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## INDUSTRIAL LOCATION DECISIONS IN THE FEDERAL REPUBLIC OF GERMANY

The degree of industrialisation in the Federal Republic — 121 industrial employees per 1000 inhabitants — was much higher in 1976 than in the other EC countries and in the USA. The distribution pattern shows a north-south decline, except for the locations of the iron and steel industry, and a rural-urban decline. Among the Länder of the Federal Republic the figures vary between 66 in Schleswig-Holstein and 154 in Baden-Württemberg, between rural and urban areas of under 50 to over 300, in Wolfsburg, for example (Volkswagen), in Leverkusen (Bayer), in Ludwigshafen (BASF). Two features characterize the development of industrial activity: the great structural changes and increasing spatial differences.

Research into the linkages between decision behaviour and location changes gives an indication to changes in location evaluation. This method is, however, of limited value. Questionnaires cannot lead to sure conclusions about decision motivation, the statistical compilation of site choice, closures, locational changes gives only descriptive hints.

## 1. Questionnaires

Industrial enterprises in the Federal Republic have been asked in several research project about the reasons for a choice and a change of location. Locational preferences vary according to branch of industry, size of enterprise and type of establishment: new foundation, removal of an already existing firm, branch establishment. The variables are not independent of each other since in the locational decision the meaning of internal and external economies of scale become evident.

According to the enquiry the characteristic location in for a **newly built** industrial establishment is a middle-sized town situated near a large town. The characteristic location for an **enterprise which has changed its location** is the periphery of metropolitan areas. This can explained by the fact that the further the distance from the old location in the middle of the congested area is, the more the information flow and size advantages decrease. This distance — in accordance with the attainability of other spatial connections — is some 25-40 km. The areas of industrial inflow, however differentiate more than administrative areas or the other functional areas of goods supply or labour markets. The size of the site, the price and development cost for investment are reckoned as higher than the intensity of spatial relations or size advantages by the firms which have mo-

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ved site. Their decision to remain in the congested area is obviously so much a matter of fact that only characteristics influencing the micro-location are mentioned. Even the realisation that the proximity of suppliers and customers plays only a small part in the choice of location does not contradict the agglomeration theory, if the decision for the macro-location is not taken into consideration. According to the enquiry one can deduce that choices are made between one conglomeration and another, and not between one metropolitan area and a rural area.

Other reasons are more important in the location decision for a branch industry. These establishments are usually so-called »prolongued workshops«, that is small, one-sided firms, dependent both for organisation and for production technology on the mother firm, without development and sales departments. Such production and assembly plants are the first to be closed when demand decreases.

Result of the enquiry show:

- that single characteristics of supply do not influence the microlocation for newly established and moving firms, but the concentrated supply of infrastructure, together with the supply of qualified labour, especially individual and expert knowledge and long experience at the job.

The probability of settlement in a congested area and in a more important central place increases (or settlement in a rural areas decreases)

- a. with the need for **more important services**, since for most of the firms certain supply levels can only be attained in the congested area, for example the traffic supply, although this spatial variable for location decision is becoming less important the more technical and social infrastructure is increased.
  - b. with **capital accumulation**, since the settlement risk increases the higher the investment, yet it decreases with agglomeration advantages.
  - c. with the share of **qualified labour**, as only here expert labour reserves for varying abilities and knowledge are to be found. Preference for living in a large town and higher living demands rise with the social status (educational, health, recreational establishments, etc.)
  - d. with the **amount of international contact**, of foreign visitors and journeys abroad because of the national reachability and a representative address.
- that direct **personal contacts** are probably of no great importance. Reliability and stability of business relations would seem more important than technical and economic relations. Here innovation perception and experience play a part together. **Proximity to services** is less important the more seldom it is made use of and the more specialised the use is. Solutions to research and consultation problems are sought there, where suitable partners are presumed. The probability of settlement in a congested area and an important central place rises (or the settlement in a rural area sinks)
  - a. with the **complexity of the firm's own working patterns and processes**, that is with the combination of advance commitments and sales, and the need of goods, services, knowledge and contacts.
  - b. with the number of **location and investment decisions** of the **people** concerned and the size of the enterprise. Here personal variables can be levelled out and decision processes rationalised more easily.



c. with **dependence on technical progress**, on innovation and cost of research and progress because of the amount of drafts, formation and research considered necessary for sales. There is a transfer of technology between the large, stateowned research establishments and industry.

— that the choice of site (micro-location) is influenced for example by its size, cost, special factors (connection to water ways), living and recreational opportunities (manifold supply, environmental quality, attractiveness of the city).

## 2. Change of location

As official statistics and special associations possess inadequate data, enquiries into location mobility are difficult.

Even if mobility can only approximately be dealt with, one can deduce

- that the number of new foundations and removals of plant and parts of plants is decreasing
- that investment in existing locations, above all substitute, adaption or rationalisation investments are more important for the spatial development than changes in location distribution through closures, foundations, removals or branch establishments.

Tab. I: Employment Changes 1955 — 1975  
Through Industrial Mobility and Closures

Yearly average	Total of industrial employees	Change of employment	Employees of newly founded and reestablished firms	Employees of closed firms (date of closure)	Internal employment changes (recruitment/dismissals)
	I	II	III	IV	V
1955—1957 (1)	7 075 510		+ 52 779	—11 803	
1958—1960	7 508 540	+ 433 030	+ 47 190	—19 400	+ 460 820
1961—1963	8 100 904	+ 592 364	+ 53 460	—23 549	+ 622 275
1964—1965	8 380 779	+ 279 875	+ 47 845	—19 699	+ 308 021
1966—1967	8 113 710	—267 069	+ 30 395	—77 717	—219 747
1968—1969	8 103 710	— 10 000	+ 45 100	—36 841	— 18 259
1970—1971	8 570 687	+ 466 977	+ 38 030	—44 684	+ 460 323
1972—1973	8 354 337	—216 350	+ 23 285	—57 723	—181 627
1974—1975	7 879 709	—474 628	+ 13 984	—88 203	—400 409

(1) up till. 1958 without Saarland, until 1962 without Berlin (West)

Source: Bundesministerium für Arbeit und Sozialordnung, Statistische Bundesamt



The distribution picture of the newly-built and shifted establishment shows in the effects of changing trade cycles:

- in phases of upswing and boom an expansion into the surroundings of the centres and into the rural area (1961-1965, 1968-1972)
- in phases of decline and recession a contraction into the core areas (1966-1967, 1973-1976)

a concentration in metropolitan areas, although these, too, have lost many places to fork in industry, in Hamburg, for example, 85000 between 1964 and 1976. There is a strong connection between supply and production activities as the economic foundation of large towns: Frankfurt, Düsseldorf, Stuttgart have not only most working places in good supply and services, but also in the production of goods. Essen and Dortmund, on the other hand have few working places both in the supply of goods and other services, and also in the production of goods. Among other things location distribution of the main administrations of large supply and production establishments, for example the iron and steel concerns in Düsseldorf (Mannesmann, Thyssen, etc.), the large banks in Frankfurt and branches of most of the foreign banks, the electro and electronic concerns in Stuttgart (Bosch, IBM, Sel, etc.) support the assertion that the concentration of activities and opportunities and density of information influence the locational attraction of the metropolitan areas to a large extent.

### 3. Industrial Promotion

Regional economic policy has been unable to realise its aims of removing differences and creating jobs. As part of the joint federal and regional programme to improve the regional economic structure, the setting up of small and medium sized industrial establishments is subsidized. Subvention in rural and structurally weaker areas is generally more difficult as a result of the decreasing mobility of private investment. The total increase in jobs in industry has become smaller. If one takes into consideration jobs which have been lost by the closing down of establishments, regional economic policy will be reduced to a nonentity with strong preferences for attractive metropolitan areas. The dependence of the rural area on the congested areas strengthens the unintended demand of unskilled labour and comparatively badly equipped firms and jobs mainly for female workers. In the metropolitan areas, on the other hand, most of the suppliers, customers, administrative and developments departments of the firms are to be found. The foundation of research and development capacities in rural areas has scarcely been promoted directly. A common deglomeration policy in the metropolitan areas is hardly realisable politically.

There is only a weak connection between promotion and investment in spite of the large amount of public aid received. Most research comes to the conclusion that the influence of subsidies on local decisions is small. Even the employment policy of public spending programmes hardly touches on the peripheral rural areas.

Regional political and planning conclusions have to take into consideration the great changes in the world-wide economic conditions, for example, the changes in the international division of labour.

- a. The real share of industry in the GNP of the Federal Republic is — as in other highly development countries — no longer increasing.



The number of jobs in industry is decreasing in favour of jobs in the tertiary sector:

	1960	1977	(1990)
Sectors	in percentage		
Primary	16	8	4
Secondary	46	43	42
Tertiary	38	45	54
	<hr/> 100	<hr/> 100	<hr/> 100

The relations change within the industrial activities. There are at the same time long-term expanding and increasing activities. These enterprises have favourable development chances whose production activities have a great investment in research and development and a great demand on labour: for example producers of high-value and investment good and suppliers of technical know how. Examples for this are: steel and machinery construction, electrical industry (amusement electronics, electro-medical machines, data processing), regulation and measuring technology, chemical industry (pharmaceuticals).

- b. The economic international conditions have changed because of the revaluation of the mark, higher cost of raw material and greater competition of the raw-material countries to acquire manufacturing locations. The number of jobs is decreasing in relatively simple activities not far removed from the raw material, with great pressure through imports and substitution (for example in the production of iron, steel, paper and cardboard, and in the textile, clothing and leather industry). The Federal Republic is losing competition advantages in standardized and labour-intensive, that is wage-sensitive, products of large industrial series with mature technology. The Federal Republic has, therefore, good chances only if she concentrates further on technologically intensive productions with high demands on the qualification of labour, the standard of infrastructure and the innovation potential.
- c. Rising environmental costs with increasing emission in densely populated and highly industrialized areas.

In order to achieve the regional development aims the following factors must be taken into consideration:

- the rising international competitive pressure in industry,
- the minimum level of the supply patterns,
- the rising demands on basic communal provisions,
- the more conscious perception and estimation of the environment, in particular the residential environment.

A concentrated expansion of infrastructure and a wide economic promotion in rural areas must be limited to medium-size and large-size central places, connected with a network of roads and means of communication. As research into changes of location has shown, site advantages, economic and social chances through a wide activity potential are in general prerequisites for an employer's location decision. In the economic and social system of the Federal Republic the



employer himself has to decide whether he makes use of these possibilities. The state contributes in deciding basically on the general pattern of land use, infrastructure investment, renewal of residential areas, and further means of improving the urban environment.

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