23

Economic Studies Series

Growth and employment in industrial companies

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"la Caixa"

Economic Studies Series

No. 23

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Foreword

The problems related to employment and unemployment have been the subject of a great number of studies and publications. Many of these studies have concentrated on the operation of the labour market, the regulations which govern it or the process of collective bargaining. Others have looked at international comparisons and the relations which become established between economic growth, production and the creation or loss of jobs.

Nevertheless, the reasons leading business executives to decide whether to hire new workers have been given less attention in spite of the importance of this matter in the efficacy of measures to promote employment. This focus, with particular reference to industrial companies, is what we see presented in this volume. The authors: Ángel Hermosilla, director, Department of Economic Studies, CEAM (Centro de Estudios y Asesoramiento Metalúrgico), a long-established institution offering services to companies, and Natalia Ortega, of the same department at CEAM.

The starting point for this work was the realization that the growth seen in industrial companies in terms of production is not turning into job creation in the same measure and the aim here is to better understand this difference by seeking an explanation in an analysis of business decisions.

In order to reach the proposed objective it was necessary to carry out field work which made it possible to learn first-hand the business strategies

related to employment. The study was thus based on 100 in-depth interviews carried out between April and December 2000.

The companies interviewed were chosen according to criteria involving geography and sector. The study focuses on the three Autonomous Communities in Spain with the heaviest concentration of industry (Catalonia, Madrid Community and Valencian Community) in which 50% of industrial employment in Spain is concentrated as well as 48% of all its industrial companies.

The sectors to which these companies belong are food and beverages, textiles and clothing, chemicals and plastics, metalworking, electrical equipment and electronics. These sectors represent 72% of industrial employment and 61% of industrial companies.

In the pages of this work, the authors come to the conclusion that there exists high growth potential for production without recourse to the hiring of new workers and this is stated by 82% of companies interviewed. Only 18% indicate that they have reached an optimum level of utilization of production resources.

We believe the interest in this study lies in that it goes right to business realities and to the spot where decisions are made. It brings the reader a new perspective on employment and provides an excellent complement to studies dealing with the macro-economic picture.

Josep M. Carrau
Director, Research Department

Barcelona, July 2001

Preface

Aims

The notable economic growth shown by Spain's industrial companies does not normally result in job creation in the same measure. In fact, if we look at the period 1970-1999, we note that while industrial GDP growth in constant terms for those years as a whole was 132.9%, employment recorded a drop of 11.7%, while there was an increase in apparent productivity of 163.7%, as set out in Table 1. During this period, the trend in these variables was not homogeneous. For example, between the years 1990 and 1995 the industrial GDP grew by 4.9%, employment fell by 16.5% and productivity rose by 25.7%. In the period 1995-1999 the GDP rose by 15.6%, employment by 12.0% and productivity by only 3.2%.

The different growth in economic activity and employment in the industrial sector often gives rise to many and varied interpretations among expert and socio-political circles. Nevertheless, the real factors and causes behind this have not been analyzed in depth and, especially, by going right to the source to look at the realities of business itself. Normally, explanations of this difference in growth rates is based on general platitudes while making use of the relations between employment and investment, between employment and labour cost, between employment and the flexibility of the labour market. None of these approaches, however, offers a totally satisfactory explanation of the gap which exists between industrial growth in an expansionist cycle and the growth, usually weaker, generated in employment.

Table 1

TRENDS IN PRODUCTION, EMPLOYMENT AND PRODUCTIVITY IN SPANISH INDUSTRY. 1970-1999

Change rates as percentage

	GDP (constant values)	Employment	Apparent labour productivity (constant values)
1970/80	52.8	6.3	63.1
1980/90	25.6	0.8	24.6
1990/99	21.3	–6.5	29.8
1970/99	132.9	–11.7	163.7
1990/95	4.9	–16.5	25.7
1995/99	15.6	12.0	3.2

Source: Own calculations based on Contabilidad Nacional and Encuesta de Población Activa (EPA), from Instituto Nacional de Estadística (INE).

We should not lose sight of the fact that this takes place in industrial companies and, as a result, in order to know more about the real process which determines the differential in growth it is necessary to examine the business strategies which could explain this situation.

The present study lies within this framework and starts out from existing reality while at the same time adopting an entirely micro-economic approach. Its aim is to analyze business strategies in relation to employment, being in mind that job creation and the trend this follows in relation to the state of production activity is a consequence or result of a series of circumstances and policies existing in the companies themselves which are affected by many factors. This is the case in factors such as, for example, the impact of the introduction of improved systems of organization, the acquisition of new equipment and technology and changes taking place in the nature of jobs (qualifications, multi-task work, flexibility, attitude and aptitude of workers, etc.) in the companies themselves as well as the effect of previous experience on current decisions, especially negative experience in periods of recession, or the effects brought about by business strategies in various fields, such as the breaking down of operational functions, the placing of work outside or sub-contracting.

Specifically, the study sets forth a double objective:

• To analyze in depth the causes behind the different growth rates in production activity and employment in industrial companies, focussing attention on those factors which determine gains in productivity, company hiring policies, and possible obstacles standing in the way of job creation.

• To carry out an analysis aimed at forecasting the situation in coming years while emphasizing possible changes from the present picture.

Methodology

In terms of methodology, the study is conceived from a highly empirical point of view with field work being the tool providing support for the overall analysis and preparation of this paper. The study is thus based on the gathering of information directly from real situations, through a series of personal in-depth interviews carried out by qualified experts in a selected group of industrial companies with the aim of collecting quantitative information and, especially, information of a qualitative nature. As a result, it may be said that the analysis is to some extent focussed on the study of business case-histories or business experience by means of a common orientational questionnaire made up of 11 questions (See Appendix).

Because of the type of research to be carried out, the questionnaire used and the information compiled, the treatment of data obtained was carried out largely by hand although combined with data-processing methods for those questions where it was possible or necessary. The latter involved either questions in which figures on growth rates were requested or questions in which the person interviewed was asked to evaluate a number of factors.

Field work was carried out between April and December 2000. This was mapped out according to criteria involving geography and sector. In the first case, it should be pointed out that work was focussed in the three Autonomous Communities in Spain with the heaviest concentration of industry where at the same time we see a combination of varied economic and business realities. The areas studied were Catalonia, Madrid Community and Valencian Community. These regions account for 50.3% of all industrial

employment in Spain and nearly 48% of industrial companies. From a sector point of view, field work was based on the four most important branches of activity in terms of their economic contribution to industry as a whole, such as food and beverages, textiles and clothing, chemicals and plastics, and metalworking, electrical equipment and electronics. Together these sectors account for 71.6% of Spanish industry in terms of employment and nearly 61% in the number of companies.

The study is based on analysis of 100 companies at which personal interviews were carried out. Selection of the companies was made according to various criteria and in keeping with the reality of the industrial fabric in terms of region, sector and company size which means having included specific realities which are quite varied in their many aspects (nature of production, trends in production and employment, business strategy, types of hiring, etc.). These companies give work to a total of 33,854 employees and are distributed in terms of region, sector and size in the following way:

Regional base

Keeping in mind the geographical distribution of industry in the Autonomous Communities examined in this study, the greater part of the interviews (58) was concentrated in Catalonia while some 22 were done in Madrid Community and a total of 20 in Valencian Community, as shown in Table 2.

Table 2

SAMPLE OF COMPANIES INTERVIEWED, BY AUTONOMOUS COMMUNITY AND INDUSTRIAL SECTOR

Autonomous Community	Industrial sector				
	Metalworking, electrical equipment and electronics	Textiles and clothing	Chemicals and plastics	Food and beverages	Total
Catalonia	27	10	8	13	58
Madrid Com.	13	2	3	4	22
Valencian Com.	8	5	2	5	20
Total	**48**	**17**	**13**	**22**	**100**

Sectors involved

Most interviews were carried out with companies in the metalworking, electrical equipment and electronics sector (48 interviews). In terms of employment, these companies made up 54.6% of the total in the sample. This sector was followed by food and beverages (22 interviews and 20.1% of the sample in number of employees), textiles and clothing (17 interviews and 13.4%) and chemicals and plastics (13 interviews and 11.9%). It should be pointed out that in each Autonomous Community the distribution of the sample according to sector of economic activity depended on their own particular features, with greater or lesser emphasis being given to those branches which have greater or lesser importance in the region.

Size of companies

Small and medium companies –those with less than 250 workers– accounted for a good part of field work. In fact, this group was the subject of a total of 76 interviews. These companies make up some 18.2% of overall employment by firms included in the sample. Within the group of small and medium companies, some 30 interviews were done with firms employing less than 50 workers (2.7% of employment) while the rest were done at companies with 50-249 employees (46 interviews and 15.5% of employment). Interviews with large companies made up a total of 24, a group which in terms of employees represents 81.8% of the total sample.

I. Trends in production and employment in period 1997-1999

Most of the companies making up the sample experienced real growth in production in the period 1997-1999. Specifically, 83.3% of the industrial firms analyzed recorded an increase, production remained stable in 11.5% while the remaining 5.2% indicated that they had shown a decrease which was generally small.

As shown in Table 1.1, the real growth rate in production in the period 1997-1999 as a whole was 26.3%, while the cumulative annual average rate was 8.1% (9.1% in 1997, 8.2% in 1998 and 7.0% in 1999). As an indication of the diversity of situations shown by companies interviewed, it may be stated that annual growth rates in production were spread over a range running between –6% and 34%.

The industrial sector to show strongest growth in those three years was food and beverages for which real production in the period grew by 37.0% with a cumulative annual average rate of 11.1%. This was followed by metalworking, electrical equipment and electronics (29.6% and 9.0% respectively). From a geographical point of view, companies in Valencian Community recorded higher real growth in production in the period 1997-1999. In this three-year period as a whole, production of Valencian Community firms rose by 36.3% which meant an average annual rate of 10.9%. In terms of company size, it may be pointed out that it was firms of medium size (with 50-249 workers) which showed the biggest growth. As a result, between

Table 1.1

TREND IN REAL PRODUCTION OF COMPANIES

1996 = 100

	1997	1998	1999	Cumulative annual average
Industrial sectors				
Metalworking, electrical equipment and electronics	109.3	119.4	129.6	9.0
Food and beverages	112.1	123.4	137.0	11.1
Chemicals and plastics	106.0	114.8	119.2	6.0
Textiles and clothing	104.4	109.0	113.5	4.3
Autonomous Communities				
Catalonia	108.7	117.0	122.1	6.9
Madrid Community	110.1	118.4	127.5	8.4
Valencian Community	109.2	120.4	136.3	10.9
Size				
Less than 50 workers	108.9	116.1	123.3	7.2
50-249 workers	108.0	118.3	129.0	8.9
More than 249 workers	112.6	120.3	127.0	8.3
Total sample	**109.1**	**118.0**	**126.3**	**8.1**

1997 and 1999 real production of these companies grew by 29.0%, an annual average rate of 8.9%.

With regard to employment, it may be said that 57.4% of companies analyzed showed an increase in the number of workers in the period 1997-1999 while 28.7% recorded no change in employment and the other 13.9% reported that they had reduced their workforce.

Between 1997 and 1999 employment in the companies making up the sample as a whole grew by 11.4%, a cumulative annual average rate of 3.7%, as may be seen in Table 1.2. Year-to-year increases were 2.7% in 1997, 4.6% in 1998 and 3.8% in 1999. Within the sample we find various situations given that the companies show a trend in employment which can run from an annual decrease of 9% in the given period to an increase of 18%.

The highest figures showed up in the metalworking, electrical equipment and electronics sector which reported growth of 13.8% for the period

Table 1.2

TREND IN EMPLOYMENT IN COMPANIES

1996 = 100

	1997	1998	1999	Cumulative annual average
Industrial sectors				
Metalworking, electrical equipment and electronics	102.2	108.5	113.8	4.4
Food and beverages	104.0	108.8	111.7	3.8
Chemicals and plastics	101.8	107.9	111.6	3.7
Textiles and clothing	101.4	102.7	105.7	1.9
Autonomous Communities				
Catalonia	102.4	107.5	110.2	3.3
Madrid Community	103.3	107.1	111.2	3.6
Valencian Community	105.1	109.9	116.9	5.3
Company size				
Less than 50 workers	102.9	103.9	106.9	2.2
50-249 workers	101.7	108.7	113.6	4.3
More than 249 workers	105.1	109.2	112.8	4.1
Total sample	**102.7**	**107.4**	**111.4**	**3.7**

as a whole (cumulative annual average rate of 4.4%). With regard to region, it may be said that Valencian Community showed the greatest strength in job creation during the years studied. As a result, between 1997 and 1999 the industrial firms in this region recorded an increase in employment of 16.9% (cumulative annual average of 5.3%). Finally, it was the medium-sized firms which generated the greatest number of jobs during the period given that they increased employment by 13.6% in overall terms (cumulative annual average rate of 4.3%).

Analysis of the trends in production and employment in the companies making up the sample in the period 1997-1999 shows that a major difference in growth rate exists both for the firms as a whole and for the different groups considered. As a result, in the sample examined we note the existence of a gap between the two variables.

In aggregate terms, we note that real production in these years rose by a percentage which was more than twice as high as that for the increase in employment. For the period as a whole, production grew by 26.3% (cumulative average annual rate of 8.1%) while employment rose by 11.4% (3.7%). This meant that productivity of the labour factor had grown by 13.4% overall, with the increase being higher in 1997 (6.2%) than in the later years (3.4% in 1998 and 3.2% in 1999).

By company group, it may be stated that the gap was highest, and therefore the increases in labour productivity greater, in the following:

• The food and beverages sector and metalworking, electrical equipment and electronics, especially in those segments of activity showing the highest levels of technology and in capital equipment, manufacturers of more standardized products and with a high degree of specialization in certain production processes and/or goods.

• In firms located in Valencian Community, followed by those located in Madrid Community; and

• In companies with fewer than 50 workers and those companies undergoing processes of major change, either of expansion (with sharp growth in production) or of restructuring (with a significant decrease in employment).

II. Factors which explain different trends in production and employment in period 1997-1999

In order to identify and analyze the factors which explain the different growth rates in production and employment, the companies consulted in the field work conducted in the course of the study carried out a double evaluation. First, they identified those factors which they considered important as determinants of that differential. Later on, they evaluated the degree of importance of each of those factors attributing a triple qualification to each, namely «Of little importance», «Important» or «Very important». This double evaluation is shown in Tables 2.1 and 2.2.

2.1. The overall sample

Explanatory factors

Improvement of equipment and technology was the main explanatory factor for the difference existing between the trend seen in real production and employment in the period 1997-1999. Indeed, this was a means of increasing productivity of the labour factor widely used by the companies. As may be seen in Table 2.1 and Graph 2.1, some 89.7% of companies interviewed gave improvements in equipment and technology as the main reason for the greater increase in production than in employment.

Table 2.1

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999

	% of companies which mention the importance of each factor
Improvement in equipment and technology	89.7
Introduction of new systems and techniques for organization and production planning	73.2
Introduction of new systems for organization and control of labour input	72.2
Simplification of production processes	67.0
Changes in job descriptions and worker profiles	63.9
Better continuing training of workers	62.9
Recourse to sub-contracting of production and services	54.6
Recourse to temporary hiring	53.6
Working on overtime	50.5
Greater use of installed production capacity	49.5
Better profile of new persons hired (qualifications and aptitude)	46.4
Recourse to services of temporary job companies	40.2
Other:	
Improvements in quality control	21.6
Good labour climate	12.4
Advances in logistics	7.2

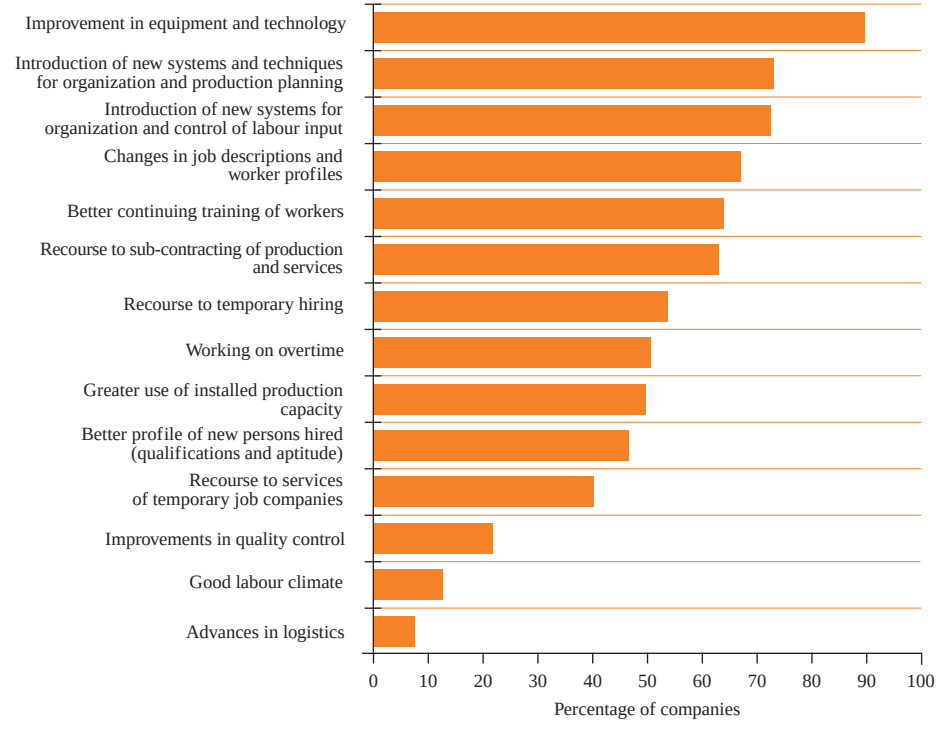
A second group of factors which justify the gap between production and employment refers to the area of business organization, both in terms of production and the human factor. On the one hand, 73.2% of companies mentioned that the introduction of new systems and new techniques for organization and planning of production were behind this unequal performance while, on the other hand, 72.2% emphasized the introduction of new systems of organization and control of labour input.

Along with these factors, considered as important by more than 70% of companies, we should mention another group of factors given by a percentage of firms running between 60% and 70%. This involved simplification of production processes, changes in job descriptions and worker profiles, and better continuing worker training, which were mentioned by

Graph 2.1

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999

Percentage of companies which mention the importance of each factor



67.0%, 63.9% and 62.9% of companies consulted. The simplification of production process meant obtaining improvements in productivity as a result of the reduced complexity of the manufacturing process linked to product strategy. In turn, the other two factors are somewhat interrelated to the extent that the reshaping of jobs and modification of worker profiles generally implied a higher level of training of people which often involved acquiring know-how and skills which allowed them to carry out a variety of functions.

Also worth mentioning, although they may be of less significance when it comes to explaining the different trend recorded in production and employment in the period 1997-1999, were such varied factors as recourse to

the sub-contracting of production activities and services, recourse to temporary hiring, and working on overtime, all of which were rated as important by 50-55% of companies. In addition, we may mention greater use of installed production capacity which was cited by 49.5% of firms consulted.

Factors considered as less important by companies were the improvement in the profile of new persons hired (qualifications and aptitude) and recourse to the services of temporary job companies, which were mentioned by 40-46% of those consulted.

Finally, under the heading of other factors we should point out the significance of improvements in quality control, a good labour climate and advances in logistics. These factors are pointed out by 21.6%. 12.4% and 7.2% of companies interviewed respectively.

Significance of the various explanatory factors

Among factors which explain the differential in growth recorded in production and employment in recent years, special mention should be made of three factors which were considered to be very important by more than half the companies consulted in field work, as shown in Table 2.2 and Graph 2.2. These involved the following matters:

- Improvements in equipment and technology (considered very important by 71.3% of companies);
- Greater use of installed production capacity (62.5%);
- Introduction of new systems and techniques in organization and production planning (53.5%).

A second group is made up of six factors which were deemed very important by 30-50% of companies interviewed. In order of importance these were as follows:

- Advances in logistics: 42.9%
- Improved quality control: 42.9%
- Good labour climate: 41.7%

Table 2.2

DEGREE OF IMPORTANCE OF FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999

	% of companies which mention importance of each factor with following classification		
	Very important	Important	Of little importance
Improvements in equipment and technology	71.3	23.0	5.7
Greater use of installed production capacity	62.5	25.0	12.5
Introduction of new systems and techniques for organization and production planning	53.5	32.4	14.1
Simplification of production processes	41.5	47.7	10.8
Recourse to sub-contracting of production and services	37.7	32.1	30.2
Introduction of new systems for organization and control of labour input	34.3	30.0	35.7
Changes in job descriptions and worker profiles	22.6	45.2	32.2
Working on overtime	20.4	20.4	59.2
Better continuing training of workers	18.0	55.7	26.3
Recourse to temporary hiring	9.6	42.3	48.1
Recourse to services of temporary job companies	7.7	43.6	48.7
Better profile of new persons hired (qualifications and aptitude)	4.4	53.3	42.2
Other:			
Advances in logistics	42.9	42.9	14.2
Improvements in quality control	42.9	38.1	19.0
Good labour climate	41.7	33.3	25.0

• Simplification of production processes: 41.5%

• Recourse to sub-contracting of production activities and services: 37.7%

• Introduction of new systems of organization and control of labour input: 34.3%

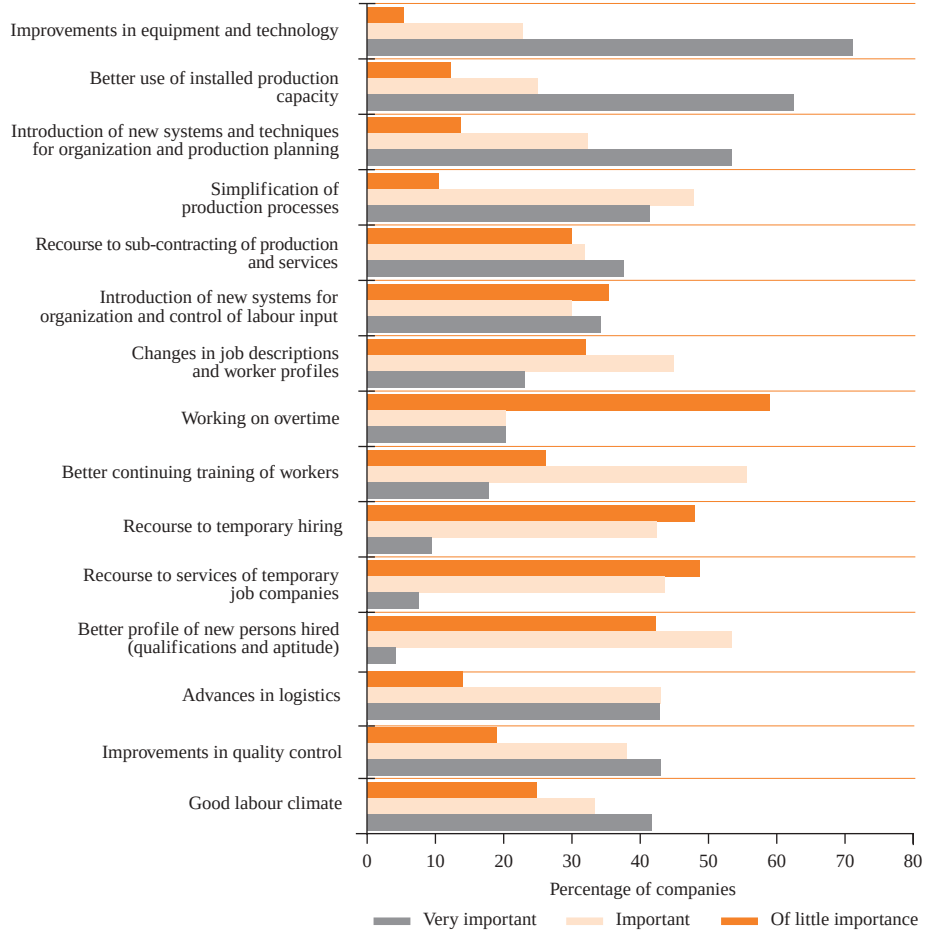
A third group includes those factors which were considered very important by 18-30% of companies consulted as follows:

• Changes in job descriptions and worker profiles: 22.6%

Graph 2.2

DEGREE OF IMPORTANCE OF FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999

Percentage of companies which mention the importance of each factor and give it a qualification of «Very important», «Important» or «Of little importance»



- Working on overtime: 20.4%
- Better continuing training of workers: 18.0%.

Finally, the other explanatory factors were given a low evaluation by companies to the extent that less than 10% classified them as being very important. These factors were as follows:

- Recourse to temporary hiring: 9.6%
- Recourse to services of temporary job companies: 7.7%
- Better profile of new persons hired (qualification and aptitude): 4.4%.

General considerations

By way of summary, it is clear that for the companies as a whole the bigger growth in production than in employment depended mainly on factors which form part of their internal operating processes and are under constant scrutiny, given that they refer to the production system or to human resources (equipment and technology, production, labour factor, production processes, etc.). At a second level of importance we should taken into consideration those factors which, while also being important, involve external/internal matters, generally of a specific and sporadic nature (subcontracting, temporary hiring, overtime, etc.).

From another perspective, keeping in mind the nature of the factors involved, we may mention that for the companies the gains in productivity of the labour factor and the bigger growth in real production than in employment arose mainly from action taken with regard to the physical situation related to the production system. This was either a matter of changes of a technical or technological nature related to the manufacturing processes, changes in the area of organization of production or action taken in terms of horizontal systems (logistics, quality control, etc.). Specifically, among these moves those which stood out because of their importance were the traditional improvement in equipment and technology, greater use of available capacity and the application of systems and techniques of organization and planning. On top of these should be added, although they were of less importance, advances in logistics, improvements in quality control or the simplification of manufacturing processes.

To the extent that the possibility of obtaining gains in productivity through changes made with regard to the production system becomes limited, companies intensify their efforts to take action on human resources and this is precisely what has been happening in recent years. In any case, action taken with regard to the human factor, for the moment, takes second place while it is clear there is important potential in this field and in a significant range of ways according to the particular objectives of the various companies. In this respect, the most notable moves taken have been in reference to the good labour climate and the introduction of new systems of organization and control of labour input. In this same area, we may consider other moves of less importance but fairly well developed by companies, such as the introduction of changes in job descriptions and worker profiles, working on overtime and better continuing training of workers. Finally, also notable in this group was the little importance given to recourse to temporary hiring or the services of temporary job companies or the better profile of new persons hired (qualifications and aptitude).

Specific analysis of various factors

Improvements in equipment and technology

As shown in Tables 2.1 and 2.2, improvements in equipment and technology are to a major extent the main and most highly considered explanatory factor in the growth differential between production and employment in recent years. Nearly 90% of companies state that this factor was important to obtain gains in labour productivity and of these some 71.3% considered this was very important as against only 5.7% who stated to the contrary.

Industrial strategies focusing on improvement in equipment and technology have their origin in the demands of the competitive environment and in the need to adapt to the conditions of the market. In this respect, the main improvements noted in companies in recent years have consisted basically of the introduction of data-processing systems, both in the area of the production process and the management area, and in automation technology. By way of example, we may mention some innovations introduced by compa-

nies interviewed, such as automatic sewing machines, automatic pocket-making machines, laser cutting equipment, automatic conserve bottling machines, computer-aided design (CAD/CAM) and ovens fed by robots.

Introduction of data-processing and automation of production activities and administrative tasks generates an increase in productivity as it makes it possible to increase real production on a stable basis as well as a reduction in employment. In one of the cases studied, automation of the installations made it possible to increase the number of units manufactured by four times while the workforce was reduced by 66.7%. In another case, improvements in automation made it possible to obtain three times the previous production with an accompanying decrease in employment. Other examples of this included a clothing company with fewer than 50 employees where, before the introduction of new equipment, cutting was carried out by three or four persons but with introduction of laser cutting equipment it required only one or two persons. In another medium-sized company making electrical products, whereas in one production line for an article they formerly needed 40 persons now with new equipment they need only 22 workers. At a light chemical company with 60 employees where the manufacture of a specific product in the past was done by 10-12 persons, with new technology it is now produced by four workers.

Apart from the direct effect that improvements in equipment and technology had on productivity of the labour factor, we should mention the indirect effect arising from the changes those improvements generated within the companies. For example, the higher level of training of those persons involved with the new equipment and technology, better organization of the production system and the introduction of changes in job descriptions and worker profiles.

Introduction of new systems and techniques for organization and production planning

In field work carried out it became clear that a second factor having a big influence on the different trends in production and employment in the period 1997-1999 was the organization of production activity and specifically the introduction of new systems and techniques for organization and pro-

duction planning. As can be seen in Tables 2.1 and 2.2, some 73.2% of companies interviewed pointed out the importance of this mechanism for improving their productivity and 53.5% considered it as very important.

In general terms, the introduction of new systems and techniques for organization and production planning had two main objectives, as follows:

• The search for greater efficiency through better refining of capacity and means which, among other things, would permit a reduction in costs.

• The search for more flexibility in business operations in keeping with the nature of demand and current trends. The objective of this strategy was to work out a production structure that could fully respond to the market conditions both in terms of quantity and quality for which efforts were needed in such areas as management and organization and planning.

As mentioned earlier, in many cases the introduction of new systems and techniques of organization and planning often arise from or are linked to the introduction of improvements in equipment and technology to the extent that, for example, the investment in new equipment involves changes in the manufacturing process in various ways. Nevertheless, there are other reasons which determine the need to introduce changes in this area, such as the following:

• Changes in systems of supply linked to a major development of logistics as, for example, «just-in-time» methods in the motor-vehicle sector.

• Changes in type of input, to the extent that industrial companies tend to incorporate inputs which are more fully finished and more complete with a moving away from the traditional supply of simple intermediate goods to the supply of assemblies already mounted and more fully finished goods.

• Changes in the production process, eliminating, for example, product lines which require a greater amount of labour factor and are not profitable and sub-contracting them out to other companies.

• Changes in the nature of products manufactured to the extent that technological innovations may mean that a product has been substantially changed (for example, from a mechanical to an electronics application)

thereby simplifying its manufacture. By way of example, we may mention the case of a product that in the past had a mechanical basis made up of 500-600 parts, which took 6 hours to assemble, and was substituted by another product with a digital basis made up of 50-60 parts which took on an hour and a half to assemble.

• Introduction of relative improvements in quality where these led to taking better and increased advantage of production processes (reduction of rejects and defects, etc.).

• Putting new production plant into operation and extension of installations (plant floor space, warehouses, etc.)

• Changes in markets as, for example, where a product which traditionally had been a seasonal one had now acquired continuing market demand throughout the year.

• Changes in distribution channels. This was the case in those companies manufacturing consumer products (food, clothing, electronics, etc.) which have had to adapt their structures to the development of a new situation in marketing mechanisms involving a reduction in the importance of traditional stores and trade with greater importance given to new channels (associated stores, supermarkets, shopping malls, specialized department stores, etc.).

It should be pointed out that the introduction of new systems and techniques for organization and production planning is changing the composition of the workforce and the functions of workers which in turn is made possible thanks to better training in terms of the human factor. In many companies a reduction is taking place in the percentage of workers involved in direct production tasks (machine operators, specialized workers, etc.) and an increase in those involved in indirect production tasks, such as production programming, warehouse control, quality control, the supervision of the manufacturing process, etc. For example, we may mention the case of two companies in the chemicals and plastics sector where personnel involved in direct production formerly made up 70%, with the other 30% involved in indirect production work, and where now each category has much the same importance.

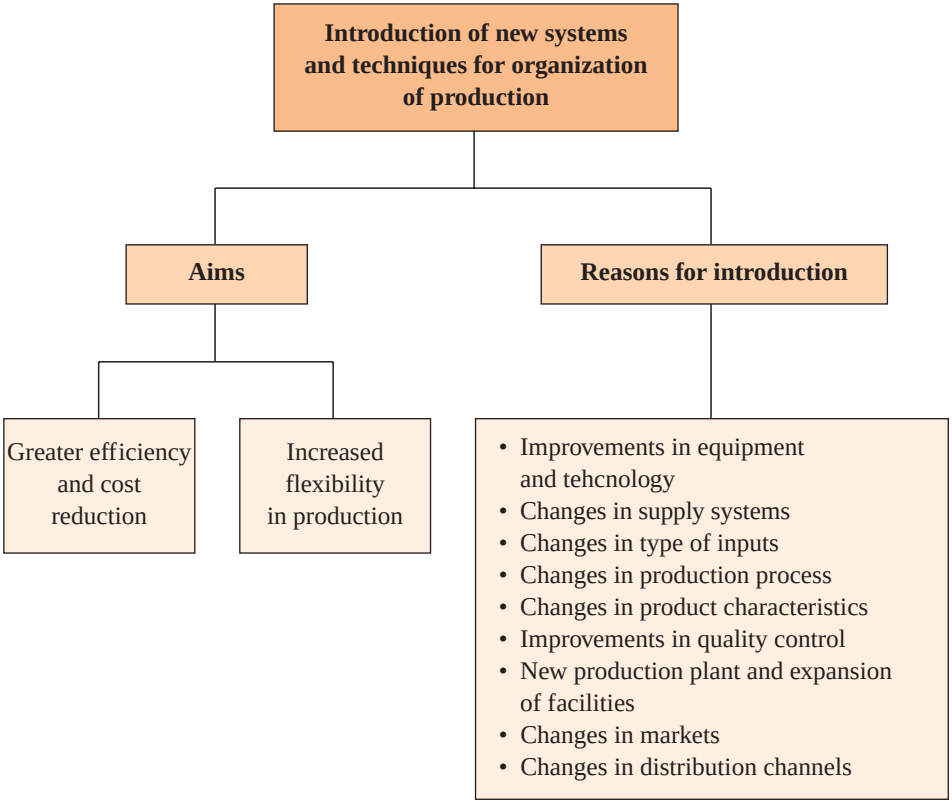
The general picture of industry with regard to the introduction of new systems and techniques of organization and production planning is quite varied. On the one hand, it may be stated that introduction of these new systems is not happening among all companies and is less common in those of small size which specialize in traditional production activities which are less technologically advanced and more labour intensive. It is true, of course, that in some of these cases it is difficult, if not impossible, to introduce new systems and techniques of this kind because it involves complicated major modifications in various areas (manufacturing processes, know-how, human resources, etc.). In addition, it should be noted that some companies report experience in which they have tried to introduce this type of improvement with little success while others have been able to make improvements carried out fully profitable. In general, it should be pointed out that the margin for maximizing gains in productivity arising from introduction of new systems and techniques for organization and production planning is still great, in view of the fact that the number of companies which have introduced such systems and have managed to obtain maximum benefits from them is low. In fact, as field work carried out makes clear, this is a factor of great interest with regard to productivity and given a high evaluation by companies, yet only a little more than half of the companies consider it fundamental or strategic from the point of view of importance.

Introduction of new systems for organization and control of labour input

The introduction of new systems for organization and control of labour input is aimed at bringing the human factor into the closest possible line with the production process and the nature of the company through the management of human resources in various ways. As shown in Table 2.1, this factor is listed in third place of importance by industrial companies as the reason behind the different trend in production and employment in recent years. Some 72.2% of companies thus point out its importance. Nevertheless, only 34.3% of these companies regard this factor as very important as against 35.7% which deem it of little importance, as may be seen in Table 2.2. This allows us to conclude that, while introduction of new systems of

Graph 2.3

INTRODUCTION OF NEW SYSTEMS AND TECHNIQUES FOR ORGANIZATION OF PRODUCTION IN INDUSTRY



organization and control of labour input has significant importance for industry when it comes to obtaining gains in productivity, for the moment this does not take a major role in strategies being developed in this respect. In spite of this, it should be pointed out that the potential in this area is very high, in view of the limitations which are more and more noticeable in improving productivity through changes in production activity and the importance being given in recent years to the human factor as an element in competitiveness.

Furthermore, it should be pointed out that the possibilities for improving labour productivity available through this means are important for two other reasons. On the one hand, because it is noted that the application of traditional systems of organization and control of labour input are not reviewed in many companies as often as they should be, which makes it possible to imagine the potential still untapped. And, on the other hand, because the application of new business and technical systems aimed at better adaptation of the labour factor to the needs of production through the so-called flexible organization of labour input, is still at an incipient stage. This kind of organization may take on various forms according to the nature of production structures, the influence of seasonal factors on production, type of personnel, etc. Among the models of flexibility most frequently seen, we should mention the following:

- The adaptation of work time to production needs
- Working in teams or production groups, and
- The rotation of jobs.

It should be pointed out that, with organization providing for flexible work arrangements, intermediate worker/supervisors take on a special role, the main feature of which is a capacity to manage and organize human resources. The experience of some companies shows how they obtained major gains in productivity thanks to introduction of new systems for organization and control of labour input. In this respect, we may cite the case of a company which showed a 9% growth in productivity in one year thanks to this move.

Simplification of production processes

As shown in Table 2.1, some 67.0% of companies interviewed in field work emphasized the importance of this factor in explaining the growth differential between production and employment in the period 1997-1999. Of these companies, some 41.5% deemed it very important and 47.7% considered it important, which confirms that this factor is significantly present in the strategy of companies for improving their productivity.

The simplification of production processes is generally the result of the introduction of changes in company product strategies aimed at obtaining economies of scale in order to reduce unit costs and to provide a more suitable response to the requirements of demand (delivery dates, service, etc.). The simplification of production often implies the reduction, elimination or modification of various tasks and stages in the production process by various means such as the introduction of technology, changes in production organization, etc. Among other moves taken in this area by companies interviewed during field work, we may mention the following:

• Reduction of the range of products manufactured (number and range of types and models);

• Introduction of new products and new types of products in existing production lines;

• Utilization of more suitable materials and inputs with higher degree of finish which makes it possible, for example, to reduce the number of phases or stages in the production process; and

• Better product design aimed at production of products with fewer workers and in a shorter time-frame.

Table 2.3

ACTION TAKEN BY COMPANIES TO SIMPLIFY PRODUCTION PROCESSES

• Reduction of product range, with changes in product type and product mix.
• Introduction of new products and new types of product manufactured.
• Changes in materials and inputs utilized.
• Better product design.

The success of the development of a strategy of simplification of production processes to a large extent lies in taking proper action at the stage prior to design of the product itself given that this depends on planning, organization, standardization and so on of the whole manufacturing chain. Today, in industry as a whole, in the matter of simplification of production processes two situations can be identified. First, that the advances and

improvements in this respect depend on the one hand on substantial changes in the production structure of companies for various reasons and especially on the introduction of permanent improvements as something integrated, and furthermore recognized, in the normal operational system of the company. In addition, we note that this way of obtaining gains in productivity has been and is widely used in industry although a large number of companies still have not yet fully incorporated it in their production strategies.

Changes in job descriptions and worker profiles

The changes seen in job descriptions and worker profiles in the industrial sector are a result of the different strategies for improvement followed by companies. For the companies interviewed in field work these changes have major importance as factors which explain the different trends in production and employment in recent years. In fact, nearly 64% of those companies give it such importance, as shown in Table 2.1. Nevertheless, the percentage of companies which consider it very important is low (22.6%) and less than that which qualifies it as important or of little importance (45.2% and 32.2% respectively), which may be seen in Table 2.2. This underlines the little strategic or basic importance this factor has for industrial companies at this time as a mechanism for improving labour productivity.

Today, the features which define the competitive environment and the increasing complexity and rapid growth of technology are bringing about a new shaping of jobs in companies and a new profile for the human factor. These may be defined as a combination of three basic elements, as follows:

- Knowledge and qualifications,
- Qualities and skills, along with experience, and
- Attitude and behaviour, both as individual and working in group.

One of the most significant changes in job descriptions and worker profiles, arising mainly from the introduction of flexible organization of work, is the polivalence or multi-functional trend in the human factor which makes it possible for workers to carry out various tasks. In some sectors of industry a worker in the production area may carry out an average of five

tasks. Some companies consider a «multi-skilled employee» as a person who is able to perform a minimum of three different tasks while others foster the «bivalence», that is to say, that employees know how to carry out another job apart from the usual work done. The development of «polivalence» capabilities or multi-functional employees is justified for a number of reasons, some of the most notable being as follows:

• Need for organization of work teams or production groups.

• The possibility of employing persons in alternative jobs if there is a drop in production involving the original or main job.

• A better response to diversity of products or models or the existence of a series of cuts in production for reasons such as changes in fashion.

• To fill jobs which may be temporarily left vacant for various reasons by persons who usually hold them on regular basis (a response to absenteeism).

• To motivate employees through development of more varied tasks.

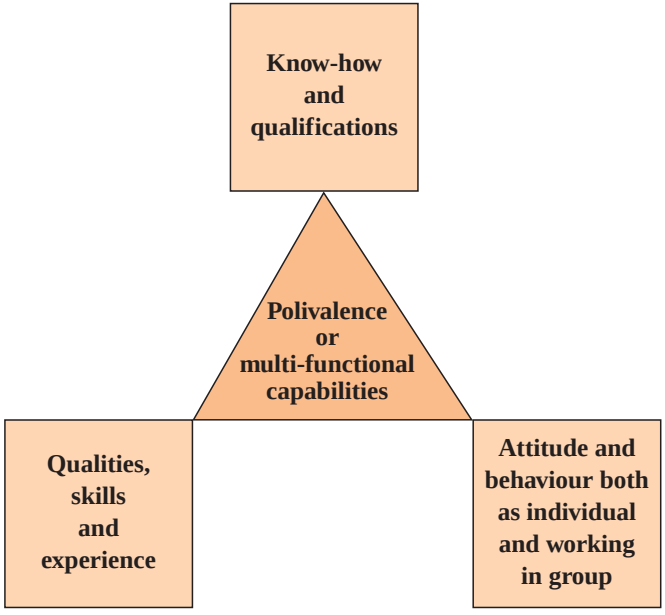
Better continuing training of workers

As may be seen in Table 2.1, some 62.9% of companies interviewed emphasized the importance of better continuing training received by workers in recent years as one of the factors which explain the differential between growth of production and employment. For these companies, the improvement in labour productivity was related to this fact. Nevertheless, this factor did not have a strategic or basic character for the firms interviewed. This comes out in the fact that only 18.0% of companies evaluated it as very important while 55.7% deemed it important and 26.3% of little importance, as shown in Table 2.2.

In fact, for most of the companies, improving the qualifications of workers was considered as a factor necessary, but not sufficient, to obtain gains in productivity. It should be mentioned that better worker training was not directly associated with an increase in production and that its positive effects are difficult to prove and often show up progressively over the long term.

Graph 2.4

BASIC ELEMENTS IN NEW PROFILE OF INDUSTRIAL WORKER



Recourse to sub-contracting of production and services

In the past 30 years the sub-contracting of production and services has become a common practice in the industrial sector with the aim of creating more flexible and smaller overall business structures which make it possible to achieve higher efficiency in carrying out production activity. In its early stages, sub-contracting came basically out of the need for production capacity, that is to say, recourse to this by companies was due to the fact that they did not have the means sufficient to meet demand which normally happened only from time to time (at periods of peak production). Nevertheless, with the passage of time what has been taking on greater importance has been so-called specialized sub-contracting which occurs when it meets areas and functions which the companies themselves cannot handle because of a lack of know-how and experience. This type of sub-contracting makes it possible for industrial firms to meet broad complex demand where, a priori, its

production specialization would not allow it to do so. Today, we see a combination of both the sub-contracting of production capacity, especially over short periods and very much connected to branches which are especially dependent on economic cycles or fashion, with specialized sub-contracting which is generally more linked to activities in which companies are characterized by a low level of vertical integration. For some years sub-contracting has received a further boost from the new concept of industrial production in which companies are tending more and more to concentrate on one specific kind of work. For example, final product companies are concentrating on matters of design, assembly and distribution and marketing.

As shown in Table 2.1, some 54.6% of companies interviewed in field work emphasized the importance of recourse to sub-contracting as a mechanism which made possible higher growth of production than of employment. The degree of importance of this factor for the various companies was uneven, as may be seen in Table 2.2. Some 37.7% considered it very important, 32.1% simply felt it was important while 30.2% stated it was of little importance.

The above evaluations show that the role of sub-contracting varies with the sector and type of production activity. This is reflected in the experience of companies interviewed. For example, one company recurs to sub-contracting depending very much on circumstances and only when its production specialization cannot meet an order in its entirety (the finish on a product, for example). In another case, a company follows the principle of sub-contracting all low-profit production activity and/or that which does not form part of its core business. The textiles and clothing sectors and metalworking, electrical equipment and electronics are those areas where this industrial strategy has become most strongly established and what we see as a characteristic of these branches is the existence of a multitude of clothing make-up shops and metalworking workshops. Depending on the proportion of total production let out on sub-contract we can distinguish three groups of companies, as follows:

• Those companies which sub-contract less than 10% of their production, generally due to specific circumstances in work levels (sub-contracting of production capacity) and in some circumstances due to specific comple-

mentary tasks (specialized sub-contracting) which cannot be met by the companies themselves in terms of volume or delivery date.

• Companies which sub-contract between 10% and 30% of their production for reasons of capacity or specialization.

• Those companies which sub-contract more than 40-50% of their production (and this could go a high as 90%) normally for reasons related to specialized sub-contracting.

In broad lines, sub-contracting has led to a reduction in employment in the industrial sector as a whole and therefore to increases in labour productivity as a result of the following:

• In production and services the process of externalisation followed by companies which use sub-contracting tends to create fewer jobs in the supplier companies than would be created by those companies if they did not have recourse to sub-contracting and had to create the internal structure for that purpose; and

• In services, apart from the reason given above, because employment generated outside by the process of externalisation is created in the services sector and not in the industrial sector.

As a result, we may conclude that the phenomenon of sub-contracting, especially in the case of specialized sub-contracting, is bringing about a reduction in industrial employment. In this respect, we should add that sub-contractor companies are more specialized in the tasks given them by the contracting companies (better equipment, better know-how), which means higher productivity and lower personnel needs than in the latter companies. Furthermore, companies often tend to sub-contract especially labour-intensive work with the aim of reducing labour costs.

Recourse to temporary hiring

As can be seen in Table 2.1, some 53.6% of companies interviewed in field work mentioned that the different trends in production and level of employment in recent years could be accounted for by recourse to temporary hiring. Nevertheless, it should be added that a notable proportion of these

companies consider this factor to be of little importance. In Table 2.2 we note that 48.1% termed this factor of little importance whereas 42.3% called it important and only 9.6% described it as very important.

Temporary hiring has played a significant role in a good number of industrial companies since the mid-Eighties. Nevertheless, changes in regulations in this sphere, especially the latest changes introduced at the end of the Nineties, have brought about a reduction in recourse to this type of hiring contract. On top of this should be added the fact that some companies are obliged to make limited use of this formula because of the collective bargaining agreement in the sector in which they operate or, simply, because of internal agreements or self-limits agreed upon. In some cases, this limit is set at a maximum of 10-12% of the total workforce.

On the other hand, we should point out the general tendency (and a growing one) among industrial companies to reduce the turnaround of workers to a minimum and thus establish them as a stable workforce. This can be attributed basically to two factors. On the one hand, because an employee with a permanent hiring contract is more productive and profitable, for reasons of motivation, level of training for the job, etc. In addition, because the difficulty in finding personnel suitable to fill job vacancies in the labour market leads quite a number of companies to fairly quickly stabilize the employees they have and thus avoid their leaving.

All the above circumstances have meant that, in the majority of companies consulted, a proportion of temporary workers has gone on to become permanent without there being any change in the total number of workers and that, as a result, the percentage of temporary workers has decreased. In spite of the above, temporary work is today regarded by many companies as a «breather» or «cushioning» formula which provides labour flexibility and makes it possible to fit the company structure to the changing conditions of the market at any time. We should point out that the proportion of temporary workers in the total workforce fluctuates substantially among companies and sectors. For example, in one company manufacturing machinery the relative importance of temporary work was nil whereas in a clothing company the proportion stood at 55% of the total workforce. It should be pointed out that in many cases analyzed this proportion did not go above 10%.

Working on overtime

Approximately half the companies interviewed indicated that working on overtime was a common practice and a significant one in explaining the higher growth of real production than in the number of workers in the period 1997-1999, as set out in Table 2.1. Nevertheless, a majority of these companies stated that this factor was not very significant. As shown in Table 2.2, nearly 60% of companies considered it of little importance.

It may be mentioned that working on overtime has been a basic traditional way of gaining flexibility used by companies in the industrial sector. Nevertheless, the growing control of overtime, limitations imposed by law (80 hours per person per year) and/or by collective bargaining agreements, as well as its high cost, have meant that the use of overtime has been reduced over the course of time, especially in the case of larger companies. Use of overtime is more common in the case of medium-sized firms and especially so among small companies. In this respect, we should add that swings in production are again often handled through recourse to sub-contracting and in some cases through temporary hiring and recourse to the services of temporary job companies. In the case of small companies, working on overtime is a basic mechanism for ensuring a flexible organization of labour, in some cases even ignoring legal requirements or limits established under collective bargaining agreements. This option continues to be the most flexible means of taking action (momentary flexibility) and the easiest to carry out.

Recourse to working on overtime comes from a desire to avoid oversizing of business structures, brought about by seasonal circumstances and/or specific circumstances of demand. Examples of this are the textiles and clothing sector and the motor-vehicle components branch. In these cases, overtime is used to meet peaks in production, for example, even though of short duration, given that the period for preparation and training needed for new employees would be too long or it would be difficult to quickly find trained persons able to join the company. It should be pointed out that some companies meet peaks in production by working overtime during an initial stage and then make use of the services of temporary job companies and, if the workload continues, they hire temporary workers.

Greater use of installed production capacity

The greater use of installed production capacity of companies is also a key factor in explaining the higher growth of production than in employment in the period 1997-1999, something which was stated by 49.5% of companies interviewed, as shown in Table 2.1. It should be pointed out that, a priori, this percentage may seem low to the extent that normally the existence of idle capacity is the most logical resource for increasing production, but this may be justified by the fact that field work was carried out in the context of an expansionist cycle in which, therefore, idle means of production available were scarce or non-existent. In the case of companies which pointed out the importance of greater use of installed production capacity, this factor had a notable role, to the point where, as shown in Table 2.2, some 62.5% of companies deemed it very important.

Normally, industrial companies are organized on continuing work lines in order to obtain maximum utilization of their installations and production possibilities. As a general rule, all work shifts operate at full performance levels although in some companies and sectors of production, especially those which have a high level of mechanization and are capital-intensive, usually reserve one shift (the night shift) or else four shifts (the week-end shift) in order to act as a «standby» for adapting capacity to the needs of the market or to remedy lack of symmetry between areas of production. In other companies and segments of production, normally less mechanized and more labour-intensive, the production system is structured on the basis of one or two basic shifts which are complemented with overtime work at moments of increased production. In these cases, major swings in production are handled through temporary hiring and, especially, through recourse to sub-contracting.

As a result, it may be stated that greater use of installed production capacity in companies is generally linked to working on overtime and/or the putting into effect of more shifts, with the bringing in of new personnel. The preferences and recourse to one or another method varies between companies. Some companies, for example, prefer recourse to more shifts because they have found that production of labour goes down with an increase in overtime. Normally, when the workload consolidates thus justifying the need

for recourse to overtime, companies tend to replace this with an increase in the number of shifts through the hiring of new workers which during an initial stage come in under temporary contracts and/or in some cases come from temporary job companies.

Better profile of new persons hired

As can be seen in Table 2.1, some 46.4% of companies analyzed underlined the importance of the better profile of new persons hired in order to explain the different growth of real production and employment. Nevertheless, this factor was evaluated as being very important by only 4.4% of companies while 53.3% termed it as important and 42.2% said it was of little importance, a result which shows up in Table 2.2.

In general terms, the profile of workers has substantially improved in industrial companies in recent years, both in the matter of qualification and aptitude. This is due, on the one hand, to better education of the labour force but at the same time to more stringent demands by companies when it comes to hiring. In this respect, in some sectors it is normal to require that employees for production jobs, as a minimum, have the qualifications of second level of trade training (FP II). In spite of this, it is common in companies that new persons hired go through a stage of apprenticeship and initial training which, in some cases, may last for six months. This phenomenon has made it possible to attain greater professionalism in the industrial workforce which also shows up in the fact that new persons hired become more quickly adapted to changes and are more prepared to obtain higher output from available equipment and technology. All of this turns into increased productivity and improvements in quality. Nevertheless, it should be noted that, although there exists a direct and positive relation between the improved profile of new persons hired and an increase in real production, the truth is that these positive effects are sometimes difficult to quantify and often show up progressively over the medium and long term.

Recourse to services of temporary job companies

Some 40.2% of companies interviewed stated that recourse to the services of temporary job companies may explain the different trends in real production and employment in recent years, as shown in Table 2.1. Nevertheless, only 7.7% stated that this kind of move was very important as against nearly 49% which deemed it of little importance, as may be seen in Table 2.2.

The use of the services of temporary job companies has gone through a substantial change in recent years as a result of the amendments made to legislation in 1999. One of the modifications having the biggest impact involves the fact that the company contracting the services of a temporary job company must pay the same wage per worker as it pays any other worker performing the same job. This change increased the cost of using the services of those companies and, as a result, reduced their use as it altered the circumstances prompting such use. This was the case of a company manufacturing components for motor-vehicles in which the workforce previously broke down at 73% for permanent workers, 18% for temporary personnel and 9% for people from temporary job companies. After the changes in legislation this changed to 80% permanent workers and 20% for temporary workers.

At present, industrial companies have recourse to temporary job companies with basically three objectives in mind. On the one hand, with the aim of temporarily filling an inside vacancy and often in the case of emergency (holidays, seasonal conditions, people leaving, replacements, etc.), an objective which follows the philosophy of the regulations governing the temporary job companies. In addition, with the aim of selecting personnel to hire directly to the extent that temporary job companies obtain workers who have been previously selected and therefore have some of the characteristics considered appropriate and that the use of their services may be considered as a trial period for those workers in the company. Recourse to the services of temporary job companies therefore significantly reduces the task and the costs of finding labour, selecting it and checking candidates for hiring. This makes it possible to conclude that a proportion of workers coming from temporary job companies to work in industrial companies ends up being incor-

porated into these company workforces. In this respect, we may mention the case of a company with 243 employees which in 1998 hired 60% of the 50 temporary workers it had in total. Finally, in some cases companies use the services of temporary job companies in order to meet quite sporadic peaks in production.

Table 2.4

REASONS JUSTIFYING RECOURSE TO TEMPORARY JOB COMPANIES

• To cover a temporary vacancy.
• For selecting personnel.
• Response to very sporadic production peaks.

The proportion of personnel supplied by temporary job companies working in industrial companies fluctuates considerably. In general terms, percentages under 10-15% of total workforce are the most normal although there are exceptions. Finally, we may cite the unusual case of one large company which decided to replace its temporary personnel by going to a temporary job company because it felt that the regulations were restrictive in the case of temporary hiring and because in this way it might avoid labour problems in the event of having to petition the authorities to allow the restructuring of its workforce.

Other

Among other factors mentioned by companies during the course of field work which turned out to be of great interest in justifying the bigger growth of production than in employment in recent years, three points especially stood out. These were as follows:

• The improvement of quality control through the setting up of checking systems for processes and products. This factor was mentioned as important in explaining the different trends in production and employment in recent years by 21.6% of companies interviewed (Table 2.1) of which nearly 43% deemed it to be very important (Table 2.2). The introduction of ISO, QS and VDE systems brings about changes in many areas of a company

which makes possible increases in labour productivity (more continuing training, changes in the organization of production processes, etc.).

• A good labour climate was considered important as an explanation of the different trend in real production and employment in recent years, according to 12.4% of companies interviewed (Table 2.1), of which 41.7% felt that this factor was very important (Table 2.2).

• The introduction of advances and improvements in logistics, both in regard to outside logistics of supply and distribution as well as in internal logistics. Some 7.2% of companies felt that this factor explained the higher growth of production than in employment (Table 2.1) and of these nearly 43% deemed this very important as a determining factor (Table 2.2). It should be mentioned that internal manufacturing logistics have revolutionized industrial companies with major gains in productivity.

2.2. Explanatory factors according to production sector

The factors which explain the different trend in real production and employment in companies in the various sectors of production basically come down to two aspects. On the one hand, in terms of the very nature of production itself in the various branches and segments of which it is made up, with reference to the degree of involvement and the extent to which they have recourse either to the labour factor or the capital factor, we may differentiate between more mechanized production and that which is more of a craft nature. In the former, for example, an increase in production may be obtained through greater or better use of technology or even changing the organization of equipment and production activity itself. In the second case, however, it may be necessary to increase the number of employees, have recourse to the introduction of systems for organization and control of labour inputs or improve the level of qualifications and training of workers.

Another aspect affecting factors which explain the gap is that relating to the different degree of technological and organizational development to be found in the various branches and segments of production. By way of example, we may point out that the degree of this development is much greater in

areas such as motor vehicles and electronics than in other fields such as clothing and certain segments of primary food processing or chemicals for the consumer.

Food and beverages

As shown in Table 2.5, the three factors which make it easier to explain the difference between the trends in real production and employment in companies in the food and beverages sector in recent years are the improvements in equipment and technology, the introduction of new systems and techniques for organization and production planning and greater use of installed production capacity. The first factor was underlined by all companies interviewed whereas the other two factors were mentioned by nearly 91%. Outstanding among these three factors was the greater use of installed production capacity which was deemed very important by 85% of companies.

Of special note among other factors was the simplification of production processes and the introduction of new systems for organization and control of labour inputs which were considered important by more than 80% of companies interviewed. As compared with the average for industry as a whole, we should mention the following points:

• The notable importance for the food and beverages sector to be seen in the greater use of production capacity as well as such aspects as the qualifications and training of workers and, specifically, the better continuing training carried out and the better profile of new persons hired, as well as recourse to temporary hiring.

• The lesser significance of recourse to sub-contracting of production and services in the food and beverages sector, the importance of which is lower in these companies than in other branches of industry.

Textiles and clothing

Improvements in equipment and technology was the main factor explaining the different growth in real production and employment in the textiles and clothing sector. As set out in Table 2.5, some 93.8% of compa-

nies interviewed underlined the importance of this factor and 86.7% classified it as very important.

Other significant factors making it possible to obtain gains in labour productivity in this sector are recourse to sub-contracting of production and services and changes in job descriptions and worker profiles, both of which were mentioned by three out of four companies in the sector. Also notable, although given less importance, was the introduction of new systems and techniques for organization and production planning, introduction of new systems for organization and control of labour input, simplification of production processes and improvements in quality control. Of all these factors, because of the high level of significance they had for companies, we should point out those relating to organizational aspects, such as the introduction of new systems and techniques for organization and production planning and introduction of new systems for organization and control of labour input.

In the textile and clothing sector, we should differentiate between those companies which belong to various segments of production. Mention should thus be made of the fact that, in the case of so-called «primary» textiles (production of thread, weaving, dying and finishing), which are more capital intensive, we see a predominance of the improvement in equipment and technology as a factor explaining the gap between production and employment. On the other hand, in those segments concentrating on final product (dress garments and leisure wear) which is characterized by its higher labour factor, such improvements had a lesser impact while other factors had greater importance, such as recourse to sub-contracting of production, for example, especially in stages related to sewing.

In comparison with industry as a whole, we should mention the following:

• The greater importance factors such as recourse to sub-contracting of production and services and improvements in quality control had for companies in the textile sector.

• On the contrary, the lesser importance given to factors relating to greater use of production capacity and the better profile of new persons hired.

Table 2.5

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT. 1997-1999 1) ACCORDING TO PRODUCTION SECTOR

	Food and beverages		Textiles and clothing		Metalworking, electrical equipment and electronics		Chemicals and plastics		Total	
	1	2	1	2	1	2	1	2	1	2
Improvements in equipment and technology	100.0	68.2	93.8	86.7	80.4	75.7	92.3	50.0	89.7	71.3
Introduction of new systems and techniques for organization and production planning	90.9	50.0	56.3	55.6	65.2	56.7	92.3	50.0	73.2	53.5
Introduction of new systems for organization and control of labour input	81.8	22.2	56.3	44.5	69.6	37.5	84.6	36.4	72.2	34.3
Simplification of production processes	86.4	21.1	56.3	33.3	58.7	57.3	76.9	40.0	67.0	41.5
Changes in job descriptions and worker profiles	77.3	17.6	75.0	8.3	50.0	39.1	76.9	10.0	63.9	22.6
Better continuing training of workers	81.8	27.8	50.0	0.0	58.7	18.5	61.5	12.5	62.9	18.0
Recourse to sub-contracting of production and services	31.8	14.3	75.0	33.3	58.7	48.1	53.8	28.6	54.6	37.7
Recourse to temporary hiring	77.3	17.6	43.8	14.3	39.1	5.3	69.2	0.0	53.6	9.6
Working on overtime	50.0	18.2	43.8	28.6	54.3	24.0	46.2	0.0	50.5	20.4
Greater use of installed production capacity	90.9	85.0	18.8	33.3	45.7	47.6	38.5	40.0	49.5	62.5
Better profile of new persons hired (qualifications and aptitude)	77.3	5.9	25.0	0.0	41.3	5.3	38.5	0.0	46.4	4.4
Recourse to services of temporary job companies	31.8	14.3	31.3	0.0	47.8	4.5	38.5	20.0	40.2	7.7
Other:										
Improvements in quality control	9.1	0.0	56.3	33.4	17.4	62.5	15.4	50.0	21.6	42.9
Good labour climate	4.5	0.0	6.3	0.0	17.4	50.0	7.7	0.0	12.4	41.7
Advances in logistics	0.0	–	12.5	0.0	4.3	50.0	23.1	66.7	7.2	42.9

1 = Percentage of companies which emphasize the importance of each factor.
2 = Percentage of companies which emphasize the importance of each factor and deem it very important.

Metalworking, electrical equipment and electronics

Three factors were most emphasized by companies in the metalworking, electrical equipment and electronics sector as determinants in the different trends in real production and employment in recent years and therefore in the increase in labour productivity. As show in Table 2.5, these determinants in order of importance are as follows:

• Improvements in equipment and technology, mentioned by 80.4% of companies;

• Introduction of new systems for organization and control of labour input (69.6%); and

• Introduction of new systems and techniques for organization and production planning (65.2%).

Along with these factors we may point out the simplification of production processes, better continuing training of workers and recourse to subcontracting of production and services.

Out of all the above factors, those considered most important by companies in the sector were improvements in equipment and technology, the simplification of production processes and the introduction of new systems and techniques for organization and production planning.

Compared with industry as a whole, we should point out the following factors:

• The greater importance for companies in the metalworking, electrical equipment and electronics sector of factors such as recourse to sub-contracting of production and services, working on overtime and recourse to the services of temporary job companies.

• On the contrary, the lesser importance of factors relating to changes in job descriptions and worker profiles and recourse to temporary hiring.

Chemicals and plastics

The different growth in real production and employment which has taken place in the chemicals and plastics sector in recent years may be largely explained by two factors as can be seen in Table 2.5. On the one hand, because of the improvement in equipment and technology and, on the other hand, by the introduction of new systems and techniques for organization and production planning, with both factors being given the same importance. After these comes the introduction of new systems for organization and control of labour input.

Compared with industry as a whole, we should mention the following points:

• The greater importance given by companies in the chemicals and plastics sector to the introduction of new systems and techniques for organization and production planning, recourse to temporary hiring and changes in job descriptions and worker profiles.

• The lesser importance ascribed by the sector to factors such as greater use of installed production capacity and the better profile of new persons hired.

General thoughts

A comparison of factors which explain the production/employment gap in the four sectors of production makes it possible to underline certain conclusions. In the first case, we should point out that in the metalworking, electrical equipment and electronics sector and the chemicals and plastics sector we note a fairly regular distribution of the importance given by companies to the various factors so that this distribution runs between lows of 38-39% and highs of 80-90%. This points up that both these branches are characterized by a relatively balanced approach when it comes to the utilization and importance of the various factors and the possibilities these provide for improving labour productivity. Nevertheless, the food and beverages sector and the textile and clothing sector show a greater concentration with regard to the importance of the various factors, given that some factors have

a fairly high importance while others have significantly low importance. In these cases, percentages run between lows of 19-32% and highs of 94-100%. This fact shows that companies in these sectors of production have heavy recourse to certain factors in order to increase production, leaving aside the possibilities offered by others.

On the other hand, in Graph 2.5 we see that there is a high degree of convergence between those sectors when it comes to pointing out factors related to services of temporary job companies, working on overtime and improvements in equipment and technology. Nevertheless, the biggest differences between branches of industry show up in the following factors: greater use of installed production capacity, improvements in quality control and better profile of new persons hired.

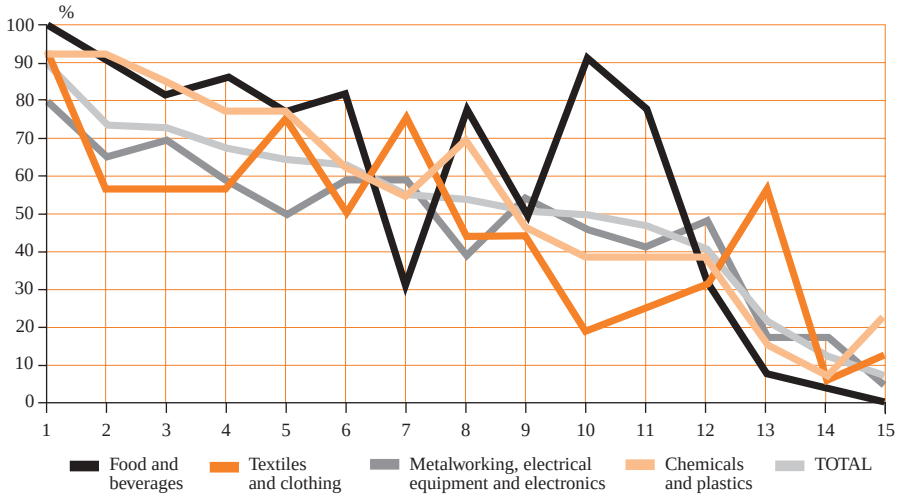
Finally, from another point of view, we should point out that, in those production activities characterized by being labour intensive and generally with a low level of mechanization because of their very nature or sometimes because of a lower level of development, the factors which explain the different trends in growth of production and employment refer to the greater use of available means of production and action taken with regard to employment. As a result, notable among the various factors was a greater use of installed production capacity, working on overtime and better continuing training of workers. Examples of this were to be found in clothing, machine building, chemicals for the consumer and primary food processing.

On the other hand, in those segments of production activity which are more capital intensive and have a higher level of technological development, the explanatory factors seem to be more linked to improvements in equipment and technology, to aspects related to the organization of production and labour input and the simplification of processes. This was the case, for example, in segments such as motor vehicles, electronics, textiles, basic and industrial chemicals and certain production activities in secondary food processing.

Graph 2.5

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999
1) ACCORDING TO PRODUCTION SECTOR

Percentage of companies which emphasize the importance of each factor



1. Improvements in equipment and technology.
2. Introduction of new systems and techniques for organization and production planning.
3. Introduction of new systems for organization and control of labour input.
4. Simplification of production processes.
5. Changes in job descriptions and worker profiles.
6. Better continuing training of workers.
7. Recourse to sub-contracting of production and services.
8. Recourse to temporary hiring.
9. Working on overtime.
10. Greater use of installed production capacity.
11. Better profile of new persons hired (qualifications and aptitude).
12. Recourse to services of temporary job companies.
13. Improvements in quality control.
14. Good labour climate.
15. Advances in logistics.

2.3. Explanatory factors according to Autonomous Community

Factors which explain the different trend in real production and employment in recent years in companies located in various Autonomous Communities naturally depend on the level of socio-economic development of each region as well as the specialization of its production sectors.

Catalonia

The different growth in real production and employment in companies in Catalonia may be largely explained by the improvement in equipment and technology, as can be seen in Table 2.6. This factor is considered to be important by 89.1% of companies, of which 83.7% termed it very important. This is followed in order of importance by simplification of production processes, the introduction of new systems and techniques for organization and production planning and the introduction of new systems for organization and control of labour input. Some 62-67% of companies note the importance of these three factors while 41-51% of companies give it a rating of very important.

With regard to other factors, it is worth mentioning those relating to recourse to sub-contracting of production and services and greater use of installed production capacity, given that these factors are regarded as important by 50.9% and 43.6% of companies interviewed while 57-58% of these companies consider them very important.

With regard to industry overall, we should mention that Catalonia stands out for the following reasons:

• The greater importance given to factors such as improvement in equipment and technology, recourse to sub-contracting of production and services and simplification of production processes.

• The lesser importance of factors such as recourse to temporary hiring, the introduction of new systems for organization and control of labour input, greater use of installed production capacity and the introduction of new systems and techniques for organization and production planning.

Madrid Community

Three factors were singled out by companies in Madrid Community as determinants of the different trends in real production and employment in recent years. As shown in Table 2.6, these factors in order of importance were as follows:

Table 2.6

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999
2) ACCORDING TO AUTONOMOUS COMMUNITY

	Catalonia		Madrid Community		Valencian Community		Total	
	1	2	1	2	1	2	1	2
Improvements in equipment and technology	89.1	83.7	95.5	38.1	85.0	76.5	89.7	71.3
Introduction of new systems and techniques for organization and production planning	63.6	48.6	86.4	47.4	85.0	70.6	73.2	53.5
Introduction of new systems for organization and control of labour input	61.8	41.2	90.9	20.0	80.0	37.5	72.2	34.3
Simplification of production processes	67.3	51.4	77.3	23.5	55.0	36.7	67.0	41.5
Changes in job descriptions and worker profiles	58.2	28.1	68.2	13.3	75.0	20.0	63.9	22.6
Better continuing training of workers	49.1	18.5	86.4	15.8	75.0	20.0	62.9	18.0
Recourse to sub-contracting of production and services	50.9	57.1	63.6	21.4	55.0	9.1	54.6	37.7
Recourse to temporary hiring	40.0	0.0	81.8	5.6	60.0	33.3	53.6	9.6
Working on overtime	49.1	22.2	72.7	12.5	30.0	33.3	50.5	20.4
Greater use of installed production capacity	43.6	58.3	95.5	57.1	15.0	100.0	49.5	62.5
Better profile of new persons hired (qualifications and aptitude)	40.0	4.5	77.3	5.9	30.0	0.0	46.4	4.4
Recourse to temporary job companies	41.8	8.7	27.3	0.0	50.0	10.0	40.2	7.7
Other:								
Improvements in quality control	12.7	57.1	–	–	70.0	35.7	21.6	42.9
Good labour climate	3.6	0.0	13.6	100.0	35.0	28.6	12.4	41.7
Advances in logistics	3.6	100.0	–	–	25.0	20.0	7.2	42.9

1 = Percentage of companies which emphasize the importance of each factor.
2 = Percentage of companies which emphasize the importance of each factor and deem it very important.

• Greater use of installed production capacity, which was mentioned by 95.5% of companies.

• Improvement in equipment and technology (95.5%).

• Introduction of new systems and techniques for organization and production planning (90.9%).

These factors involved action taken with regard to production, whether applying outside improvements or improving the efficiency of available means and taking better advantage of them. These factors are followed by introduction of new systems for organization and control of labour input, better continuing training and recourse to temporary hiring.

In comparison with industry as a whole, with regard to Madrid Community the following points may be mentioned:

• The more notable importance of factors such as the greater use of installed production capacity, the better profile of new persons hired, recourse to temporary hiring, better continuing training of workers and working on overtime.

• The lesser importance of factors such as recourse to temporary job companies and improvements in quality control. We should mention that improvements in equipment and technology and changes in job descriptions and worker profiles, in spite of being considered important by a significant number of companies, were termed very important by a small proportion of companies, a proportion that turned out to be lower than the industry average.

Valencian Community

Among companies in Valencian Community, there were two quite outstanding factors which explain the different trends in real production and employment in recent years. On the one hand, as shown in Table 2.6, improvements in equipment and technology was emphasized by 85.0% of firms, with some 76.5% deeming it very important. In addition, the introduction of new systems and techniques for organization and production planning was mentioned by 85.0% of companies, of which 70.6% termed it very important. Although it was some distance behind, mention should also be made of the introduction of new systems for organization and control of labour input.

With regard to Valencian Community, compared with industry as a whole the following points should be mentioned:

• The greater importance of factors such as the introduction of new systems and techniques for organization and production planning, improvements in quality control, better continuing training of workers, and changes in job descriptions and worker profiles. We should draw attention to the notable significance given to recourse to temporary hiring by companies which emphasized its importance.

• The lesser importance of factors such as greater use of installed production capacity, working on overtime, the better profile of new persons hired and the simplification of production processes. Of special note was the fact that, while recourse to sub-contracting of production and services was important for a significant percentage of companies, the percentage of companies which deemed it very important was low in comparison with the average for industry as a whole.

General thoughts

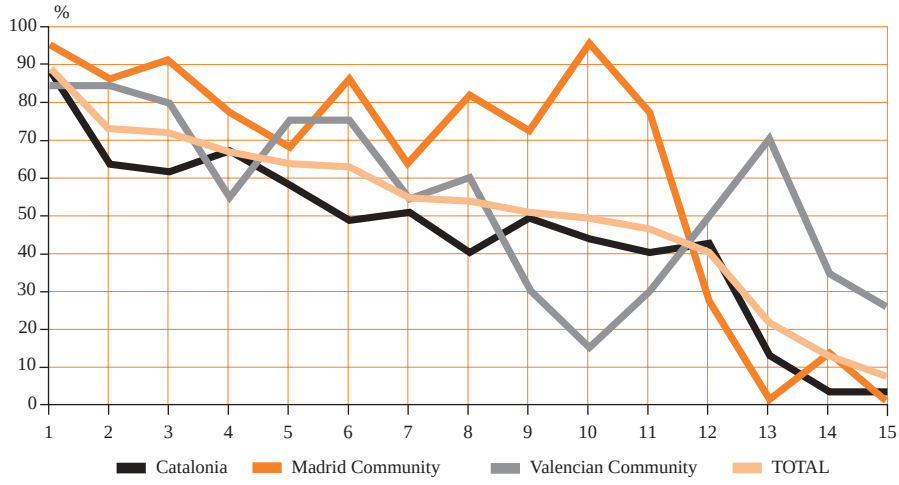
A comparison of factors which explain the gap between production and employment taking into account the three Autonomous Communities studied makes it possible to set out some conclusions. First of all, it may be said that, taking the criterion of Autonomous Communities, the divergences in behaviour of the various groups or groupings in terms of recourse to the various factors studied is less than if we look at the criterion of production sectors. This shows that the geographical aspect is not a specially key element in explaining the differences which justify the unequal growth in real production and employment in recent years.

Of the three Autonomous Communities, Catalonia is the one which shows a more regular distribution of the importance of the various factors for companies, so that this runs between a low of 41.8% and a high of 89.1%, which underlines a more balanced approach by companies with regard to the utilization and importance of the various factors in order to obtain increases in labour productivity. Companies in Madrid Community and Valencian Community, show an opposite situation with greater concentration, giving greater importance to a certain number of factors and little importance to others. In these cases, the importance of those factors runs between lows of 10-27% and highs of 85-95%. This indicates that companies

Graph 2.6

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999
2) ACCORDING TO AUTONOMOUS COMMUNITY

Percentage of companies which emphasize importance of each factor



1. Improvements in equipment and technology.
2. Introduction of new systems and techniques for organization and production planning.
3. Introduction of new systems for organization and control of labour input.
4. Simplification of production processes.
5. Changes in job descriptions and worker profiles.
6. Better continuing training of workers.
7. Recourse to sub-contracting of production and services.
8. Recourse to temporary hiring.
9. Working on overtime.
10. Greater use of installed production capacity.
11. Better profile of new persons hired (qualifications and aptitude).
12. Recourse to services of temporary job companies.
13. Improvements in quality control.
14. Good labour climate.
15. Advances in logistics.

in these regions have heavy recourse to certain ways and means of increasing productivity while not paying much attention to the gains which might be generated through others.

As may be seen in Graph 2.6, it should be pointed out that there is greater convergence among companies in the three regions in terms of factors which are considered to better explain the gap, for example, improvements in equipment and technology, introduction of new systems and techniques for organization and production planning, or simplification of

production processes, whereas we note a more significant divergence among the regions so far as concerns those factors which provide less explanation of the gap, namely greater use of installed production capacity, better profile of new persons hired or working on overtime.

2.4. Explanatory factors according to company size

The factors which explain the different trends in real production and employment in companies in recent years according to size in number of workers depend basically on their know-how in terms of management and production, their experience as companies and the availability of resources (human, plant, financial capital, etc.).

Companies with fewer than 50 workers

The factor which best helps explain the gap between real production and employment in companies with fewer than 50 workers is improvements in equipment and technology. As shown in Table 2.7, we note that 86.7% of these companies underlined its importance, with 57.7% considering it very important. This is followed by introduction of new systems and techniques for organization and production planning and introduction of new systems for organization and control of labour input, which was mentioned by 73.3% and 70.0% of companies respectively and given a classification of «very important» by 50.0% and 19.0% of those companies.

Somewhat lower in the scale, we should also mention greater use of installed production capacity and simplification of production processes.

Compared with industry as a whole, attention may be drawn to the following points:

• The greater importance given by companies with fewer than 50 workers to factors such as greater use of installed production capacity, working on overtime and recourse to temporary hiring. The latter two points especially stand out with regard to the greater importance given those factors by those companies which mention them in terms of the industry average.

• On the other hand, the lesser importance given factors such as the simplification of production processes and recourse to the services of temporary job companies. At the same time, we should point out the low proportion of companies which give great importance to such factors as the introduction of new systems for organization and control of labour input and changes in jobs descriptions and worker profiles.

Companies with 50-249 workers

Improvements in equipment and technology was the factor most mentioned by companies with 50-249 workers as the cause of the different trends in real production and employment in recent years. As shown in Table 2.7, some 86.4% of companies noted its importance, with 71.1% of these considering it very important. This was followed by introduction of new systems and techniques for organization and production planning and introduction of new systems for organization and control of labour input which were classified as important by 72.7% of companies. Other factors noted were better continuing training of workers, changes in job descriptions and worker profiles and simplification of production processes.

Compared with industry as a whole, it should be mentioned that those companies with a labour force of 50-249 workers stand out above the general average on the following points:

• Greater importance given to good labour climate, better continuing training of workers, recourse to temporary hiring, the sub-contracting of production and services and recourse to services of temporary job companies.

• Lesser importance of factors such as greater use of installed production capacity and simplification of production processes.

Companies with more than 249 workers

As shown in Table 2.7, for those companies with workforce of more than 249 workers the factor which best explained the different trend in real production and employment in recent years was improvements in equipment

Table 2.7

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN INDUSTRY. 1997-1999
3) ACCORDING TO COMPANY SIZE

	Companies with less than 50 workers		Companies with 50-249 workers		Companies with more than 250 workers		Total	
	1	2	1	2	1	2	1	2
Improvements in equipment and technology	86.7	57.7	86.4	71.1	100.0	87.0	89.7	71.3
Introduction of new systems and techniques for organization and production planning	73.3	50.0	72.7	59.4	73.9	47.1	73.2	53.5
Introduction of new systems for organization and control of labour input	70.0	19.0	72.7	43.8	73.9	35.3	72.2	34.3
Simplification of production processes	56.7	35.3	63.6	42.9	87.0	45.0	67.0	41.5
Changes in job descriptions and worker profiles	53.3	6.3	65.9	27.6	73.9	29.4	63.9	22.6
Better continuing training of workers	53.3	18.8	68.2	16.7	65.2	20.0	62.9	18.0
Recourse to sub-contracting of production and services	43.3	38.5	59.1	38.5	60.9	35.7	54.6	37.7
Recourse to temporary hiring	46.7	14.3	59.1	7.7	52.2	8.3	53.6	9.6
Working on overtime	46.7	28.6	50.0	22.7	56.5	7.7	50.5	20.4
Greater use of installed production capacity	63.3	68.4	43.2	63.2	43.5	50.0	49.5	62.5
Better profile of new persons hired (qualifications and aptitude)	43.3	0.0	45.5	5.0	52.2	8.3	46.4	4.4
Recourse to temporary job companies	23.3	0.0	45.5	10.0	52.2	8.3	40.2	7.7
Other:								
Improvements in quality control	13.3	25.0	27.3	33.3	21.7	80.0	21.6	42.9
Good labour climate	3.3	100.0	22.7	40.0	4.3	0.0	12.4	41.7
Advances in logistics	–	–	11.4	40.0	8.7	50.0	7.2	42.9

1 = Percentage of companies which emphasize the importance of each factor.
2 = Percentage of companies which emphasize the importance of each factor and deem it very important.

and technology, deemed important by all the firms interviewed, of which 87.0% considered it very important. A second factor to be noted was the simplification of production processes, considered important by 87.0% although deemed very important by only 45.0% of these companies. This was followed up by the introduction of new systems and techniques for organization and production planning, the introduction of new systems for organization and control of labour input and changes in job descriptions and worker profiles.

Compared with industry as a whole, in the case of companies with more than 249 workers, attention should be given to the following points:

• The greater importance of factors such as the simplification of production processes, sub-contracting of production and services, recourse to services of temporary job companies, improvements in equipment and technology and changes in job descriptions and worker profiles.

• The lesser importance given to factors such as a good labour climate and the greater use of installed production capacity.

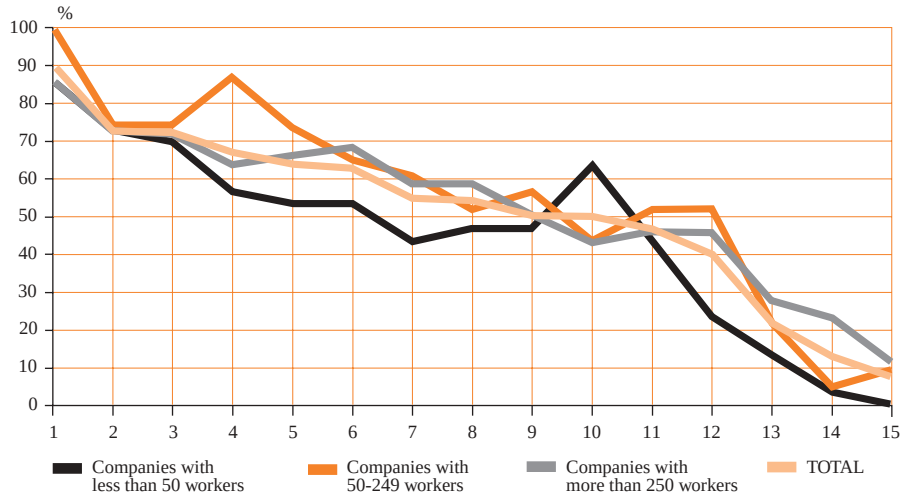
General thoughts

In general terms, in those companies of smaller size there was a predominance of factors related to steps of a traditional nature, such as improvements in equipment and technology, greater use of installed production capacity, working on overtime and recourse to temporary hiring. What stood out, however, was the lesser importance given to the more complex and innovative factors, especially those related to the human factor as, for example, the introduction of new systems for organization and control of labour input, simplification of production processes, better continuing training of workers and changes in job descriptions and worker profiles. In turn, in firms of larger size, as well as the more traditional factors, we note a higher importance given to complex factors related to the human factor, such as those referring to the organization and control of labour input, continuing training, changes in job descriptions and worker profiles and the profile of new persons hired.

Graph 2.7

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN INDUSTRY. 1997-1999
3) ACCORDING TO COMPANY SIZE

Percentage of companies which emphasize the importance of each factor



1. Improvements in equipment and technology.
2. Introduction of new systems and techniques for organization and production planning.
3. Introduction of new systems for organization and control of labour input.
4. Simplification of production processes.
5. Changes in job descriptions and worker profiles.
6. Better continuing training of workers.
7. Recourse to sub-contracting of production and services.
8. Recourse to temporary hiring.
9. Working on overtime.
10. Greater use of installed production capacity.
11. Better profile of new persons hired (qualifications and aptitude).
12. Recourse to services of temporary job companies.
13. Improvements in quality control.
14. Good labour climate.
15. Advances in logistics.

From another perspective, we note a positive correlation between company size and certain explanatory factors, so that to the extent that the size of a company increases the importance of those factors shows up greater. This was so largely in the case of simplification of production processes, recourse to temporary job companies, sub-contracting of production and services and changes in job descriptions and worker profiles.

We also note that the behaviour of companies of larger size, especially those with a workforce of 50-249 workers, is characterized by a more even

distribution of the importance of the various explanatory factors. In fact, the importance of these factors varies between a low of 43.2% and a high of 86.4%, which indicates a more balanced recourse to the possibilities offered by each factor for improving labour productivity. On the other hand, firms with less than 50 workers are characterized by concentrating their efforts to improve labour productivity in certain areas while ignoring others.

Finally, Graph 2.7 points up the high degree of convergence in the importance given by the three groups of companies to factors which are considered to well explain the gap between real production and employment, such as improvements in equipment and technology, the introduction of new systems for organization and production planning, better use of installed production capacity and introduction of new systems for organization and control of labour input. With regard to other factors, we note a greater divergence in the approach taken by various groups of companies and what stood out were the cases involving the simplification of production processes, changes in job descriptions and worker profiles and recourse to temporary job companies.

2.5. Explanatory factors according to extent of production/employment gap

Companies with small gap

For those industrial companies in which the annual average growth rate of real production in the period 1997-1999 was less than twice that for employment (those with a small gap) the main factor explaining that difference was the introduction of new systems for organization and control of labour input. As shown in Table 2.8, this was considered important by 82.6% of companies but only 36.8% considered it very important. On the other hand, the improvements in equipment and technology and the introduction of new systems and techniques for organization and production planning were mentioned as important by 78.3% and 73.9% of companies respectively, with 72.2% and 70.0% also stating these as very important.

Following these came the introduction of new systems and techniques for organization and production planning and changes in job descriptions and worker profiles.

Companies with large gap

Those industrial companies in which annual average growth rates for real production in the period 1997-1999 were more than double rates for employment (those with a large gap) stated that the factor which best explained this difference was improvements in equipment and technology. According to Table 2.8, some 95.7% of companies interviewed mentioned the importance of this factor, while 63.6% termed it very important.

Other key factors were the introduction of new systems and techniques for organization and production planning, the introduction of new systems for organization and control of labour input, better continuing training of workers and changes in job descriptions and worker profiles.

General thoughts

As shown in Graph 2.8, if we compare the situation of the two groups of companies according to the size of the gap between the trends in real production and employment in the period 1997-1999, we note the following:

• Those companies showing a small gap give greater importance to factors relating to working on overtime, recourse to sub-contracting of production and services and recourse to services of temporary job companies.

• In those firms with a large gap greater importance is given to factors such as improvements in equipment and technology, better continuing training of workers, recourse to temporary hiring and advances in logistics. Nevertheless, we note that for these companies factors such as the introduction of new systems and techniques for organization and production planning and simplification of production processes are more important than in those companies in the small gap group.

Table 2.8

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999
4) ACCORDING TO EXTENT OF PRODUCTION/EMPLOYMENT GAP[1]

	Companies with small gap [2]		Companies with large gap [3]		Total	
	1	2	1	2	1	2
Improvements in equipment and technology	78.3	72.2	95.7	63.6	89.7	71.3
Introduction of new systems and techniques for organization and production planning	73.9	47.1	78.3	66.7	73.2	53.5
Introduction of new systems for organization and control of labour input	82.6	36.8	78.3	44.4	72.2	34.3
Simplification of production processes	69.6	31.3	69.6	50.0	67.0	41.5
Changes in job description and worker profiles	73.9	23.5	73.9	17.6	63.9	22.6
Better continuing training of workers	60.9	21.4	73.9	17.6	62.9	18.0
Recourse to sub-contracting of production and services	65.2	60.0	43.5	20.0	54.6	37.7
Recourse to temporary hiring	52.2	8.3	65.2	0.0	53.6	9.6
Working on overtime	69.6	18.8	52.2	8.3	50.5	20.4
Greater use of installed production capacity	43.5	70.0	47.8	63.6	49.5	62.5
Better profile of new persons hired (qualifications and aptitude)	43.5	0.0	47.8	9.1	46.4	4.4
Recourse to services of temporary job companies	47.8	9.1	39.1	0.0	40.2	7.7
Other:						
Improvements in quality control	8.7	0.0	8.7	50.0	7.2	42.9
Good labour climate	26.1	50.0	21.7	20.0	21.6	42.9
Advances in logistics	13.0	66.7	69.6	50.0	12.4	41.7

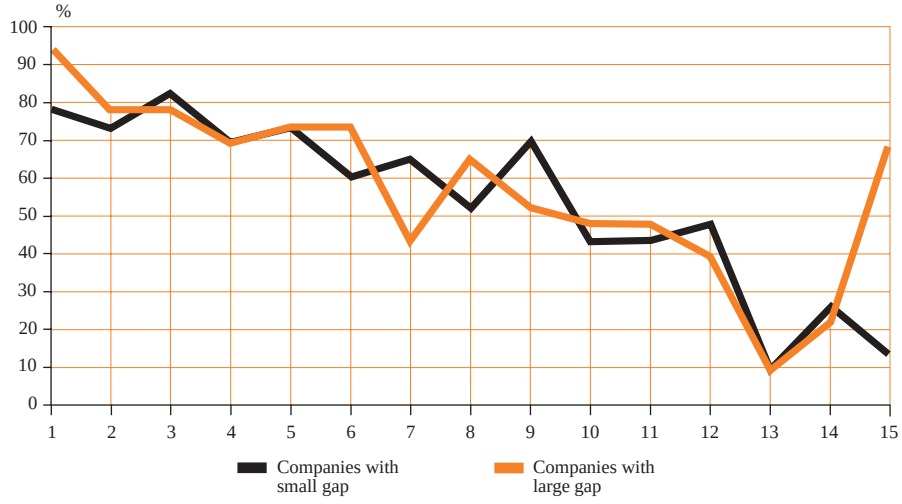
1 = Percentage of companies with emphasize importance of each factor.
2 = Percentage of companies with emphasize importance of each factor and deem it very important.

(1) Information obtained did not make it possible to classify all of the companies in the sample in one of the two groups interviewed so that it does not make any sense to draw comparisons between figures for each of these groups and figures for the whole sample.
(2) Included in this group are those companies which in the period 1997-1999 recorded annual average growth rates in real production of less than twice rates for employment.
(3) This groups includes those companies which in the period 1997-1999 recorded annual average growth rates in real production of more than twice rates for employment.

Graphic 2.8

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999
4) ACCORDING TO EXTENT OF PRODUCTION/EMPLOYMENT GAP[1]

Percentage of companies which mention the importance of each factor



1. Improvements in equipment and technology.
2. Introduction of new systems and techniques for organization and production planning.
3. Introduction of new systems for organization and control of labour input.
4. Simplification of production processes.
5. Changes in job descriptions and worker profiles.
6. Better continuing training of workers.
7. Recourse to sub-contracting of production and services.
8. Recourse to temporary hiring.
9. Working on overtime.
10. Greater use of installed production capacity.
11. Better profile of new persons hired (qualifications and aptitude).
12. Recourse to services of temporary job companies.
13. Improvements in quality control.
14. Good labour climate.
15. Advances in logistics.

(1) Information obtained did not make it possible to classify all of the companies in the sample in one of two groups interviewed so that it does not make any sense to draw comparisons between figures for each of these groups and figures for the whole sample.

Finally, it may be stated that those companies showing a small gap give greater importance to more traditional factors which emphasize recourse to outside means and involve few inside changes. In turn, those companies showing a larger gap above all have recourse to alternatives of greater complexity which basically affect the internal structure of companies and production activities and processes.

III. Employment strategy of companies

3.1. Philosophy for hiring personnel

In recent years the management of human resources has taken on growing importance in the strategy followed by companies into order to improve competitiveness. In the present context, good management and organization of the labour factor is the basic crux of competitiveness which marks the difference in any company operating in international markets. This fact makes the hiring and incorporation of new employees rather fundamental to which special attention should be given. But it must been kept in mind that, just as the role of human resources in companies has changed, there has also been a notable transformation in all matters relating to the hiring of workers.

Today, the basic principles which define the process of hiring personnel are as follows:

- Optimization of resources and means available within companies (equipment, facilities, persons and organization) before proceeding to hire new personnel.
- Profound analysis of employment needs.
- Fullest justification of any new hiring of workers.
- Minimum job rotation with highest possible stability of workforce.

• Stringent requirements with regard to new persons hired in personal terms (qualifications, experience, attitude, etc.).

Table 3.1

BASIC PRINCIPLES IN PROCESS OF HIRING PERSONNEL IN COMPANIES

• Optimization of available resources and means (equipment, facilities, etc.).
• Profound analysis of employment needs.
• Fullest possible justification for hiring new workers.
• Minimum job rotation with highest possible stability of workforce.
• Stringent requirements for new persons hired (qualifications, experience, attitude, etc.).

Optimization of resources and means, analysis of needs and justification for hiring

In the past, the hiring of personnel by companies was carried out more lightly than it is today in the sense that labour needs arising from an increase in production activity would be met without a profound internal analysis and justification of such needs. Nevertheless, in companies today we see a predominant philosophy according to which, when the company is in a growth stage of production, all means of increasing production must be exhausted before changing the size of the workforce. This means that the demands for justification of any further hiring, especially if it should involve permanent jobs, are much higher than in the past.

As a result, companies often carry out the optimization of available resources and means, such as equipment, facilities, persons and organization (structural improvements, quality control, better organization, etc.) as well as a profound internal study (alternatives to hiring by the company, nature and future prospects of the job to be filled, etc.), as a previous step to determining whether it is necessary to hire personnel or not. Along these lines, it should be pointed out that companies normally define the structure of the workforce according to their needs and, in view of this, adjust them to the fullest extent possible in terms of cost/benefit, taking advantage of available capacity practically to the limit and, when possible, eliminating jobs. For

example, we should mention that in one of the companies analyzed an increase of 10% in production by volume was obtained in one year without there being any change in workforce, thanks especially to the major improvements obtained in productivity. Nevertheless, the fine adjustment of workforce to the absolute limit and the tendency of companies to manufacture without inventories means that any increase in demand brings about a direct and immediate increase in production and hiring needs. In spite of all this, some companies occasionally hire personnel without having fully optimized their internal structures.

From another perspective, it may be said that growth in production activity of companies in past decades was normally accompanied by parallel large increases in the number of workers. However, today this does not happen as the alternatives to employment of people to make growth in production possible are more numerous and, in most cases, more advantageous from a business point of view (cheaper, less conflict-producing over the short and medium term, more flexible, more innovative and dynamic, etc.). Furthermore, as mentioned earlier, there is a predominating philosophy according to which, in case of the need to increase production, a company should exhaust all possible ways of raising production without changing the workforce. This leads to the point where in a normal situation the number of workers in a company usually remains fairly stable in expansionist economic cycles and recourse is had to other mechanisms in order to obtain increases in production. It may even be said that in some large companies there exist annual objectives for progressively reducing employment until it reaches a size considered optimum for the type and volume of business. Along these lines, we find some companies which make continuing investment in more modern machinery (which requires labour) in order not to increase the workforce and even be able to reduce it. On the other hand, we should point out that there are always facilities which exist outside the plant which make it possible to increase production without having to hire personnel as, for example, through recourse to sub-contracting. Nevertheless, we should mention that, where the growth cycle in production lasts over time, recourse to outside facilities may become unsustainable and it is finally necessary to increase employment. This was the case, for example, with one metalworking company which raised its production in the period 1990-1995 while

maintaining its workforce stable at 200 employees (only replacing those who left the company), thanks to sub-contracting, but at a specific moment this situation became difficult to continue because its internal company strategy prevented it from going above certain maximum limits in the proportion of sub-contracting and it thus had to increase employment.

In spite of the fact that companies have quite different ways of acting, it may be said that, along broad lines, the specific processes of hiring follow fairly common paths. These may be defined according to the area of work for which a person is to be hired. When it is a matter of a new employee for office work, companies usually go to firms which specialize in advice and selection of personnel to choose a candidate, especially if this person requires certain qualifications. In some cases, the new worker is hired on a temporary basis and later goes onto permanent status while in other cases people are hired directly on a permanent basis. When it is a matter of a new employee for production tasks, companies make greater use of the possibilities of temporary status available through the various formulas allowed under existing regulations with the hope of maximizing the trial period for the candidate and/or ensuring some flexibility in case of unforeseen events. In some cases, employment takes place through a temporary hiring contract which is renewed until the limit of 13.5 months is used up following which the person usually goes on to form part of the regular workforce. On other occasions, companies have recourse to temporary job companies and employ the person for a maximum period of 9 months. Later on, this person may become part of the workforce either with a temporary contract until the maximum period is used up when he/she goes onto permanent status or else may go directly to form part of the permanent workforce. When companies are facing an urgent situation arising from peaks in demand and production or unforeseen orders, they may respond by following a sequential method of action. First, a company may opt for working on overtime and, if the workload continues, it may make use of workers from a temporary job company and, if the situation carries on and seems to consolidate, it may have recourse to temporary hiring. On the other hand, seasonal periods are usually covered by temporary hiring and on occasion by working on overtime and using the services of temporary job companies.

Highly stable workforce with minimum job rotation

As mentioned above, one of the basic principles in the hiring philosophy of industrial companies today is to reduce the rotation of employees in the workforce to a minimum and thus aim for the maximum stability in employment. In most cases, temporary hiring is justified as a mechanism for selection and trial of job candidates. Nevertheless, for many companies temporary hiring is a way of having a «breather» or «cushion» workforce which provides some margin of labour flexibility for meeting «peak periods» and «low periods» in production. This workforce is generally made up of personnel doing practical training, temporary workers and/or employees from temporary job companies. In some cases, companies have recourse to temporary workers simply because there are government support programmes in existence connected to the hiring of this type of personnel.

The principle of minimum job rotation and highly stable workforces means that when someone is hired the aim is to consolidate that person's status and make it permanent more easily than in the past on the basis of three aspects. First, whether production justifies maintenance of that job and the hiring contract. Next, whether the person responds adequately to initial expectations and the nature of the job occupied. And, of course, whether the person wants to continue with the company. Normally, all or nearly all temporary workers go on to become permanent, especially when the companies maintain stable production or are going through a period of growth. By way of example, we may mention the case of one firm where usually 90-95% of temporary workers went on to become permanent or that of another company which in the past two and a half years has made 40 workers permanent out of a total workforce of 104 persons. What is more, as mentioned in the previous chapter, in many companies the proportion of temporary workers does not exceed 10% of the workforce. Some companies, usually of medium-large size, follow an internal policy of every now and then transferring part of their temporary personnel to permanent jobs, something which is also often under agreements with the trade unions. In spite of all this, a good number of companies state that they take maximum advantage of the flexibility available under existing regulations for temporary work.

Many reasons are given to justify the conduct of companies favourable to workforce stability, of special note being the following:

• Jobs are consolidated and stable.

• Workers joining a company are trained and adapt to the situation of the jobs they occupy and the company in general.

• Permanent jobs motivate people much more than temporary jobs.

• The type of product being manufactured requires experience and know-how on the part of workers (for example, in labour-intensive products and craft-type products), something which comes only as a result of workforce stability.

• Temporary hiring is limited so far as concerns maximum period allowed, according to law or internal union agreement) so that people move more easily on to being taken on permanently. In this respect, we should point out that the change in legislation on temporary work a few years ago putting the limit down from a period of 3 years to 13.5 months has generally boosted the number of permanent hirings.

• There are in existence certain agreements on stable employment and low job rotation which have been reached between some companies and trade unions.

• Workforce stability is seen as a mechanism for helping to keep workers who may be tempted to leave a company, especially when it is a matter of employees the firm wants to keep in the workforce in which it has invested in experience, training, time, etc. This is greater at times such as the present when we see a lack of supply of workers available for hiring in the labour market.

• Today, workforces are very fine tuned to real needs and when the number of workers is increased this is done with good justification (when the company really is growing) so that it is logical to have greater direct immediate recourse to permanent hiring.

True enough, in this area we see a change in the philosophy of companies given that there has been a significant reduction in the fear and con-

cern attached to permanent hiring that existed in the past. In fact, for many companies the cost of firing people is not important or rather it has been provided for. For example, the odd firm interviewed stated that it had made financial provision to deal with dismissals. On the other hand, having the status of «permanent employee» or not having it in a company has lost the importance it had a few years ago. In spite of all this, there are still exceptions to this type of policy. For example, some companies hire workers thinking how they can overcome a crisis situation or having as reference some bad experience in the past, prominent among these being with use of the temporary hiring formula. Other companies provide permanent hiring contracts following serious consideration, given that the possible dismissal of an employee could create serious internal labour conflict. In addition, companies may be pointed out whose aim is to grow without increasing their workforce, especially their permanent workforce.

More demanding hiring requirements

The situation of greater competitiveness in the economic environment and the ever faster speed of technological advances mean that companies are more demanding with candidates when hiring personnel. These demands refer both to aspects related to qualifications and experience, especially behaviour and attitude (motivation, apprenticeship, ability to adapt, etc.). So far as education is concerned, the minimum requirements for production work, in most cases, is centred on vocational training (Grade 2 level, if possible), although for some branches of industry primary schooling and/or general certificate level is sufficient. In the area of management or office work qualifications required are generally a university degree at medium level and/or higher. On the other hand, it should be pointed out that some companies are more rigorous in their hiring of personal not directly involved in production (in office administration, for example) than for personnel directly involved in that area with regard to the ease/difficulty in bringing new employees into the company when needed.

3.2. Circumstances in which jobs created

The creation of jobs in companies depends on an amalgam of necessary conditions and good and sufficient reasons linked to an overall objective such as the need to respond to an increase in production. As shown in Table 3.2, this increase may be explained by the following most important necessary conditions:

• Growth in sales, especially if growth consolidates.

• Regional expansion and/or market growth in the sector, for example, through export to other countries, introduction of new demand sectors, incorporation of new customers or simply an increase in market share.

• Development and launching of new products and new lines of manufacture. In many cases, it is a matter of new products and new more complex product lines with greater value added, which involves changes in make-up of personnel so that there is a reduction in the number of workers directly employed in production and an increase in indirect employees linked to such tasks as planning, organization, etc., as well as better in-plant training of workers.

Table 3.2

CIRCUMSTANCES IN WHICH JOBS CREATED BY COMPANIES

Percentage of companies

Conditions necessary	% of companies
Increase in sales	59.5
Regional expansion and/or market growth in sector	34.5
New products and lines of manufacture	32.1
New installations/centres and increase in production capacity	20.2
Replacement of machinery	7.1
Availability of suitable personnel in labour market	4.8
Increase in work shifts	3.6
Policies of expansion through investment	3.6

• Putting in new facilities and centres and an increase in production capacity (warehouses, sections, etc.).

• Other: renewal of machinery, availability of suitable personnel in labour market ready to be hired, increase in number of work shifts and application of policies of expansion through investment.

Nevertheless, when there is an increase in production from one of these causes, the possible job creation is finally determined by the following good and sufficient reasons:

• Having reached an optimization of resources and means available within the company.

• Having exhausted the alternatives to job creation in order to compensate for the increase in production.

• Having analyzed hiring needs in depth and fully justified any new hiring.

• The existence of positive prospects for the future.

Aside from the above, we should point out that significant increases in the number of employees take place only at moments which may be termed exceptional. Examples of this are, basically, the development of a decided policy of expansion and/or a policy of investment which involves new market areas, new products, increases in production capacity, renewal of machinery, specialization of plants or equipping facilities with data-processing. These circumstances justify the creation of jobs which implies carrying out a policy of hiring people. Among the cases analyzed, those relating to small and medium companies revealed projects for expansion and investment with substantial job creation in the past 2-3 years, whereas most of those cases involving large companies reflected recent or current adjustment processes and reduction of jobs.

3.3. Factors standing in way of job creation

Among those factors which may mean that, while in a stage of growth, companies have not created more employment in recent years, of special note is the availability within their internal structures of alternative mechanisms to make possible an increase in production and the search for

other methods outside. In some cases we see many of the factors which explain the different trends recorded in production and employment analyzed in Chapter 3 (excess production capacity, recourse to sub-contracting, etc.). Nevertheless, in addition to these causes we may mention other conditions which also have meant that companies have not created more employment in recent years.

First, it should be pointed out that in some companies interviewed there was a predominance of policies against any increase in workforce as a result of negative experience suffered in the area of employment in the past (1992-1994 recession, drop in business, adjustments in workforce, labour conflict, etc.).

On the other hand, we should also mention the existence of a significant proportion of companies (12% of all firms interviewed) which did not want to increase their workforce for strategic reasons, including the following points:

• Not to exceed the size of a small-medium company because that involved more obligations (enlarge the works council, tax obligations, requirements for prevention of work accidents, etc.) and fewer advantages (government aid, tax benefits, etc.). For some companies the barrier in this respect was established at a workforce limit of 50 employees whereas for other companies it was a limit of 100 employees.

• Not to enlarge the works council. For some companies, going above 100 employees would increase the number of employees making up the works council from 5 to 9 persons which would mean having a greater proportion of the workforce practically inactive.

• Not to lose control of the company.

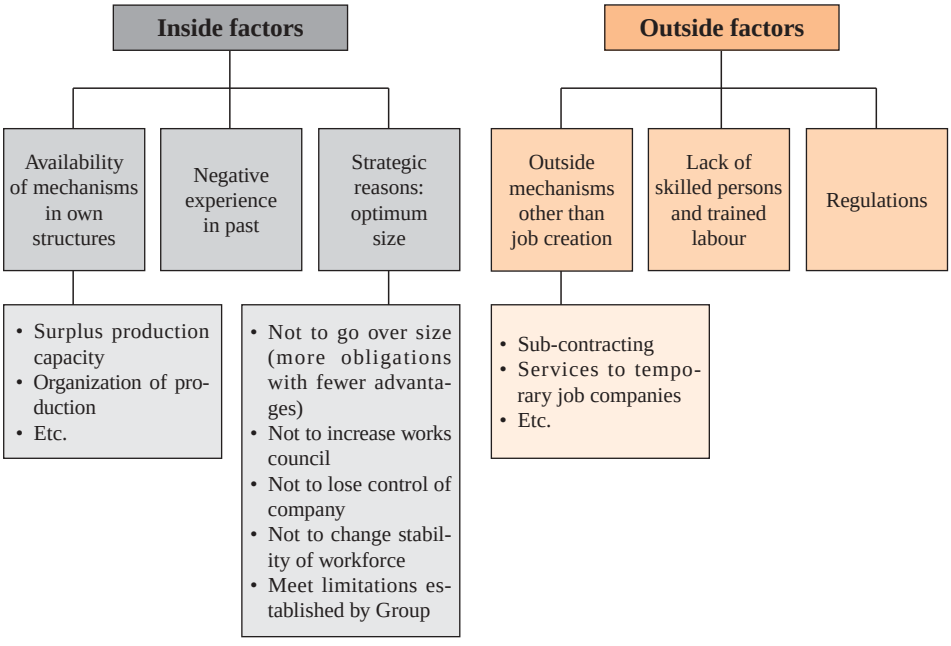
• Not to change the stability of the workforce and break existing labour climate.

• To meet the limits imposed by the parent company when the company belongs to a group, generally of foreign origin.

When companies decide to go ahead and hire personnel, the reasons (outside reasons in this case) which stand in the way of job creation show up

Graph 3.1

FACTORS STANDING IN WAY OF JOB CREATION IN COMPANIES



basically as the lack of skilled workers and sufficiently trained workers in the labour market and, to a lesser extent, to existing regulations. In any case, it is noted that for 8% of industrial companies no difficulties exist when it comes time to create jobs.

Lack of skilled workers and properly trained persons in labour market

Some 63% of companies interviewed stated that they were currently having problems in meeting all their hiring needs because of the lack of supply in the labour market. They could not find sufficiently well trained people, neither in number nor in level of qualifications, above all in those medium level skills linked to vocational training. In the supply of personnel it may be stated that it is substantially greater in those skills linked, for exam-

ple, to the field of administration when in those trades related to production work. As well as this, we should point out that at present there is a phenomenon involving the shift of industrial workers with greater or lesser specialization and experience to other sectors, such as construction and services because of factors such as type of hiring contract, working conditions or simply wage levels. The odd company operating in production of a seasonal nature stated that the difficulty of finding personnel obliged them to keep some employees through periods of low or nil production (for two months, for example) for fear of not getting them back into the workforce when needed later on. Among those branches of production analyzed, this problem showed up especially in the textiles and clothing sector and in metalworking, electrical equipment and electronics.

Some companies stated that they did not hire more personnel because they could not find them in the labour market. This was the case with a metalworking company employing 42 workers which stated that it would increase its workforce by 24% if it could find the right people. Another company with 100 employees said that it would increase its workforce by 4% if it could find the type of workers it needed. Other companies stated that the lack of suitable personnel was causing a bottleneck in its production and that this even meant not accepting new orders which would bring about a growth in business.

Among the job skills in industry having the biggest problems we should mention the following:

• At the general level: executives, engineers, skilled maintenance mechanics, medium management people, foremen and sales personnel.

• In food and beverages sector: electricians, persons skilled in electro-mechanics and electronics.

• In the textiles and clothing sector: textile mechanics, weavers, and operators of certain types of machinery (for example, data-controlled cutting machinery for fabrics, and workers skilled in sewing operations.

• In the metalworking, electrical equipment and electronics sector: die-makers, mould-makers, boiler-makers, controllers, machinery adjusters,

machinists, turners, mechanics, data-processing programmers and machine designers.

• In the chemical sector: application hands, shipping department heads, mould-makers.

According to a good number of companies, the problem of lack of skilled workers and suitably trained workers in the labour market was largely due to the loss of prestige in industrial production work in general and in industrial skills and trades in particular in society as a whole and especially among young people. To this was added the unsatisfactory response of both the education system and government to this question and attention was drawn to the fact that there were some major gaps in the Trade Training system. In some sectors within certain specific production activities, companies saw some troublesome difficulties ahead in ensuring there would be another generation of persons in the more qualified medium-level trades, something which could put the continuation of those branches in the future in doubt. This was so in the case of «master industrial» in the spinning area of the textile and clothing sector. For some companies, however, the problem was mainly focused on the difficulty in finding personnel who could adapt to working conditions in terms of behaviour and attitude rather than problems of qualifications and training. On the other hand, we should mention that this problem becomes much worse for companies of small size as these are less attractive to students and workers.

The solutions being adopted by industrial companies in the face of this problem arising in the labour market create additional costs which they must absorb in various ways (paying higher wages, inefficiency and less productivity per worker, training costs, etc.). Notable among these costs are the following:

• Inside promotion of personnel.

• Increased continuing training.

• Bringing in students with no experience, during studies or at end of studies, to give them on-the-job training.

• Introduction of greater mechanization in production.

• Gradual elimination of jobs.

• Working on overtime.

• Recourse to sub-contracting.

• By attracting workers employed in other companies by offering higher wages or permanent jobs immediately or almost immediately. Along these lines, we should mention the case of one metalworking company with 64 employees that was obliged to give permanent status to all skilled tradesmen hired so that they would not leave and that in the period 1998-2000 saw wages of these tradesmen go up by 30%.

• By giving the company more prestige and a better image in the surrounding community in order to attract possible workers.

We may conclude that in most cases studied the difficulty in finding suitable personnel in the labour market has increased stability in workforces as it has fostered recourse to permanent hiring as a means of attracting and holding workers. Nevertheless, there are also some companies where this problem obliges them to have greater recourse to temporary hiring in order to prove out employees and prepare them to become part of the regular workforce.

Regulations in force

In broad terms, the regulations in force do not present major problems to industrial companies when it comes to creating jobs because, in fact, whether they are created or not does not depend on the kind of regulations in force or their terms. For example, some companies stated that when they increase their workforce the first thing they think of is whether there is a need to hire people and not the kind of hiring contract to be followed and, once the need is confirmed, they then look at the most suitable form of agreement according to the job involved and the qualifications of the employee. On the other hand, practically all companies stated that they had adapted to the regulations in force in one way or another in spite of the fact that, in the opinion of many companies, these could definitely be improved on in order to better deal with their needs.

Criticism of the existing set-up and possible improvements that might be introduced was focused on three areas, as follows:

- Temporary hiring.
- Regulations related to firing.
- The government-run employment system.

In addition, we may mention the fact that the many modifications in regulations introduced in recent years have created an idea of continuous change and of a basic system that is not very stable for companies.

Temporary hiring

Some 55-60% of companies interviewed made some criticism or suggested possible improvements which could be introduced in existing regulations dealing with temporary hiring. The great majority of these companies made reference to the changes brought about by the last reforms in the regulations made a few years ago and to the rigidity or loss of flexibility these introduced to the labour market. One of the aspects most mentioned was the fact that the temporary work contract had gone through a change in nature notably because of the substantial reduction in the time limit during which this formula may be used for a worker (down from 3 years to 13.5 months) and, to a lesser extent, the setting of the number of extensions allowed within the maximum time period (one trial period and one extension) as well as the conditions which justify recourse to this type of hiring contract (who is being replaced, why someone is being hired, etc.). In some companies and branches of production the current labour agreement has set a greater reduction in the time limit during which temporary hiring contracts may be used as they establish a maximum of 9 months. In other cases, the bargaining agreement sets a limit in terms of the number of temporary workers allowable out of the total workforce which sometimes may de 12%. All of this has forced companies to better define their hiring policies in order to take maximum advantage of the flexibility provided under the regulations so far as concerns temporary work (time period, extensions, etc.)

The reduction of the time limit on temporary hiring has had substantial consequences for industrial companies. On the one hand, it has raised the number of permanent hirings and brought about a change in philosophy regarding this type of hiring contract to the extent that recourse to this formula is now more common and causes less concern. At the same time it has reduced the degree of flexibility for companies and has obliged them to seek alternatives in order to ensure having mechanisms for adapting to circumstances such as, for example, recourse to sub-contracting, working on overtime and use of the services of temporary job companies. We may mention the case of two companies with workforces of 100-200 employees in the plastics and rubber sector which have recourse to temporary job companies in order to extend the trial period for new persons hired and temporary workers, first using the services of temporary job companies and later hiring the workers directly from these companies on a temporary basis.

For some companies the new temporary hiring contract does not make it possible for production to be matched properly with production cycles and their particular circumstances. For example, in the motor-vehicle sector cycles runs for approximately 3 years while regulations allow for a maximum period of 13.5 months for temporary hiring. For those companies which work in operations subject to seasonal or temporary fluctuations, current temporary hiring contracts do not meet their needs, given that, with the brief period involved and the difficulty in giving employees permanent status when they have made it possible for workers to obtain a minimum of experience, the contract is terminating. On the other hand, in some chemical and metalworking branches it would seem necessary to increase the number of possible extensions allowed under a temporary hiring contract because in some jobs the period of time needed to try out candidates is quite high. On the other hand, the obligation to justify why a company is recurring to temporary hiring means that companies lean toward breaking the law by giving reasons which are not correct. In general, we should mention that existing limitations on temporary hiring present a major obstacle for some companies in the absence of which they indicate they would hire more people.

Also in the area of hiring, we should point out that some companies stated that there did not exist a series of hiring formulas which fully met

their needs, such as hiring for shorter periods (such as in the launching of new products). In some cases, this was due to the fact that some hiring formulas which were useful had been eliminated, such as hiring contracts for start-up of a business, the contract covering specific production situations, and the contract to foster job creation. According to some companies, the latter hiring contract was one of the best available and was very useful.

Regulations dealing with firing

With regard to regulations dealing with firing of employees, we should point out that only 15% of companies mentioned problems in this regard while 15% expressly stated that they did not consider those regulations as constituting a barrier to job creation. The main criticism was concentrated on the need for firing to be cheaper and easier, especially in periods of recession. Some companies mentioned that they would increase their workforces by 5% if firing were more flexible and for this reason industrial firms in general run very close to essential levels in terms of employment.

Government-run employment service

The problems regarding the government-run employment service were focused on the existence of excessive bureaucracy in procedures (forms, formats, etc.), as well as on high Social Security costs.

Some measures suggested by companies regarding regulations

Notable among possible solutions put forward by companies in order to deal with some of the problems mentioned regarding existing regulations were the following:

• Hiring should allow for longer trial periods for recently hired workers, especially at medium-low trade levels. For example, for a worker in the chemical sector the trial period is 1 month and this should be 3 months. In the case of a company in the metalworking sector where the period is now 15 days this was considered to be very short.

• There should be greater possibilities open for temporary hiring through contracts which do not involve risk, involve low costs, make it possible to meet economic cycles (especially negative cycles) and ensure the viability of companies. Along these lines, companies offered various alternatives as follows:

– A return to temporary contracts with a 3-year limit;

– Establish temporary contracts with a time limit longer than at present, for example, 2-3 years;

– Establish permanent contracts introducing exceptions which facilitate and reduce the cost of firing as, for example, with lower cost indemnities in case of firing for a drop in production.

• Move ahead with reform of the labour market providing facilities for fostering permanent hiring and reducing Social Security costs payable by employers. Specifically, one company stated that when it thought of temporary hiring it was trying to resolve a problem whereas when it was considering permanent hiring it was planning to create a permanent job.

IV. Future prospects for trends in production and employment

4.1. Potential for growth without creating jobs: optimization of structures

Some 82% of companies interviewed currently have sufficient capacity and means to show a growth in production without the need to increase employment while the remaining 18% state that this would not be possible because they have reached an optimum level of utilization of resources. On average, it is estimated that the companies as a whole could show a real increase in production of 12.3% without the need to create new jobs, as set out in Table 4.1. Nevertheless, in field work carried out very different business situations were apparent, given that in some responses possibilities for growth were put at 1.5%-2% while, on the other hand, the odd firm estimated that it could double production. Furthermore, we should point out that in the same company those possibilities may show internal differences between sections and production lines. For example, in one of the cases studied it was considered that use of installed production capacity was quite high and that the possibilities of a growth in real production without creating jobs was only 2%. Nevertheless, there was the odd section where production could be increased by 35% without changing employment through innovations and better placing of equipment on the plant floor.

At the overall level, on the basis of annual average growth rates in production shown by firms in the sample in the period 1997-1999 (8.1%)

Table 4.1

POSSIBILITIES FOR GROWTH OF PRODUCTION WITHOUT CREATING JOBS ACCORDING TO PRODUCTION SECTOR, AUTONOMOUS COMMUNITY, COMPANY SIZE AND EXTENT OF PRODUCTION/EMPLOYMENT GAP IN PAST. 2000

	% increase in real production possible without need to create jobs 2000	% increase in period 1997-1999 (cumulative annual average) in	
		Real production	Employment
Production sector			
Metalworking, electrical equipment and electronics	12.1	9.0	4.4
Food and beverages	16.9	11.1	3.8
Chemicals and plastics	13.6	6.0	3.7
Textiles and clothing	7.2	4.3	1.9
Autonomous Community			
Catalonia	10.4	6.9	3.3
Madrid Community	14.6	8.4	3.6
Valencian Community	14.7	10.9	5.3
Company size			
Less than 50 workers	14.7	7.2	2.2
50-249 workers	10.5	8.9	4.3
More than 249 workers	12.2	8.3	4.1
Extent of production/employment gap in past			
Large gap (1)	9.8	12.6	3.6
Small gap (2)	14.0	7.6	6.6
Total	**12.3**	**8.1**	**3.7**

(1) This group includes those companies which in the period 1997-1999 recorded annual average growth rates in real production more than twice that in employment.
(2) This group includes those companies which in the period 1997-1999 recorded annual average growth rates in real production less than twice that in employment.

and considering that these took place in a situation of increasing employment (3.7%), it may be calculated that the companies interviewed possess sufficient leeway to grow in terms of real production at a rate of 4.4% annual in a period of 2.8 years with the same number of workers as at present. Nevertheless, it must be supposed that employment would increase in coming years independently of the above for various reasons, such as the following:

• Desire of companies not to exhaust and/or optimize their available production capacity and means.

• Difficulties companies find in optimizing structures to maximum.

• Development of a hiring policy apart from what availability of production capacity and means may permit even though not optimized.

Among possible measures which would allow industrial companies to grow in real production without the need to change their workforces, those which stand out are, first of all, improvements in organization of production activity (mentioned by 25.6% of companies), as set out in Table 4.2. This underlines the fact that there exists a substantial margin for improving production in the industrial sector, along with competitiveness, through internal organization. It may be stated that over the short term, that is to say without any change in technology or equipment, the possibilities of growth without increasing employment are based on the optimization of internal structures through proper organization of resources, first of equipment and then of the human factor. Better organization of production in a broad sense

Table 4.2

STEPS WHICH COULD MAKE POSSIBLE GROWTH IN PRODUCTION OF COMPANIES WITHOUT NEED TO CREATE JOBS. 2000

Percentage of companies

Steps	% of companies
Better organization of production	25.6
Introduction of new technology	17.1
Optimization of use of equipment	11.0
Better continuing training of workers	7.3
Automation of production	6.1
Greater recourse to sub-contracting of production	6.1
Greater involvement/motivation of workers	6.1
Working on overtime	4.9
Simplification of production processes	3.7
Optimization of workforce	3.7
Increase in production capacity	2.4
Working more shifts	2.4
Introducing data-processing in company and production	2.4

involves various factors, such as, for example, planning of the manufacturing process and its various stages, buying of supplies, internal and outside logistics (flow of materials and products), programming of production over the year and changes in product design.

Other notable steps taken by companies to raise production without the need to increase employment were the application of new technology and the optimization of use of equipment, which were mentioned by 17.1% and 11.0% respectively. Some way behind these two points were the following:

- The carrying out of more continuous training of workers (7.3% of companies);
- Automating of production (6.1%);
- Greater recourse to sub-contracting of production (6.1%);
- Greater involvement/motivation of personnel with regard to company objectives (6.1%); and
- More work on overtime (4.9%).

Among steps aimed at optimization of structures mentioned by less than 4% of companies interviewed during field work, those of note were simplification of production processes, optimization of personnel, increase in production capacity, working more shifts and introducing data-processing in the company and in production.

Potential according to sector of industrial production, Autonomous Community, company size and extent of production/employment gap in past

As shown in Table 4.1, the sector of industrial production to show the best possibility of growth in real production without creating jobs, through optimization of available resources, was food and beverages where it was estimated that companies could show an increase of 16.9%. This was the branch of industry which in the 1997-1999 period recorded the biggest difference between growth in production (11.1%) and growth in employment (3.8%).

Next after food and beverages come the chemicals and plastics sector and metalworking, electrical equipment and electronics. Potential growth in real production estimated in these cases were 13.6% and 12.1% respectively. On the other hand, the branch of industry showing the greatest use of its available production capacity and means was the textiles and clothing sector in which the possibilities for real growth of production was estimated at 7.2%. It should be added that of all sectors studied this was the one to record the smallest increases in production and employment in the period 1997-1999 (4.3% and 1.9% respectively).

According to region, we see in Table 4.1 that companies in Valencian Community and Madrid Community were characterized as having the greatest possibilities for optimizing their structures. Specifically, these companies could show an estimated growth of real production without creating jobs of 14.7% in Valencian Community and 14.6% in Madrid Community. In turn, companies in Catalonia showed a greater use of production capacity and means, to the extent that it was calculated that the possibilities of an increase in this case would be 10.4%.

With regard to company size, Table 4.1 shows that those of small size (less than 50 employees) have a greater margin for growth in terms of real production without modifying their workforce. Growth was estimated at 14.7%. Next came companies of larger size (more than 249 employees), with 12.2% and in last place those with 50-249 employees at 10.5%. As a result, it is clear that small companies and large ones have greater possibilities for growth in terms of production without the need to create jobs than those of medium size. With regard to the first two groups, it may mentioned that this was due, on the one hand, to the lack of attention paid to optimizing resources by the smaller companies and, on the other hand, to the difficulties in carrying this out in the case of the bigger companies.

Finally, we should point out that those companies which were notable for having recorded a small production/employment gap in the 1997-1999 period, that is to say, for having shown growth in real production of less than twice the increase recorded in employment, have greater possibilities of increasing their production without creating jobs through the optimization of production capacity than those characterized by a big production/employ-

ment gap, that is to say, having recorded an increase in real production of more than twice the growth shown in employment. As shown in Table 4.1, in the first case it is estimated that production could increase by 14.0% while in the second case it would be 9.8%. This situation may be explained by the fact that companies which in recent years have shown major growth in production with lower growth, stagnation or even a reduction in workforce have done so, among other things, through the optimization of structures (equipment and personnel) which suggests that at present the possibilities for making use of these factors are lower, contrary to the situation in those companies where increases in production and employment have been more regular.

To summarize, it may be concluded that, so far as the variables of sector of production and region are concerned, those companies which have reported higher growth in terms of production and employment in recent years show more possibilities of being able to grow over the short and medium term without the need to create jobs or else show a lower degree of use of their internal structures and, as a result, present greater potential for optimization. This also happens the other way around. Examples of the former are food and beverages and Valencian Community and examples of the latter are textiles and clothing and Catalonia. Nevertheless, these conclusions are not fully valid for an analysis based on criteria such as company size and the extent of the production/employment gap recorded in the past.

4.2. Forecast trends in production and employment in period 2001-2003

In coming years it is expected that industrial companies will continue to grow in terms of production and employment. In the period 2001-2003 some 86.8% of companies interviewed stated that they would increase production and 64.8% stated they would increase employment. Among those which indicated growth in production we note that 46.0% mentioned that the rate of increase would be higher in coming years than in the recent past while another 46.0% stated the opposite and only 8.0% stated that it would be the same. Among those companies which forecast an increase in employment, some 43.9% expected that the growth rate would be higher in period

2001-2003 than in the period 1997-1999, whereas some 37.9% stated the opposite and 18.2% said that the percentage increase would be similar.

Growth of real production and employment forecast for coming years will continue to be different. As may be seen in Table 4.3, it is estimated that in the coming years mentioned real production will rise by 11.7% at cumulative annual average rate while employment will be up 4.3% and as a result it is calculated that productivity of the labour factor will increase by around 7% a year. The range of individual corporate situations is this respect is quite wide. As an example, we may mention the case of one company which expects to nearly double production in volume by putting in new facilities and an increase of 33% in workforce and another which estimates that there are possibilities of increasing production by 30% in terms of product units without creating new jobs.

Compared with the period 1997-1999, we should mention three important conclusions. On the one hand, that over the short and medium term there will be a continuation of the different growth rates between production and employment as in the past. Secondly, that this gap will tend to widen because of the higher growth rate in production compared with the years 1997-1999 (11.7% as against 8.8%) and of nearly stagnation in the employment growth rate (4.3% as against 3.8%). And, as a result, that labour productivity will grow at a higher rate in coming years than it has done in previous years (around 7% as against 4.5%-5%). We should also add that there is a direct relation between those companies which expect to show a bigger growth differential between production and employment in coming years and at the same time a widening of the gap in comparison with the past and those which have shown greater possibilities for optimization of resources in the sense that they consider it possible to obtain high increases in real production without the need to modify the level of employment. From all of this, we may conclude that over the short and medium term it is to be expected that industrial growth will be progressively less a source of job creation to the extent that the minimum rate of increase in real production as of which jobs begin to be created will be higher. For example, it may be estimated that in the period 1997-1999 jobs began to be created when real production was growing by more than 2.2% and for each 2.2 percentage points of increase in real production jobs increased by 1%. Nevertheless, for the

Table 4.3

FORECAST TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES ACCORDING TO PRODUCTION SECTOR, AUTONOMOUS COMMUNITY, COMPANY SIZE AND EXTENT OF PRODUCTION/EMPLOYMENT GAP IN PAST. 2001-2003

	Real production (% cumulative annual increase)	Employment (% cumulative annual increase)
Production sector		
Metalworking, electrical equipment and electronics	14.1	5.4
Food and beverages	11.5	3.9
Chemicals and plastics	16.6	5.9
Textiles and clothing	4.1	1.2
Autonomous Community		
Catalonia	10.6	7.4
Madrid Community	16.8	9.2
Valencian Community	14.4	12.1
Company size		
Less than 50 workers	13.9	4.5
50-249 workers	11.6	5.0
More than 249 workers	8.4	2.3
Extent of production/employment gap in past		
Large gap(1)	13.6	3.7
Small gap(2)	10.7	4.8
Total	**11.7**	**4.3**

(1) This group includes those companies which in the period 1997-1999 recorded annual average growth rates in real production more than twice that in employment.
(2) This group includes those companies which in the period 1997-1999 recorded annual average growth rates in real production less than twice that in employment.

period 2001-2003 it may be calculated that jobs will begin to be created as of a rate of increase in real production of 2.7% and for each 2.7 percentage points of increase in real production employment will grow by 1%. By way of example, we may mention the case of one large company in the metal-working, electrical equipment and electronics sector which estimates that, with increases in real production of more than 3% it could create employ-ment but not with lower increases.

Forecast trends according to production sector, Autonomous Community, company size and extent of production/employment gap in past

According to production sector, in Table 4.3 we can see that the chemicals and plastics sector and the metalworking, electrical equipment and electronics sector are those expecting to show the highest growth both in production and employment as well as those which will show the biggest difference in growth rates of both variables. Of special note is the case of the chemicals and plastics sector in which we reach the correlation between biggest growth and biggest gap between production and employment. On the other hand, the textiles and clothing sector is the one which will likely show lower growth in coming years and, at the same time, the one which will show the biggest difference between growth rates of production and employment, thus following along the same lines as in the period 1997-1999. Compared with the recent past, it shows that the gap will tend to widen in almost all areas of production, with the chemical and plastics sector and food and beverages being of special note. It may be added that it was the companies in both these sectors which in field work carried out showed lower use of their resources and therefore greater possibilities for optimization, especially with regard to the organization of production and the human factor (see Table 4.1).

If we look at the location of companies by region, we see a continuity with respect to the recent past. As shown in Table 4.3, the autonomous communities which expect higher growth in economic activity in terms of production and employment are those which show the biggest gap. These are Madrid Community and Valencian Community. It should be remembered that it is the companies in these regions which have the greatest possibilities of optimization of resources (see Table 4.1). Compared with the period 1997-1999, we note that in the three autonomous communities studied it is expected that the differential in growth rates between production and employment will widen in coming years, especially in the case of Madrid Community.

An analysis of future trends according to company size shows an inverse correlation between production/employment growth (as well as an increase in the difference between growth rates of both variables) and the size of the companies themselves. In fact, in Table 4.3 we see that, as compa-

ny size increases, the rate of increase in production and employment decreases as well as the gap. This makes it possible to state that it is the smaller companies which will have greater drive in coming years but at the same time those which will show a greater difference between growth of production and employment. Rounding this out is the fact that in the future these companies will undergo a greater widening of the gap recorded in recent years. All this suggests that it will be the smaller companies which devote most effort to improving labour productivity which, on the other hand, is confirmed by the fact that their internal structures are the least optimized (see Table 4.1).

Finally, we should point out that the group of companies showing a large gap in the period 1997-1999 in coming years will continue to show a bigger gap than the group which showed a small gap. This makes it clear that over the short and medium term companies expect to continue recording the same trends as in the recent past. Nevertheless, we note that, while those with a large gap expect to maintain the differential between growth rates in production and employment, those with a small gap expect this difference to get bigger. This indicates that in the future the second group of companies wants to make an effort to improve productivity of the labour factor, in keeping with the fact that this group has greater possibilities of taking advantage of its resources (see Table 4.1).

4.3. Factors accounting for different trends in production and employment forecast for period 2001-2003

In general terms, the factors which explain the different trends in production and employment in companies in recent years are the same as those given to account for the different growth in both these variables forecast for the period 2001-2003. Nevertheless, we note some specific changes in certain factors which make it possible to make two general conclusions, as follows:

• On the one hand, increasing attention will be given to organizational aspects and especially to those factors related to the labour factor (organization, training, worker profiles, etc.).

• In addition, less importance will be paid to the more classical factors, such as working on overtime, recourse to temporary hiring and recourse to temporary job companies.

As in the past, the higher growth in production than in employment in coming years will continue to be explained especially by improvements in equipment and technology, followed by introduction of new systems and techniques for organization and production planning and the introduction of new systems for organization and control of labour input. As shown in Table 4.4, the first of these factors was mentioned by 90.7% of companies while the other two factors were cited by 79.1% and 72.1% respectively. Also expected to play a notable role are changes in job descriptions and worker profiles (68.6%) , simplification of production processes (66.3%) and better continuing training of workers (62.8%). Notable among other factors was sub-contracting of production and services, recourse to temporary hiring and greater use of installed production capacity, all of which were mentioned by more than half of companies interviewed during the course of field work.

Compared with the period 1997-1999, in Graph 4.1 we note an increase in the proportion of companies which for coming years emphasize the importance of factors related to the introduction of new systems and techniques for organization and production planning and changes in job descriptions and worker profiles as well as advances in logistics. Of some interest was the case of one company in the textiles and clothing sector which indicated that in the past 2-3 years the increase in production was brought about thanks to an increase in employment but that in coming years growth in production would come from technology, organization and increased plant area. On the other hand, compared with 1997-1999 there was some drop in the percentage of companies which mentioned the importance of recourse to sub-contracting of production and services, recourse to temporary hiring and working on overtime.

With regard to the evaluation given by companies to the various factors which explain the different trends in production and employment, Table 4.5 shows that, while in general the picture for recent years is still maintained, it is expected that the degree of importance of each factor will show changes. Those factors which will continue to be most significant for com-

Table 4.4

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999 AND 2001-2003

	% of companies mentioning importance of each factor in	
	1997-1999	2001-2003
Improvements in equipment and technology	89.7	90.7
Introduction of new systems and techniques and production planning	73.2	79.1
Introduction of new systems for organization and control of labour input	72.2	72.1
Simplification of production processes	67.0	66.3
Changes in jobs descriptions and worker profiles	63.9	68.6
Better continuing training of workers	62.9	62.8
Recourse to sub-contracting of production and services	54.6	50.0
Recourse to temporary hiring	53.6	50.0
Working on overtime	50.5	41.9
Greater use of installed production capacity	49.5	50.0
Better profile of new persons hired (qualifications and aptitude)	46.4	47.7
Recourse to services of temporary job companies	40.2	39.5
Other:		
Improvements in quality control	21.6	23.3
Good labour climate	12.4	10.5
Advances in logistics	7.2	11.6
Increases in plant floor space	–	7.0

panies are those related to the production system, such as improvements in equipment and technology, greater use of installed production capacity and introduction of new systems and techniques for organization and production planning. Next in line come simplification of production processes, introduction of new systems for organization and control of labour input and recourse to sub-contracting of production and services.

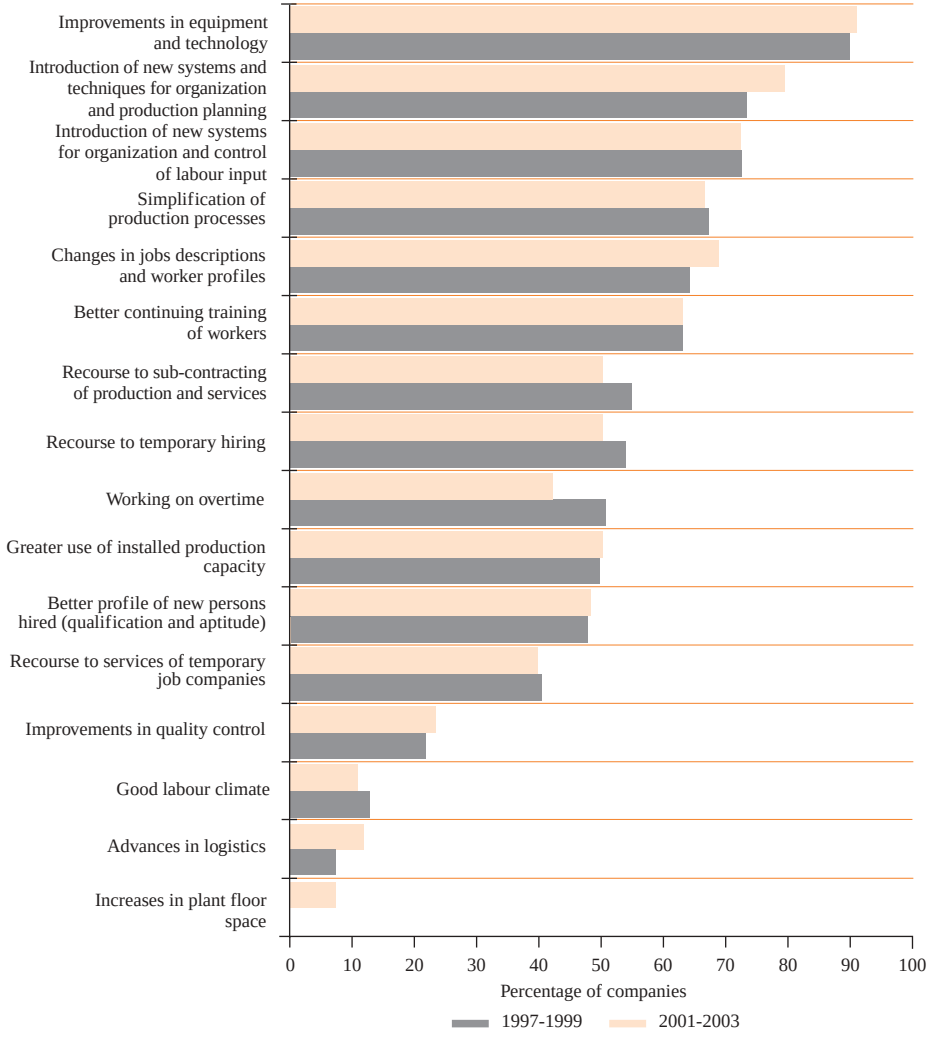
Compared with the period 1997-1999, in Graph 4.1 we can see that for companies there will be a notable increase in the degree of importance of such factors as a better profile of new persons hired, the introduction of new

systems for organization and control of labour input, continuing training of workers and greater use of installed production capacity. Nevertheless, it is

Graph 4.1

FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999 AND 2001-2003

Percentage of companies mentioning importance of each factor



expected that there will be less importance given by companies to working on overtime, recourse to temporary hiring and recourse to temporary job companies.

Table 4.5

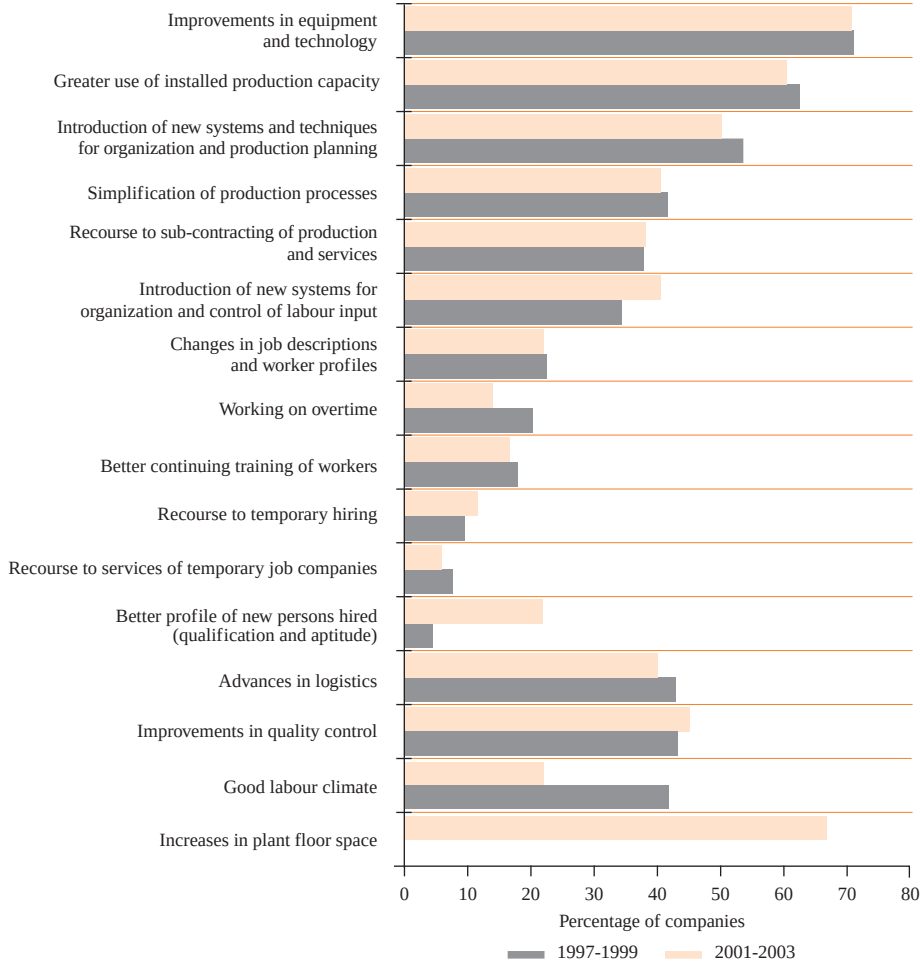
DEGREE OF IMPORTANCE OF FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999 AND 2001-2003

	% of companies which mention importance of each factor and rate it as follows in 1997-1999 / 2001-2003					
	Very important		Important		Of little importance	
	97-99	01-03	97-99	01-03	97-99	01-03
Improvements in equipment and technology	71.3	70.5	23.0	21.8	5.7	7.7
Greater use of installed production capacity	62.5	60.5	25.0	32.5	12.5	7.0
Introduction of new systems and techniques for organization and production planning	53.5	50.0	32.4	30.9	14.1	19.1
Simplification of production processes	41.5	40.4	47.7	43.9	10.8	15.9
Recourse to sub-contracting of production and services	37.7	38.1	32.1	33.3	30.2	28.6
Introduction of new systems for organization and control of labour input	34.3	40.3	30.0	29.0	35.7	30.7
Changes in jobs descriptions and worker profiles	22.6	22.0	45.2	42.4	32.2	35.6
Working on overtime	20.4	13.9	20.4	22.2	59.2	63.9
Better continuing training of workers	18.0	16.7	55.7	68.5	26.3	14.8
Recourse to temporary hiring	9.6	11.6	42.3	30.2	48.1	58.2
Recourse to services of temporary job companies	7.7	5.9	43.6	32.4	48.7	61.7
Better profile of new persons hired (qualifications and aptitude)	4.4	22.0	53.3	36.6	42.2	41.4
Other:						
Advances in logistics	42.9	40.0	42.9	60.0	14.2	0.0
Improvements in quality control	42.9	45.0	38.1	45.0	19.0	10.0
Good labour climate	41.7	22.2	33.3	66.7	25.0	11.1
Increases in plant floor space	–	66.7	–	33.3	–	0.0

Graph 4.2

DEGREE OF IMPORTANCE OF FACTORS WHICH EXPLAIN DIFFERENT TRENDS IN PRODUCTION AND EMPLOYMENT IN COMPANIES. 1997-1999 AND 2001-2003

Percentage of companies which mention importance of each factor and rate it as very important



4.4. Hiring policy of companies in coming years

In the period 2001-2003, some 64.8% of companies interviewed during field work expected to record growth in employment while 33.8% stated that they would stay at the same level as in the period 1997-1999 and only 1.4% expected a decrease. As mentioned earlier, it is estimated that in coming years employment will increase at an average rate of 4.3% covering a range of possibilities which run from a rise of 0.5% to an increase of 40.0%. Within this framework, hiring of personnel by the industrial sector will largely be concentrated on the creation of new jobs as well as the replacement of workers who for one reason or another leave the company (retirement, firing, etc.).

The factors which will make growth of employment possible in coming years are quite numerous, notable among which are the market situation and specifically the rise in orders and sales, followed by the existence of plans for business expansion. As well as these, we should mention others, including the following:

- Enlarging plant facilities.
- Process of diversifying production.
- Launching of new products.
- Starting up new divisions in companies.
- Putting new shifts into operation.
- Meeting high points in demand.
- Moving into new markets.
- Introduction of new machinery and data-processing systems.

In coming years, company philosophy for hiring personnel will not undergo substantial changes compared with previous years. In fact, some 86.8% stated that they would maintain the same policy as in the recent past. As a result, over the short and medium term the philosophy defining the hiring of workers and, to some extent, management of the human factor, in companies will be guided by basic principles as follows:

• Optimization of available resources and means of companies.

• Detailed analysis of hiring needs and justification of any new hiring.

• Minimum job turnaround with highly stable workforce.

• Rigorous requirements for new persons hired with regard to worker profiles (qualifications, experience, attitude, etc.).

It should be pointed out, however, that among companies interviewed we note a growing trend to stabilizing workforces in coming years and to hiring of more qualified personnel.

With regard to the 13.2% of industrial companies which mentioned that they would not maintain the philosophy for hiring workers followed in recent years, we observe that there was a predominance of companies which planned to put possible changes into operation according to specific circumstances, notable among which was the introduction of changes in labour legislation. Other factors which could bring about a change in corporate policy in this respect were the degree of success obtained through plans currently being drawn up and existing difficulties in finding suitable personnel to hire in the labour market.

V. Summary and conclusions

5.1. Aims and methodology

The aims of the study were to analyze the reasons behind the fact that growth of production in the industrial sector does not turn into job creation to the same degree.

In view of this fact, the study had two aims. On the one hand, it would analyze those factors which explained this phenomenon, as well as company hiring policies and the factors which stood in the way of job creation. In addition, it would carry out a forward analysis on the situation likely to be seen in this phenomenon in coming years emphasizing possible changes with regard to the present.

In terms of methodology, the study was based on carrying out personal interviews with 100 industrial companies which gave employment to 33,854 persons. In terms of location, the work was concentrated in the Autonomous Communities of Catalonia, Madrid Community and Valencian Community. From the sector point of view, work was carried out in food and beverages, textiles and clothing sector, chemicals and plastics sector, and metalworking, electrical equipment and electronics. With regard to company size, it may be stated that a good part of the interviews were with small and medium-sized companies.

5.2. Main results obtained

Trends in production and employment in period 1997-1999

In the period 1997-1999 as a whole, the companies making up the sample recorded growth in real production of 26.3% (cumulative annual average rate of 8.1%) and an increase in number of employees of 11.4% (cumulative annual average rate of 3.7%), which underlines the fact that in the group studied there was a notable difference between growth of production and employment.

From a sector point of view, it may be stated that companies the food and beverages sector were those recording higher growth in production while metalworking, electrical equipment and electronics recorded higher growth in employment. On the other hand, companies in Valencian Community and medium-size companies (with 50-249 employees) were those showing the biggest increases both in production and employment.

The major gap resulting from different growth in real production and employment meant that productivity of the labour factor increased by 13.4% overall between 1997 and 1999. The gap shows up in all areas taken into consideration and was especially high in the food and beverages sector and in metalworking, electrical equipment and electronics, in Valencian Community and in companies with less than 50 employees.

Factors which explain different trends in production and employment in period 1997-1999

Among the various factors which explain the different growth in production and employment in the industrial sector, what stands out in the first place was improvements in equipment and technology, which was mentioned by some 89.7% of companies interviewed during field work. This was followed by a group of factors in the area of business organization (both in production and human factor) such as introduction of new systems and techniques for organization and production planning and the introduction of new

systems for organization and control of labour input (mentioned by 73.2% and 72.2% of companies).

Along with those indicated, we should also point out other factors mentioned by a percentage of companies running between 60% and 70%, such as simplification of production procedures, changes in job descriptions and worker profiles and better continuing training of workers. Notable among other factors were recourse to sub-contracting of production and services, recourse to temporary hiring and working on overtime. The least important factors were better profile of new persons hired (qualifications and aptitude) and recourse to temporary job companies.

If we look at the degree of importance companies ascribed to each of the explanatory factors, three factors especially stood out. These were improvement in equipment and technology, greater use of installed production capacity and introduction of new systems and techniques for organization and production planning. Next after these came advances in logistics, improvements in quality control, good labour climate and simplification of production processes. Factors given a low evaluation by companies were recourse to temporary hiring, recourse to services of temporary job companies and better profile of new persons hired (qualifications and aptitude).

In summary, it is clear that the higher growth of production than of employment depends mainly on factors that form part of the internal operations of companies and that they keep these factors under constant attention. From another point of view, it may be noted that what stands out among the various factors are those that involve steps to deal with the physical reality of the companies linked to the production system, either of a technical or technological nature or related to the area of organization or connected to the application of horizontal systems (logistics, quality control, etc.). Nevertheless, to the extent that the possibilities of obtaining gains in productivity through these factors are used up, increased efforts are made to take steps regarding human resources, a field of action that up until now has been little developed but one with great potential.

Production sectors

According to production sector, it may be stated that the factors which explain the different trends in production and employment in recent years basically depend on two factors. On the one hand, they depend on the production nature of the various branches and segments of which they are made up and we may differentiate between that production which is more mechanized and that which is more of a craft type and, in addition, on the different degree of technological and organizational development of the various sectors. It may be stated that, in that type of production characterized by a more intensive use of the labour factor and less mechanized, the explanatory factors refer to greater use of available means and steps taken in the matter of employment (this is the case, for example, in clothing, machinery, chemicals for consumer use and primary food processing). On the other hand, that type of production which is more capital-intensive with a higher technological level is more linked to improvements in equipment and technology, organizational factors and simplification of production processes (this is the case in motor-vehicles, electronics, textiles, chemical industry and those segments involved in secondary food processing).

Autonomous Communities

In terms of Autonomous Communities, we may point out that the factors which explain the different trends in production and employment depend on the level of economic and industrial development of each region as well as the degree of specialization at the sector level. Of the three Autonomous Communities studied, Catalonia showed the most balanced record of companies so far as concerned the utilization and importance of the various factors in order to obtain improvements in labour productivity. In turn, Madrid Community and Valencian Community showed a higher degree of concentration with regard to the importance of the various factors, with heavy recourse to certain types of possibilities in order to increase productivity while paying little attention to others.

Company size

According to company size, it should be pointed out that the factors which explain the different trends in growth of production and employment in recent years basically depend on know-how in management and production, on experience as a company and the availability of resources in general. In those companies of smaller size the predominant explanatory factors are those related to steps of a traditional type (improvements in equipment and technology, greater use of production capacity, etc.). Nevertheless, in large companies, as well as traditional factors what stand out are those aspects related to the human factor (introduction of new systems for organization and control of labour input, continuing training of workers, etc.). These companies are characterized by the fact that they make more balanced use of the possibilities offered by each factor for improving their labour productivity.

Extent of production/employment gap

Depending on the extent of the difference between the trends in production and employment in the period 1997-1999, it may be stated that those companies showing a small gap (average annual growth in real production less than twice growth in employment) give greater importance to the more traditional factors which emphasize recourse to outside means and involve few inside changes. In turn, those companies showing a large gap (average annual growth in real production more than twice growth in employment) especially have recourse to more complex alternatives which basically affect the internal structures of the companies and production activities and processes.

Synthesis of various explanatory factors

a) Improvements in equipment and technology

The improvement of equipment and technology as an industrial strategy has its origins in the demands of the competitive environment and the need to adapt to market conditions. The main improvements in this respect have largely been in the introduction of data-processing systems (both in production and management spheres) and automation technology. It should

be pointed out that this creates a major increase in productivity of the labour factor and furthermore has an indirect influence within the company (better trained people, better production organization, etc.)

b) Introduction of new systems and techniques for organization and production planning

The introduction of new systems and techniques for organization and production planning has two basic objectives in mind. On the one hand, it seeks greater efficiency through the proper adjustment of capacity and means and, on the other hand, it is aimed at greater flexibility in production according to the nature of demand and trends it follows. Among specific reasons justifying its application we may mention the introduction of improvements in equipment and technology, changes in supply systems, changes in type of inputs and changes in the production process. We should point out that the corporate picture with regard to introduction of new systems and techniques for organization and production planning is quite varied as to how widespread its application may be and the results which arise from it. It is clear that there still exists substantial margin for maximizing the gains in productivity which this type of strategy can bring to companies.

c) Introduction of new systems for organization and control of labour input

The introduction of new systems for organization and control of labour input is aimed at the best possible adjustment of the human factor to the production process and the nature of the companies themselves. This line of action is of great importance in obtaining gains in labour productivity but still does not hold a major role in business strategies. It should be mentioned that, to the extent that steps taken to increase production concentrating on production activity begin to wear out, those steps focusing on the human factor are gaining more importance. This is confirmed by the potential this may offer, on the one hand, through revision of the traditional systems which many companies still apply and, on the other hand, through the application of new systems and techniques based on the so-called flexible organization of labour input.

d) Simplification of production processes

The simplification of production processes is generally the result of introduction of changes in product strategy, with the aim of obtaining economies of scale, reducing unit costs and being better able to meet demand. It often implies the reduction, elimination or modification of various tasks and stages in the manufacturing process. Today, this course for increasing the productivity of the labour factor is widely used by companies although a substantial segment of companies still have not incorporated this in their strategies to any major degree.

e) Changes in job descriptions and worker profiles

The competitive environment, market conditions and the growing complexity of technology are bringing about changes in the nature of jobs and workers themselves. A new way of describing jobs and a new profile of the human factor which defines a combination of knowledge and qualifications, qualities and skills, attitudes and behaviour as an individual and working in a team is now taking over. As a result, one of the most significant phenomena in the current industrial context is the all-rounder or multi-task worker which arises from a number of factors (need to organize labour input, response to drop in production, response to a wide range of products, to meet needs arising from absenteeism, etc.).

f) Better continuing training of workers

Better continuing training of workers and improving their qualifications is considered by companies as a factor which is necessary but not sufficient to obtain gains in productivity. In this respect, it should be pointed out that better training cannot be directly associated with an increase in production and that its positive effects are difficult to prove and often show up progressively over the long term.

g) Sub-contracting of production and services

The sub-contracting of production and services in recent years has become a common practice in the industrial sector aimed at creating more flexible and smaller corporate structures. Its importance varies according to branch of industry and type of production. Sub-contracting is leading to a reduction in employment by companies and, at the same time, is bringing about gains in labour productivity to the extent, among other things, that

sub-contractors are more specialized in the work they perform and have lower workforce needs.

h) Recourse to temporary hiring

Recourse to temporary hiring by companies has dropped in recent years as a result of the legislative changes introduced at the end of the Nineties and the general trend to stabilize workforces and reduce the degree of job rotation to a minimum. Nevertheless, temporary work continues to be considered by many companies as a formula providing flexibility in view of changing conditions of the market. Its importance in the workforce as a whole changes substantially from company to company and from sector to sector but in many cases studied it does not go above 10%.

i) Working on overtime

Working on overtime has been a traditional element giving basic flexibility to industrial companies allowing them to avoid over-sizing of structures and to respond to seasonal situations and/or temporary increases in demand. Nevertheless, growing controls on overtime work, limitations set by law and/or collective bargaining agreements and high cost have meant that recourse to overtime has progressively dropped, especially in the case of large companies.

j) Greater use of installed production capacity

Greater use of installed production capacity by companies is generally linked to the use of overtime and/or the introduction of additional shifts along with the hiring of new personnel. This is the most logical recourse for increasing production but its possibilities are tied to the existence of unused capacity which finally depends on the economic cycle at any given moment.

k) Better profile of new persons hired

In recent years, the profile of workers in industrial companies has improved substantially both in terms of qualifications and aptitude. A factor in this has been the better education of the labour force and, at the same time, the higher demands by companies when it comes time to hire people. The better profile of workers turns into increases in productivity and improvements in quality control although this effect is difficult to quantify and becomes progressively evident over the medium and long term.

l) Recourse to temporary job companies

Recourse to the services of temporary job companies has undergone a substantial change in recent years because of the changes made in legislation in 1999. At present, companies have recourse to this type of service largely for three reasons, namely to cover temporary vacancies, to select personnel for direct hiring and the need to meet very specific peaks in production. The relative importance of workers from temporary job companies covering the needs of industrial companies shows notable fluctuations but does not usually go above 10-15% of total workforce.

Employment strategy of companies

Philosophy for hiring personnel

At the present time, the basic principles defining the process of hiring personnel in companies are as follows:

- Optimization of available resources and means (equipment, facilities, people and organization) before proceeding to add new personnel.
- Detailed study of hiring needs.
- Fullest possible justification for any new workers added.
- Minimum job rotation and high level of workforce stability.
- Rigorous demands with regard to new persons hired (qualifications, experience, attitude, etc.).

In the past, the hiring of personnel by companies was carried out less seriously than in the past in the sense that labour needs were met without analyzing and justifying them in great depth. What is more, growth in production of companies was normally accompanied by parallel substantial increases in the number of workers. Today, however, there is a predominating philosophy that when a company is faced with an increase in production it should exhaust all methods of increasing production before changing the size of the workforce. This involves the need to optimize available resources and means and requires the carrying out of internal studies in order to establish whether or not it is necessary to hire personnel. On the other hand, today

the alternatives to employment in order to achieve an increase in production are more numerous and more advantageous from a business point of view. This means that in a normal situation the number of workers usually remains fairly stable in the face of expansionist economic cycles and that recourse is had to other mechanisms in order to achieve increases in company production.

The philosophy predominating among companies is to reduce job rotation in the workforce to a minimum and to work toward maximum job stability. In view of this, temporary hiring is justified in most cases as a means of selecting and trying out job candidates although nevertheless it continues to be a means of having some margin of labour flexibility. It may be said that compared with the past there is less fear and concern among companies about hiring people on a permanent basis.

Increased competition in the market and the rapid rate of technological developments mean that companies are more demanding about the type of workers to be hired. This refers both to those aspects related to qualifications and those related to past experience and especially to behaviour and attitude.

Circumstances in which employment created

Job creation in companies depends on a series of necessary and sufficient conditions linked to a specific objective such as the need to meet an increase in production. Of special significance among the necessary conditions is growth in sales, followed by extension of markets on a regional or sector basis, the development/launching of new products or lines of manufacture and the start-up of new facilities or centres and increases in production capacity. With regard to sufficient conditions, we may mention the fact of having attained an optimization of available resources and means, having fully exhausted alternatives to job creation, having fully analyzed hiring needs and justified any addition of workers and there being positive future prospects.

Factors standing in way of job creation

Notable among those factors which stand in the way of more job creation by companies in line with growth in production is the availability of alternative mechanisms with their internal structures in order to make an increase in production possible as well as looking for other means outside. In each case there are many factors present which explain the different trends recorded in production and employment in the past (excess production capacity, recourse to sub-contracting, etc.). Nevertheless, on top of this there are other factors.

On the one hand, some companies give preference to policies contrary to increasing their workforce as a result of past negative employment experience (1992-1994 recession, drop in business, workforce adjustments, etc.). In addition, a significant proportion of companies do not wish to increase their workforces but wish to maintain them at an ideal size for strategic reasons (growth in size involves bigger obligations and fewer advantages, means enlarging works council, etc.).

When a company decides to hire people, the reasons (outside) which stand in the way of job creation arise largely from the lack of skilled workers and suitably trained workers in the labour market and, to a lesser extent, from existing labour regulations.

Some 63% of companies interviewed stated that they had difficulty in meeting their hiring needs because of the lack of skilled people and general workers in the labour market, especially at medium levels of vocational training.

Some firms stated that they did not hire more people because they could not find them while others indicated that this lack was putting a bottleneck in their production and growth potential. This problem was mainly explained by the loss of prestige in industrial operations in general and industrial jobs in particular in the society at large, especially among young people. On top of this was the unsatisfactory response of the education system and government to the problem which was especially serious among small companies.

In general terms, existing labour regulations did not pose major problems for companies when it came time to create jobs to the extent that practi-

cally all companies stated that in one way or another they had adapted to the existing framework even though this could certainly be improved upon. Some 55%-60% of companies interviewed made some criticism or indicated a possible improvement which might be introduced into the regulations with regard to temporary hiring, with special emphasis on the time limit for which this formula may be used with any one worker and, to a lesser extent, the number of extensions allowed and the conditions which were necessary to justify recourse to this formula. On the other hand, only 15% of companies interviewed stated any problems in the regulation covering the firing of workers (cost, ease, etc.) while another 15% expressly stated that they did not consider this regulation a barrier to job creation.

Future prospects for trends in production and employment

Growth without job creation: optimization of structures

Some 82% of companies interviewed had sufficient capacity and means to carry out growth in production without the need to increase employment, thanks to better use of their internal structures. It is estimated that on average it would be possible to show an increase in real production of 12.3%.

Of special note among steps which would allow companies to increase production without creating jobs was improvements in the organization of production. In this respect, it may be noted that over the short term, that is to say without changing technology or equipment, the possibilities of growth without increasing employment are based on the optimization of internal structures through proper organization of resources, first in equipment and then in the human factor.

Those companies which stated that they had the greatest possibilities of increasing production without the need to create jobs were to be found in the food and beverages sector, those located in Valencian Community and in Madrid Community, those of small size in terms of workforce and those which in recent years could be defined as having a small gap between growth of real production and an increase in employment. It is noted that those companies which in the period 1997-1999 recorded higher growth in

production than in employment showed greater possibilities for growth over the short and medium term without the need to create jobs to the extent that they demonstrated taking advantage of internal structures to a lower degree and therefore had greater possibilities for optimization.

Forecasts for trends in production and employment in period 2001-2003

In coming years, companies will continue to grow in terms of production and employment. Some 86.8% of companies interviewed stated that they would increase production while 64.8% indicated they would increase employment. This growth will continue to be uneven. It is estimated that real production will grow by 11.7% on annual average while employment will rise by 4.3%, an increase in labour productivity of around 7% per year.

Compared with the period 1997-1999, two conclusions are to be drawn. On the one hand, we may conclude that over the short and medium term the different growth rate between production and employment will be maintained. And secondly, that this gap will tend to widen and therefore that the productivity of the labour factor will increase at a higher rate than in the past. It is noted that those companies which expect to show a greater difference in growth between production and employment in coming years (and a widening of the gap compared with previous years) are the ones which have shown the greatest possibilities of optimizing their resources, that is to say increasing production without creating jobs.

In coming years, industrial growth will progressively create less employment given that the minimum rate of increase in real production as of which it begins to create jobs will be higher. Specifically, it may be estimated that in the period 2001-2003 jobs will be created as of a growth rate in real production of 2,7% as against 2.2% in the years 1997-1999.

The companies which stated that they would show higher growth both in production and employment in coming years were those operating in the chemicals and plastics sector and in metalworking, electrical equipment and electronics, located in Madrid Community and Valencian Community and of small size in terms of workforce.

In general terms, the factors which have accounted for the different trends in production and employment in companies in recent years are the same as those which will account for the different growth of both variables forecast for the period 2001-2003. Nevertheless, we note two significant changes. On the one hand, increased attention will be given to organizational aspects and especially to those factors related to labour input. And, furthermore, there will be less importance given to other more traditional factors (overtime, temporary hiring, etc.).

Hiring policy in coming years

Notable among those factors which will make possible an increase in employment in coming years is the increase in orders and sales, followed by the existence of expansion plans and other factors (extension of plant facilities, diversification of production, launching of products, etc.).

The philosophy of hiring policy in companies will not undergo substantial changes over the short and medium term compared with previous years so that it will continue to be defined by the same basic principles (optimization of resources and means, detailed analysis of hiring needs, etc.). The possible changes which could take place will come out of specific circumstances, notable among which could be the introduction of changes in labour legislation.

Within companies in coming years we can expect a growing trend so far as two aspects are concerned. On the one hand, a tendency to stabilize workforces and, on the other, to hire more qualified personnel.

5.3. Final conclusions

For some time, it has been apparent that there exists a growing gap between the trends in production and employment in the industrial sector. This shows that the productivity of the labour factor is growing significantly and at an increasing rate. It is expected that this situation will continue and even become sharper in coming years given that, according to estimates made, higher growth rates in industrial production will be necessary to put

into motion those mechanisms which create jobs, which also means that companies will strengthen their strategies for making gains in productivity.

Up to now and in coming years the gap between growth in production and employment in industry, and therefore the increase in productivity of the labour factor, may be accounted for largely by the introduction of mechanisms which concentrate attention on the production system. Nevertheless, two points are to be noted. First, the little importance of steps taken through alternatives such as working on overtime and use of temporary hiring. And, in addition, we still see little attention being paid to measures which put emphasis on human resources. In this field the potential is very high, in spite of the fact that factors of a qualitative nature are still little recognized (worker profile, continuing training, etc.), given that possible gains in labour productivity which may be obtained through measures taken in the production system have been limited in many companies over the years.

In line with the above, we note that in recent years companies have based their growth particularly on physical elements, among which the introduction of technology and equipment have played a fundamental role. Nevertheless, we see the evident existence of possibilities for optimizing business structures by means of proper organization of resources, something to which companies have not paid very much attention in periods of rapid growth and which, nevertheless, are those given consideration at times of lower production.

In recent years, companies have begun a process of professionalization of the management of human resources which is bringing about a more rigorous policy in the hiring of personnel. In keeping with this, companies are more reticent about easily shifting any growth in production to job creation and are much more ready to have recourse to alternative measures. On the other hand, we note measures more favourable to consolidate workforces by stabilizing employment of a permanent nature. This, at the same time, justifies a hardening of conditions for increasing employment, hiring policy and requirements for workers to be hired.

Today, the outside factors which stand in the way of job creation are mainly the lack of skilled workers and properly trained workers in the labour

market which, on the one hand, prevents making the most of the stage of economic expansion in terms of jobs and, on the other hand, it generates major costs and puts a bottleneck on production and the growth possibilities of companies. In addition, what is surprising is the little importance labour regulations have as a factor standing in the way of creating jobs. Along these lines, it may be said that the regulatory framework is not a fundamental reason explaining the phenomenon studied (the different trends in growth of production and employment) although it certainly does determine hiring policy and strategy. Companies generally have adapted to the existing legal framework although they make criticisms and put forward possible improvements regarding temporary hiring and, to a lesser extent, those regarding the regulation of firing.

Appendix
Questionnaire used in personal interviews

COMPANY : .....

TYPE OF PRODUCTION: .....

NUMBER OF EMPLOYEES: .....

1. Trend in the company in the past 3 years (1997-1999): % growth in real production (or value of production and prices).

1997 .....% 1998.....% 1999.....%

2. Trend in employment in last 3 years (1997-1999): % growth in employment (or number of employees in the three years).

1997 .....% 1998.....% 1999.....%

3. In terms of trend in the company, why are there differences in the trend in the company's real production and the trend in employment over the past 3 years? That is, on what basis, in terms of means, has it been possible to obtain higher growth in production than in employment? 3: very important; 2: important; 1: of little importance; 0: not important).

- Greater use of installed production capacity.
- Working on overtime.
- Improvements in equipment and technology.
- Simplifying production processes (making them easier, etc.)

• New systems and techniques for organization and production planning.

• New systems and techniques for organization and control of labour input (team work, rotation of tasks, etc.).

• Changes in job descriptions and worker profiles (qualifications, flexibility, all-rounder qualities, attitudes, etc.).

• Better continuing training of workers.

• Recourse to sub-contracting of production and services.

• Recourse to temporary hiring.

• Recourse to services of temporary job companies.

• Better profile of new persons hired (qualifications and attitude).

• Other:

4. Why has the company had recourse to these factors? What are the basic reasons behind this strategy/philosophy for hiring company personnel?

5. Indicate some of the barriers which have stood in the way of creating more jobs/hiring more people in recent years (hiring regulations, regulations on firing, lack of skilled workers in labour market, etc.).

6. In the present situation, estimate the proportion by which you might increase real production in the company without creating jobs (with the same available resources).

Real production could increased by .....%.

* Based on what means?

7. In what circumstances is employment in the company created or would it be created? (increase in sales, regional expansion plans, replacement of equipment, new facilities, new products, etc.).

8. What is the policy for hiring personnel in the company over the next 3 years (2001-2003)? For what reasons?

9. In the next 3 years (2001-2003) the company's plans foresee increasing real production by ..... % a year while employment will grow by ..... % a year.

* Based on what means? (3: very important; 2: important, 2: of little importance; 0: not important).

- Greater use of installed production capacity.
- Working on overtime.
- Improvements in equipment and technology.
- Simplification of production processes (making them easier, etc.)
- New systems and techniques for organization and production planning.
- New systems for organization and control of labour input (team work, rotation of tasks, etc.).
- Changes in job descriptions and worker profiles (qualifications, flexibility, all-rounder qualities, attitudes, etc.).
- Better continuing training of workers.
- Recourse to sub-contracting of production and services.
- Recourse to temporary hiring.
- Recourse to services of temporary job companies.
- Better profile of new persons hired (qualifications and attitude).
- Other:

10. Will the company change its hiring strategy/philosophy in the next few years?

11. Observations.

Appendix
Companies interviewed

• **In Catalonia**
– Aiscondel Laminados
– Asahi Vet
– Autotex
– Basf Española
– Bettor MBT
– Blanxart
– Braun Española
– Brose
– Cafés Marcilla
– Can Feu
– Cía Roca Radiadores
– Climesa
– Codorníu
– Construcciones Mecánicas Marés
– Copesco & Sefrisa
– Cortinova
– Cosmética Técnica (LENDAN)
– Cribas y Tamices Intervenispa
– Damm
– Diseños y Fabricados Especiales (DEFESA)
– Diseño y Textura (DITEX)
– Draftex Ibérica
– DSM Bakery Ingredients
– E Ballús
– Freudenberg
– Gedesco (MAHESO)
– Giral y Carbonell
– Gonvarri
– Gonvauto
– Gutmetal
– Gutser
– Hewlett-Packard Española Barcelona Division
– Hidrocolor
– Hilaturas Llaudet
– Industrial Técnica Pecuaria
– Industrias Cafetales Hispano Americanas
– Industrias Enrique Galán
– J.D. Casanovas
– Kostal Eléctrica
– La Preparación Textil
– Mikalor
– Nissan Motor Ibérica
– Panrico

– Peguform Ibérica
– Phuc Control Systems 2000
– Pirelli Cables y Sistemas
– Rejillas Calibradas (RECA)
– Rovema Ibérica
– Serra Soladura
– Siemens (plant in Cornellà de Llobregat)
– Sintermetal
– Star Textil
– Súñer
– Suprem-Inox
– Tecnología del Alambre (TECALSA)
– Turrones Especialidades Viar
– T500 Puratos
– Witte & Solà

• **In Madrid Community**
– Avio System
– Cemetal
– Confecciones Aselag
– Conmetal
– Construcciones y Estudios Industriales (CEI)
– Cremop
– Favram
– Flores Valles
– Fiesta
– FIT
– Fundosa Alimentaria
– Industrias Cárnicas Criado
– Ingersoll-Rand Ibérica
– Jause
– L'Air Liquide
– Made Tecnologías
– Nusa Ibérica
– Plásticos Vanguardia
– Prefimetal
– Reycar
– Sadepan
– Seginsa

• **In Valencian Community**
– Andreu Barberà
– Belloch
– Blaya
– Colortex
– Cooperativa Vinícola La Viña
– Das Audio
– Dimas
– Embutidos Martínez
– Etexa
– Forflesa
– Fabricantes de Tornillería (FACTOR)
– Frisoval
– GH Electrotermia
– Industrias Ochoa
– Iriscrom
– Panrico (plant in València)
– Productos Pilarica
– Saez Merino (LOIS)
– Valenciana de Galvanización
– Vizmón