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Patterns of Enterprise Flexibility:

IAB Establishment Panel Results, Western Germany, 1993-95*

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0. Abstract

The debate on flexibility has recently shifted focus from individual employees, forms of employment and remuneration to converge on the entire range of options open to corporations, in particular technological upgrading, research, innovation in tandem with investment, longer operating times, organisational changes, in-house basic training and advanced training. So flexibility at the level of the individual establishment and its effects on the economy and employment system are now centre-stage. The purpose of the IAB Establishment Panel was to undertake empirical employment research in the form of interviews, followed up annually in the same establishments and new units, with a view to building up a new range of data on individual companies. This process has yielded representative results on the process of introducing flexibility in business activities, with more than 4,000 usable statements for all 1.6 million establishments of every size class and sector. Compared with case studies in flexible companies, sectoral studies on the use and distribution of key technologies or new forms of organisation, and analyses of developments of new corporate forms or services that are said to be exemplary, our results enable statements to be made for individual units and the economy as a whole for all establishments in western Germany. Our analysis concentrates on data obtained at the management level of establishments, for taken together, they make up the competitive fabric of Germany and determine the flexibility of the production and employment system.

1. Introduction: Defining Flexibility

The German model of employment is characterised by consensual industrial relations, high union membership and even higher union involvement in wages, apprenticeship training and adult education issues, and social security provision for all. Numerically flexible manpower planning has never been an important factor in German labour market policy with any impact on employment at will, atypical forms of work, inefficiently high wage differentials and the working poor, or even full-time, year-round contracts at legal minimum wages. The goal of labour market flexibility is not to maximise job and labour turnover.

Flexibility at the level of the enterprise is not primarily intended to lower labour costs. Enterprise flexibility mainly involves functional elements such as R&D, technological and organisational change, innovation and investment, an increasing variety of operating or business hours (in addition to reduced and flexibly implemented working hours), and in-house training of young and adult workers. It focuses on human resource management (Standing, 1995) and on improving profitability with a view to eliminating the reasons for poor enterprise performance and lack of competitiveness.

Behind the demand for more flexibility, (reflected in more movement of employees between enterprises, deregulation of labour law and collective bargaining, new forms of working time and even greater wage differentiation, for example), is also the assumption that Europe, in contrast to the United States, has a number of institutions, regulations, official practices and policies that may prevent companies from operating efficiently or being competitive on world markets. An evaluation of these factors on an enterprise level

may indicate whether such assumptions are correct and whether the range of available options is being utilised.

The OECD Jobs Study (OECD, 1994) diagnoses the cause of continuing high levels of unemployment as being the member states' inability to adapt quickly and creatively to a world of rapid structural change with new goods, markets, technologies, services and communication routes. The study recognises the central role played by enterprises in this process, but it does not explore the ways they are responding to the challenge in the areas of R&D, innovation, nor their efforts at external and internal organisational restructuring and introducing new working time patterns and independent operating times. The study makes no mention at all of implications for corporate personnel management, in-house basic and advanced training and the role of corporate planning.

Brodsky (1994) has outlined the changes in the OECD strategy for the promotion of labour market flexibility over the last thirty years (e.g. OECD 1986), and he objects that it has not reduced unemployment; moreover, he believes it has encouraged sub-standard employment and undermined minimum social standards. Brewster, Hegewisch and Mayne (1994) argue that aspects of labour market flexibility have generally been appraised indirectly, and not from the standpoint of the enterprise, i.e. by looking at inflows and outflows of personnel (numerical flexibility) and atypical, often insecure employment arrangements: part-time, fixed-term employment contracts, employment for only part of a year and labour law regulations. More recent studies on more flexible working times and remuneration and on decoupling working time from operating times tend to focus on the macro-economic effects on employment, rather than look at what is happening actively at enterprise level.

The distinction between a **core** and a **peripheral** workforce, as defined by either the segmentation theories of the seventies or by Atkinson (1985), does take us back to the level of the enterprise, but it is rather vague; there is little empirical evidence and the distinction is imprecise at a strategic level because it cannot be shown that enterprises form and utilise core and peripheral workforces as part of their personnel strategy.

Nevertheless, a combination of the two arguments does lead to the conclusion that labour market flexibility outside the enterprise is closely related to internal flexibility. Too much or too frequent external flexibility can have negative effects on the workforce's productivity, and on the enterprise's commitment to an efficient workforce, restructuring and necessary internal job changes. Often, enterprises do not provide in-house basic and advanced training for personnel who are temporary or on fixed-term contracts, seasonal, employed for only a few hours a week, part-time, peripheral etc., part of the reason being because it does not really pay off. So functional flexibility within the enterprise and for the workforce as a whole comes to be of decisive importance in coping strategically with external adjustment constraints (Semlinger, Frick, 1995). Productivity gains have to be planned; work must be organised to meet market, customer and production needs; collectively agreed and individually requested working times must be balanced with the longer operating times that are necessary; and internal staff qualifications and participation must be enhanced.

In the past, efforts have been focused on achieving greater and better flexibility of employment, labour law regulations, working time arrangements and remuneration with

greater differentiation in order to reduce labour costs. 146 British case studies, mostly of big companies (Institute of Management, 1995), have shown that greater manpower flexibility has usually been introduced mainly for cost reasons. More than three quarters of all reorganisations to date have involved job losses at every level of the firm. 60% of the British firms surveyed anticipate further staff reductions. They all expect flexible forms of work organisation to predominate one day, but they see a danger here: a potential decline in company loyalty and cohesion if the workforce becomes an arbitrary grouping, with the core workforce losing its morale. It was felt that the way to strengthen a company's competitiveness is by developing flexible activities (e.g. new products, markets, production techniques, forms of organisation, patterns of working time and qualification processes), although they must be strategic: the workforce and their representatives must be involved. This will require adequate job security with ongoing personnel training opportunities.

The European Commission (1995) has pointed out how external and internal flexibility are related and how both are important for economic growth, competitiveness and employment. The ILO (1995) also views enterprises as being flexible protagonists when they are forced to adjust to new markets, technologies, forms of organisation and employment, and to modernise in order to remain productive (and therefore competitive), yet offer decent jobs.

The OECD too emphasises enterprise flexibility and its implications for personnel policy in the process of technological and organisational change. The main focus of the OECD analysis, and consequently of political attention and at-large discussion, are private and public enterprises and their organisational behaviour.

Our analysis of enterprise flexibility and its implications for personnel management and training is based on the following definition of flexibility, comprised of three parts:

- The ability of establishments to adjust constructively to external constraints resulting from labour law and collective agreements on working times and remuneration and personnel representation;

- The ability of establishments to adjust to new requirements by undertaking research, investment, and implementing innovation and technical and/or organisational modernisation. This includes the provision of in-house basic and advanced training to upgrade personnel management strategies and qualifications. We look at new establishments, their survival rates and employment effects, as well as splitting and the merging of existing establishments;

- The ability of establishments to cope with short-term and medium-term personnel difficulties, to pursue strategic employment policy objectives and priorities, and to implement production, investment and manpower plans.

The analysis is mainly of a descriptive nature, using many indicators. In some cases, it also addresses the interaction between indicators. Substantial longitudinal analyses of the three different definitions of flexibility have been left for the future, when more than the first three 'waves' of the IAB Establishment Panel are available.

The paper first looks at job and labour turnover, focusing on numerical flexibility and employment contracts, working and operating times and remuneration. It goes on to examine how technical and organisational change affect research, product innovation and investment and what this means for functional flexibility. This is followed by a discussion of the importance of training for corporate flexibility. Lastly, the paper describes the development of new establishments and the integration or hive-off effects.

It is important to read this paper against the backdrop of employment trends in western Germany between 1992 and 1995: from a historic peak of 29.5 million employed in 1992, there was a steady decline of about one million over the next twelve months, to 28.5 million in 1995. Employment losses continued in 1996, but in 1997 there have been some signs of stability.

2. The IAB-Establishment Panel: Complementary Data

In the past, the discussion on flexibility has always suffered from a lack of empirical evidence. Most studies concentrate on workers or the unemployed, working times and wages. Labour market statistics, national sources that have been made internationally comparable and most research projects draw on employee, working hours and remuneration data for their flexibility statistics, not on the real protagonists, the enterprises. At most, there are some individual case studies, a few sectoral studies and some surveys that are not representative, but none of them is really internationally comparable.

The international organisations have concluded from this that new reporting systems need to be created on an enterprise level. The OECD bases its work on new surveys of enterprises in some member states. The EU has commissioned EUROSTAT (1995) to carry out the **European Enterprise Panel Project** and study the effects of the European single market on enterprises. The ILO has carried out surveys in enterprises in more than 20 countries on 'Flexible Enterprises and Human Resource Management' (ILO 1995).

In the Federal Republic of Germany, the Institute for Employment Research (IAB) developed such a reporting strategy in the early 1990s (Projektgruppe IAB-Betriebspanel 1991, 1994, 1995). Every year interviews are conducted on a management level in about 4,000 establishments employing altogether about 3 million workers. This yields a random sample of 0.3% of all 1.6 million western German establishments, accounting for about 11% of the total workforce and is representative of all sectors and establishment sizes. The fact that the process is repeated annually allows for accurate individual macroeconomic longitudinal analyses. New establishments, hive offs and closures are also included.

The units surveyed are establishments (not companies), i.e. local units that produce goods or services; they must have an operating ID number allocated by the labour office and have at least one wage or salary earner for whom statutory social insurance contributions are payable. The Federal Employment Institute employment statistics draw on the same source, and together with the IAB Establishment Panel data, they are the main source of data for this paper. Data from the first three 'waves' of the Establishment Panel (1993/1994/1995) are used; eastern Germany has been included in 1996. The data from the IAB Establishment Panel random sample is generally extrapolated proportionately. The total reference figure is the number of establishments (units) according to em-

ployment statistics data; reference date: 30 June of the previous year; the random samples are weighted and extrapolated using that structure.

In regard to the results, it must always be borne in mind that smaller and medium-sized establishments employing up to fifty persons constitute 95% of the total 1.6 million establishments but account for only 45% of the total workforce. The average establishment employs a workforce of only 18. The results of an analysis carried out purely on establishment level will therefore always reflect the predominance of such smaller units. Looked at from the angle of employment, the effects on personnel and labour market policy will emerge more strongly.

3. Job Turnover and Labour Turnover: Numerical Flexibility of Human Resources

The most comprehensive way to measure numerical flexibility is to look at the job turnover caused by jobs being created and destroyed as a result of hirings and firings by existing establishments and by the creation of new businesses and plant closures (OECD 1987, Cramer/Koller 1988, Cramer/Boeri 1991). A high job reallocation ratio means that the employment system can react flexibly to changing structures, regulations and policies.

Table 1 shows that nearly 2.3 million new jobs were created during mid-1982 to 1994, i.e. a growth rate of 11%. Throughout the entire period, the balance of new businesses and closures (1.4 million jobs, or 62% of the net growth) is very much greater than the balance of expansions and shrinkages (0.86 million jobs, or 38% of net employment gains). Aggregating the four components gives an average job turnover of 7.9% per annum for 1982-94. Assuming a constant number of jobs, 7.9% of all jobs are renewed annually, and on average, employees hold their jobs for a little more than 12.5 years.

Table 1: Job Turnover in Three Sectors, 1982-94, (in 1000s)

Employment change	Primary Sector	Secondary Sector	Tertiary Sector	Whole Economy
Growth in employment - new enterprises	140	1 766	3 451	5 357
Loss of employment - closures	-161	-1 411	-2 375	-3 948
Growth in employment - expanding establishments	273	6 342	9 485	16 100
Loss of employment - shrinkages	-255	-7 358	-7 628	-15 241
Net change	-3	-662	2 933	2 269

Source: Federal Employment Institute, Employment Statistics.

Looking at each economic sector separately, clearly de-industrialisation was caused mainly by the lack of compensation for shrinking establishments in the primary sector. The number of new enterprises was small and could not compensate for job losses.

The job growth in the services sector was due partly to a clear surplus of new firms over closures and to the fact that even more establishments were expanding rather than shrinking. Nevertheless, more jobs were lost in this sector as a result of plant closures (-2.4 million) and declining firms (-7.6 million) than in the secondary sector.

According to the OECD (1987, 155ff), turnover in Germany in the 1980s was lower than in some other member countries. The results presented here indicate that it has not risen further.

All these gross and net changes in employment reflect labour turnover, i.e. the sum of inflows and outflows in relation to average personnel figures over the period of a year. Labour turnover is a key factor in renewing and rejuvenating the workforce, as new employees bring new knowledge and require lower wage payments. Outflows create upward mobility for those that remain, and opportunities for internal transfers, for recalls and for saving labour costs.

According to the IAB Panel on Establishments labour turnover is considerable, at around 11% per year of the total workforce, with a slightly rising trend for 1993-95. The figure for SMEs employing up to 50 persons is 12-14%, a downward trend, which is nevertheless still double that of larger firms where downsizing has resulted in higher labour turnover.

The OECD calculates western Germany's labour turnover to have been about 25% in 1984 (OECD Part II, 1994, p. 64); German sources estimate it to be 28.9% (Cramer/Koller 1988, p. 369) - a relatively high figure compared with estimates in managers' surveys:

- The Panel surveys all employed persons (i.e. self-employed, family workers, civil servants, officials) and all industries - not only those covered by social security (+/- 80% of the workforce). Job turnover for the whole economy is lower, since more stable employment is included and the total workforce is much bigger (about 29 million).

- Inflow and outflow figures obtained from interviews are only about 50% as high as the movements officially registered under statutory social insurance requirements. Data on inflows and outflows during a six month period obtained during interviews are imprecise and incomplete in respect of the groups included and what the managers interviewed actually remember. Brief periods of employment, breaks, recalls, fixed-term contracts and extra staff - even if registered and accounted for - are sometimes not considered inflows or outflows.

Some inconsistencies in data remain: if, regardless of industry or size of enterprise, at least 11% of the workforce move every year, then there are many opportunities for renewals and internal transfers. Instead of looking at obstacles to flexibility in rigid person

nel structures, it might be better to examine the costs and erosion effects of excessive labour turnover.

Labour and social legislation designed to prevent staff cuts is frequently used as a tool to contain flexibility if employers do not take on personnel, delay in doing so, employ too few people or hire them only on fixed-term contracts, or if groups of workers that enjoy special protection are not taken on.

According to the IAB Establishment Panel, about 36% of all outflows during 1993-95 were initiated and carried out by the employer. If half of the terminations by mutual consent are included, e.g. older workers accepting earlier retirement, the figure is clearly over 40%. Terminations by the employer account for about one quarter, and the expiration of fixed-term contracts nearly 10%, a rising trend. 3% to 4% of all outflows result from transfers to other establishments of the same firm. While in energy/mining, banking/insurance and in the public sector, 20% of all outflows were initiated by the employer, the figure was around twice as high in private production and service industries. During the recession in 1993 and subsequent cutbacks, large establishments reduced their workforce considerably.

The idea of a flexible enterprise with a **core** and a **peripheral** workforce originated from segmentation theories and has recently become established (Atkinson 1985), despite the critics who argue that there is no precise definition and little empirical evidence of data or strategy, and that it might be a consequence of service sector expansions (Brewster et al, 1994, pp. 187-189). Generally, the core workforce is employed on a permanent basis: they work full-time and year-round, they have job security and personnel representation; they are functionally flexible and participate in in-service training; at most, they may be confronted with contract annulment, golden handshakes and social plans for early retirement. A peripheral workforce bears all employment risks; they work only for a few hours a week, on fixed-term contracts or not throughout the year; their jobs are part-time, irregular and possibly even precarious; some are subcontracted (Kühl 1990, 1995). Recent additions to the peripheral workforce are the ‘quasi’ self-employed, temporary workers, persons teleworking at home, or on screens, on networks and for virtual firms. This ‘complementary employment’ is believed to be extensive and expanding, fuelled by the endeavour to reduce labour costs.

If useful data is to be gathered from interviews in firms, the definition of atypical forms of employment must be pragmatic. Part-time work, which in western Germany accounted for about 14% of all workers covered by social security in 1995, (or even 21%, when including persons employed for a few hours a week), has now become a normal phenomenon, part of the trend away from full-time employment. According to the IAB Establishment Panel, about 3.5 million workers were employed for a few hours a week in 1995. As this data was not calculated for 1993 and 1994, these workers cannot be included in the peripheral workforce for those years, although they do represent an important form of numerical flexibility.

In this paper, peripheral employment is defined as:

- fixed-term employment
- extra staff, occasional workers, staff on practical courses

- sub-contracted workers
- independent workers on service- or works-contracts.

These four groups of workers account for 8-9% of the total workforce (including the peripherally employed); the 1993-95 trend is upward. In larger establishments, all four peripheral forms occur simultaneously. SMEs in particular have an above-average proportion of these groups; in larger firms the figure is around 6%. The slight upward trend in 1993-95 indicates that personnel cuts were also carried out in the core area: establishments did not already have a strategic and expansive peripheral workforce.

4. Time: Another Dimension of Flexibility of Human Resources and Establishments

Just as important as the three aspects of numerical flexibility discussed above is the concept that greater flexibility in working and operating times, together with a steady reduction in annual working times, will help employment policy by securing existing jobs or even enabling firms to employ more people. After initial confrontations in employer/union bargaining over reduced vs. more flexible working time and implementation on the establishment level, there is now consensus that collectively-agreed working time policies have to be managed on the establishment level. When asked about corporate policy aims, like improving quality, increasing productivity, organisational restructuring and personnel cuts, more than a fifth of all establishments said in mid-1995 that ‘more flexible working and operating times’ was a priority objective. For about 4% it was the most important one.

Table 2 summarises the numbers of establishments which practise a certain working time mode (or combinations) and compares the results with the 1991 ISO/DIW study (Groß et al). The variation of working time patterns is very large and increases as establishment size increases:

Table 2: Certain Working Time Arrangements in Western Germany by Establishment Size: Comparison between the ISO/DIW study for 1991 and the IAB Establishment Panel 1993

	All sectors				
	Size (number of employees) 1-19	20-199	200-499	500 and more	Total
Establishments					
Part-time work					
(a) ISO/DIW 1991	64.2	82.6	93.6	91.5	66.7
(b) IAB Panel 1993	57.0	75.1	94.2	96.6	59.7
Flexi-time					
(a) ISO/DIW 1991	9.0	21.8	46.1	58.9	11.0
(b) IAB Panel 1993	20.9	29.2	56.0	62.7	22.3
Staggered working times					
(a) ISO/DIW 1991	n.a.	n.a.	n.a.	n.a.	n.a.
(b) IAB Panel 1993	19.8	39.2	48.1	52.7	22.4
Shift work					
(a) ISO/DIW 1991[1)]	No c.d.	No c.d.	No c.d.	No c.d.	8.4
(b) IAB Panel 1993	3.3	19.4	53.3	74.5	5.9
Saturday work[2)]					
(a) ISO/DIW 1991	57.4	56.4	62.9	69.0	57.4
(b) IAB Panel 1993	50.8	46.4	51.9	66.0	50.3
Sunday work[2)]					
(a) ISO/DIW 1991	21.7	20.5	31.1	44.2	21.7
(b) IAB Panel 1993	17.0	17.1	27.1	42.1	17.2
Overtime					
(a) ISO/DIW 1991	25.0	53.3	56.9	58.9	28.6
(b) IAB Panel 1993	37.1	63.9	74.4	84.6	40.8
	Manufacturing industries				
Establishments					
Shift work					
(a) ISO/DIW 1991[1)]	1.5	17.3	64.3	77.9	4.8
(b) IAB Panel 1993	1.9	18.0	70.5	90.1	6.1
Overtime					
(a) ISO/DIW 1991	25.0	53.3	56.9	58.9	28.6
(b) IAB Panel 1993	45.7	66.1	84.6	85.3	50.0

1) The relative data from the ISO/DIW 1991 study refers to 'regular shift work'; the IAB Establishment Panel 1993 does not differentiate between 'occasional' or 'regular' use.

2) In both surveys the data refers to 'constant' or 'regular' weekend work.

n.a. = Question not asked in ISO/DIW 1991 survey.

No c.d. = No comparable data in ISO/DIW 1991 survey.

Source: ISO/DIW 1991; IAB Establishment Panel, 1st wave, 1993.

(i) Part-time work was a feature in 60% of all establishments in 1993 and expanded to almost three quarters of all firms in 1995. Following the 1993 recession, the ratio of all part-timers to the total workforce increased from 15.8% to 21.9% in 1995. This ratio includes 3.5 million employment contracts of less than 15 hours per week in 1995, of which 2.5 million were women. If we restrict part-time work to jobs covered by social security, in 1995 14.1% of all staff members under social security were part-time. In the primary sector, 4.7% were part-time, although 63.4% of corresponding establishments had at least one part-timer. Private services had 19.9% and public services 23.2% part-time jobs covered by social security. Thus, we can see that this phenomenon is normal - or even on the increase - in private and public establishments, where one fifth of all employment contracts and one seventh of all jobs covered by social security are part-time.

(ii) Flexible working hours are practised by 22.3% of all establishments - again more frequently in larger firms - not only in administration, but in commercial and technical divisions and customer-oriented services as well. Flexi-time contracts account for 24% of total employment on average; most (almost 57%) are found in public sector employment.

(iii) Staggered working times are regarded by employers as a suitable means to extend opening or operating times, although from the employees' perspective they offer less individual control over individual working hours than flexi-arrangements. Nevertheless, the percentages of establishments with staggered working times is just as high (22.4%) as those implementing flexi-time. On average, about 13% of the workforce work staggered hours: in the tertiary sector the figure is 20%. In manufacturing industries, especially in medium-sized and large firms, shift work takes the place of staggered working hours. There are more and more permutations of both arrangements appearing, and both are becoming increasingly independent.

(iv) Shift work was performed in 5.4% of all establishments in 1993, with a slightly higher proportion in manufacturing industries. More than half of all establishments with 200-499 employees perform shift work, and in larger firms, as many as three out of four employees work shifts. The figures are even higher for manufacturing industries. For methodological reasons, however, too much importance should not be placed on the shift work figures in both studies. Employers' decisions on shift work or job-sharing systems are decisions of principle and only slight changes are to be expected over time. This assertion is confirmed by the fact that the numbers of employees doing shift work are quite stable.

(v) Weekend work: in 1993 in 50% of the establishments, work was performed on Saturdays and in 17% on Sundays. Both surveys found the figures for all size classes decreased in 1991-93, perhaps due to the end of the unification boom, to the recession in 1993 and to subsequent low rates of capacity utilisation. Nearly a quarter of the workforce work regularly on Saturday, and nearly 10% on Sundays as well. But the number of employees affected by weekend work has fallen since the late eighties. There are legal restrictions on Sunday work, so most weekend work is still performed on Saturdays. Nearly half the establishments performing Saturday work 'normally' work 'every' Saturday, and are mainly in the service sector. In manufac

turing industries, one third of all establishments surveyed included Saturday in their operating time which is covered by shift work.

(vi) Overtime was performed in 40.8% of all establishments and in half of the manufacturing industries in 1993. Due to the recession and slow growth, and due to the efforts to reduce overtime made by works' councils and management, the number of establishments using overtime decreased from 40.8% to 24.9 during 1993-95; due to the business cycle, manufacturing industries reduced overtime from 50% to 40.1% in 1994 and 42.9% in 1995 (first half). However, this did not involve any general reduction in paid overtime, as in the decreasing number of establishments with overtime work, paid overtime as a proportion of the total volume of labour increased from 2.8% in the first half of 1993 to 4% in the first half of 1995. Most establishments are still using overtime as a short-term adjustment option in the course of the business cycle.

There is much evidence that an increasing variety and extension of working and operating time patterns indicate widespread temporal flexibility of human resources and establishments. Greater flexibility in working times and cost-optimal choices of operating time are important indicators of economic performance and competitiveness. While the discussion has so far concentrated on the weekly duration of operating times (Bosch 1991; Hofmann 1995, Seifert 1995b), their adaptability, extension and variability in a downward trend of collective agreements of weekly hours and the strong desire of the workforce for flexible working times (Stille 1995) are even more important. Many studies (Reyher et al,1985, ISO/DIW 1991) have shown that the dissociation of working and operating times has been on the increase in every industry.

The IAB Establishment Panel 1995 therefore investigated whether operating times go beyond the agreed weekly working time, and if so, which patterns of working time arrangements were implemented.

Table 3 shows that only one third of establishments 'decouple', but the number clearly increases with the size of the firm to reach about three fifths for large firms employing a workforce of 500 or more. Keeping in mind that SMEs employing a maximum of 19 staff account for 90% of all firms, overtime is the most important form of dissociation, followed by staggered working times and weekend work. Combinations of full and part-time work, flexi-time and shift work are mainly implemented in bigger firms employing more than 200 people. If, however, the answers are weighted to reflect the workforce, shift work is the main form of dissociation (cf. European Commission, 1995, No. 25), especially in manufacturing industries.

More than half of all establishments with longer operating hours than working hours make use of only one form of dissociation, mainly 'regular overtime': nearly two fifth of establishments in the manufacturing industries, one third in the private service sector, and just 12% in public services. Almost one third of all establishments implement two forms of dissociation; and 15%, three or more.

Table 3: Decoupling Weekly Working Times and Operating Times by Establishment Size, 1995

	Size of establishment, employing 1-19	20-199	200-499	500 and over	**Total**
Total number of establishments which decoupled working and operating times (in %)	30.2	44.1	56.6	59.4	32.4
Of which: decoupling by ... (multiple responses)					
- overtime	54.6	44.5	47.0	42.2	52.7
- staggered working times	31.4	50.5	44.6	53.6	35.0
- weekend work	35.8	28.5	43.4	43.1	34.7
- a combination of full and part-time work	16.0	23.4	36.4	40.9	17.7
- flexi-time	11.6	18.1	42.1	61.1	13.4
- shift work	4.0	26.6	53.2	73.3	9.0
- other	7.0	5.8	6.2	8.1	6.8
Of which: number of establishments using two working time patterns for decoupling	32.6	29.7	19.7	19.0	31.8
Of which: number of establishments using three or more working time patterns for decoupling	11.9	25.4	57.6	66.9	15.2

Source: IAB Establishment Panel. 3rd Wave, 1995.

Looking at the new micro-level evidence, it must be borne in mind that the adaptability and flexibility of enterprises are not only reflected in patterns of working and operating time - they are just one instrument that can be used to respond to specific adjustment requirements. Table 4 gives an overview of the numerical and functional flexibility of establishments as an internal or external solution. Working time and operating time are part of a whole series of measures that firms may adopt when forced to act flexibly in response to fluctuations in demand or structural change.

Table 4: Survey of 'Flexibility Patterns' in the Manufacturing and the Service Industries[1)] in Response to Fluctuations in Demand or Production in 1993
Firms Responding to Demand or Production Fluctuation by ..... (percentages)

Manufacturing Industries				
	Numerical adjustment		**Functional adjustment**	
Internal solution	... Increasing and reducing overtime/ extra shifts/short time	70.8	... Transferring workers inside the firm	20.3
	... Advancing or postponing holidays	44.5	... Changing the handling of orders	28.
	... With at least one internal-numerical adjustment measure	**82.1**	**... With at least one internal-functional adjustment measure**	**41.5**
External solution	... Use of fixed-term or subcontracted workers - hire and fire - contract termination	48.5	... Subcontracting or retrieving contracts	23.3
	... Not replacing natural wastage	10.3		
	... With at least one external-numerical adjustment measure	**53.0**	**... With at least one external functional adjustment measure**	**23.3**
Service sector				
	Numerical adjustment		**Functional adjustment**	
Internal solution	... Increasing and reducing overtime/ extra shifts/short time	53.3	... Transferring workers inside the firm	21.8
	... Advancing or postponing holidays	41.5	... Changing the handling of orders	13.5
	... With at least one internal-numerical adjustment measure	**68.3**	**... With at least one internal-functional adjustment measure**	**32.4**
External solution	... Use of fixed-term or subcontracted workers - hire and fire - contract annulment	41.5	... Subcontracting or retrieving contracts	12.3
	... Not replacing natural wastage	8.3		
	... With at least one external-numerical adjustment measure	**43.7**	**... With at least one external-functional adjustment measure**	**12.3**

[1)] Service sector without private households and non-profit organisations.
Source: IAB Establishment Panel, 1st Wave, 1993.

5. Trends in Wage Differentials and Wage Gaps

Pay flexibility may be inferred from wage differential trends, the number of establishments bound by collective wage agreements and the wage gap between wages/salaries paid and collectively-agreed figures. Contrary to trends evident in the OECD study (1993), wage differentials actually increased over time in western Germany: high paying manufacturing sectors declined, low paying services expanded, while in both sectors wage dispersion was on the rise; trade unions lost power in terms of membership and involvement; changes in the international division of labour had severe repercussion on the structure of employment; relatively undesirable employment for some hours per week, and the numbers of fixed-term, seasonal, part-time jobs etc. expanded; technological developments, labour supply factors and female labour all grew.

A look at the daily wages of males in full-time employment (i.e. the core workforce) in 31 industries between 1979-89, out of a 1% sample from the employment statistics reveals a rising trend in wage differentials (Bellmann/Möller 1995). This trend is increasing in capital-intensive industries like petroleum and tobacco processing, but it is also on the rise in high-tech industries like aircraft, data processing and chemical industries. A downward trend is evident in clothing industries, food, steel construction, precision instruments/optics and timber processing. As regards education and vocational training, the figures indicate an increase in qualification-dependent wage differentials, especially for highly qualified workers (there is an upper limit to income according to social security requirements).

The evidence is in line with Bound and Johnson's thesis (1992) that technical progress has resulted in a drop in demand for semi-skilled manpower and an increase in demand for better trained workers, in particular highly qualified employees.

The German system of regional and sectoral bargaining (Flächentarifvertrag), pattern bargaining (Pilotabschlüsse) within and between regions and industries and collective wage agreements that are binding on members and non-members alike, (Allgemeinverbindlichkeitserklärung) leads to more or less standardised wages in many industries, including many firms that have to be flexible and pay higher wages in order to gain or keep skilled or specialised workers.

Table 5 shows that the number of establishments bound to collectively-agreed wages dropped from 72% to 62% from 1993 to 1995. This result holds for all industries except public services and private households. Most of the collective wage levels had been agreed on a sectoral level, while some industries used firm-specific rates, particularly the big companies. As the numbers of establishments not bound by collective agreements and of those paying only collectively-agreed rates (of those bound by collective bargaining) have risen, the average wage gap fell between 1993 and 1995 from 13.4% to 11.2%. The decline is even more noticeable in regard to establishments bound by collective agreements - from 7.6% to 5.9%. This decline occurred in almost all industries except business services between 1993 and 1995. By mid-1993, the highest average monthly wages were being paid by the mining industries, utilities (DM 4,144), public services (DM 3,860) and banking/insurance (DM 3,581). The lowest monthly gross wages were paid in hospitals/medical services (DM 2,157), restaurants/hotels (DM 1,771) and in agriculture (DM 1,767). It can be seen that in some industries, a high average wage level

corresponds to a low wage gap and vice versa (Bellmann/Kohaut 1995, 7). Income ranges were lower during the slow growth upswing phase than in the low of the 1993 recession.

Table 5: Average Monthly Wages: Collectively-Agreed, Sectoral or Individual Firm Wage Levels And Average Wage Gap by Industry, 1993/1995

	Average monthly wage	% of establishments with				Average wage gap in % in establishments paying			
Industry	level DM 1993	Collective agreements 1993	1995	Sectoral levels 1995	Individual levels 1995	Above collectively-agreed rates 1993	1995	Collectively-agreed rates 1993	1995
Agriculture	1767	69	48	45	3	11.7	7.9	4.4	2.5
Mining & utilities	4144	100	94	89	5	10.1	5.2	1.5	1.0
Basic industry	3262	81	70	61	9	14.1	11.3	10.8	7.6
Investment goods	3316	81	63	59	4	13.5	11.4	9.5	8.3
Consumer goods	2603	87	75	68	6	11.9	10.2	8.1	6.1
Construction	3423	90	84	79	4	11.0	8.7	7.8	5.5
Trade, transport, telecommunic.	2754	75	64	53	11	14.3	11.4	9.0	6.9
Banking, insurance	3581	74	70	69	2	9.6	7.5	3.0	2.6
Catering, restaurants, hotels	1771	75	59	48	9	14.0	13.7	7.0	4.7
Education, services, entertainment	2841	60	54	46	8	18.4	15.2	2.5	2.3
Hospitals and medical services	2157	86	75	64	11	15.2	12.9	11.3	8.8
Business services	2958	24	23	17	6	13.9	14.0	5.8	6.3
Private households	2839	64	65	49	14	10.2	7.5	0.6	0.4
Public services	3860	95	98	87	10	7.8	5.6	0.4	0.5
Total	2748	72	62	53	8	13.4	11.2	7.6	5.9

Source: IAB Establishment Panel 1993, 1995.

If flexibility of working hours and wages at the firm level are taken together, there is considerable - and increasing - flexibility in collective bargaining and in the employment system.

6. Technical and Organisational Renewal, Investment and Innovation: Other Means to Achieve Flexibility

Establishments can increase their flexibility not only by varying their personnel policy activities but also by modernising, targeting for example:

- research and development (R&D), and market research, including product imitation and marketing strategies;

- investment activity and priorities in stimulating production potential;

- innovations in products and production processes, including services;

- internal organisational changes like mergers, team-work, flattening hierarchies, just-in-time production, profit centres;

- in-house basic (i.e. apprenticeship) training and advanced training of staff.

Naturally, not every establishment engages in all these activities in a short space of time (e.g. a year), and so only longitudinal analyses can adequately measure the extent and frequency of follow-up. Moreover, such activities may be undertaken individually or in conjunction with one another, depending on compatibility of content. For example, investment in technology and innovation can entail organisational improvements and special staff training programs. Finally, research and training activities need not necessarily be undertaken in the local production units: they can be centralised in the appropriate units of the same enterprise.

R&D and market research are among the most important renewal strategies that an establishment has to enhance its flexibility potential. The number of establishments engaged in such research activities is a function of the size of the company, rising to 70-90% in the case of large enterprises. The average for the economy as a whole - 8% for all establishments engaged in market and sales research and 5% in R&D - is deceptive, owing to the preponderance of small units. Moreover, in the larger companies, (10% to 18%), research is more and more often assigned to a different unit in the holding company.

When SMEs engage in research, it is more on the sales than on the R&D side. They contribute 13.5% to that part of the GDP generated by research-intensive industries and are clearly very important, both for the national economy and for international investment competition. In 1995, total German R&D expenditure was about DM 59.4 billion, although since the early 1990s, a decline in real terms has been evident. The share of R&D expenditure (on fixed assets, personnel and investment) was still 1.8% of GDP in 1991, but it is now only 1.6%. According to the Stifterverband für die Deutsche Wissenschaft a total of 284,400 employees were working in R&D in 1994, nearly 12% fewer than in 1991. While the big companies reduced the personnel in their research departments by between 4% and 5% in 1993 and 1994, the research groups in the smaller and medium-sized establishments that employ up to 500 staff remained unchanged. Unlike the large companies that are cutting back on research at home, the smaller establishments actually increased their R&D expenditure in the first half of the 1990s.

A recent German Federal Ministry of Education, Science, Research and Technology report offers little hope of any noteworthy growth in employment in the technology sectors, as these are no longer the draught-horses for jobs in the manufacturing sector. Nor can we expect that rapidly expanding R&D industries will provide the solution to macroeconomic growth and employment problems in the future. On the contrary: research-intensive sectors are only of indirect importance to growth and job creation, since they tie up capacities for scientific and technical problem-solving and promote the expansion of innovative corporate services.

Investment Activities and Targets

Around 18.5% of GDP (at constant 1991 prices) was invested in western Germany in 1994: DM 202 billion in equipment and DM 322 billion in buildings. That was 2.2% more than in 1993, the recession year, but clearly less than during the unification boom in 1991/92. Between 1993 and 1995, around 40% of all establishments did not make any annual investment: this figure is explained by the SMEs that employ up to 49 staff. The bigger the company, the greater the investment activity; this was particularly true in the recovery phase after 1993 when 85% of medium-sized establishments and more than 90% of the largest establishments were engaged in investment activities.

Nearly three quarters of large and nearly two thirds of medium-sized establishments clearly prefer to invest in information and communications technology, for example in multimedia services. Smaller establishments invest more or less equally in information technology and in production plant or business equipment (30% each for all establishments). As table 6 shows, the structure of investment priorities remained remarkably stable throughout 1993-95.

Table 6: Establishments' Major Single Investment Target in 1993 - 1995

Biggest single investment target	**1995**	**1994**	**1993**
Replacement/modernisation of plant and equipment	42%	44%	39%
Improving working conditions	18%	17%	21%
Expanding capacities, additional plant, equipment	14%	20%	20%
Reducing operating and production costs	6%	7%	6%
New products, improving product quality	5%	-	-
Meeting legal requirements (environment, safety at work)	3%	4%	4%
Reducing the need for staff	2%	2%	2%
Other targets	6%	3%	7%

Source: IAB Establishment Panel, 1st to 3rd Wave, 1993-1995.

Innovation Activities

Both commercially and organisationally, such research and investment activities are closely connected to production and sales innovation activities. An empirical distinction was drawn between three different forms of high-risk innovation:

- 26% of establishments, employing altogether 14.4 million, improved or further developed products or services they were already marketing in 1992/93 with the least risk-prone form of innovation;

- 25% of establishments, employing a total of 11 million, incorporated in their range new products or services that were already being marketed by other enterprises. In some cases, both internal transfers of personnel and new sales strategies were needed to gain market shares.

- Around 11% of establishments, employing altogether 5.7 million, developed entirely new products or services and created or found a new market for them.

Where these three innovation activities occur simultaneously, particularly in larger establishments, around 40% of all establishments in the economy as a whole, i.e. about 600,000 employing a good 17 million, can be classified as 'innovative'. 87,000 establishments, employing 3.5 million, use all three forms of innovation simultaneously to increase their competitiveness.

Although about 60% establishments surveyed in western German stated that they did not engage in any of the innovation activities named, they cannot really be called 'not innovative'. During the unification boom in 1991/92, considerable innovation was undertaken: products were changed and new products were created. However, during the 1993 recession, financing was not always available for innovation. In many enterprises the normal product cycle may be such that these forms of innovation will only be necessary at some future date.

7. Modern Technology, Organisational Changes and Employment Flexibility

The corporate and internal flexibility an enterprise needs to compete globally today requires the use of modern technology; certain organisational changes may also have to be made.

The usual spectrum of reorganisation measures consists mainly of:

- flattening hierarchies (hierarchy levels, management ranges);

- 'segmentation' (creation of autonomous and self-managing 'centres' - functional integration, holding structures, independent local units, the 'factual' factory, production islands, the enterprise-within-the-enterprise);

- learning organisation (shifting improvement processes out of central staff departments into specialised departments - continuous improvement process);

- intensification of group work (partly autonomous groups, project groups, circle work, co-ordination bodies).

'Lean' strategic manpower planning needs to integrate elegant solutions to staff shortages, bottlenecks and surpluses. It would be wrong to see lean management as primarily a tool for saving on staff by killing jobs and making cuts (slimming down personnel, thinning out the workforce, rationalisation, out-placement). The aim is to limit fluctuations by forming teams (in the interests of group cohesion) and in project work (minimising training on the job).

The following question was asked in the IAB Establishment Panel survey: 'How do you rate the technology in this establishment in comparison with other establishments in your sector?' We asked for a response on a five-point scale, where '1' was very advanced and '5' very old. Since those responding to the survey were expected to give very different answers as a function of their own expectations, the responses have been separated by

industry. The results are roughly similar in the manufacturing sector and in trade/banking/insurance in particular, and in other services, where in 1995, in each case rather more than (extrapolated) 60% of establishments answered '1' or '2'. The figure for non-profit organisations, central, regional and local authorities and social insurance institutions was a good 10 percentage points lower for 1995. An assessment of the trend between 1993 and 1995 reveals a decline in '1' and '2' responses and an increase in '3's.

The pattern is similar for establishments with an upward employment trend. While in 1993, 77% of these judged their technology to be '1' and '2' on the scale, in 1995 only 69% did so. The number of establishments with an upward employment trend giving '3' responses increased during the same period from 21% to 27%. However, more establishments with upward employment trends answered with '1's and '2's: clearly then, establishments expecting employment opportunities to increase tend to say that their technology is relatively modern.

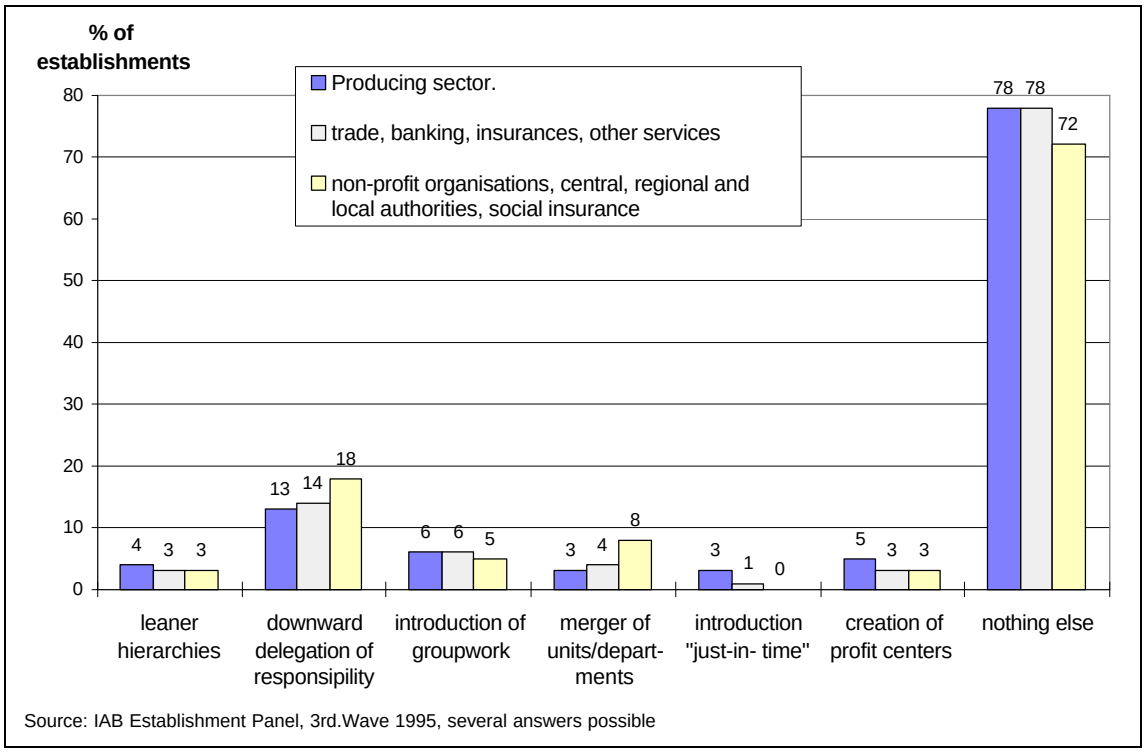
Differences are also evident between the manufacturing sector and the services sector in regard to hirings, layoffs and churning. *Churning* occurs when the same establishment (in the first half-year) both hires and fires personnel, or staff leaves of their own volition. There are more of these establishments in the manufacturing sector than in the service sector. 35% of the establishments in the manufacturing sector said they had hired and laid off employees or staff had given notice. 21% experienced all of these in the same period. In the service sector the corresponding figures were 28% and 17%. In both sectors, the greatest personnel fluctuation occurred in establishments with modern technology (that is, rated as '1', '2' or '3' on the scale).

A relatively high number of establishments whose representatives believed their plant to be very modern stated they had only hirings and no layoffs. In the manufacturing sector more establishments with '1', '2' and '3' ratings reduced rather than hired personnel.

Another question that is related to the use of modern technology is whether establishments have made any organisational change. Nearly 80% of establishments across the manufacturing sector, private services, non-profit organisations and the public service had not undertaken any organisational changes in 1995. Indeed, the majority of all establishments had made no more than one change.

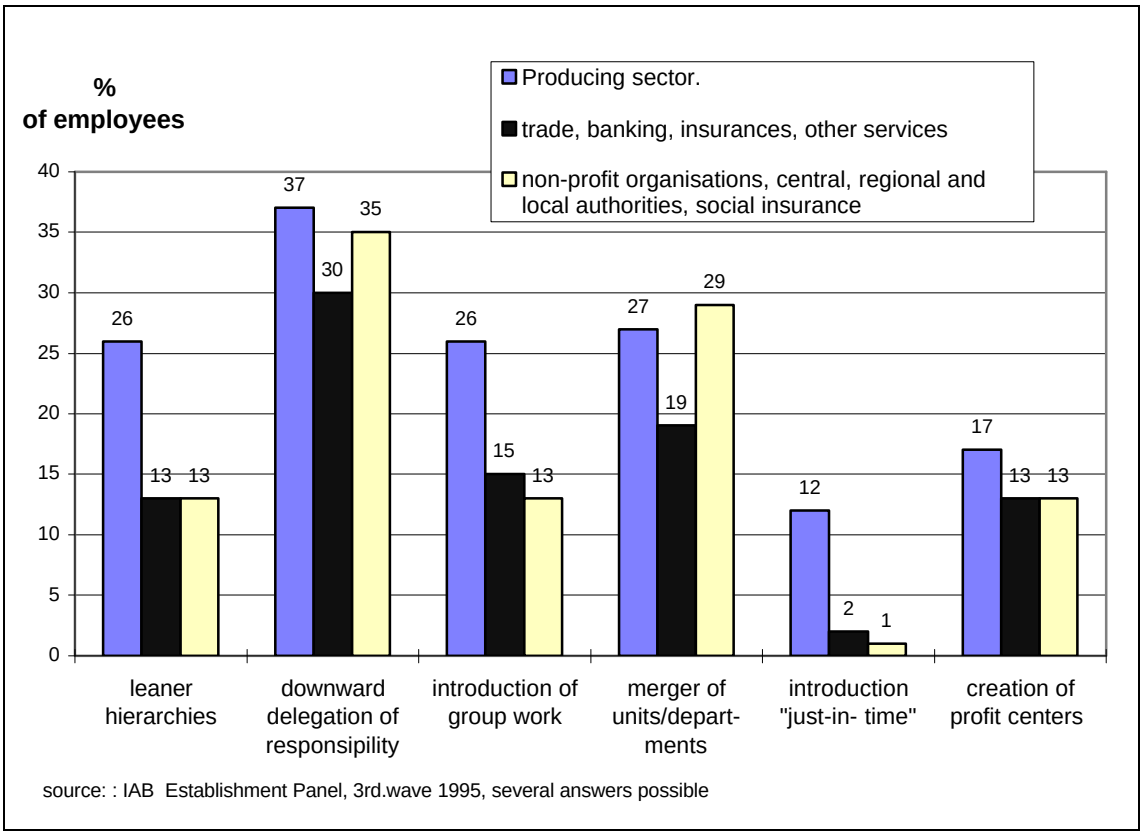
Although only one fifth of all establishments had carried out any organisational changes, it is interesting to see their employment figures, even if the survey did not ask how many were directly affected by these changes. Diagram 1 and 2 shows that these (relatively few) establishments employ a considerable share of the total workforce. Only 4% of the establishments in the manufacturing sector, for instance, said they had seen hierarchies reduced, but 26% of the total workforce in that sector are employed in these establishments. The size of the firm clearly has an affect on organisational changes: SMEs (employing up to 49 employees) that had implemented such changes accounted for just 5-19% of the total SME workforce.

Diagram 1: Percentage of Establishments that Have Implemented Organisational Changes (by Economic Groups), 1995



Source: IAB Establishment Panel, 3rd.Wave 1995, several answers possible

Diagram 2: Percentage of Workforce in Establishments with Organisational Changes of the Total Workforce (by Economic Groups)



source: : IAB Establishment Panel, 3rd.wave 1995, several answers possible

Which of the six organisational changes were made? At the top of the list comes a downward transfer of responsibility and decision-making powers (13% of manufacturing sector establishments and 14% in the service sector), and introducing group work, with 6% in both sectors. The IAB Establishment Panel results for introducing group work are lower than the NIFA Panel results, which recorded forms of group work in 15% of establishments in the capital goods industry and 7% of its workforce (cf. Pekuhl 1995).

However, it must be borne in mind that the data refers to 1993-94. If the number of establishments that said they introduced group work before 1993 is included, the figure rises by 2%, bringing the total establishments with group work to 8%. The number of workers who regard their work situation as co-operative is lower. The IAB Establishment Panel does not give information on this.

Flexible use of technology, of manpower and operating times are now important tools that can be used singly and even more effectively in combination to bring about structural change in the production and employment system. It is not economically or strategically necessary for an establishment in every case and at all times to implement a combination of these three types of flexibility, but such a combination may be the best recipe for future success. According to Bathelt (1995), in order to achieve functional flexibility, an establishment should organise flexible, modern production techniques and services, and invest in innovation to keep renewing them. This means a well-trained workforce with frequent advanced training opportunities, and progressive working time patterns, balancing the employer's interests in longer operating times with the workers' interests in determining their own working times. Purely numerical flexibility brings at best lower labour costs over the short term, but it will increasingly meet with opposition from the workers, the works' councils and the public. Most significantly, it does not eliminate the causes of low competitiveness and poor profits. Although functional flexibility is expensive in the combination described, it does strengthen the company's competitive position and profitability.

The survey looked at how the degree of modernity of the plant was related to organisational changes in the establishment. In the middle of 1995 a good three quarters of all establishments (employing 47% of the workforce) said that they had not undertaken any organisational changes in the last two years. This finding did not change when establishments were classified according to the state of their technology. Only in smaller establishments with up to 49 employees, is it evident that, as the technology becomes older, fewer organisational changes are made, and increasingly larger numbers of the workforce are affected by these. Similarly, in medium-sized establishments with 50 to 499 employees the tendency is to make fewer organisational changes staying with relatively old technology, and affecting fewer employees in these groups of establishments.

A growing number of large establishments are making organisational changes that affect more of their workforce. However, this approximate analysis does not reveal any systematic correlation with the state of their technology. Decision-making is transferred downward, departments are combined and hierarchies reduced more frequently in larger units, either as a single measure of organisational change or in combination, but probably such measures are only loosely connected to the state of technology in the establishment.

Looking at establishments that chose to implement more than one change at once, there were a good 124,000 establishments in 1995, employing more than a sixth of the total workforce (5.1 million), that regarded their technology as very advanced compared with other establishments in their sector (i.e. '1' response) but nevertheless - or perhaps for that very reason - went ahead and made the organisational changes listed.

8. Functional Flexibility and Training

Between 1977 and 1994 there was a general upward trend in the level of skills demanded by establishments of all sizes:

	1977	1994	change
Unskilled workers	41.0%	29.4%	- 11.6 points
Skilled workers	55.5%	63.9%	+ 8.4 points
Highly-skilled, university graduates	3.5%	6.6%	+ 3.1 points

While numerical flexibility results in a highly qualified core group of employees and a group of less qualified, semi-skilled workers with a high employment risk, functional flexibility generally requires higher skill levels and fewer low-skilled workers. If we look at establishments with a growing workforce, we find a significantly higher number of skilled and highly-skilled employees. But it depends on the industry: some industries use traditional, Taylor type strategies, whereas other growing industries prefer to pursue functional strategies, i.e. continuously upgrading the skills of their staff.

Every year, 4% to 5% of the workforce (1.4 million) start an apprenticeship and are trained in-house or at vocational school. 10% of the workforce (3 million) undergo advanced training paid by an establishment. About 80% of the workforce are in establishments that offer apprenticeship training (i.e. 19 million employees) or advanced training (18 million) or both (14 million). But a little less than 870.000 firms, employing 6.3 million, neither conducted apprenticeship training nor advanced training, mainly SMEs.

Even if the establishments that offer training fulfil their promises regarding apprenticeship places, three developments rather suggest that there will be a shortage of traineeships over the next ten years:

- the half million small and medium-sized establishments, including 200,000 craft industries, that provide around 60% of the training are having considerable management problems and difficulties consolidating their position. Easier access to training, e.g. for *Fachhochschule* (specialised colleges of higher education) graduates, a training association and tax breaks could help here.

- The training cut-backs introduced by the large establishments in 1994-95, especially in industry, can be attributed to new management strategies intended to make establishments more 'lean' and get training back onto the factory floor. There is a feeling that in the short term, training does not pay off, given the heavy expenditure on work

shops, trainers and apprentices' remuneration, or a preference to pass the costs off on to the state.

- Service establishments have provided a further 6 million jobs over the last twenty years, but vocational training has not followed this expansion, either in numbers or content. Half of all our youngsters are still training for commercial and technical occupations, although this type of employment can only provide jobs for 40% of the total workforce now and the numbers are falling. New training requirements in the service sector could help here, as could supporting service establishments' training efforts.

Finally, the question of a more even distribution of costs between companies that provide training and those that do not will have to be addressed.

Inadequate initial training cannot be compensated for by more advanced training in the establishment, and wooing suitable skilled workers from other establishments may well prove more expensive, owing to the costs of the search and high wage demands, along with the cost of training on the job and of obtaining the workers' commitment to the firm.

Table 7: Participation in Advanced Training by Skill Class, Jan-June 1993

Qualification	% of workforce	Participants in advanced training as % of total workforce	Participants in advanced training measures	
			All measures	Longer than three days
Unskilled and semi-skilled workers	25.0	2.6	6.3	4.1
Skilled workers	22.0	9.3	20.1	19.2
White collar workers/public servants				
With simple jobs	11.0	6.5	6.8	5.8
with skilled jobs	42.0	16.2	66.8	70.9
Total	100	10	100	100

Source: IAB Establishment Panel, 1st Wave, 1993.

As previously seen, a more highly-skilled workforce has a higher number of people involved in in-house advanced training. Probably the greatest challenge for training in all the industrialised countries is that the demand for unskilled and semi-skilled workers is falling, while the demand for skilled workers is rising. Establishments, however, are doing next to nothing to remedy the situation. Table 7 indicates that participation in training depends on the employee's initial qualification. 43% of those in training are women, which is directly proportional to their number in the workforce.

9. New Establishments, Hive-off and Integration of Units

New businesses have been a big focus of interest for research and in political discussion. There are all sorts of programmes to encourage new businesses and there are currently proposals to extend these further (e.g. by offering tax breaks for venture capital). The interest in new businesses is due mainly to the mostly positive long term effects on employment. Moreover, it is assumed that new businesses frequently have the requisite know-how for innovative products, production techniques and distribution channels etc., and will stimulate innovation in large establishments. There is a high mortality rate of firms in their first few years of operation: a high ratio of new businesses always implies a high ratio of closures. Turbulent market activity of this kind also reflects fierce competition, something which is desirable and means that the establishments that do survive for a longer period will have to be particularly efficient.

Between 1 July, 1982 and 30 June, 1983, about 128,000 establishments were founded, of which the majority were in the service sector. On 30 June, 1983, about 359,000 people were employed in these establishments, giving an average size of 2.8 workers per new establishment. A good third of these, employing approximately 165,000 workers in 1983, were still operation on 30 June 1994, by then employing 330,000 staff. Clearly, the workforce grew considerably on average in the establishments that survived. The average size of establishment doubled over the twelve-year period; the survivors were clearly bigger, even in the year they were established, than the average for the total number of establishments.

The founding of new establishments is also strongly related to the restructuring processes in existing firms, particularly during the period in question. As part of organisational change, companies hived off divisions, and in the employment statistics register these appear by definition as new establishments. The significance and extent of these processes has not yet been evaluated.

With the help of the IAB Establishment Panel it is possible to determine the significance of the hive-off and the integration of formerly independent firms into divisions of existing firms, at least for the years 1994 and 1995, and for establishments that were surveyed in the First Wave (1993). The results are shown in Table 8, classified under industry and services. One sees that both trends are more significant in the service industries. In the production sector one third more establishments were integrated than hived off (in the service sector these were only about 10%). As there were clearly more units -hived off during these two years than integrated, fewer workers were affected, because the average number of employees in hived off enterprises is higher than that in integrated establishments. This applies, although to a lesser extent, to the service sector as well.

Table 8: Organisational Restructuring of Establishments in Western Germany, 1993-1995

	Establishments with restructuring			Effects on employment	
	Number of establishments	% of total no. of establishments	Average number of employees	Workers affected	% of workers employed in previous year
	(1)	*(2)*	*(3)*	*(4)*	*(4/5)*
	absolute	*%*	*absolute*	*absolute*	*%*
	- Manufacturing Sector -				
Hive offs					
- from 1993 to 1994	4,900	1.4	171	80,700	21.5
- from 1994 to 1995	4,300	1.1	135	105,400	16.4
Integrations					
- from 1993 to 1994	6,600	1.9	90	88,900	40.9
- from 1994 to 1995	5,500	1.4	84	41,500	41.4
	- Service Sector -				
Hive offs					
- from 1993 to 1994	14,700	1.8	47	199,400	31.8
- from 1994 to 1995	14,300	1.6	36	103,600	32.3
Integrations					
- from 1993 to 1994	19,300	2.4	38	158,200	48.6
- from 1994 to 1995	12,600	1.4	54	95,200	46.0

Source: IAB Establishment Panel 1994, 1995

10. Prospects

This study is limited to a description of many individual indicators of functional and numerical flexibility for all establishments, and in most cases for the workforce concerned as well. However, there are establishments that are so profitable that they can do without any flexibility at all; there are also establishments for which one or the other form of flexibility suffices, e.g. where the workforce can be mobilised at any time, or labour costs can be cut; there are also establishments implementing several flexibility strategies at once. Product innovations stemming from in-house research require co-ordinated technological innovations, a new work organisation, decoupled operating times and working times and additional staff qualifications. The data collected does permit this kind of specificity; however, there is still insufficient criteria to judge what forms of flexibility and in what combination, extent and distribution must be present for an economic system to be designated as ‘flexible’. For this reason it is not possible to propose any combination of flexibility indicators for establishments to give a general indicator for the economy as a whole.

Germany - often regarded as one of Europe's least flexible labour markets - is in fact much more flexible than the popular image suggests.

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