as such which are of relevance, but their divergence. Analysis of the divergent regulations concerns their hindrance of a free flow of goods. The study aims to describe the manner and extent of the hindrance of a free flow of goods between

- Great Britain
- France
- Italy
- West Germany.

Of relevance are:

- low voltage products
- wood-working machines
- fire protection products
- lifts
- weighing equipment

2. Methodology

Completion of the tasks comprised several phases.

2.1 Specification of the products

Consideration of the following facts required a specification of the product groups according to products:

- relative short time period for the analysis
- low available budget
- the effects of regulations can only be described if the products are closely connected.

Several meetings with the client to discuss these facts resulted in the following products being deemed the basis for further work.

product group:	wood working machines
relevant products:	- planing machines -- single-spindle type -- multi-spindle type
product group:	testing and measuring equipment
relevant product:	- weighing machines, especially mechanical weighing machines for consumer purpose (household and kitchen balances)
product group:	low tension products
relevant products:	- household dishwashers - HAR[1)] cables

1) PVC-isolated cable for household products

product group:	fire protection
relevant products:	- doors (inhouse) - plates (inhouse)

product group:	electrically driven lifts
relevant products:	- electrically driven passenger lifts - electrically driven material lifts

It should be noted that:

with the exception of the products wood-working machines and lifts, the client presented no clearcut ideas.

In the case of wood-working machines

- planing machines
  -- single-spindle type
  -- multi-spindle type

were selected under the aspect of

- a conventional product
- a new technique.

The EN-81 was at the fore in the case of lifts, i.e. information on the effects of harmonised regulations was to be obtained. This aspect also led to

- dishwashers
- cables

being selected from the numerous low-voltage products.

Weighing equipment was selected under the aspect of a quasi-harmonized product, whereas with fire-protection doors and plates, the possible effects of non-harmonized regulations are of interest. The importance of the different products within a branch played no part in the selection of the products.

2.2 Project realization

The project work for each country was conducted by:

- Italy: GEWIPLAN Italia, Milano
- France: Mr. Naciri

  , Grenoble
- Great Britain: Atkins Planning, Epsom
- West Germany: GEWIPLAN, Frankfurt/M.

Project coordination was conducted by GEWIPLAN in Frankfurt/M.

The national consortium members are responsible for the following work:

- Market
- Regulations
- Effects of removing regulations

The first phase of the project was the carrying out of intensive desk research by each national team aimed at obtaining all available information on the products, e.g. production, foreign trade, and market volume.

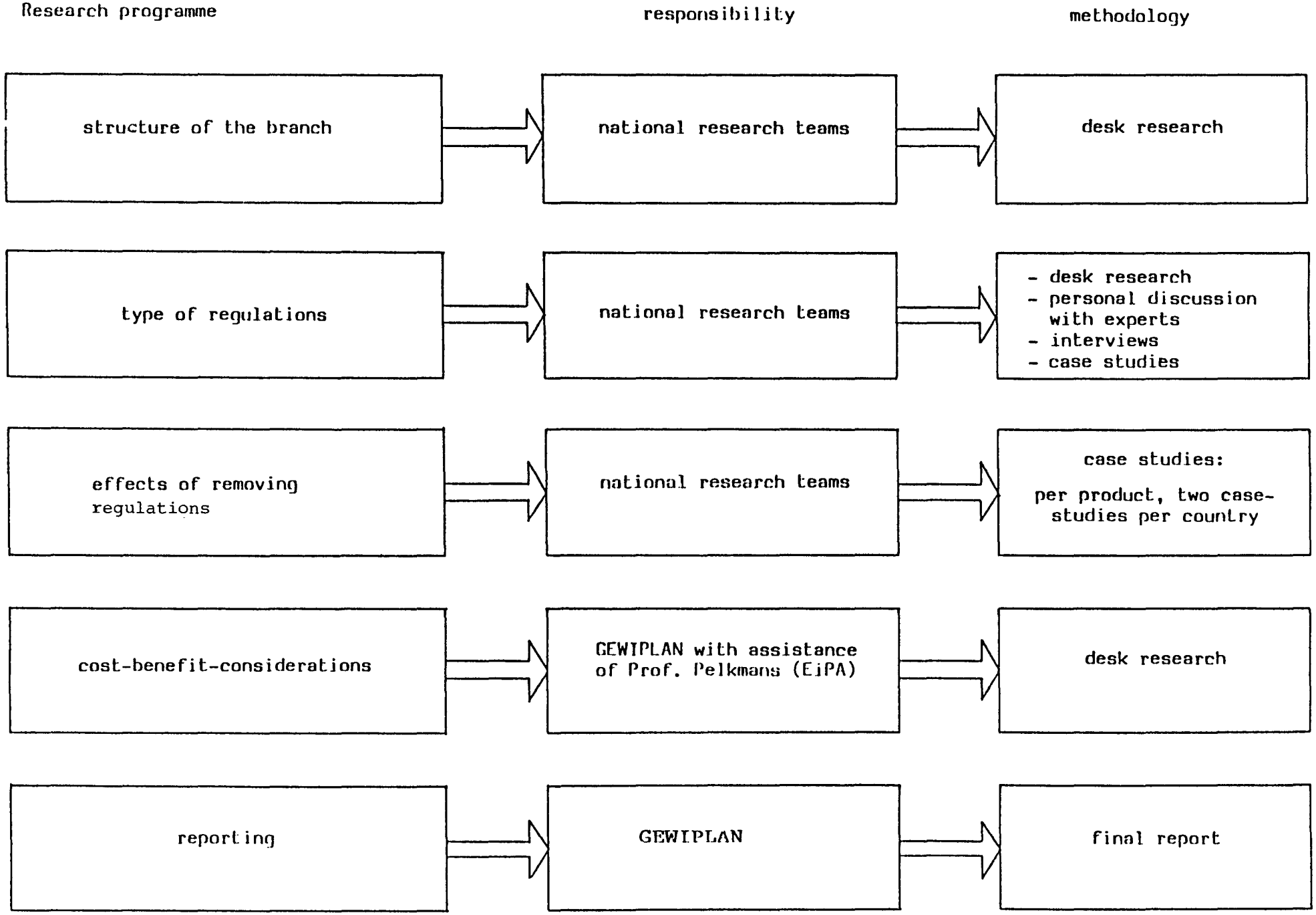
The second stage involved identification and interviewing of relevant suppliers. Interviewing was carried out in the form of case-studies. The total number of case studies conducted was as follows.

Products	UK	France	Italy	FRG	Total
wood-working machines	4	3	4	5	16
weighing equipment	5	2	3	2	12
low tension products:					
- dishwashers	-	1	2	3	6
- HAR cables	5	3	2	3	13
fire protection products:					
- doors	5	2	2	3	12
- plates	4	2	2	4	12
lifts	3	3	3	4	13
Total	26	16	18	24	84

It should be noted that a total of one-two case studies per product were offered but that a total of 84 were actually carried out. This is justified by

- the altered content of the aims made clear at the first symposium in Brussels
- the willingness and the ability of the interviewees to give information.

The results of the case studies are contained in section IV, sectoral analysis. The case studies serve to show the possible effects of removing technical barriers.


Research programme
responsibility
methodology
structure of the branch
national research teams
desk research
type of regulations
national research teams
- desk research
- personal discussion with experts
- interviews
- case studies
effects of removing regulations
national research teams
case studies:
per product, two case-studies per country
cost-benefit-considerations
GEWIPLAN with assistance of Prof. Pelkmans (EiPA)
desk research
reporting
GEWIPLAN
final report

III. THE ECONOMIC IMPACT OF REMOVING TECHNICAL BARRIERS

1. Removing Technical Barriers

Removing technical barriers refers to activities with respect to technical standards, technical regulations and technical certification.

This differentiation is of importance for proceeding description because technical standards are based on a voluntary agreement between firms, whereas technical regulations are mandatory; technical regulations predominantly concern environmental and safety aspects which are primarily intended to protect national interests. Checks on adherance to the technical regulations frequently necessitates a control procedure which leads to technical certifications. The actual problem regarding technical barriers is not so much the possibly different technical standards but more the technical regulations and technical certification.

As stressed previously, technical standards are of a voluntary nature; technical regulations have a predominantly legal character primarily involving the implementation of national environmental and safety measures. Internationally active companies themselves are interested in orientating the national technical standards to international practice (e.g. ISO). The expert discussions conducted made it clear that the companies consider technical standards as unproblematic with regard to an international exchange of goods. Of greater importance is the fact that technical regulations and technical certification are so structured that they create trade barriers which impede the exchange of goods. This fact was evident in the case of the products, wood-working machines (safety aspects), weighing equipment (inspection aspects) and fire protection products (safety and inspection aspects). The technical regulations are of a partially prohibitive

nature in the case of wood-working machines and, to a certain extent for fire protection products and weighing equipment.

2. Effects of removing technical barriers

The economic impact of technical barriers can be expressed in terms of the cost of their presence or the benefits of their removal - there is no difference. It is more a question of a difference in points of view (negative or positive). Harmonization of the varying technical regulations can lead to direct and indirect effects. Direct costs are those that result immediately and mechanically from the barriers. Indirect costs are those that follow as a result of the direct cost.[1)] These definitions are based on the following considerations.

In the short run average costs schedules are given, that is, the technology, the capital/labour mix, the number of basic and intermediate inputs and the prices of all these elements are fixed.

As a harmonized regulation will imply fewer alternations or stops or the elimination of a special ingredient, the average costs of a given input will decrease. If production is characterized by increasing returns to scale, it implies a downward shift of the scale curve itself.

A decrease in variety, especially of components and intermediate goods, will tend to reduce storage costs as a lower percentage of overall output needs to be kept in store.

In the medium and long term it is possible for cost schedules to change e.g. improvement of technical efficiency, product differentiation, process innovation or innovation, i.e. the scale curve alters.

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1) Cliff Pratten, A Survey of the Economies of Scale, University of Cambridge, 1987

These economic considerations are based on the premise of functionable competition and comparability of products.

The application of economies of scale to ascertain the impacts of a harmonization of technical regulations and technical certification is very problematical owing to the fact that technical regulations frequently do not represent only a cost factor. Technical regulations frequently distort competition making a description of impacts particularly difficult.

For reasons of simplicity, further observation of technical regulations and certification applies only to their cost. This cost leads to a shift in the economies of scale curve.

Further problems are created by the fact that the level at which harmonization of technical regulations will be implemented is very uncertain.

Figure 1 represents a possible model suitable for illustrating the possible consequences of a removal of technical barriers, in instances where there are significant economies of scale. Initially, $S_{ms}1$ is the scale curve of the "less efficient" Member State. The Member State is technically inefficient compared to best-practice suppliers elsewhere in the EC, who have scale curve S_{EC}.

The explanation of this technical inefficiency may lay in: insufficient introduction of new technology, insufficient investment for renewal, a too slow workpace, management is loath to exert pressures for further cost minimization, etc. Of course, such a technical inefficiency is not sustainable if there is not some kind of protection. It is assumed that the protection is provided by a technical barrier, raising

prices of the competitive EC supply with (p_1-p_2). Figure 1 now shows that <u>either</u> the intra-EC free trade (in the absence of technical barrier, here) has forced upon the Member state's industry at least some improvement of technical efficiency - i.e. from $S_{ms}1$ to $S_{ms}2$ - permitting sales at Q and production at R, <u>or</u> other protection must also be obtained for survival (perhaps public procurement or subsidies) at T.

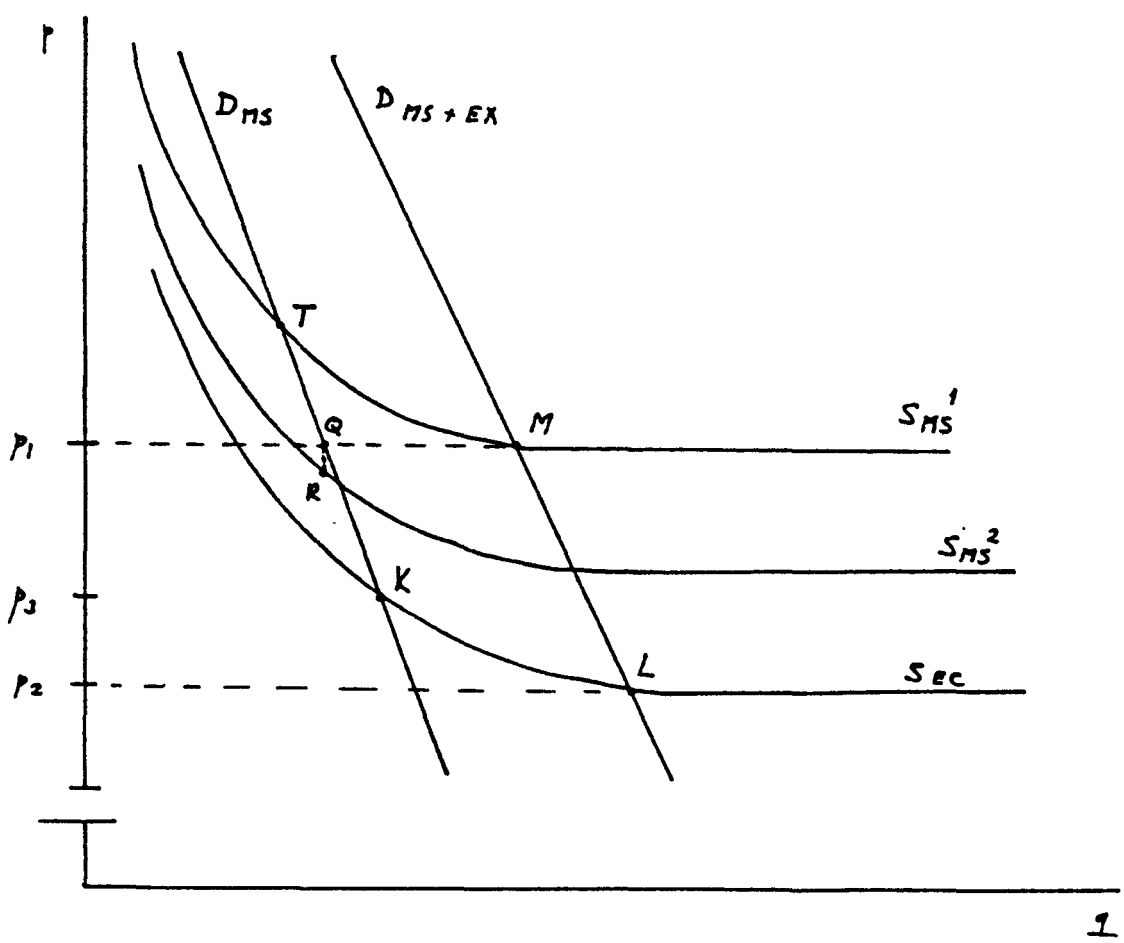


Figure 1

Removing the technical barrier in this framework, given free trade in the Internal Market, is both a threat and an opportunity. The threat is that survival is not possible

at $S_{ms}2$: most competitive firms from elsewhere in the EC will have to be competed against head-on along S_{EC} and this will require further cost minimization, innovation and probably some further specialization. Observe however that, given national demand D_{MS} even this effort would still only reduce the cost price to p_3. It is the Internal Market, and intra-industry trade in it, that present the opportunity to realize a survival strategy. The crux is to specialize in fewer variants (perhaps through innovation, too) and tap some of the export demand in the Euromarket. The intra-industry specialization strategy will thus combine elements of a high-quality strategy based on the standard or regulation commonly agreed on in the EC product-innovation and process innovation.

For simplicity, in Figure 1 it is assumed that this shifts demand to D_{ms+ex}, although the product set exported would no longer be as broad as before. It is also simple for the sake of illustration to remain at S_{EC}. Note that the export strategy would not work without a change in technical efficiency and intra-industry specialization (at M nobody outside the country would buy, given the supply at p_2).

IV. SECTORAL ANALYSIS

1. Remarks

Classification of the sectoral analysis is according to the prescribed aims:

- Market
  - -- production
  - -- foreign trade
- Regulations
- Market characteristics
- Removal of technical barriers

The following product specific sequence corresponds to the level of harmonization:

- low tension products
  - -- dishwashers
  - -- HAR cables
- lifts
- weighing equipment
- wood-working machines
- fire protection products

2. Procedure of fact finding

In chapter II a brief description indicated that extensive first-phase desk research was conducted aimed at obtaining information. This involved contacting and obtaining data from the respective national authorities, such as the Statistisches Bundesamt, INSEE, Instituto Centrale di Statistica as well as the Government Statistical Service. As we are aware, the data received cannot be inter-compared as all national product groups differ very greatly in their content. (This problem will be dealt with in more detail in the respective product-specific sections.) This applies not only to the production statistics, but also to the foreign trade statistics. In order to be able to compare the data - at least regarding foreign trade - the NIMEX statistics were applied as they contain product classification. Product data and sector structure data were obtained from the national organisations. The respective bodies contacted were:

Product	Organisations in			
	France	UK	Italy	Germany
low tension products	SYCABEL GIFAM	AMDEA BEAMA BASEC	ANIE	ZVEI
lifts	Chambre syndical de Ascenseurs et Monte Charge	CBJ	ANIE	VDMA TÜV (testing)
weighing equipment	SYPECOM	weighing machines manufacturers association	ANIMA	Verband der feinmechanischen und optischen Industrie
fire protection products	FFMI CSTB/CTTCA testing quthorities	Worrington Fire Research Centre TRADA (testing authorities)		BAM (testing authority) Industrieverband Türen, Tore, Zargen
wood working machines	FNIMME	wood working suppliers association	ACIMALL	VDMA

The desk research also included determination of existing regulations. Information on the existing diverse regulations between each country was also obtained in discussions with the organisations. Second phase project work involved the conducting of company case-studies. A total of 84 case-studies were carried out in which the product specific quotation is represented as follows:

Number of case-studies

Products	UK	France	Italy	FRG	Total
wood-working machines	4	3	4	5	16
weighing equipment	5	2	3	2	12
low tension products:					
- dishwashers	-	1	2	3	6
- HAR cables	5	3	2	3	13
fire protection products:					
- doors	5	2	2	3	12
- plates	4	2	2	4	12
lifts	3	3	3	4	13
Total	26	16	18	24	84

In this respect it should be noted that:

- Case-studies at dishwasher manufacturers:
  - -- no manufacturers exist in the UK
  - -- two companies produce dishwashers in France, one company primarily distributes Swedish products and its own production primarily involves assembly activities

- Companies interviewed were those with a certain market importance, i.e. a market share greater than 10-15 %.

- The management was interviewed whereby in
  - -- smaller companies (approximately 500 employees) this was the Managing Director
  - -- larger companies this was the Head of Sales who frequently referred to the specialist departments (e.g. calculation expert)

The interviews took the form of a discussion based on the relevant questions concerning

- basic data on products and production processes
- acutal market situation
- domestic trade activities
- foreign trade activities
- national regulations
- national test procedures
- existing differences in foreign countries
- effects of removing technical barriers

The questions were the same for each country. The case-studies served to:

- obtain further statistical data
- determine relevant national regulations
- determine possible differences in national regulations
- determine the effects of removing technical barriers

Discussions with the interviewees were extraordinarily difficult concerning the determination of the effects of removing technical barriers because:

- many of the interviewees had little or no foreign trade activities and accordingly could only discuss national possibilities
- some of the interviewees could only give estimations
- all interviewees always stressed that any harmonization could only mean adapting to their own national regulations

In addition, it should be mentioned that an isolated description of the "effects" - exclusively concerning the regulations - is extraordinarily difficult since a number of other parameters must also be taken into consideration, e.g.

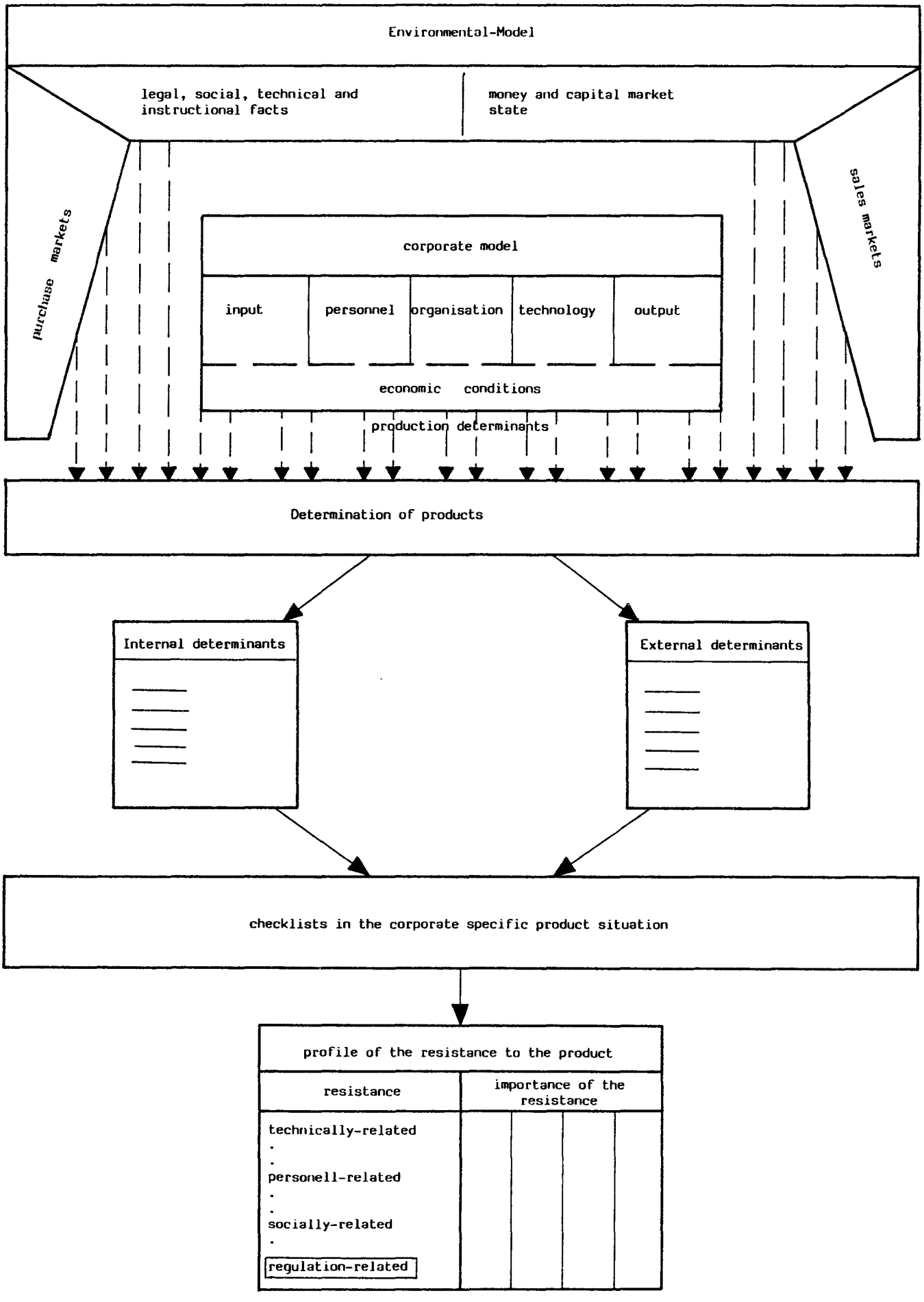
- in the case of dishwashers there is the difference in the quality of water or different plugs and wires
- in the case of lifts which are installed on-site, problems arise concerning the variations in the kind of building, and the different fire-protection regulations which must be considered
- in the case of fire-protection products, market development depends on national regulations, i.e. if regulations

require fire-protection measures, demand for the products occurs.

A number of influence factors affect the products, thus, as has previously been stressed, it is very difficult for the interviewees to undertake an isolated description concerning regulations and their effects.

Possible influence parameters are indicated in the following diagram.

Determinants of products



3. Sectoral analysis

A. Low tension products

1. Production

1.1 Remarks

The electrotechnical industry, the motor vehicle industry and the mechanical engineering industry represent the most important branches in each country.

The product range of the electrotechnical[1] industry is very varied creating problems in statistically detailing the branch, particular the kind of product division. As far as possible, the data of the different countries was harmonized with regard to content.

1.2 Production

Production of electrotechnical products has developed as follows:

Table 1: Production of electrotechnical products in billion ECU

	1980	1984	1985
France	24.0	29.7	31.5
Italy	20.2	22.2	25.0
Germany	38.9	43.3	48.9
UK	21.4	27.5	29.5
Total	104.5	122.7	134.9

Source: official national statistics, except UK: AMDEA

1) products like electric apparatus, electric insulating equipment, heaters, generators

Compared to 1983, production values rose in 1985 by approximately 25.1 %. Dishwashers and HAR cables account for a share of 0.58 % and 0.76 % respectively when measured against the total production of electro-technical products.

The following tables show the production development of HAR cables and dishwashers.

Table 2: Production[1] of HAR cables in mio. ECU

	France	Italy[2]	FRG	UK	Total
1983	50[3]	120	220[3]	220[3]	610
1984	52[3]	144	233[2]	240[3]	669
1985	52[3]	146	245[3]	255[3]	698

Sources:

1) Official figures on production of HAR cables are not published; HAR cables are contained in a number of statistical positions.

2) ANIE

3) estimations based on personal interviews

Table 3: Production of dishwashers

	in Mio. ECU [5]				in 1,000 pieces			
	FRG[1]	France[2]	UK	Italy[3]	FRG[1]	France[4]	UK	Italy
1975	190	-	-	41	574		-	528
1976	-	-	-	56	-	311	-	565
1977	310	-	-	85	1033	312	-	715
1978	273	-	-	77	929	314	-	583
1979	316	-	-	86	1114	331	-	545
1980	306	-	-	79	1074	333	-	450
1981	301	-	-	87	1037	310	-	429
1982	295	-	-	90	1000	301	-	344
1983	329	-	-	103	1035	287	-	435
1984	367	-	-	127	1128	264	-	485
1985	399	-	-	114	1279	221	-	432
1986	501	51	-	141	1534	219	-	549
rate of growth 1975/86 (%)	+163.7			+243.9	+167.2	./.29.6		+ 4 %

1) Source: Statistisches Bundesamt
2) no official data available
3) Source: ANIE
4) Source: GIFAM
5) in current prices

As the data indicates, production in the FRG and Italy in the period under investigation has increased not only quantity-related but also value-related. Development of the production data is based on the following facts:

- In France, only one company produces dishwashers today; another company only manufactures spare parts and distributes products of a Swedish sub-contractor; thus, production is declining.

- Technically, simpler dishwashers are manufactured in Italy primarily (e.g. without micro-electronics) due to the level of wages.

- More expensive dishwashers are primarily manufactured in the FRG (the latest technology); in addition, production data contains commercial dishwashers; these devices are larger, of higher performance and also more expensive; thus the average price per dishwasher in the FRG is considerably higher than in Italy.

- There is no domestic dishwasher production in Great Britain; there are occasionally attempts by a company to start up production, however, the strong Italian competition in the UK forces curtailment of the intention.

Average price per dishwasher, in ECU

	FRG	Italy
1975	331.0	77.6
1976	-	99.1
1977	300.0	118.8
1978	293.8	132.1
1979	283.6	157.8
1980	284.9	175.6
1981	290.2	202.8
1982	295.0	261.6
1983	317.8	236.7
1984	325.3	261.8
1985	311.9	264.2
1986	326.6	256.8

The annual average data is only available to a limited extent because the production structure of dishwashers according to size and output levels is not known - no information on it is available.

1.3 Companies and employees

There is a limited number of manufacturers involved in the segments of dishwashers and HAR cables.

Table 4: Manufacturers of dishwashers and HAR cables

	dishwashers	HAR cables
France	1	15
Italy	10	30
Germany	15	30
UK	-	4

The majority of manufacturers of both dishwashers and HAR cables are large, internationally operating companies. Increasing concentration trends can be envisaged. The fact that large companies are active in the market prevented any explicit detailing of the data involving the number of employees in the field of HAR cables and dishwashers.

2. Foreign trade[1)]

Germany and Italy are the most important exporting countries; France and the UK are the importing countries of dishwashers. Consequently Germany and Italy have an export surplus. With the exception of Italy, HAR cables were not detailed in foreign trade statistics. HAR cables are primarily exported as components by the appliance manufacturer, meaning that the importance attached to foreign trade of HAR cables as a product is only small.

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1) Source: Nimex Statistics

Table 5: Imports of dishwashers in 1,000 ECU

	Household dishwashers				Other dishwashers			
	France	Italy	UK	FRG	France	Italy	UK	FRG
1975	26,069	2,289	7,074	10,124	5,550	763	-	1,349
1976	42,161	5,862	8,597	11,537	8,685	1,097	-	1,827
1977	36,433	6,739	-	9,635	8,764	562	17,946	793
1978	44,733	6,517	17,288	11,873	8,512	1,113	2,321	1,286
1979	58,069	9,542	21,102	14,293	11,456	923	3,514	2,132
1980	54,953	13,114	23,063	9,963	13,069	1,228	4,752	3,020
1981	65,894	15,197	27,975	12,262	14,459	1,912	5,833	2,476
1982	74,707	14,268	28,004	13,006	18,064	1,269	6,952	3,172
1983	70,901	13,822	46,975	16,588	17,092	596	8,334	3,303
1984	78,670	15,146	54,764	21,507	16,155	1,413	10,165	3,634
1985	81,943	17,620	66,082	17,898	18,494	998	12,615	4,501

Table 6: Exports of dishwashers in 1,000 ECU

	Household dishwashers				Other dishwashers			
	France	Italy	UK	FRG	France	Italy	UK	FRG
1975	11,294	23,380	1,064	60,214	1,913	4,176	-	14,509
1976	19,333	30,184	1,487	103,284	2,173	6,853	-	20,321
1977	23,108	38,308	-	120,549	5,125	7,488	2,027	18,795
1978	19,943	41,813	678	110,323	2,184	10,711	2,124	21,191
1979	23,169	52,272	473	132,705	2,269	13,936	1,614	22,829
1980	20,978	50,482	488	130,994	2,413	16,654	1,759	22,906
1981	18,287	53,777	366	138,405	3,393	17,378	1,045	25,744
1982	14,645	61,988	751	147,828	2,677	19,434	1,017	27,990
1983	17,977	75,104	622	157,432	3,205	19,549	962	28,999
1984	17,971	81,859	562	175,698	4,043	23,255	1,128	30,684
1985	11,558	83,176	1,026	221,919	4,710	27,929	1,010	36,969

Some remarks concerning import and export data:

- the Englisch exports are re-exports

- French imports have increased since 1982 in that a French manufacturer is now primarily the sales subsidiary of a foreign company; consequently French exports are declining (only 1 % now of production volume)

- Italian exports have increased in that the Italian manufacturers are primarily contract producers for Bosch, Philips and Elektrolux

3. Regulations

The directive HD 25752 has been applied to national regulations since 1986. The regulations concern the safety demands (quality and operation) on dishwashers. In accordance with the Cenelec-memorandum 13, a CCA-certificate is used for the foreign test centre. The CCA certificate confirms that the product corresponds to the HD 25752 regulations. It should be noted that no mandatory approval of dishwashers is required. Approval, whether from VDE, UTE, etc. is granted for marketing policy reasons.

The sign of approval

- BEAB in Great Britain
- VDE in the FRG
- UTE in France
- IMA in Italy

indicates to any national customer the quality of the product.

The CCA certificate is unknown due to the fact that the suppliers of dishwashers apply for national certificates in order to correspond to consumer attitude.

Differences exist with regard to the testing requirements in

- Germany:
  The VDE certificate only refers to safety; functionability is determined by the Stiftung Warentest.

- France:
  UTE approval requires that the functionability has been tested and attested to. In the main, the functionability refers to the cleaning test which must achieve 75 %, and the drying effect.

- Great Britain:
  The British waterworks demand that a dishwasher be approved by the WRC (Water Research Centre) and be published accordingly in the WRC register (approval duration: 5 years). If this is not the case then the connection to the water supply is refused. It is sufficient that the manufacturer certifies that all components in the fresh water consist of material which are WRC approved.

Further differences:

Network voltage:

220 V = West Germany
240 V = Great Britain

Plug form:

different forms of plugs and earthing systems

Capacity:

16 ampère = West Germany, France, Italy
13 ampère = Great Britain
Consequence: those dishwashers bound for the British market have to be equipped with devices with a lower heating performance.

4. Market characteristics

4.1 HAR cables

The market for HAR cables is a relatively unimportant segment within that of low tension products. As a product in itself, there is only a negligible amount of trade with HAR cables, their being predominantly components for finished products.

4.2 Dishwashers

The market can be described as follows:

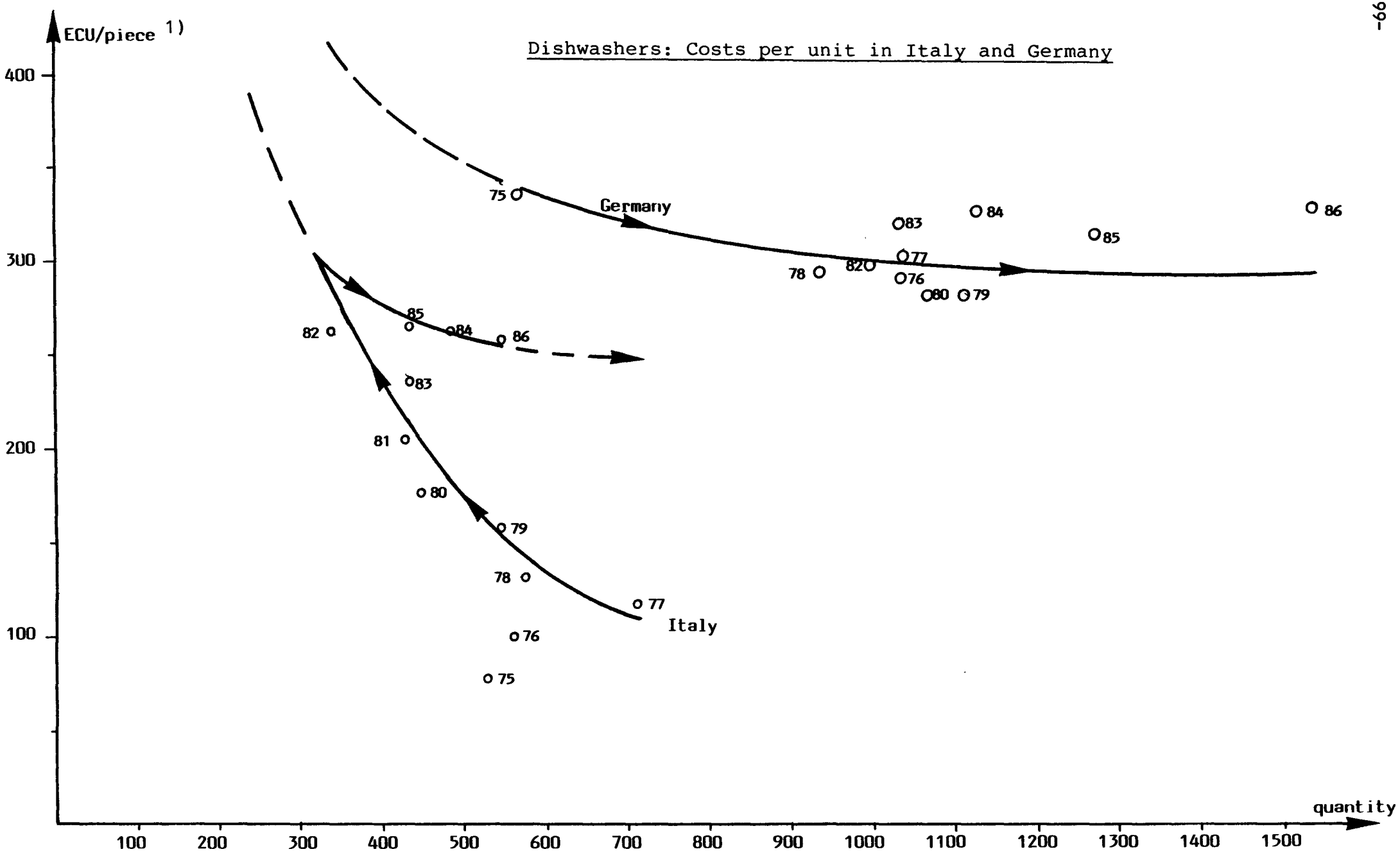
- tendentially increasing production (see production figures)
- increasing foreign trade activity
- high concentration on the production side:
  - -- only one manufacturer in France
  - -- a few, less important manufacturers in the FRG
  - -- in Italy, the manufacturers primarily produce for foreign companies
  - -- no manufacturer in the UK
- increased demand (time period 1982-1985 approximately 7 %)

The increased demand results from an increase in incomes (= increased consumer goods demand). Consideration of previous development allows presentation of the following statements:

- Costs per unit in the FRG have declined in recent years.
- Costs per unit in Italy rose with 1982; since 1984 the reverse has been observed.

- The divergent developments can be interpreted as follows:
  -- Costs per unit have stabilized at a relatively high level in comparison to Italy: the cause of this can be seen in:
     --- qualitatively high-class dishwashers
     --- application of newer technology (e.g. micro-electronics)
  -- Italian production did not meet EC market requirement at the outset; the production was primarily domestically oriented; consequently, Italian manufacturers have been taken over by foreign firms in the last few years; the low-cost product market was lost. An adaption process took place at a high cost-level which today leads to decreasing costs per unit.
     The common market subjected the Italian manufacturers of dishwashers to an adaption process which led to the loss of traditional low-cost customers and which expressed itself in increased unit costs coupled with decreasing quantities. The adaptation investment necessary was reflected in increased costs. On completion of the adaption process, a cost reduction with renewed increased quantities set in, as it was now possible to supply the common market adequately. The distinctly lower progression of cost-curve ensured the competitiveness and the attractiveness as a supplier.

Dishwashers: Costs per unit in Italy and Germany



1) in current prices (see page 34)

In addition to the reasons of contract-production, in Italy as well as in the FRG the German VDE certificate is held in high regard, though in France and GB the national certificates (UTE, BEAB) have to be visible on the product in order to satisfy consumer requirements.

The consumers are not aware of the CCA certificate, thus requiring the manufacturerer to have the national certificate. The low-voltage directive has made it simpler for manufacturers to obtain the respective national certificates, reflected by the fact that none of the manufacturers interviewed had any problem whatsoever in obtaining the certificate.

It was emphasized that obtaining the certificate had significantly shortened test duration. Whereas prior to introduction of the CCA certificate the test duration in all countries amounted to 15-24 months, the present time period has become substantially shorter.

UK:

BEAB-British Electrical Approval Board
Before harmonization:
- test duration: 1-2 years
- test fees: appr. 2,500 DM

Now (with approval of CCA certificate):
- test duration: 2-3 months
- test fees: under 1,000 DM

France:

UTE-Union Technique D'Electricité
Before harmonization:
- test duration: 6-9 months
- test fees: appr. 3,000 DM per type

Germany:

Test duration:
- VDE: 6-9 months
- CCA certificate: 3 months
- total: 9-12 months

Costs (average level, e.g. those used for a pre-calculation):
- VDE test: 3,000 DM per type
- CCA certificate: 1,500 DM per type

Italy:

Test duration:
- IMQ: 9-12 months
- CCA certificate: 3-6 months

Costs:
- IMQ-test: about 3,500 DM
- CCA certificate: about 1,600 DM

5. Removing technical barriers

With regard to the area of safety (operation), the low voltage directive has created a uniform EC regulation which has led to the following indirect effects:

- reduction of type variety (today only 20 types)
- reduction of stock-keeping

The interviewees indicated that these effects had led to a reduction of cost per unit of approximately 5-6 %. The problems involved in isolating the effects of removing technical barriers have been described previously. The Italian manufacturers were particularly overtaxed due to the fact that they are predominantly active in contract production where the cost per unit is prescribed. Moreover, it should be taken into consideration that dishwashers have been subjected to severe product modifications in recent years, e.g. the number of programmes, improved material, new lac procedure, which lead to the cost curve experiencing varying contentual alterations in the course of time, i.e. alterations took place on the product-input side which led to changes in the progression of the cost curve. The indicated effects of 5-6 % should be interpreted under the aspect of product environment.

It was possible to pinpoint with a great degree of accuracy the costs necessary to modify dishwashers to meet BEAB requirements - the outlay amounts to 2.2 ECU per unit.

It has been mentioned previously that the time required to obtain a national certificate has been shortened so that today only 6-9 months are necessary. Effects (direct) engendered by the CCA certificate are:

- short testing times
- a decrease in the documentation necessary

From the point of view of costs, these effects are very slight and the interviewees were unable to quantify them. Consumer acceptance of the CCA certificate would render national tests unnecessary.

B. Electrically driven lifts

1. Remarks

The nationally published statistical data are extra-ordinarily divergent. In the English and German statistics, data on lifts is contained in statistics involving mining machinery, construction and construction material machinery. It is further divided under the sub-group, conveyors. Consequently, it is hardly possible to compare the data of each country.

2. Employees, companies and production

The number of companies was:

Table 7: Number of companies

	UK	F[3]	I[3]	FRG
1983	-	46	15	2)
1984	-	48	15	2)
1985	-	48	15	2)
1986	134[1]	48	15	642[2]

1) number of companies in the field "conveyors" (including smallest companies with up to 10 employees)

2) number of companies in conveyor technology

3) estimations, based on personal interviews

Employed in the companies were:

Table 8: Employees

	UK[1)]	F[2)]	I[2)]	FRG[1)]
1983	-	13,482	1,951	64,500
1984	-	13,596	1,900	59,500
1985	43,000	13,217	1,800	65,000

1) conveyor industry
2) estimations, based on personal interviews

Production share of the branch "Lifts" in the data presented would be accounted for by approximately on average 5 - 10 % of the conveyor industry. For example, approximately 3,900 lifts, engendering a production value of around 169 mio. ECU, were produced in Great Britain 1986; in Germany the production volume was approximately 4,800 lifts engendering a production value of approximately 137 mio. ECU.

The production of lifts is directly dependent on the construction industry.

Table 9: Production of electrically driven passenger lifts and material lifts

	in Mio. ECU				in pieces			
	FRG[1]	France[2]	UK[1]	Italy[2]	FRG	France[3]	UK	Italy[2]
1975	178.2	306.4	109.0	127.5	7,901	-	7,042	11,000
1976	172.2	322.3	110.4	151.0	7,172	-	6,653	10,500
1977	175.4	344.8	101.8	249.1	8,018	-	5,275	10,400
1978	136.4	368.0	114.7	241.6	6,624	-	5,088	9,090
1979	125.5	383.7	118.2	231.0	5,980	-	4,779	10,100
1980	135.1	456.3	134.6	415.2	6,563	-	5,548	10,700
1981	148.6	534.5	152.7	419.0	6,579	-	4,252	10,600
1982	158.5	608.1	182.6	354.8	6,296	-	4,100	11,600
1983	154.8	619.0	165.7	296.4	5,982	-	3,743	12,300
1984	155.3	657.1	173.4	347.5	6,024	-	3,651	12,300
1985	139.2	699.0	.	.	5,283	-	3,800[4]	13,300
1986	136.8	.	169.2	.	4,802	4,000[3]	3,900[4]	14,000

1) electrically driven passenger and material lifts
2) conveyor equipment, including: hydraulic driven passenger and material lifts, stairways, material lifts
3) no data available; estimation
4) estimations

Sources: FRG: Statistisches Bundesamt
F: INSEE
UK: Business Monitor
Italy: ANIE

These facts apply to all relevant countries. The divergent statistics only allow limited comparison of production data - the British and German statistics are the exception. As has been previously mentioned, production of lifts is directly dependent on the construction industry. The extent of production is further influenced by the substitution of electrically driven passenger and material lifts by hydraulically driven passenger material lifts. Taking the production volume of lifts in 1975 as 100 %, recent years have brought about the following shifts in production:

lifts, total	1975	1980	1985
thereof:			
- electric drive	85-90 %	75-80 %	60-65 %
- hydraulic drive	10-15 %	20-25 %	35-40 %

basis 1975 = 100

Two predominant reasons have determined the increase in hydraulically driven passenger and material lifts:

- Architectural/asthetic reasons call for the use of hydraulic lifts for buildings up to 6 (max. 8) floors. The machine room of an electrically driven passenger lift is generally located above the top floor. That can lead to problems with flat-roofed buildings because in this case the machine-room can impair the silhouette.

- The costs of hydraulically driven lifts are approximately 2/3 that of electrically driven lifts.

A disadvantage of hydraulically driven lifts is the slower speed, which restricts their use to a certain number of floors.

3. Foreign trade

Foreign trade with electrically driven passenger and material lifts can be sketched as follows:

- The import volume of each country is very low (see table 10).
- Imports come primarily from EC countries (see table 11).
- Export volume greatly exceeds import volume (see table 10): the most important users are countries of the Middle East.
- Intra-EC trade is of a relatively lower level (see table 11).

Foreign trade is characterized furthermore by:

- Foreign trade within the EC is comprised only of the supply of components; finished lifts are more or less not imported/exported.
- Foreign trade with countries of the Middle East is restricted to complete lifts.

This means that intra-EC foreign trade data contains the supply of components in which the following tendencies exist:

- Italy primarily exports doors, and hydraulic components.
- France primarily exports automatic doors and certain parts.
- Germany exports driving mechanisms and control systems.
- The UK exports control systems (for high-speed lifts).

Table 10: Imports and exports of electrically driven passenger and material lifts

	Imports in 1,000 ECU				Exports in 1,000 ECU			
	FRG	France	UK	Italy	FRG	France	UK	Italy
1976	680	2,616	11,688	202	16,502	17,656	21,161	19,450
1977	857	2,494	11,623	171	29,472	23,993	23,818	17,530
1978	687	1,648	2,547	154	34,274	28,561	5,981	14,667
1979	2,713	3,013	2,561	25	25,719	22,256	6,411	14,414
1980	3,503	5,072	3,825	39	28,869	30,398	6,552	16,467
1981	6,099	5,608	4,448	139	38,704	30,600	10,718	24,275
1982	6,990	5,490	4,689	456	55,941	37,368	6,978	24,040
1983	10,841	5,884	3,400	641	37,881	39,714	6,608	23,619
1984	9,930	6,416	3,928	1,041	41,948	41,592	9,605	21,199
1985	9,490	7,170	6,857	1,068	52,434	30,790	7,260	19,341
1986	8,731	9,320	9,494	348	56,593	30,343	5,416	17,100

Source: NIMEX-statistics

Table 11: Intra-EC-trade in % of total exports and imports of electrically driven passenger and material lifts,

	Intra EC-trade (% of exports)				Intra EC-trade (% of imports)			
	FRG	France	UK	Italy	FRG	France	UK	Italy
1976	39.5	21.1	29.2	11.4	78.4	58.2	76.7	84.2
1977	22.1	16.2	22.1	12.5	63.8	52.6	85.5	0.6
1978	19.1	15.6	12.4	10.9	54.0	69.0	89.6	30.5
1979	27.8	21.1	17.7	12.0	78.8	70.2	80.5	96.0
1980	26.5	35.5	17.8	14.7	77.3	58.9	87.4	97.4
1981	24.0	31.3	23.5	11.8	79.4	74.7	90.2	29.5
1982	20.6	36.4	5.3	8.2	88.0	80.4	81.0	5.9
1983	27.8	35.2	9.8	5.8	80.1	89.2	71.2	21.2
1984	27.3	31.3	9.4	8.8	87.7	81.2	62.2	23.7
1985	33.9	31.2	6.1	7.9	71.2	85.9	74.6	26.6
1986	38.7	35.1	10.8	9.8	76.4	92.0	88.3	99.7

If the flow of goods is regarded as noticeable, then the low share of supplies from Italy is conspicuous. The reason for this is that the "Mediterranean-type" of lift dominates in Italy, i.e. a capacity of 320 kg and frequently an open passenger cabin. Approximately 60 % of the lift volume (population) consists of this type (source: ANIE).

4. Regulations

On the 17th September 1984, the EC Council of Ministers passed a resolution on the framed guidelines "Hoisting and Conveying Equipment" and single guideline "Electrically Driven Lifts". The corresponding legal regulations were published in the official journal of the EEC on the 19th November 1984 under the number L 300.

In these guidelines on the elimination of technical trade impediments for lifts, the EEC decided to forego creating its own regulations and refers in the single guideline "Electrically Driven Lifts" to EN 81-1.

From 26/9/86, lifts which are constructed according to this guideline and EN 81-1 can no longer be rejected.

Each country applies to EN 81-1 to the full extent. No technical barriers exist. Possible differences still exist at present in the case of testing costs/inspection costs. Effects are still felt concerning the divergent regulations regarding fire protection in each country where lift installation must be taken into consideration, e.g. for the air shaft, for the cabins. In addition, divergent welding regulations exist in each country. The uniformity of prototype tests is advantageous.

5. Market characteristics

Since the end of the fifties, the tendency in the market for electrically driven lifts has been one of concentration with the consequence that today four companies are internationally active. These companies dominate the market in all the countries studied - their market share is between 80-90 %. Concentration primarily takes place as an effort to increase the stock volume of lifts:

Approximately 39 % of production consists of new products - the remaining 61 % are spare-parts essential for maintenance and installation and service. The companies live from the lift population. This also explains the sometimes large number of statistically represented companies, then the four larger companies operate a comprehensive service network in each country involving sometimes independent, however, contractually linked firms.

The decision of these companies to apply EN 81 to the full extent eliminated technical barriers.

The problems of the lift manufacturers are rooted in the divergent building regulations of each country, such as storey-size considerations. As a result, practically each lift must be tailor-made to the demand.

Adapting to the conditions prevailing on construction means that certain parts such as housings and doors require single-piece production. The key components such as drive, control, buffer and safety-gear are manufactured by the lift manufacturers themselves, whereas the other parts (mostly sheet-metal or wooden parts) are obtained from local manufacturers. Thus, export concentrates on key components - also due to transport

cost reasons. Assembly of a lift mainly takes place on the building-site. The largest part of component production comprises service-work, since the manufacturers primarily achieve their turnover through service work and maintenance. Installation of new lifts accounts for only approximately 39 %.

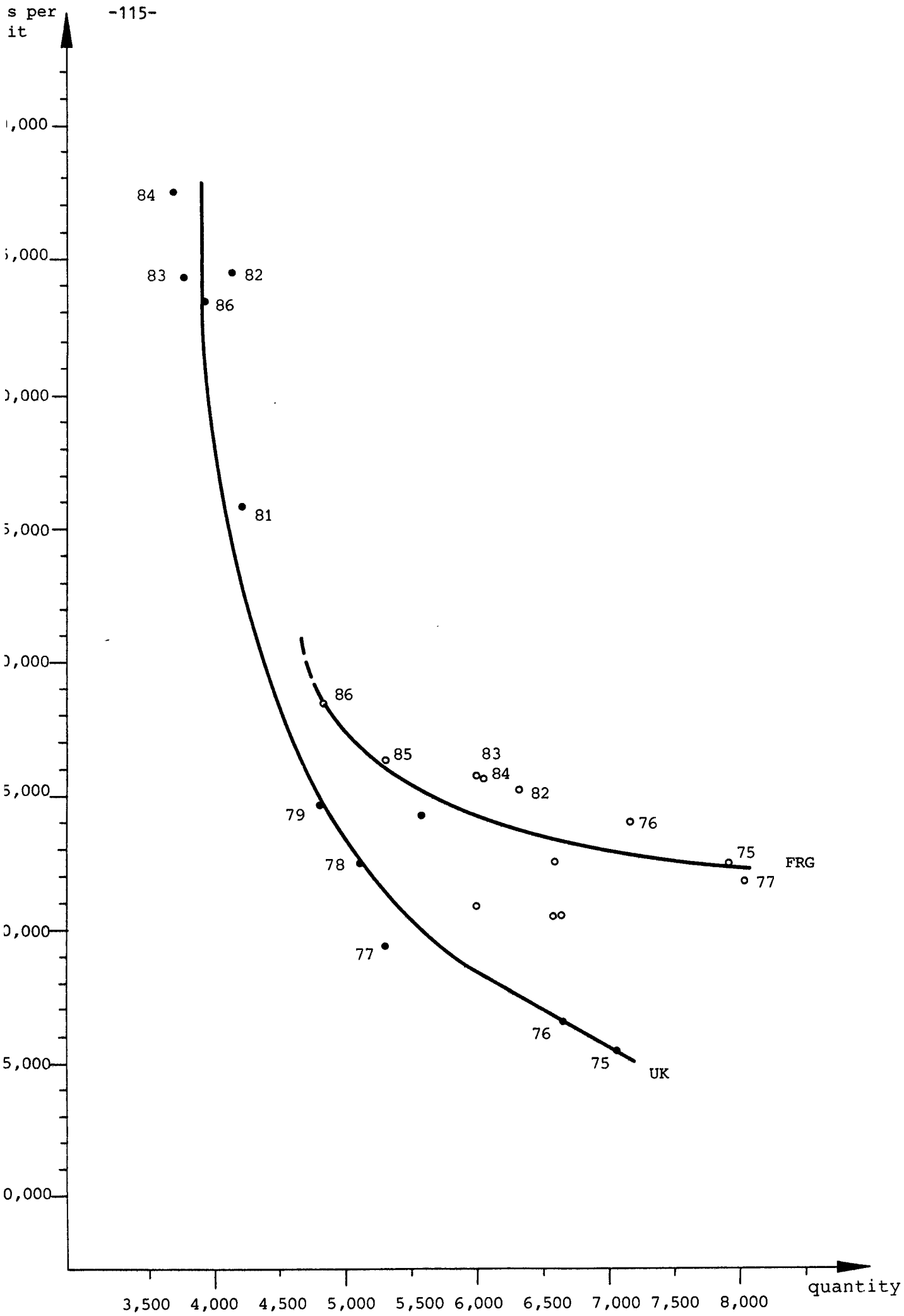
Consideration of the development of costs per unit in Great Britain and the FRG - the statistics available for these countries are comparable to a certain extent - results in the following situation:

- Distinctly declining quantities are being produced in both countries (due to the correlation with construction activity which is declining).

- In the early years, the cost curve for German products was at a distinctly higher level than in the UK, even though production was approximately of the same level.

- As opposed to GB, the correlation between costs per unit and quantity reduction is less severe in the FRG.

These cost curves indicate trends, however, they cannot serve to deduce possible economies of scale. The statistical data is based on turnover records made by companies, whereby the turnover comprises the production of lifts, parts, service and maintenance. In the case of Great Britain, control systems, whose cost level is higher than that of the other parts, form a considerable part of the data for spare parts.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6. Removing technical barriers

The market is characterized by production stagnation and declining employment. The apparent problem of national technical regulations seems to be minor because

- conformity with EN 81-1 is satisfactory
- product trade is less important than lift servicing (which imparts a strong local base)
- the real problems are with compatibility vis à vis building rules, fire protection regulations, architect traditions, and numerous instances of an "installed base" where lifts have to fit!

It is important to understand the market's characteristics because these compatibility problems are hard to solve (all together). Note that even mutual recognition and the 'new approach" of the EC does not alter an "installed base". So progress here is extremely slow and economic gains will (very long) drawn out in the future (if predictable).

Any harmonization of regulations must also consider the environment, e.g. construction regulations. These construction regulations influence the product, i.e. adaption of the lift to the respective building (see figure, page 31).

According to the most important manufacturers of lifts, the primarily positive effect of the EN 81-1 is the simplified approval of the building elements such as drive, control etc. due to the fact that the EN 81-1 is applied in all countries. As a result, building elements documentation for approval must merely meet the requirements of EN 81-1, thus simplifying the intermaterial exchange of building elements. The effect of introducing the EN 81-1 could

not be answered by any interviewee. In this connection they refered to the large share of service and maintenance resulting in spare parts business.

It can however, be assumed that the EN-81 represents a harmonization which was created by the companies over a period of years. This appears probable due to the fact that only a small number of companies are active in the market. Similarities to dishwashers are apparent.

C. Weighing equipment

1. Employees, companies and production

The compiling of statistical data on the scales industry is extraordinarily difficult as the industry is partly included in the precision mechanics industry and partly in products of the mechanical engineering industry. Interviews established the following picture of the branch.

Table 12: Number of companies in the field of "weighing equipment"[1)]

	France	Italy	Germany	UK	Total
1983	53	50	100	90	293
1984	50	50	100	90	290
1985	50	50	95	90	285

1) estimates, based on personal interviews

In 1985 these companies had approximately 18,200 employees.

Table 13: Employees[1)]

	France	Italy	Germany	UK
1983	2,590	2,200	12,500	9,000
1984	2,280	-	-	-
1985	2,100	2,080	10,000	4,000

1) estimates, based on personal interviews

In 1985 the average number of employees per company amounted to:

- France: 42
- Italy: 41
- Germany: 105
- UK 42

The suppliers are primarily small companies contributing to a production volume of:

Table 14: Production[1)] in mio. ECU

	France	Italy	Germany	UK	Total
1983	103	94	350	77	624
1984	135	96	390	97	718
1985	152	107	467	110	836

1) production comprised the products: baby, personal, kitchen and shop scales

Source: national statistics; estimates

Compared to 1983, production rose by approximately 33 % in 1985. Electronics scales contributed exclusively to this production recovery (see chapter 4 - market characteristics). The average value of production per company is at a relatively lower level.

Table 15: Average production per company in 1985 (in 1,000 ECU)

France	3,040
Italy	2,140
Germany	4,915
UK	1,222

With regard to mechanical/electro-mechanical scales, such as

- baby scales
- personal scales
- kitchen scales

there are few companies still active in the market. The number of important companies in each country:

- France: two suppliers
- Italy: two suppliers
- Germany: three suppliers
- UK: two or three suppliers, resp.

The extreme concentration on a few suppliers manufacturing mechanical and electro-mechanical scales is based on the fact that electronic scales are being increasingly regarded as state of the art technology. In addition, "cheap wage countries" are gaining an ever increasing foothold in the EC market for traditional scales.

2. Foreign trade

Measured in terms of production, the import value amounted to approximately 5 % in 1985 and the export level reached approximately 3-5 %. The following table shows the import and export development in the relevant countries. Imports from the relevant countries are of negligible importance (see appendix C).

Table 16: Foreign trade

Imports[1] of different scales, in 1,000 ECU

	Baby scales	Personal scales	Household scales	Total
1983	456	18,074	13,117	31,647
1984	480	22,538	13,595	36,613
1985	903	24,201	15,468	40,572
1986	863	24,882	15,614	41,359
1983/86	+83 %	+38 %	+19 %	+31 %

Exports[1] of different scales, in 1,000 ECU

	Baby scales	Personal scales	Household scales	Total
1983	1,474	20,410	10,149	32,033
1984	1,582	25,313	12,770	39,665
1985	2,688	29,719	12,130	44,537
1986	3,361	31,920	12,294	47,575
1983/86	+128 %	+56 %	+21 %	+49 %

1) all four countries
Source: GEWIPLAN calculations based on Nimex statistics

Exports by country are:

Table 17: Exports of different scales, in 1,000 ECU

	Baby scales				Personal scales				Household scales			
	France	Italy	UK	FRG	France	Italy	UK	FRG	France	Italy	UK	FRG
1980	307	116	585	313	4,485	575	1,003	9,373	3,475	906	822	4,416
1981	157	59	479	171	3,918	754	1,295	11,525	1,943	1,083	557	6,113
1982	131	24	587	295	3,366	484	1,127	13,655	1,475	839	846	6,601
1983	167	56	564	687	5,101	556	1,514	13,239	937	1,159	830	7,223
1984	82	78	440	982	5,843	720	2,311	16,439	2,045	1,707	1,993	7,025
1985	283	135	601	1,669	5,173	1,015	3,301	20,230	2,104	1,072	1,787	7,167
1986	186	86	954	2,135	5,222	785	2,535	23,378	2,040	1,181	895	8,178
increase/ decrease 1983/86												
	./.39 %	./.26 %	+63 %	+582 %	+16 %	+36 %	+53 %	+146 %	+41 %	+19 %	+9 %	+85 %

Table 18: Structure of exports

	Total exports in 1,000 ECU 1985	Export shares	Main products	
France	34,553	~ 23 %	kitchen scales:	6 %
			personal scales:	14 %
			shop scales:	10 %
			parts and accessories:	13 %
Italy	22,511	~ 21 %	weighing machines of capacities max: 30 kg:	20 %
Germany	194,257	~ 42 %	parts and accessories:	21 %
			shop scales:	16 %
			personal scales:	10 %
UK	54,275	~ 49 %	parts and accessories:	33 %
			personal scales:	6 %

The FRG is also the most important recipient country concerning imports, with the focal point being the import of personal scales and household scales.

Exports in the relevant countries are of negligible importance (see Appendix C).

Table 19: Imports of different scales, in 1,000 ECU

	Baby scales				Personal scales				Household scales			
	France	Italy	UK	FRG	France	Italy	UK	FRG	France	Italy	UK	FRG
1980	126	521	134	708	1,682	3,001	4,191	3,426	181	2,336	2,463	4,449
1981	226	251	152	155	1,942	3,079	5,200	5,466	208	2,903	2,565	4,412
1982	143	125	148	63	1,971	2,624	5,280	6,805	300	2,547	2,707	5,073
1983	230	121	101	4	1,761	4,180	5,499	6,634	473	2,546	3,162	6,936
1984	207	181	58	34	2,161	5,536	6,664	8,177	311	2,230	3,203	7,851
1985	410	94	316	83	2,704	4,896	7,661	8,940	284	2,694	3,513	8,977
1986	448	109	246	60	3,241	5,626	7,046	8,969	116	3,019	2,375	10,104
increase/ decrease 1980/86	+255 %	+79 %	+84 %	./. 91 %	+92 %	+87 %	+68 %	+161 %	./. 36 %	+29 %	./.3,5 %	+127 %

Table 20: Structure of imports

	Total imports 1985 in 1,000 ECU	Import shares	Main imported items	
France	39,251	~25 %	shop scales:	10 %
			personal scales:	7 %
			parts and acessories:	29 %
Italy	33,927	~32 %	personal scales:	14 %
			kitchen scales:	12 %
			weighing machines of capacity max. 30 kg:	32 %
			parts and accessories:	21 %
Germany	57,776	~12 %	kitchen scales:	10 %
			personal scales:	10 %
			shop scales:	6 %
			parts and accessories:	29 %
UK	50,863	~46 %	personal scales:	15 %
			weighing machines of capacity max. 30 kg:	15 %
			shop scales:	12 %
			parts and accessories:	21 %

3. Regulations

There are indeed EEC regulations concerning non-automatic balances, however, the technical certifications for mechanical and electro-mechanical scales in each country are very divergent. The following overview includes some of the divergent regulations.

The most considerable differences exist involving the scaling as well as the calibration.

The French technical certification requirements deviate so extremely that a brief description is required.

Table 21: Type of regulations

Type of regulations	Germany	Italy	France	UK
standards	DIN 1305	Regio Decreto 7088, 226	decrét No. 73.788/75.201	BS 5750
type approval	for all balances	for all balances	for all balances	for all balances
mandatory calibration	no	yes	yes	yes
period of testing	~ 1/2 year	1/2-1 year	at least 6 months per type	1/2-1 year
scaling	metric standard	metric standard	metric standard	imperial standard
tolerances	different	different	different	different
miscellaneous		in the case of mechanical balances, no springs can be used		
fees for type approval in ECU	1,400-2,800	~ 500-2,000	1,400-2,800	1,400-2,800

EEC Guidelines 73/360 from 1/7/1982

The French regulation

The French regulation is based on the decree of November, 30th 1944; the decree number 73.788 (04/09/73) in application of the European directive related to the common disposition to meaning equipment and methods of metrological control; the decree number 75.201 (04/12/75) and the order of 24/03/72 modified by the order of 06/01/77.

The classification of scales for households requires minimum numbers and maximum real grades (related to their value), as described as follows:

Value of grade contineous (d) discontineous (dd)	Number of grades	
	minimum	maximum
5 gr $\leq$ d $\leq$ 10 kg	100	1,000
10 kg $<$ dd	200	1,000

This chart means that the weighing machines possessing precision inferior to 100 or 200 grades are not available on the market. This rule seems to be logical; what is not the case is that even the firms able to offer more precise products cannot do it without changing their category, using then other regulatory standards. A second aspect concerns the "fluages". The French regulation imposes a tolerance of half an hour which is much too high compared with the common use. It is hard to imagine a user staying half an hour on his scale. This technical rule, originally established to measuring instruments leading to a commercial contract, logically involves overcosts for components and consequently has effects on the market prices.

Tests and controls

In the same decrees, control procedures involving the conformity of scales for households define three steps:

- The model approval:the firm eager to obtain the approval has to register at the "Service des Instruments et Mesures" a technical file describing the exact characteristics of the product. This approval can be made where the fabrication takes place.

- The basic verification: a control of the first 500 mass-produced products is made. This control is carried out within the factory by inspectors of the "Service des Instruments et Mesures". Of course their travel expenses are paid by the firm on the basis of a lump sum. The statistic sampling is based on the norm NFX 026 022. There are 32 sampled machines whose maximum error rate is 2.5 %. After a second try if this limit is exceeded, the lot can be refused.

- The ensuing controls take place within the factory without warning. Based on the same standard, samples are made and controlled. For the importers this type of control takes place in the warehouses.

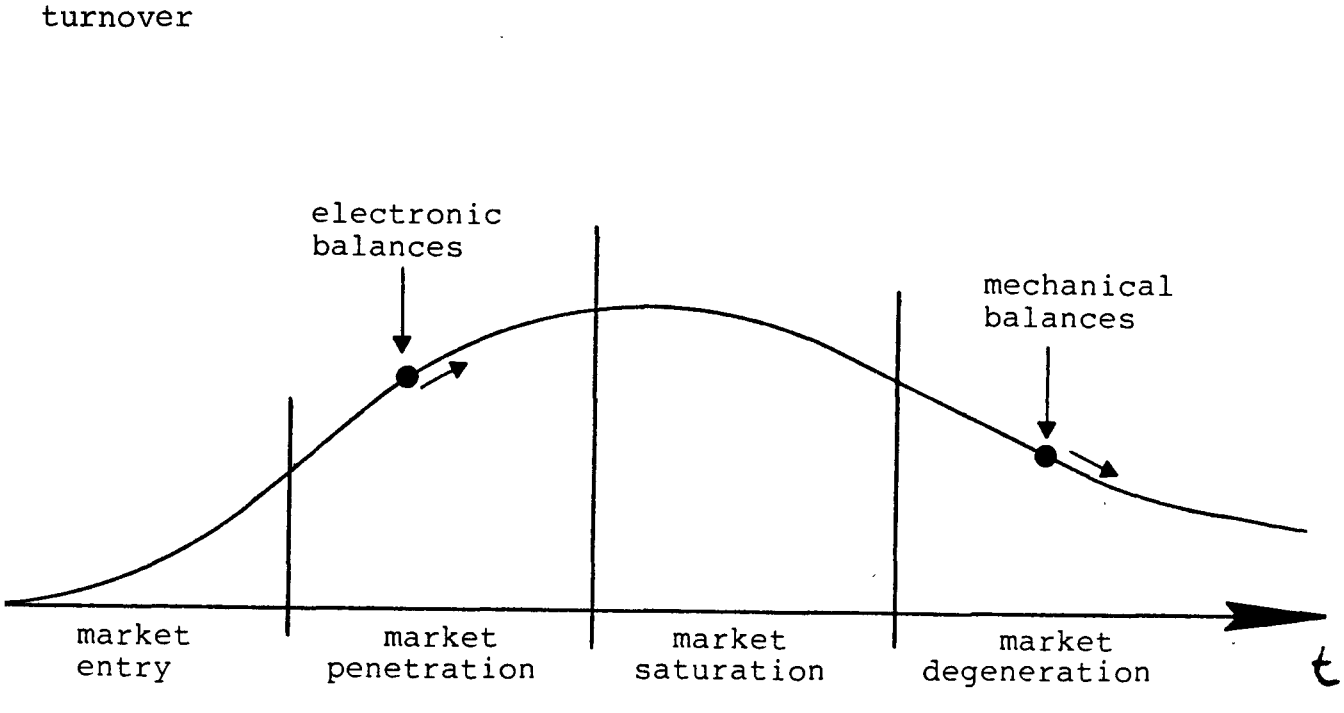
The divergent technical certification requirements complicate the flow of goods between each state.

4. Market characteristics

The following statements describe the market for mechanical/ electro-mechanical balances:

- declining production (1983-1986 of nearly 3 %)
- only a few suppliers on the market
- substitution trends: substitution of mechanical/eletro-mechanical scales by electronic scales; according to the views of experts, the current share of mechanical/electro-mechanical scales on the total production of scales amounts to approximately 20 - maximal 30 % - with a declining trend.
- Consequently mechanical/electro-mechanical scales have entered the phase of "market degeneration" in the product life cycle curve.

Product life cycle



- divergent, particularly of a technical nature, regulations within the relevant countries
- low import level of the different countries

5. Removing technical barriers

Removing technical barriers means a uniformity of scaling and calibration. These divergent regulations lead to an increase in the number of components so that a manufacturer supplying all countries required 8,000 components. Harmonization could result in reducing this number to approximately 800-1,200, which would represent a material costs saving of approximately 15-20 %. With average material costs of approximately 40-50 % - related to manufacturing costs - this would represent a savings per balance of approximately 0.2-0.8 Ecu.

To achieve these objectives, however, would require manufacturers of mechanical scales to consciously employ product variety as a marketing instrument to stimulate sales. Product variety consists of different colours, differing design as well as differing maximum loads, i.e. a correlation between necessary component variety and divergent regulations exists to a very limited extent - possible savings are practically neglected. Possible harmonization of technical certification and technical regulations has only slight impacts because:

- manufacturer concentration has taken place
- adaptation investment has been carried out
- demand is stagnating.

The direct effect of harmonization will be in the order of magnitude of less than one percent.[1)] Indirect effects will result from possible reduction of components as well as a more efficient utilization of production capacity.

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1) test costs per type: 2,000 Ecu, related to an output of at least 200,000 units at 7-8 Ecu, this represents a cost share of less than 1 %

Due to the type variety (= small lot sizes) as well as the relatively large share of manual work in the manufacturer of scales (calibration), cost reduction with a rise in output is very slight. Related to manufacturing costs, costs reduction would amount to less than 3 %. With a stagnating output of approximately 10 mio. scales in Europe (approximately 50 % thereof in the relevant countries), costs savings would amount to an approximately maximum of 2 mio. Ecu.

As a high degree of concentration already exists and the companies are internationally active, harmonization of the technical certification requirements would mean a downward movement on the economy of scale curve.

D. Wood working machines

1. Employees, companies and production

In 1985, a total of 33,930 people were employed in the wood working machine industry.

Table 22: Number of companies in 1985

Country	Number of companies	Employees	Employees per company
Germany	237	20,200	85
France	47	2,110	45
UK	16	1,850	115
Italy	283	9,770	35

Source: Eumabois

The number of companies and employees has shown a downward trend in recent years.

Table 23: Employees

	Employees			
	France	Germany	UK	Italy
1983	2,598	19,000	2,100	-
1984	2,540	19,400	-	10,000
1985	2,110	20,200	1,850	9,770

Source: estimations

The number of companies has diminished in recent years by approximately 30-40 % - no accurate data is available (e.g. Italy: 1975 - 400 companies; 1985 - 283 companies). The companies are primarily of the small and medium-sized level.

The details on the number of companies comprise all wood-working machinery products. With regard to planing machines there are:

- approx. 30 companies in Italy
- approx. 6 companies in France
- approx. 15 companies in Germany
- approx. 8 companies in UK

Production[1+2)] involving wood-working machines developed as follows (in mio. ECU):

	1983	1984	1985	
Italy	410	487	570	
France	103	105	138	
UK	37	42	56	
Germany	707	719	1,010	1983-85: increase of approx. 41 %
Total	1,257	1,353	1,774	

The production data comprises the complete range of wood-working machines. Of relevance for further examination are the following details:

- The share of single-spindle machines for planing, milling or moulding

- The share of multi-spindle machines for planing, milling or moulding

It was possible to determine the following share value on production in each country for 1985:

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1) Source: Eumabois
2) including spare parts

	single-spindle	multi-spindle
Italy	98 %	2 %
Germany	6 %	94 %
France	60-70 %	30-40 %
UK	80 %	20 %

With the exception of Germany, single-spindle machines dominated production (see also chapter 4: Market characteristics).

Measured against the total production of wood working machines, the value-related share of planing, milling and moulding machines amounted to:

Value-related share in %

	1985
Italy	11 %
FRG	10 %
France	14 %
UK	22 %

The development of the production of planing, milling and moulding machines has varied greatly in recent years, as is indicated by the following data.

Tale 24: Production[1] of surface planing, thickness planing, milling and moulding machines in mio. ECU

	France	Italy	FRG	UK	Total
1980	17.0	68.1	109.9	17.0	212.0
1981	19.5	66.5	96.9	13.6	196.5
1982	16.1	50.7	76.1	12.2	155.1
1983	17.0	53.7	84.3	11.4	166.4
1984	15.6	49.3	82.4	12.0	159.3
1985	19.8	63.8	99.5	12.6	195.7
1986	17.5	48.7	101.5	9.4	177.1

1) Source: Eumabois

2. Foreign trade[1)]

The EEC as recipient market for wood working machines played only a restricted role. Approximately two-thirds of production were exported to Third Countries. Of interest here are the recipient countries: German and Italian products were primarily supplied to

- Austria
- Switzerland
- Finland
- USA
- Canada,

i.e. highly developed countries, whereas French and British products were primarily supplied to

- the Middle East
- African countries.

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1) country specific data see Annex D

Table 25: Foreign trade of surface planing, thickness planing milling and moulding machines, in mio. ECU[1)]

	Imports				Exports			
	France	Italy	FRG	UK	France	Italy	FRG	UK
1983	7.3	4.1	11.1	5.1	5.1	28.9	62.8	4.6
1984	6.8	5.0	11.7	5.3	5.7	33.5	83.4	7.1
1985	7.9	3.9	13.9	5.8	8.7	33.7	82.2	5.7
1986	9.5	5.6	13.2	4.2	6.9	31.5	100.0	5.3

Source: Eumabois

Based on production and foreign trade figures, the consumption is:

Table 26: Consumption of surface planing, thickness planing, milling and moulding machines, in mio. ECU

	France	Italy	FRG	UK	Total
1983	19.2	28.9	32.6	11.9	92.6
1984	16.7	20.8	10.7	10.2	58.4
1985	19.0	34.0	31.2	12.7	96.9
1986	20.1	22.8	14.7	8.3	65.9

3. Regulations

The following overview shows each national regulation.

ations, certification authorities

	Countries			
	France	Germany	UK	Italy
uct ility	manufacturer	manufacturer	user	user or manufacturer or hirer
nical ification	YES[1], very dangerous machines	NO[1]	NO[1]	NO
ing approvals sterial orities	minister of labour	-	-	-
uting con- ; test orities	INRS, LNE, LCIE, Labour Inspector circular 3/84	Bundesminister für Arbeit und Sozialordnung (GS mark) and authorities in each federal state	if necessary, labour inspector checks safety of machines	labour inspector checks safety of machines
tional safe- regulations	rotating elements cannot be broken away from the machine	dangerous elements placed in labour zone must be protected from any power	NO, except sharp tools protection (general rules)	-
ines elements ing elements	protectors fixing tool using for dismantling if impossible when opening they must set off the stoping of mobile elements; setting and maintenance points must be outside the dangerous zones	protectors fixing tool using for dismantling	-	-

There are no divergences involving the British, Italian and German regulations, with the exception that in Germany the electrical systems of a machine must correspond to VDE regulations. However, these also correspond to the British and Italian regulations but require that machines supplied to Germany must be labelled accordingly.

Significant different regulations only exist in France.

In July 1980, various decrees concerning the general safety of machines and devices were issued by the French government. Regulations for the formal implementation of these regulations were published in 1981 and 1982, and also came into force in 1982. Of importance in this respect are that

> safety facilities (e.g. protective hood) should prevent access to the workpiece during processing.

The following testing procedures were established to test the working safety of wood-working machines:

- Conformity certificate and label on each machine affected, with which the manufacturer himself confirms compliance with the decree of July 1980.

- Visa d'examen technique; this involves the standard machines according to the decrees 81-170, 171, 172, 173, 308 and 409 (circular saws, band saw machines, planing machines, milling bench machines, and chain mortising machines).

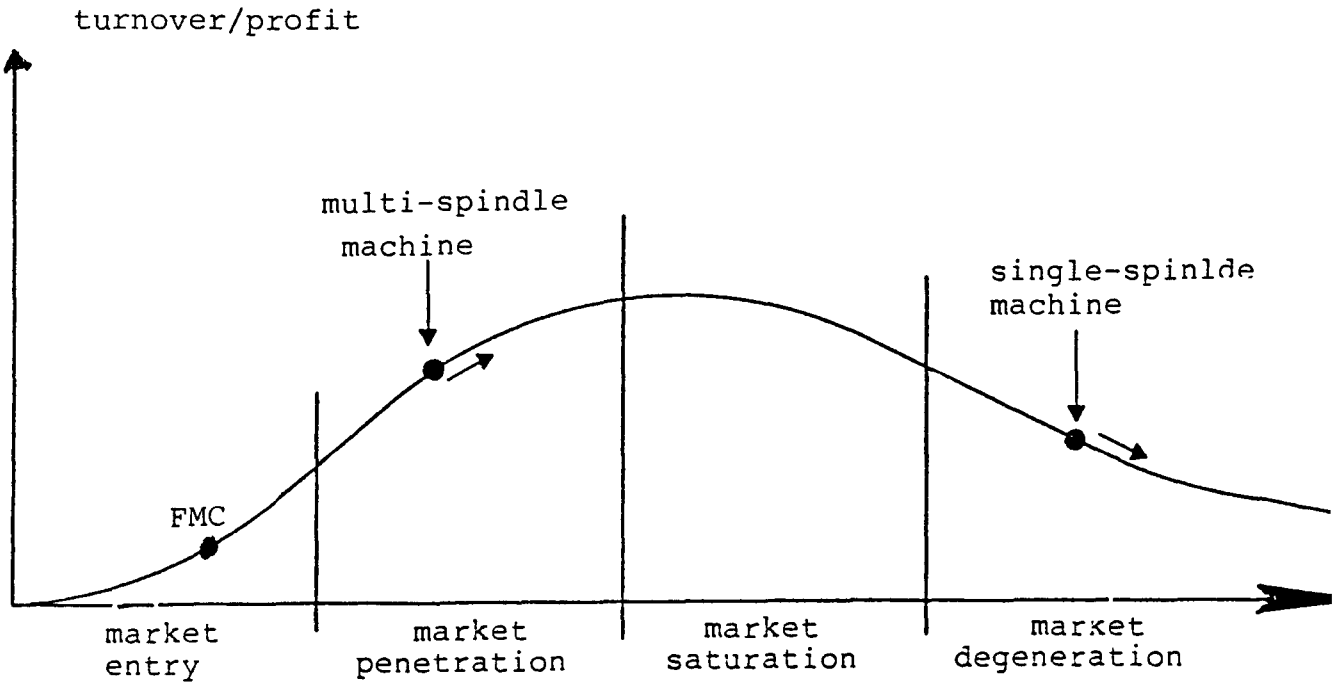
- Homologation; to be applied for combined and multiple stage machines in accordance with decres 81-410 and 411, whereby these machines are treated in an analogue visa d'examen technique.

4. Market characteristics

The suppliers of wood-working machines are primarily smaller companies. The total number of suppliers amounts to approximately 60 companies of which none can be termed a market leader, i.e. the market share of each company is low. The branch is dependent on developments in the wood-working industry. The application of materials such as wood-chip, synthetics and steel has led to a reduction in the use of wood. This trend forced the manufacturers of wood-working machines to enter new export markets, or on the other hand, to stimulate demand for machines through innovative technologies, i.e. the efforts of the wood-working industry to counter the substitution trends through more rational production, fostered the application of new technologies. In this respect, it is necessary to refer to the problem of the numerous variants which demands more flexible production from the wood-working industry.

In the case of wood-working machines, particularly planing and milling machines, it was established that single-spindle machines cannot satisfy user requirements concerning more flexible production. Positioning of the different machines results in the following situation.

Product life cycle



The conventional wood-working machines have now reached the market degeneration phase: multi-spindle machines and flexible manufacturing cells are in the market penetration phase. Examination of the recipient countries of single-spindle machines shows that they are mostly countries which can be termed developing or underdeveloped countries, whereas multi-spindle machines are primarily exported to developed countries. With the exception of Germany, companies in the other countries primarily manufacture single-spindle machines.

The following overview illustrates these facts:

Value of production[1] for 1985/1992

	single-spindle		multi-spindle	
	1985	1992	1985	1992
Germany	6 %	4 %	94 %	96 %
France	60-70 %	50-60 %	30-40 %	40-50 %
UK	80 %	70 %	20 %	30 %
Italy	98 %	80 %	2 %	20 %

Source: own data based on personal interviews

The persistence of the companies regarding the manufacture of conventional single-spindle machines was justified by the following state of affairs:

- France:
  There has been negligible investment in new products in recent years.

- UK and Italy:
  The mainly small companies lack the financial resources to be able to manufacture high quality machines.

In Germany, companies invest approximately 3-5 % of their turnover (per capita investment 2,350 ECU). These investments were 90 % rationalization investments, whereas in the other countries the corresponding investment level was a negligible 2 %.

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1) in % of value of planing, milling or moulding machines

5. Removing technical barriers

The existing divergences of the national regulations were described in section 3, whereby these divergences only create problems for imports into France.

According to the type of wood-working machine, the costs for additional protective facilities in France amount to approximately 1,200-1,400 ECU. These additional costs raise the price per machine, however, it must be taken into account that these additional regulations apply to all suppliers, even the French, i.e. they are tendentially competitively neutral (upwards trend of economy of scale curve).

The question of competitive neutrality must be considered under the aspect of formal requirement. Formal requirements apply to e.g. particular drawing formats, which frequently mean that existing plans cannot be used and must be revised. Sectional drawings, details on material and other information is required for the many details concerning the machine. A complete piece-list in French must also be drawn up.

The level of the testing fees for a machine i.e. type of machine, amounts to between 300 and 800 ECU. When evaluating the testing fees it must be taken into account that

- a special test is required for each deviation in machines of one and the same type, e.g. in the working width, output or numbers of aggregates

- correspondingly high costs are incurred for the transport of the machines to the testing centre in France

- in the case of bulky machines or the examination of a large number of prototypes, considerable travel and accomodation expenses of the French examiners must be borne by the manufacturers of each country

- costs are again incurred by the frequently prescribed repeat tests.

The testing duration itself is between six months and one year. In the other countries, Italy, UK, FRG, the test duration extends to 2-3 months only. The consequences of the French regulations are as follows:

- on the issuing of the decree, foreign suppliers had to carry out adaption investment in order to meet the French requirements

- manufacturers of special machines are more greatly subjected to testing procedures than the manufacturers of standard machines (no type variety)

- the safety regulations caused a general rise in the price level in France - the level of the price rise depends on the kind of machine
  - -- in the case of special machines, the price rise corresponds to the costs of the protective hood and the testing costs
  - -- in the case of standard machines the price rise is less than proportionate the value of the machine.

- drawing up piece lists in French
- drawing up circuit diagrams in French
- producing detail drawings

Depending on the export activity to France, the respondent firms stated that on average, one employee must be engaged for 50-100 of his time on these tasks; this corresponds to additional expenditure of approximately 15-30,000 ECU p.a., regardless of the number of models involved.

In order to quantify the consequences of harmonization, the following premise must be assumed:

- the average plant manufacturers approximately 150 wood-working machines p.a.
- approximately 10 % of production is exported to France
- the average price of the machines amounts to 10-15,00 ECU (smaller single and multi-spindle machines)

The following additional costs thus result:

Alternative A: 15,000 ECU for personnel costs:
number of exported machines
(approx. 15) = 1,000 ECU

Alternative B: 30,000 ECU for personnel costs %.
15 = 2,000 ECU

Related to the value of the machine this results in a scale of 6.6 % to 20 % max. According to the interviews the average ratio amounted to 7-10 %. The firms react to the French decrees in varying manners:

- some foreign suppliers did not carry out adaption investment with the consequence that no machines are exported to France

- in so far as it was accepted, manufacturers of special machines passed on the full cost of the price rise to the customer

- Italian manufacturers carried out product improvements and concentrated on exporting smaller, standardised machines to France

- German manufacturers primarily supply CNC controlled machines with automatic feeding of the workpiece, i.e. this new technique takes the safety aspect into account

- there are no noteworthy British exports to the French market

Taking the described state of affairs into account, the following direct costs of a non-realised internal market will arise:

the case of a rise in average job size to approximately 30-40 units, this results in cost reduction of 11.5 mio. ECU x 3-5 % = 0.5-0.9 ECU.

Harmonization of the technical regulations at a "non-French level" could lead to an expansion of production, particularly for the Italian manufacturers. This expansion would be at the cost of French manufacturers, i.e. the number of French manufacturers (currently approximately 6 firms) would be reduced. The initial basis for further observation is the French production volume, which amounted to 17.5 mio. ECU in 1986. Taking into account the well-known economies of scale in mechanical engineering of approximately 3.5 % in the case of a rise in average job size to approximately 30-40 units, this results in cost reduction of 17.5 mio. ECU x 3-5 % = 0.5-0.9 mio. ECU.

In 1986, French imports of (conventional)planing, milling or moulding machines amounted to approximately 3,3 mio. ECU. The direct effect of harmonization at the French level would accordingly amount to approximately 0,2-0,33 mio. ECU. From the longer term viewpoint the complete market situation must be considered. The demand for conventional planing, milling or moulding machines is tendentially stagnating/declining (see table 24).

E. Fire protection products

1. Remarks

The product group - fire protection products-comprises a number of individual products which appear in only very few statistics. The respective national statistic data cannot be compared, as fire protection products appear in the most varied of statistics. The following data is based on extensive analyses conducted by GEWIPLAN in this sector, as well as personal interviews. Of the numerous products involved, the following are of relevance to the study:

- fire protection material, especially:
  fire protection plates
- fire protection elements, especially:
  fire protection doors

2. Employees, companies and production

A total of approximately 25,000 employees are employed in slightly more than 100 companies who manufacture fire protection doors and panels.

Table 27: Branch data, 1985

	Companies	Employees	Employees per company
United Kingdom	44	9,000	approx. 200
France	10	6,300	approx. 630
Italy	8	500	approx. 62
Germany	40	900	approx. 225
Total	102	24,800	approx. 243

Source: compiled by GEWIPLAN

Not included in this data are the firms which carry out the installation. In each of these countries there are dominant companies, e.g.

- in France: three companies
- in Great Britain: two companies
- in Germany: two companies
- in Italy: two companies

The value of the fire protection doors and plates produced in different countries amounts to:

Table 28: Production of fire protection doors and plates in mio. ECU

Production	UK	F	I	FRG	Total
1983	102	34	2	99	237
1984	110	33	4	100	247
1985	114	34	5	88	241
1986	116	37	7	106	266
⋮					
1992	130	85	20	140	375

Source: estimations, based on interviews

Production level is determined by

- the volume of construction
- the fire protection regulation

in each country.

In the period 1983-1986, total production volume increased by 12 %. As a consequence of an expected intensification of regulations, it is expected that there will be a large production increase (of approximately 52 %) by 1992.

3. Foreign trade

Foreign trade is at a very low level. The exports of the individual countries are primarily intended for third countries, in particular the Near- and Middle East export is dependent on the individual demands of the user (e.g. DIN, BS standards) in these countries. With the exception of fire-protection plates, foreign trade is of no importance in the study-related countries. Fire-protection doors are neither imported nor exported. Reseach produced the following.

Table 29 : Exports of fire-protection plates in mio. ECU

Exports	UK	F	I	FRG
1983	47	3	-	13
1984	54	3	-	15
1985	53	4	-	12
1986	54	4	-	16

Source: compiled by GEWIPLAN

Table 30 : Exports of fire-protection plates by countries in mio. ECU, 1986

Exports from	to UK	F	I	FRG	other countries
UK	-	5	-	10	39
F	-	-	-	-	4
I	-	-	-	-	-
FRG	-	-	-	-	16
other countries	5[1)]	9[1)]	-	4[1)]	18

1) exports primarily from Belgium

Source: desk research; official statistics are not available

The cause of low foreign trade is created by the diverent regulations (see section: Technical barriers). Deviations in the value-related exports are determined by building activity in the Near and Middle East.

4. Regulations

The regulations - technical standards, technical regulations and technical certification - in each country vary greatly; consequently no national product obtains certification for another country. The strictest regulations exist in Germany and Great Britain, however the DIN standards and BS 476 also diverge greatly.

Table 32: Differences in regulations

Criteria	in Germany	in France	in Italy	in Great Britain
standards	DIN 4102	CCH[1)]	UNI 7557, 7677	BS 574
technical regulations	different	different	different	different
test method	different	different	different	different
requirements	rather high	considerably low	considerably low	rather high
duration of approval	5 years	5 years	5 years	5 years
test fees	different	different	different	different

general: Many of the producers do not know the foreign regulations well enough. They are only aware that the requirements are different in other countries.

different: means varying in the individual countries

1) CCH: Code de Construction et d'Habitation, article R 121-2

5. Market characteristics

The following statements briefly describe the market:

- The national regulations are divergent.
- The demand for fire protection products depends on regulations and construction activity; in this respect there is close correlation.
- This sector is not comprised so much of differentiated products, but different (!) products; dependent on the product, one can observe numerous suppliers or only one supplier.
- Safety levels in regulations differ between each country.
- The market is growing, but haphazardly.
- The rise in demand is caused by the increase in safety regulations, particularly for the protection of persons in public buildings.

6. Removing technical barriers

The product group, fire protection products, is a very problematical product group in regard to regulations. The companies interviewed are mainly familiar with their own national, but have little experience with the regulations of other countries. Exceptions to this state of affairs were two companies who were however, reluctant to devulge information. Studies aimed at deriving information on the existence of differing regulations are presently being conducted. The Commission has commissioned an expert team to examine, amongst other things, methods of determining fire resistance and particularly to propose a classification procedure for doors on the basis of information derived from tests.

EGOLF is the European Group of Official Laboratories for Fire-testing. Its goal is to promote inter-laboratory acceptance of test data. It is assisting the European Commission with its harmonization programme. In this context EGOLF decided to discuss proposals for harmonization.

Possible harmonization involves the question of at which level such harmonization can be undertaken, i.e. at the German, English, French or Italian level. The order in which the countries are listed corresponds to the level of requirements demanded for fire production products, i.e. the German requirements - in respect of fire resistance - are the highest.

Under the aspect of the increase in safety requirements, the question primarily concerns whether the English or German regulations are to be of future relevance. The divergences lie in the varying testing regulations.

The aim of the currently existing 30, 60 and 90 minutes test is to determine the pressure at which the test is carried out, at which temperature, whether only the plate or the aggregate (e.g. door frames), and which toxic levels are accepted.

Due to the divergent testing costs, different products exist in each country. This also explains the negligible foreign trade between each country.

It is presently not possible for Italian products to receive approval in the UK. Should an Italian manufacturer want to supply the English market, he must manufacture other products. An English product however, which is to be sold in Italy is considerably more expensive than an Italian product, i.e. the English product is "overqualified". E.g. a domestic fire-protection plate costs 5-6 ECU per m^2 in Italy; a German product costs 12.3 ECU per m^2; an English product costs 9.6-12 ECU per m^2; whereby the average values are the sales prices.

In determining the effects of a realisation of an internal market, it is necessary to examine to what extent the economies of scale (see also part III: Impact ...) can act.

Approximately 10-20 % of the sales value is accounted for by transportation costs (depending on the distance from the manufacturer). An average product price[1] of approximately 12-15 ECU per m^2 and an assumed rise in output of 20 % results in a reduction in the fixed costs of approximately 0.3-0.5 ECU per m^2 per plate[2], as against transport costs

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1) German/English product demands were assumed.

2) Price of plate x percentual plant cost x supposed production rise

of approximately 1.2 to max. 3.0 ECU per m^2, i.e. the effect of the economies of scale is lower than the transport costs incurred. The high costs of approval (FRG e.g.: 14,000 ECU per plate type, UK approximately 2,500 ECU) have the predominant effect of acting as a barrier to market entry, because related to a volume of approximately 500,000-1 mio. m^2, this represents a product price increase of less than 0.01 %.

From the point of view of the increasing pursuance of safety, it can be assumed that the German or English regulations will form the basis of harmonization. This would mean that suppliers from the other nations could not supply (short-term) the respective market. In the medium and long-term, it can be assumed that production in the respective countries would be altered accordingly, whereby the upper limit of the respective price level will be defined by the manufacturing costs of the foreign supplier plus transport costs. A similar state of affairs exists in the case of fire-protection doors. Here, transport costs are also a factor impeding an exchange of goods between each country.

The average price for fire protection doors is:

- Germany: 1,080 ECU per unit on average
- France: 514 ECU per unit on average

The price difference is due to the considerably stricter German regulations compared to France. If a costs structure of

- 40 % distribution costs
- 45-50 % material costs
- 10-15 % plant costs

is laid down, of which transport costs account for approximately 10 % of the entire costs, it is apparent that the cost reduction of an increase in production is not compensated by the transport costs. This applies to a cost reduction of approximately 3-5 %, with a production increase of approximately 30 %.

The impacts of a realisation of an internal market can be described as follows:

- An exchange of goods will only take place in border proximity (up to max. 300-500 km), due to the transport costs.

- A transfer of know-how will be the primary result, particularly between those companies who have to adapt their products to harmonized regulations.

APPENDIX A:

- Foreign trade data of
  -- dishwashers
  -- HAR cables

- Regulations

Table A-1: French imports of dishwashers, in 1,000 ECU

Imports from	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dishwashers											
- other dishwashers											
GERMANY											
- household dishwashers	21,042	34,901	28,621	37,143	44,729	44,090	56,255	60,043	49,969	51,534	55,576
- other dishwashers	2,464	3,583	3,393	2,701	4,256	4,536	5,831	6,528	5,330	4,817	5,558
ITALY											
- household dishwashers	4,821	6,993	7,211	8,349	11,863	9,714	8,723	12,753	13,489	15,720	15,778
- other dishwashers	2,193	3,478	3,635	4,135	6,030	6,884	7,489	9,820	10,456	9,986	11,731
UK											
- household dishwashers	60	51	58	44	27	1	3	2	3	2	4
- other dishwashers	8	38	35	32	33	254	36	14	1	6	2
TOTAL Imports											
- household dishwashers	26,069	42,161	36,433	44,733	58,069	54,953	65,894	74,707	70,901	78,670	81,943
- other dishwashers	5,550	8,685	8,764	8,512	11,456	13,069	14,459	18,064	17,092	16,155	18,494
INTRA-EC Trade											
- household dishwashers	26,019	42,040	36,206	44,574	56,697	53,902	65,025	72,904	63,544	67,330	71,460
- other dishwashers	4,731	7,172	7,153	7,111	10,529	11,877	13,638	16,657	16,016	15,004	17,350

Table A-2: German imports of dishwashers, in 1,000 ECU

Imports from	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dishwashers	3,543	6,339	4,064	3,709	5,113	3,383	3,359	3,464	4,546	5,551	2,682
- other dishwashers	569	746	47	106	25	47	257	833	999	1,088	906
GERMANY											
- household dishwashers											
- other dishwashers											
ITALY											
- household dishwashers	6,216	5,082	5,513	8,037	8,783	5,958	6,760	9,047	11,011	14,846	14,484
- other dishwashers	610	923	632	805	1,315	1,910	1,273	1,335	1,483	1,934	2,878
UK											
- household dishwashers	25	25	1	1	20	15	19	12	12	42	21
- other dishwashers	26	20	7	35	94	119	60	35	34	36	29
TOTAL Imports											
- household dishwashers	10,685	12,628	9,988	12,261	14,722	10,818	12,251	14,959	19,804	22,370	19,163
- other dishwashers	2,261	2,713	1,516	2,005	2,910	4,097	3,786	4,653	5,217	5,905	6,759
INTRA-EC Trade											
- household dishwashers	10,124	11,537	9,635	11,873	14,239	9,963	11,262	13,006	16,588	21,507	17,898
- other dishwashers	1,349	1,827	793	1,286	2,132	3,020	2,476	3,172	3,303	3,634	4,501

Table A-3: Italian imports of dishwashers, in 1,000 ECU

Imports from	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dishwashers	124	296	1,023	1,756	2,499	3,950	3,875	2,372	3,171	3,100	417
- other dishwashers	54	58	27	126	89	192	75	64	65	108	111
GERMANY											
- household dishwashers	2,108	5,505	5,180	4,595	6,808	9,019	10,677	11,375	10,462	11,797	16,851
- other dishwashers	665	955	507	926	800	1,019	1,365	1,027	517	1,213	770
ITALY											
- household dishwashers											
- other dishwashers											
UK											
- household dishwashers	26	5	4	-	3	2	2	1	21	6	2
- other dishwashers	32	25	10	31	18	16	76	43	4	48	41
TOTAL Imports											
- household dishwashers	2,289	5,862	6,739	6,517	9,542	13,114	15,197	14,268	13,822	15,146	17,620
- other dishwashers	922	1,256	612	1,269	1,025	1,350	2,133	1,380	1,010	1,932	1,570
INTRA-EC Trade											
- household dishwashers	2,284	5,851	6,610	6,482	9,502	13,014	14,607	13,750	13,655	14,906	17,319
- other dishwashers	763	1,097	562	1,113	923	1,228	1,912	1,269	596	1,413	998

Table A-4: Imports of dishwashers in 1,000 ECU

	Household dishwashers				Other dishwashers			
	France	Italy	UK	FRG	France	Italy	UK	FRG
1975	26,069	2,289	7,074	10,124	5,550	763	-	1,349
1976	42,161	5,862	8,597	11,537	8,685	1,097	-	1,827
1977	36,433	6,739	-	9,635	8,764	562	17,946	793
1978	44,733	6,517	17,288	11,873	8,512	1,113	2,321	1,286
1979	58,069	9,542	21,102	14,293	11,456	923	3,514	2,132
1980	54,953	13,114	23,063	9,963	13,069	1,228	4,752	3,020
1981	65,894	15,197	27,975	12,262	14,459	1,912	5,833	2,476
1982	74,707	14,268	28,004	13,006	18,064	1,269	6,952	3,172
1983	70,901	13,822	46,975	16,588	17,092	596	8,334	3,303
1984	78,670	15,146	54,764	21,507	16,155	1,413	10,165	3,634
1985	81,943	17,620	66,082	17,898	18,494	998	12,615	4,501

Table A-5: French exports of dishwashers, in 1,000 ECU

Exports to	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dishwashers											
- other dishwashers											
GERMANY											
- household dishwashers	3,878	5,693	4,304	3,744	5,101	3,386	4,013	3,386	4,769	5,641	2,776
- other dishwashers	68	94	68	45	76	49	249	626	713	833	977
ITALY											
- household dishwashers	123	369	1,008	2,047	2,636	4,174	3,564	2,262	3,244	2,876	293
- other dishwashers	27	47	36	53	66	67	49	79	82	108	187
UK											
- household dishwashers	1,159	1,904	3,394	1,680	1,223	1,062	2,046	1,861	2,167	3,122	2,745
- other dishwashers	30	20	51	88	67	93	147	111	132	175	301
TOTAL Imports											
- household dishwashers	11,294	19,333	23,108	19,943	23,169	20,978	18,287	14,645	17,977	17,971	11,558
- other dishwashers	1,913	2,173	5,125	2,184	2,269	2,413	3,393	2,677	3,206	4,043	4,710
INTRA-EC Trade											
- household dishwashers	6,668	11,586	12,268	11,105	12,151	11,049	10,876	8,753	11,823	13,042	7,370
- other dishwashers	617	636	764	739	869	721	995	1,189	1,493	1,606	2,315

Table A-6: German exports of dishwashers, in 1,000 ECU

Exports to	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dishwashers	18,817	36,587	36,928	38,057	51,118	46,321	55,472	56,513	47,995	50,887	56,095
- other dishwashers	3,282	4,460	3,252	3,246	3,876	4,195	4,995	5,793	4,707	4,328	4,761
GERMANY											
- household dishwashers											
- other dishwashers											
ITALY											
- household dishwashers	2,369	6,199	5,195	5,401	9,035	11,792	10,397	10,230	9,665	11,472	17,002
- other dishwashers	606	1,023	585	759	1,155	1,204	1,170	973	1,371	1,046	1,126
UK											
- household dishwashers	2,086	2,136	7,778	7,308	7,742	8,835	12,068	11,974	20,182	25,061	33,984
- other dishwashers	868	1,118	989	1,538	1,906	1,951	2,411	4,064	5,438	6,900	7,922
TOTAL Imports											
- household dishwashers	60,214	103,284	120,549	110,323	132,704	130,994	138,405	147,828	157,432	176,698	221,919
- other dishwashers	14,509	20,321	18,795	21,191	22,829	22,906	25,744	27,990	28,999	30,684	36,969
INTRA-EC Trade											
- household dishwashers	38,792	71,717	79,927	77,388	95,445	91,509	100,537	102,264	103,963	116,607	146,061
- other dishwashers	8,745	12,174	10,045	11,427	13,078	13,985	15,553	16,960	17,629	18,390	21,174

Table A-7: Italian exports of dishwashers, in 1,000 ECU

Exports to	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dishwashers	5,143	6,671	6,422	8,138	11,290	10,765	10,585	17,162	16,451	17,514	18,041
- other dishwashers	1,466	2,758	2,722	3,601	4,192	5,027	5,096	6,851	6,325	6,701	9,677
GERMANY											
- household dishwashers	4,265	3,834	7,526	7,432	8,429	6,312	7,245	9,828	10,999	15,492	17,192
- other dishwashers	333	562	661	1,027	1,502	2,279	1,612	1,611	2,189	2,670	2,780
ITALY											
- household dishwashers											
- other dishwashers											
UK											
- household dishwashers	2,036	2,193	4,343	6,511	9,206	10,429	11,542	13,234	23,191	22,262	23,232
- other dishwashers	383	303	303	547	844	1,035	2,115	2,201	2,419	2,971	3,764
TOTAL Imports											
- household dishwashers	23,380	30,184	38,368	41,813	52,272	50,482	53,777	61,988	85,104	81,859	83,176
- other dishwashers	4,176	6,853	7,488	10,711	13,936	16,654	17,378	19,434	19,549	23,255	27,929
INTRA-EC Trade											
- household dishwashers	14,957	16,649	22,987	26,015	32,605	30,166	32,213	53,843	54,872	59,210	62,585
- other dishwashers	2,590	4,391	4,559	6,745	8,364	10,223	10,878	12,777	12,706	14,917	19,133

Table A-8: United Kingdom exports of dishwashers, in 1,000 ECU

Exports to	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
FRANCE											
- household dish-washers	79	77	-	36	29	8	-	-	-	-	-
- other dish-washers	-	-	49	42	32	463	40	23	26	137	2
GERMANY											
- household dish-washers	22	8	-	84	46	2	-	45	14	56	80
- other dish-washers	-	-	46	26	65	110	101	105	191	14	10
ITALY											
- household dish-washers	18	146	-	12	17	17	2	20	56	5	7
- other dish-washers	-	-	6	18	-	-	-	-	12	-	25
UK											
- household dish-washers											
- other dish-washers											
TOTAL Imports											
- household dish-washers	1,064	1,487	-	678	473	488	336	751	622	562	1,026
- other dish-washers	-	-	2,027	2,124	1,614	1,759	1,045	1,017	962	1,128	1,010
INTRA-EC Trade											
- household dish-washers	286	410	-	306	373	366	249	423	400	454	825
- other dish-washers	-	-	367	422	430	805	315	310	388	310	222

Table A-9: Imports of HAR cables, in mio. ECU

	HAR cables		
	1983	1984	1985
France	-[1)]	-	-
Italy	14.8	16.6	20.7
Germany	-[1)]	-	-
UK	-[1)]	-	-

1) figures for HAR cables are not published

Table A-10: Exports of HAR cables

	1983	1984	1985
France	-[1)]	-	-
Italy	66.6	72.4	58.7
Germany	-[1)]	-	-
UK	-[1)]	-	-

1) figures for HAR cables are not published

REGULATIONS

Regulations for dishwashers

	France	UK	Germany	Italy
Standards	NF 73605 NF-C73-175 NF-C73-176	BS 3456	VDE 0700	CEI 107.21
Certification	UTE	BEAB	VDE	IMQ
Type test	yes	yes	yes	yes

Regulations for HAR cables

	France	UK	Germany	Italy
Standards	NF 7360	BS 6500 BS 6004 BS 5750	VDE 281 R VDE 282	CEI 2020 CEI 2022
Certification	UTE	BASEC/ BEAB	VDE	IMQ

The following situation exists with regard to approvals and national pecularities:

UK:

BEAB-British Electrical Approval Board
Before harmonization:
- test duration: 1-2 years
- test fees: appr. 2,500 DM

Now (with approval of CCA certificate):
- test duration: 2-3 months
- test fees: under 1,000 DM

France:

UTE-Union Technique D'Electricité
Before harmonization:
- test duration: 6-9 months
- test fees: appr. 3,000 DM per type

Germany:

Test duration:
- VDE: 6-9 months
- CCA certificate: 3 months
- total: 9-12 months

Costs (average level, e.g. those used for a pre-calculation):
- VDE test: 3,000 DM per type
- CCA certificate: 1,500 DM per type

Italy:

Test duration:
- IMQ: 9-12 months
- CCA certificate: 3-6 months

Costs:
- IMQ-test: about 3,500 DM
- CCA certificate: about 1,600 DM

APPENDIX B:

Electrically driven passenger lifts - foreign trade data

Table B-1: FRG imports of electrically driven passenger and material lifts, in 1,000 ECU

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
France	-	86	164	101	1,928	2,447	4,065	5,467	7,607	7,555	5,432	5,559
Italy	-	102	8	50	42	61	581	316	502	385	147	240
UK	-	30	73	101	24	34	1	89	461	666	350	362
Total	-	680	875	687	2,713	3,503	6,099	6,990	10,841	9,930	9,490	8,731
EC-Intra	-	533	588	371	2,139	2,709	4,845	6,151	8,737	8,711	6,760	6,669

Table B-2: French imports of electrically driven passenger and material lifts, in 1,000 ECU

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Italy	-	545	736	351	639	691	735	402	1,239	952	733	380
UK	-	-	4	-	-	3	224	228	235	-	-	-
FRG	-	498	240	471	511	1,293	1,299	1,410	1,457	1,595	1,983	2,369
Total	-	2,616	2,494	1,648	3,013	5,072	5,608	5,490	5,884	6,416	7,170	9,392
EC-Intra	-	1,523	1,312	1,138	2,116	2,986	4,188	4,416	5,252	5,212	6,164	8,641

Table B-3: United Kingdom imports of electrically driven passenger and material lifts, in 1,000 ECU

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
France	-	1,815	1,693	48	291	2,299	2,650	1,886	540	313	301	341
Italy	-	1,620	1,296	246	213	47	354	414	380	459	564	271
FRG	-	5,163	5,397	1,509	1,095	729	718	1,394	1,496	1,570	3,987	6,301
Total	-	11,688	11,623	2,547	2,561	3,825	4,448	4,689	3,400	3,928	6,857	9,494
EC-Intra	-	9,201	9,933	2,283	2,061	3,342	4,015	3,802	2,421	2,443	5,116	8,387

Table B-4: Italian imports of electrically driven passenger and material lifts, in 1,000 ECU

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
France	-	78	1	38	16	6	14	7	-	3	57	-
UK	-	66	-	-	-	-	20	-	-	-	-	-
FRG	-	23	-	9	7	32	-	20	48	234	177	56
Total	-	202	171	154	25	39	139	456	641	1,041	1,068	348
EC-Intra	-	107	1	47	24	38	41	27	136	247	284	347

Table B-5: FRG exports of electrically driven passenger and material lifts, in 1,000 ECU

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
France	2,164	1,425	1,317	2,386	1,860	2,193	2,365	2,023	7,386	2,951	3,698
Italy	218	88	105	.	304	311	237	654	174	422	449
UK	297	553	1,077	1,012	607	1,083	2,263	2,647	2,383	4,498	9,197
Total	15,502	29,472	34,274	25,719	28,869	38,704	55,941	37,881	41,948	52,434	56,593
EC-Intra	6,519	6,519	6,560	7,162	7,668	9,298	11,561	10,544	11,463	14,254	21,932

Table B-6: French exports of electrically driven passenger and material lifts, in 1,000 ECU

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Italy	50	55	26	-	-	-	37	-	-	-	-
UK	327	28	202	570	1,620	1,835	4,354	4,590	2,892	2,273	2,134
FRG	87	-	44	1,542	4,188	4,216	4,765	6,640	6,746	4,795	4,997
Total	17,656	23,993	28,561	22,256	30,398	30,600	37,368	39,714	41,592	30,790	30,343
EC-Intra	3,730	3,896	4,471	4,693	10,171	9,585	13,602	13,985	13,008	9,616	10,653

Table B-7: United Kingdom exports of electrically driven passenger and material lifts, in 1,00 ECU

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
France	3,599	2,377	188	173	184	146	77	296	483	56	267
Italy	34	266	2	-	3	168	4	5	3	3	-
FRG	941	925	18	77	20	119	16	12	86	76	77
Total	22,161	23,818	5,981	6,411	6,552	10,718	6,978	6,608	9,605	7,260	5,416
EC-Intra	6,461	5,255	743	1,132	1,165	2,518	366	647	902	443	586

Table B-8: Italian exports of electrically driven passenger and material lifts, in 1,000 ECU

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
France	1,019	781	526	471	956	942	461	254	749	590	271
UK	212	178	290	573	667	851	884	712	316	247	238
FRG	188	205	150	185	191	93	1	113	125	241	208
Total	19,450	17,530	14,667	14,414	16,467	24,275	24,040	23,619	21,199	19,341	17,100
EC-Intra	2,217	2,197	1,611	1,732	2,421	2,857	1,961	1,380	1,850	1,525	1,677

Comparison of the import and export data (see annex B) indicates that the export data (e.g. France) deviates considerably from the import data (e.g. Germany). The reason for this could be c.i.f. and/or f.o.b. prices. As foreign trade data gives no indication of the country of origin, it can be assumed that triangular trade takes place (country of delivery!).

However, the reason for the divergence can also be the incorrect declaration of statistics. This problem exists with many statistics.

APPENDIX C:

Weighing equipment
- foreign trade data

Table C-1: French exports of different scales, in 1,000 ECU

Exports to	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales							
- personal scales							
- household scales							
ITALY							
- baby scales	-	-	-	-	-	-	-
- personal scales	1,636	893	895	2,475	2,187	1,567	1,091
- household scales	1,229	818	542	37	739	1,102	1,227
UK							
- baby scales	-	-	-	-	-	-	-
- personal scales	113	436	103	141	203	75	12
- household scales	162	123	59	35	47	89	8
FRG							
- baby scales	-	-	-	-	-	-	-
- personal scales	729	612	536	469	1,264	1,743	1,859
- household scales	856	35	183	380	796	64	53
TOTAL EXPORTS							
- baby scales	307	157	131	167	82	283	186
- personal scales	4,485	3,918	3,366	5,101	5,843	5,173	5,222
- household scales	3,475	1,943	1,475	937	2,045	2,104	2,040
EC-INTRA-TRADE							
- baby scales	34	33	2	2	2	37	1
- personal scales	2,706	2,274	1,799	3,273	3,954	3,466	3,226
- household scales	2,514	1,196	877	483	1,666	1,462	1,362

Table C-2: Italian exports of different scales, in 1,000 ECU

Exports to	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales	-	-	2	10	-	21	-
- personal scales	36	82	21	2	4	27	30
- household scales	45	-	-	7	100	-	-
ITALY							
- baby scales							
- personal scales							
- household scales							
UK							
- baby scales	-	-	-	-	-	18	-
- personal scales	8	21	24	142	160	286	169
- household scales	2	18	88	55	64	89	49
FRG							
- baby scales	-	-	-	-	-	-	-
- personal scales	39	12	13	21	29	23	65
- household scales	119	160	67	136	57	57	82
TOTAL EXPORTS							
- baby scales	166	59	24	56	78	135	86
- personal scales	575	754	484	556	720	1,015	785
- household scales	906	1,083	839	1,159	1,707	1,072	1,181
EC-INTRA-TRADE							
- baby scales	13	32	4	12	30	128	44
- personal scales	119	191	105	261	252	423	427
- household scales	284	312	361	600	548	466	644

Table C-3: British exports of different scales, in 1,000 ECU

Exports to	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales	-	-	2	-	20	-	-
- personal scales	32	2	70	14	30	71	64
- household scales	17	-	-	3	42	-	-
ITALY							
- baby scales	-	-	-	-	-	-	-
- personal scales	27	-	16	15	14	49	116
- household scales	40	-	-	9	39	71	63
UK							
- baby scales							
- personal scales							
- household scales							
FRG							
- baby scales	-	-	-	-	-	-	-
- personal scales	33	18	46	53	164	129	140
- household scales	22	14	30	7	32	29	64
TOTAL EXPORTS							
- baby scales	585	479	587	564	440	601	954
- personal scales	1,003	1,295	1,127	1,514	2,311	3,301	2,535
- household scales	822	557	846	830	1,993	1,787	895
EC-INTRA-TRADE							
- baby scales	224	396	453	395	217	341	329
- personal scales	286	183	266	324	694	1,100	1,007
- household scales	187	27	159	164	234	334	299

Table C-4: German exports of different scales, in 1,000 ECU

Exports to	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales	-	-	98	181	333	-	-
- personal scales	475	605	666	641	722	832	990
- household scales	73	-	-	99	22	-	-
ITALY							
- baby scales	-	-	-	-	-	-	-
- personal scales	900	1,329	1,175	1,635	2,035	2,045	2,688
- household scales	688	1,018	798	887	860	914	824
UK							
- baby scales	-	-	-	-	182	-	-
- personal scales	938	1,175	1,045	618	203	1,225	1,193
- household scales	228	331	430	355	488	605	589
FRG							
- baby scales							
- personal scales							
- household scales							
TOTAL EXPORTS							
- baby scales	313	171	295	687	982	1,669	2,135
- personal scales	9,473	11,525	13,655	13,239	16,439	20,230	23,378
- household scales	4,416	6,113	6,601	7,223	7,025	7,167	8,178
EC-INTRA-TRADE							
- baby scales	74	39	166	39	525	963	1,358
- personal scales	5,069	6,356	7,665	6,557	8,931	10,184	12,519
- household scales	2,405	3,153	3,559	4,000	3,792	4,120	4,464

Table C-5: French imports of different scales, in 1,000 ECU

Imports from	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales							
- personal scales							
- household scales							
ITALY							
- baby scales	20	18	-	-	-	52	25
- personal scales	-	70	9	-	1	60	-
- household scales	15	12	24	39	21	56	92
UK							
- baby scales	-	-	-	-	-	-	-
- personal scales	-	4	3	3	1	-	19
- household scales	-	7	-	-	40	15	-
FRG							
- baby scales	106	208	111	200	181	358	421
- personal scales	1,340	1,504	1,696	1,504	1,879	2,277	2,774
- household scales	55	24	10	103	23	7	-
TOTAL EXPORTS							
- baby scales	126	226	143	230	207	410	448
- personal scales	1,682	1,942	1,971	1,761	2,161	2,704	3,241
- household scales	181	208	300	473	311	284	116
EC-INTRA-TRADE							
- baby scales	126	226	143	230	205	410	448
- personal scales	1,470	1,736	1,782	1,648	2,012	2,547	3,080
- household scales	87	89	42	201	87	84	113

Table C-6: Italian imports of different scales, in 1,000 ECU

Imports from	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales	135	-	-	-	-	-	-
- personal scales	1,492	1,071	794	1,811	2,035	1,814	1,582
- household scales	913	657	764	540	776	1,003	841
ITALY							
- baby scales							
- personal scales							
- household scales							
UK							
- baby scales	-	-	-	-	-	-	-
- personal scales	20	25	-	65	16	30	7
- household scales	130	53	10	7	-	62	44
FRG							
- baby scales	45	8	10	7	83	42	4
- personal scales	768	1,238	1,157	1,209	1,514	1,612	2,410
- household scales	422	1,293	836	1,000	936	901	939
TOTAL EXPORTS							
- baby scales	521	251	125	121	181	94	109
- personal scales	3,001	3,079	2,624	4,180	5,536	4,896	5,626
- household scales	2,336	2,903	2,547	2,546	2,230	2,694	3,019
EC-INTRA-TRADE							
- baby scales	518	195	58	12	83	42	4
- personal scales	2,397	2,458	2,186	3,357	3,841	3,606	4,252
- household scales	1,876	2,257	2,045	2,106	3,218	4,189	4,624

Table C-7: British imports of different scales, in 1,000 ECU

Impofts from	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales	-	-	-	-	-	-	-
- personal scales	130	351	127	182	213	44	24
- household scales	119	85	-	-	30	107	7
ITALY							
- baby scales	-	-	-	-	-	-	-
- personal scales	-	14	25	78	154	42	148
- household scales	43	36	89	48	93	95	7
UK							
- baby scales							
- personal scales							
- household scales							
FRG							
- baby scales	15	145	54	72	2	234	189
- personal scales	941	1,059	817	1,029	1,471	994	1,317
- household scales	282	298	548	777	503	684	437
TOTAL EXPORTS							
- baby scales	134	152	148	101	58	316	246
- personal scales	4,191	5,200	5,280	5,499	6,664	7,661	7,046
- household scales	2,463	2,565	2,707	3,162	3,203	3,513	2,375
EC-INTRA-TRADE							
- baby scales	20	146	127	92	47	239	197
- personal scales	2,735	3,128	3,103	3,022	3,952	4,121	4,302
- household scales	1,810	1,530	2,022	2,109	1,553	2,222	1,690

Table C-8: German imports of different scales, in 1,000 ECU

Imports from	1980	1981	1982	1983	1984	1985	1986
FRANCE							
- baby scales	4	-	-	-	-	-	-
- personal scales	708	604	672	564	1,324	1,791	2,436
- household scales	789	5	66	351	61	1	249
ITALY							
- baby scales	88	152	-	-	-	77	58
- personal scales	-	95	97	85	46	17	42
- household scales	27	45	68	38	64	71	38
UK							
- baby scales	-	-	-	-	-	-	1
- personal scales	7	79	13	8	14	33	7
- household scales	17	8	9	6	21	29	45
FRG							
- baby scales							
- personal scales							
- household scales							
TOTAL EXPORTS							
- baby scales	708	155	63	4	34	83	60
- personal scales	3,426	5,466	6,805	6,634	8,177	8,940	8,969
- household scales	4,449	4,412	5,073	6,936	7,851	8,977	10,104
EC-INTRA-TRADE							
- baby scales	706	153	63	-	30	78	60
- personal scales	763	803	843	674	1,404	1,856	2,510
- household scales	863	77	153	399	163	139	414

APPENDIX D:

Wood-working machines

- foreign trade data
- regulations

Table D1: Exports of wood-working machines

German exports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	5,106	7,431	4,292	6,003
EC	1,473	1,451	1,773	2,531
- France	390	549	627	749
- Italy	118	-	267	-
- UK	301	222	266	353
other countries	3,632	5,980	2,519	3,472

French exports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	9,588	3,755	3,443	2,487
EC	2,109	1,895	1,358	898
- Germany	1,016	890	518	66
- Italy	5	-	119	-
- UK	378	335	68	294
other countries	7,479	1,860	2,084	1,589

Italian exports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	16,331	15,032	11,802	14,474
EC	3,094	2,721	3,110	5,841
- Germany	914	546	703	1,581
- France	985	1,076	1,167	1,837
- UK	306	251	334	324
other countries	13,238	12,311	8,692	8,633

British exports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	835	687	2,649	647
EC	70	147	282	186
- Germany	-	66	175	91
- France	24	7	-	36
- Italy	-	-	2	-
other countries	765	542	2,367	460

German exports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	41,580	63,837	74,789	100,500
EC	14,320	24,665	24,710	32,364
- France	3,376	5,172	4,532	7,246
- Italy	1,992	3,054	3,825	4,790
- UK	4,580	7,578	8,168	8,030
other countries	27,260	39,171	50,079	68,186

French exports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	1,547	5,836	11,512	2,171
EC	329	348	652	754
- Germany	91	128	108	51
- Italy	3	4	341	439
- UK	170	55	40	25
other countries	1,218	5,488	10,860	1,417

Italian exports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	3,230	3,888	4,280	5,291
EC	332	214	533	834
- France	88	78	84	31
- Germany	94	71	96	264
- UK	115	3	249	17
other countries	2,998	3,674	3,747	4,457

British exports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	322	1,116	1,290	1,161
EC	51	588	910	508
- France	-	102	-	-
- Germany	51	322	119	39
- Italy	-	164	-	139
other countries	271	528	380	653

German exports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	62,850	83,414	82,189	100,011
EC	24,718	31,539	29,513	39,813
- France	6,169	6,340	7,077	8,791
- Italy	4,226	5,337	3,283	4,590
- UK	4,531	5,751	6,164	7,435
other countries	38,133	51,875	52,577	60,199

French exports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	5,073	5,695	8,869	6,885
EC	1,843	2,061	3,354	3,437
- Germany	1,100	777	1,486	1,097
- Italy	290	638	1,048	1,250
- UK	274	395	342	317
other countries	3,230	3,635	5,515	3,448

Italian exports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	29,007	33,552	33,639	31,565
EC	10,899	9,771	11,230	14,737
- France	3,999	3,034	3,891	5,298
- Germany	3,747	2,782	3,464	2,945
- UK	987	1,879	1,613	817
other countries	18,108	23,781	22,409	16,828

British exports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	4,588	7,103	5,725	5,256
EC	514	1,124	625	1,128
- France	22	164	10	-
- Germany	261	455	221	375
- Italy	3	-	73	295
other countries	4,073	5,978	5,100	4,128

Table DII: Imports of wood-working machines

German imports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	2,887	2,828	1,817	1,432
EC	2,206	1,650	1,243	539
- France	1,142	657	300	26
- Italy	980	864	779	493
- UK	-	-	8	-
other countries	681	1,178	574	893

French imports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	3,053	3,992	5,248	6,671
EC	2,637	3,145	4,347	6,665
- Germany	757	493	447	539
- Italy	1,069	1,028	2,001	2,972
- UK	-	-	-	-
other countries	416	847	901	6

Italian imports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	640	230	452	526
EC	420	105	422	365
- Germany	409	68	219	177
- France	-	10	181	188
- UK	-	-	11	-
other countries	220	125	30	161

British imports of machines designed to perform several different operations with manual transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	1,106	1,566	1,277	736
EC	1,099	1,278	1,044	559
- France	80	3	32	39
- Germany	365	755	166	297
- Italy	627	450	783	121
other countries	7	288	233	117

German imports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	2,713	3,055	1,993	3,403
EC	1,660	715	992	1,743
- France	612	181	94	160
- Italy	830	282	510	1,258
- UK	-	39	63	-
other countries	1,053	2,340	1,002	1,660

French imports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	6,918	9,234	14,202	12,198
EC	6,310	8,376	12,400	11,056
- Germany	3,675	5,328	5,794	7,327
- Italy	2,428	2,729	6,267	3,680
- UK	99	235	60	630
other countries	608	-	1,803	342

Italian imports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	877	1,522	4,075	2,932
EC	877	1,342	4,066	2,641
- France	-	-	80	52
- Germany	863	1,342	3,986	2,589
- UK	4	-	-	-
other countries	-	180	9	290

British imports of machines designed to perform several different operations with automatic transfer of workpiece between each operation (in 1,000 ECU)

	1983	1984	1985	1986
Total	5,121	5,359	5,847	4,226
EC	4,824	5,316	5,615	3,929
- France	-	81	46	219
- Germany	3,116	4,306	5,309	3,130
- Italy	1,666	555	10	73
other countries	296	43	233	297

German imports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	11,103	11,655	13,915	13,292
EC	6,879	6,495	8,444	8,506
- France	1,883	1,220	1,471	2,078
- Italy	4,296	4,114	5,049	5,331
- UK	266	498	1,096	358
other countries	4,224	5,161	5,471	4,786

French imports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	7,256	6,770	7,872	9,528
EC	6,907	6,587	7,442	9,030
- Germany	4,508	4,165	5,624	5,716
- Italy	1,967	2,143	1,731	2,920
- UK	257	198	26	212
other countries	350	183	430	498

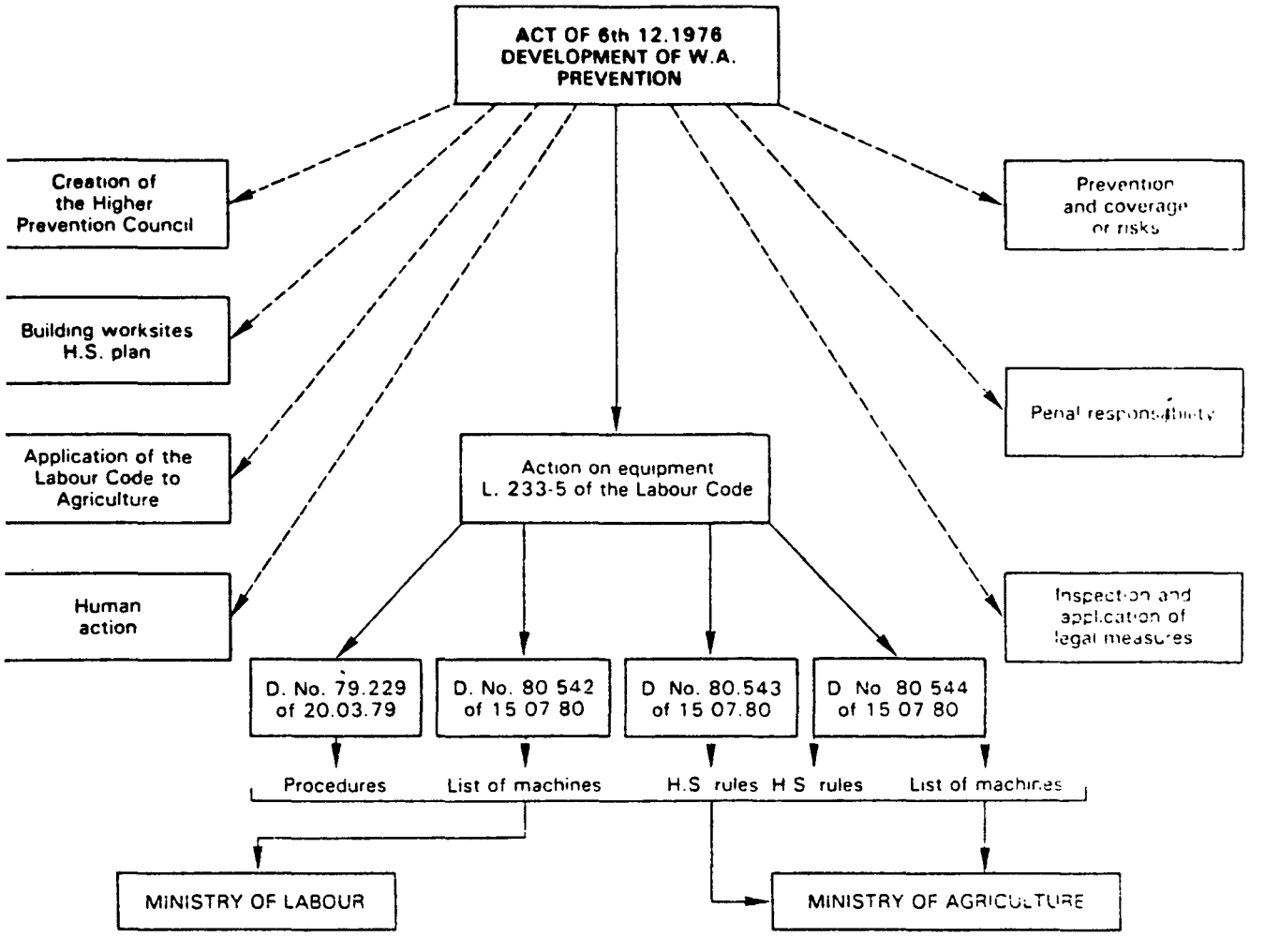
Italian imports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	4,061	5,020	3,960	5,598
EC	2,836	3,599	3,005	4,127
- France	164	308	692	265
- Germany	2,628	3,247	2,206	3,788
- UK	17	4	92	3
other countries	1,224	1,421	955	1,471

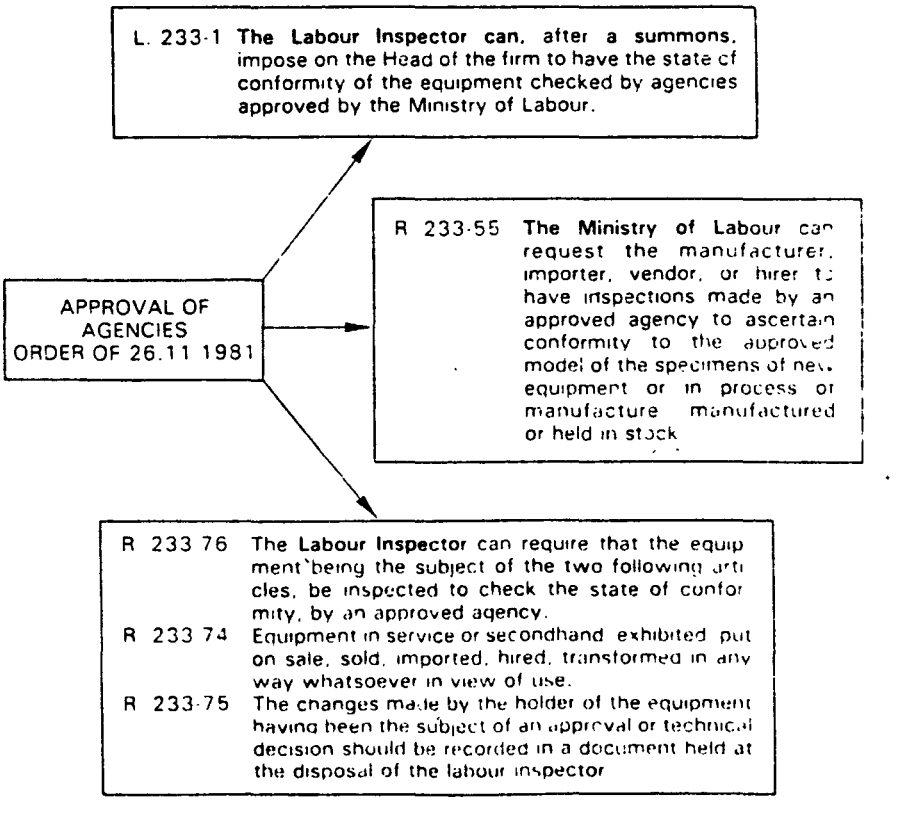
British imports of planing, milling or moulding machines (in 1,000 ECU)

	1983	1984	1985	1986
Total	8,526	9,544	10,017	8,082
EC	7,850	8,748	9,289	7,632
- France	1,056	471	547	654
- Germany	4,979	5,848	6,569	6,232
- Italy	1,240	1,563	1,482	732
other countries	676	796	728	450

EFFECTS OF THE ACT OF 6th DECEMBER 1976 ON THE LEGISLATIVE STIPULATIONS RELATING TO SAFETY



ACTIVITIES OF APPROVED AGENCIES IN CONNECTION WITH MACHINES AND APPARATUS



H.S. = Hygiene, safety

The outline-law of 6 December 1976 about workers' safety is one of the major texts. It establishes the regulation basic principle and the legal limits for machines and apparatus considered as dangerous.

Labour Act L 235-5 (1), involved by this law, enforces the integration of safety in machines' conception as well as it defines the classification of these machines on the basis of their dangerous use.

The Act of 6th December 19876 and legislative provisions

The previous organization chart shows the general scheme of legislative provisions concerning safety for wood working machines. The Labour Code article L 235.5 has led to the promulgation of the following decrees: 80.42, 80543, 80.544 (hygiene and safety applying to some machines tools); 81.170, 81.171, 81.172, 81.173, 81.408, 81.409, 81.410, 81.411 (hygiene and safety applying to wood wirking machines.

On this legal basis, the French regulation established several supervision procedures, a priori (technical visa) or posteriori (Labor Inspection), according to machine types. Three types have been created for the supervision:

- Category X machines. They have to undergo a preliminary supervision procedure and are concerned with specific degrees.

- Category A machines. They can deal with specific recommendations. Decrees 80.543 and 80.544 apply to them. Moreover, these machines can merely undergo the self-sertification procedure.

- Category B machines. Those not mentioned in categories X or A, but used in plants. Articles R.233.85 to R.233.106 and decree 80.543 apply to them. It is also a self-certification procedure.

It is worth noting that in the wood working machines field, only category X and A do exist. Category X procedures are explained in detail in the following pages.

CATEGORY X MACHINES

(1)	Number	Dates	SUBJECT	Official gazette	Labour Code articles	NCP customs classification
			WHEELED AGRICULTURAL AND FORESTRY TRACTORS			
D	80-1091	24 12.80	Conditions of hygiene and safety to be met by wheeled agricultural and forestry tractors.	30.12.80	Approval	87-01
A	–	06.07.81	Procedures for checking and testing the conditions of safety to be met by agricultural and forestry tractors in case of overturning.	04.09.81		
A	–	15.10 81	Procedures for checking and testing the hygiene and safety conditions to be met by the seats of wheeled agricultural and forestry tractors.	05.01.82		
A	–	24 08.81	Composition of the application file for technical examination certification for dangerous agricultural equipment: Appendix 1.	10.09.81		
			PORTABLE, HEAT ENGINE CHAIN SAWS			
D	81-131	10.02.81	Conditions of hygiene and safety to be met by portable heat engine chain saws used for working wood, cork and materials of similar strength.	13.02.81	Approval	84-49
A	–	13.03.81	Procedures for checking the conditions of hygiene and safety which should be met by portable, heat engine chain saws used for working wood, cork and materials of similar strength.	15.04.81		
A	–	15.07 81	• modifying articles 3 and 4 of the aforesaid order. • completing 3.33 of Appendix III of the aforesaid order. • completing 4.3 of Appendix IV of the aforesaid order.	26.08.81		
A	–	24 07 81	Composition of the file applying for approval or technical examination certificate for dangerous agricultural equipment: Appendix II.	10.09 81		
			CARDAN TRANSMISSION SHAFTS			
D	81-293	31.03 81	Conditions of hygiene and safety to be met by cardan transmission shafts for agricultural use.	02.04.81	Technical examination certificate	
A	–	23.07 81	Procedures for checking and testing the conditions of safety to be met by cardan transmission shafts and their guards	07.08 81		
A	–	24 08 81	Composition of the file applying for approval or technical examination certificate for dangerous agricultural equipment Appendix III.	10.09.81		
			CIRCULAR SAW BLADE SAWING MACHINES			
D	81-170	20.02 81	Conditions of hygine and safety to be met by circular saw blade sawing machines designed for working wood, cork and other similar materials, together with the guards built for these machines.	24 02 81	Technical examination certificate	84 47
A	–	01 04 81	Technical instructions required for the application of certain stipulations of decree No. 81-170 of 20 February 1981 concerning circular saw blade sawing machines designed for working wood, cork and other similar materials.	08 05 81		

1)	Dates	Number	SUBJECT	Official gazette	Labour Code articles	NGP customs classification
			BAND SAW MACHINES			
D	81-173	20.02.81	Conditions of hygiene and safety to be met by the band saw machines designed for working wood, cork, and other similar materials, together with the guards constructed for these machines.	24.02.81	Technical examination certificate	84-47
			SURFACING MACHINES [1]			
D	81-171	20.02.81	Conditions of hygiene and safety to be met by surfacing machines working one face of wood, cork and other similar materials, together with the guards constructed for these machines.	24.02.81	Technical examination certificate	84-47
A	—	02.04.81	Technical instructions required for the application of certain stipulations of decree No. 81-171 of 20th February 1981 concerning surfacing machines working one face of wood, cork and other similar materials.	08.05.81		
			ROTARY TOOL PLANING MACHINE			
D	81-172	20.02.81	Conditions of hygiene and safety to be met by rotary tool planing machines working one face of wood, cork and other similar materials.	24.02.81	Technical examination certificate	84-47
A	—	03.04.81	Technical instructions required for the application of certain stipulations of decree No. 81-172 of 20 February 1981 concerning rotary tool planing machines working on one face of wood, cork and other similar materials.	08.05.81		
			SINGLE VERTICAL SPINNERS			
D	81-408	15.04.81	Conditions of hygiene and safety to be met by single vertical spinners designed for working wood and similar materials and also the guards constructed for these machines.	29.04.81	Technical examination certificate	84-47
A	—	22.06.8	Technical instructions required for the application of certain stipulations of decree No. 81-408 of 15th April 1981 concerning single vertical spinners designed for working wood and similar.	17.07.81 13.01.81		
			CHAIN SLOTTING MACHINES			
D	81-409	14.04.81	Conditions of hygiene and safety to be met by chain slotting machines for working wood and other similar materials.	29 04 81	Technical examination certificate	84-47
			COMBINED MACHINES			
D	81-410	14.04.81	Conditions of hygiene and safety to be met by so-called «combined» machines for working wood, cork and other similar materials, together with the guards constructed for these machines.	29.04.81	Approval	84-47
			ROTARY TOOL MACHINES: **Sawing - Cutting - Planing**			
D	81-411	15.04.81	Conditions of hygiene and safety to be met by rotary tool machines performing, principally without manual operation on the part . between each machining, sawing, cutting, planing operations on wood, cork and other similar materials	29.04 81	Approval	84-47
			PRESSES - GUILLOTINE SHEARS			
D	81-938	13.10 81	Conditions of hygiene and safety to be met by presses and guillotine shears for the cold working of metals, and also the protective devices constructed for these machines.	18 10 81	Technical examination certificate	84-45

1) A = order; D = decree.

1) refers also to multi-spindler

Control procedure for category X machines

Among the EEC countries this classification is only used by France. It is for a reason of difference in safety requirements. Therefore, there is a specific control procedure for category X machines. Each foreign manufacturer or importer has to obtain a technical certificate or official approval before the machine can be sold. The next chart shows machines categories, specific decrees about them and competent authorities issueing the technical certificate.

CATEGORY X MACHINES (technical certificate or approval)

TYPES OF MACHINE	SPECIFIC DECREE COMPLETING THE GENERAL RULES IN THE BASIC DECREES No. 80-543 AND 80-544	AGENCIES APPROVED TO ISSUE THE TECHNICAL CERTIFICATE
Circular blade wood sawing machines.	Decree No 81-170 of 20.2.81 Order of 1.4.81.	Technical examination certificate issued by the INRS (Art. R. 233-52 to 56 to 67 of the Labour Code) INRS, Avenue de Bourgogne 54501 VANDOEUVRE, BO 27 Tel. (83) 51.07.75.
Wood surfacing machines		
Wood planing machines	Decree No 81-171 of 20.2 81. Order of 2 4.81.	
Band saw wood-sawing machines.	Decree No. 81-172 of 20.2.81. Order of 3.4.81.	
Single vertical spinners (wood machining).		
Chain slotting machines (wood machining)	Decree No. 81-173 of 20.2.81.	
So-called «combined» machines (wood machining)	Decree No 81-408 of 15.4.81. Order of 22.6.81.	Approval by the Ministry of Labour (Art. R. 233-52 to 55 of the Labour Code). Ministry of Labour 127, rue de Grenelle 75007 PARIS - Tel. 567.55.44.
Rotary tool machines (wood machining).	Decree No. 81-409 of 15.4 81. Decree No 81-410 of 15.4 81. Decree No 81-411 of 15.4 81.	

APPENDIX E:

Fire protection products
- production data

Table E-1: Production[1)] of fire protection doors in pieces

	Wood	Steel
France:		
1983	24,500	no information
1984	20,000	17,000
1985	19,200	20,000
Germany:		
1983	79,000	66,000
1984	80,000	64,000
1985	70,000	58,000

1) estimations

Italy:

Production of fire doors started in 1985/86; about 40,000 pieces are manufactured.

UK: no information available

APPENDIX F: QUESTIONNAIRE

In carrying out the programme of personal interviews, the questionnaire was intended for use as an 'aide memoire' for the Consultant and was not passed to the interviewee. While it covers all the important aspects of the project it proved short enough to permit other questions/issues to raise. For the trade associations a more general discussion was undertaken pertaining to regulations and the market situation.

REALISATION OF A JOINT DOMESTIC MARKET

CASE STUDY

QUESTIONNAIRE

Company Name: _____

Address: _____

_____

_____

Telephone/Telex: _____

Executive interviews: _____

Date of Interview: _____

Branch: _____

1.0 BASIC DATA

1.1 Please give details of your current production (products, quantities).

_____

_____

_____

1.2 What is your company turnover?

_____

1.3 Please give your total number of employees.

_____

1.4 How many people are concerned with trade regulations/ standards/authorisations/import certifications etc.

_____

1.5 What is the importance of (relevant product) in relation to turnover?
(Express at % of turnover.)

_____

1.6 What percentage of sales are to export?

Total _____ %

Relevant product _____ %

1.7 What percentage of export sales go to EC countries?

Total _____ %

Relevant product _____ %

2.0 TECHNICAL REGULATIONS/TEST PROCEDURES (FOR RELEVANT PRODUCT)

2.1 Which technical regulations are relevant?
(Give source, standards and regulations.)

_____

_____

_____

Are they /__/ very important
/__/ important
/__/ not so important

2.2 What prototype (pattern) inspection and testing is relevant?

_____

_____

2.3 What if any manufacturers declaration is required?

_____

_____

2.4 Which inspection authority controls testing procedures?

_____

_____

2.5 Do you consider the standards and regulations mentioned to be of advantage to your company?
Please explain.
(If yes, which/if non, what problems occur?)

_____

_____

_____

2.6 Do standards primarily relate to traditional products (i.e. those in an advanced state of the product life-cycle) or also include new products/techniques?

_____

_____

2.7 Do you consider there to be any link between technical standards/technical regulations and:

a) Increasing competition?

If yes, please explain.

_____

_____

b) Tendencies for innovation?

If yes, please explain.

_____

_____

2.8 Were these regulations/procedures set up:

a) In the interest of manufactuers?

_____

_____

b) In national interests?

_____

_____

2.9 Do the technical regulations/test procedures outlined satisfy the import requirements of other EC ountries?

	Yes/No	Explain
France		
Germany		
Italy		
UK		

3.0 EXPORTING RESTRICTIONS

3.1 Please identify any restrictions to export to EC countries of products from the following:

	Yes/No	Explain
1. Local standards		
2. Content of national technical regulations (e.g. security)		
3. Extent of application information required		
4. Duration of authorisation to export		
5. Obscure regulations		
6. Consequences to supplier in application of regulations		
7. Other restrictions		

3.2 Quantify any direct adminsitrative expenses incurred (including labour) in the above.

3.3 What technical expenses are incurred? (Production modifications etc.)

3.4 What if any changes are caused to the production programme? (Lot sizes, product variants etc.)

4.0 REMOVAL OF RESTRICTIONS

4.1 If there were no restrictions, what savings could be made to direct costs? (As identified above.)

4.2 What possible additional turnover could be secured in EC countries?

4.3 Would production costs be reduced by rationalisation? (e.g. bigger lot sizes, lower variant numbers.)

4.4 Could economies of scale be achieved?

4.5 Could stock reductions be achieved?

4.6 Would any other logistical improvement occur?

4.7 Could services be rationalised?

4.8 Would this lead to additional capital investment?

4.9 Could the product be offered at a lower price?

4.10 Would this be due to:

a) Improved competition.

b) Higher turnover/increased market share.

4.11 Could you become more efficient, e.g. by adding an extra shift?

4.12 Could you relocate or expand in other EC countries?

4.13 Could you obtain a lower purchase price for semi-finished articles (raw materials)?

4.14 Would there be any difference in employment?

4.15 Would you seek a collaborator from another EC country? If yes, from which country?

4.16 How many jobs, now concerned with authorisations/regulations could be saved in a joint domestic market?

4.17 Could an overseas branch office be replaced by a representative?

4.18 Would increasing sales prospects justify opening a branch overseas?

_____

_____

4.19 If all restrictions were lifted would you enter the French and German markets? (for example)

_____

_____

4.20 Would you seek employees from other EC countries?

_____

_____

5. EFFECTS FROM THE QUANTITATIVE POINTS OF VIEW

5.1 You informed us that a realisation of an internal market could lead to possible advantages/disadvantages for you. Could you please indicate the extent of these advantages/ disadvantages?

_____

_____

5.2 Costs per unit:

- cost reduction /__/ significant
  /__/ slightly significant

  in absolute values: how many _____ in %?

- cost increase /__/ significant
  /__/ slightly significant

  in absolute values: how many _____ in %?

5.3 Which costs per unit are affected?

- Production costs _____ %
- Distribution costs _____ %
- Marketing costs _____ %
- Others _____ %

5.4 Could you indicate the present cost structure of the product?

	= 100 %	in absolute values
- Wages/salaries		
- Production costs (plant)		
- Material		
- Marketing		
- Others		

5.5 Which changes would result with a realisation of an internal market?

- turnover decline in % _____ %
- turnover increase in % _____ %
- regarding
  - -- the national market _____ %
  - -- the EC market _____ %
  - -- other markets _____ %

5.6 Effects on the existing costs: how would the cost structure of your products change?

- Wages/salaries _____ %
- Production costs _____ %
- Material _____ %
- Marketing _____ %
- Others _____ %

6. Lastly, please give your evaluation of a realisation of an internal market. If any changes occur, which?

	Intensity of change
- Internationalisation of your activities	
- Export of goods	
- Cooperation	
- Reduction of branches	
- Others	
- Change of product palette	
- Management	
- Others, which?	

Annex

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