# The Pattern of Changes in the Long-Term Development of Establishment Size

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ABSTRACT. Hypotheses and analyses dealing with the expansion of small businesses are usually carried out over relatively short periods of time. The patterns drawn from these examinations, e.g., on the question of specific differences in the growth of size, are usually influenced by configurations of the overall economy and limit the realization of regular processes to the phases they are based upon. A second disadvantage lies in most cases in the fact that data sources are used for the empirical analyses that do not cover the economic system as a whole nor for all sizes of establishments. This study attempts to present the development of the sizes of establishments in Germany over a period of more than one hundred years (1882 to 1987) and thus avoids the narrow perspective of previous examinations. It becomes evident that this development does not take a continuous course; instead, it follows a wave pattern. Since this discontinuous development pattern is common to almost all sectors, it appears to be a general phenomenon. This study reveals that the small establishments with more than five employees, contrary to most theoretical assumptions, are of utmost importance even when considered over a long period of time. The growth of small establishments in recent years, observable in all sectors, may not be a unique phenomenon; however, in view of an overall growth of employment and the simultaneous shrinking of large establishments, it occurs under a new constellation.

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## 1. Introduction

The decline of small and medium-sized units that could be observed in the post-war period and continued up to the mid-1970s went hand in hand with the then prevailing doctrine that large organizations are necessarily superior to small ones (see Bartel, 1990, p. 157).[1] Referring to the standard political economists it was assumed "that small enterprises are rather at a disadvantage in practically all areas as compared to large organizations" (see Fritsch, 1987, p. 178). By the late 1970s the number of large firms had begun to shrink, a process accompanied by a simultaneous growth in small units. This phenomenon was subsequently described as a "trend reversal" (Berger, 1990, p. 11) and even led to the assumption of a crisis of mass production (Piore and Sabel, 1984). Since then research has frequently spoken of a renaissance of small and medium-sized establishments (Berger, 1990) or of "The Re-emergence of Small Scale Production" (Acs and Audretsch, 1990 and 1993; Loveman and Sengenberger, 1991).

The empirical "trend reversal" triggered off a revision of theory. This debate centres in particular around explanations that put the growth of small and medium-sized establishments down to fundamental changes of technological conditions or of the structures of consumption and demand in modern society. This approach often does not take into consideration that small establishments and the people employed there constituted the largest share of all establishments and employees the whole time.

This is the result of the fact that in most cases these analyses neglect the historical context. They resort to data sources that do not cover all sizes of

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establishments or the economic system as a whole. This makes it impossible to observe long-term developments and significant changes occurring between establishment size categories or differences between the individual sectors.

It is the aim of this study to avoid such deficiencies; it therefore retraces the importance of small units over a period of more than one hundred years. In order to avoid misinterpretations of short-term trends and to correctly categorize them historically, analyses of longer periods must be carried out. They constitute the large framework for an analysis of individual developments. This approach is designed to illustrate that the frequently supported thesis of a "renaissance" of small establishments is at least questionable in the light of an observation that covers a longer historical period.

Contrary to most studies, this one uses complete censuses that cover the economic system as a whole and thus illustrate how the number and the shares of small establishments, as compared to all establishments, have developed. Thus it will show whether and to what extent smaller units have grown in recent years, and whether an exceptional growth of small establishments could be observed in the past as well. If this is the case, the question arises whether uniform explanations can be found for this phenomenon.

The observation of merely a few or of selected sectors constitutes another deficiency of many studies. Therefore this contribution analyses, as a further step, whether the growth of these sizes of establishments is typical of particular sectors or whether it rather is a general phenomenon, i.e., one that can be observed in all economic sectors.

## 2. Data

Our database is supplied by the German workplace censuses. These are complete censuses which have been carried out in Germany since 1875. Each non-agricultural establishment[2] as well as each individual person — whether fully employed or in sideline employment — has been covered without exception. No other census is similarly comprehensive, and as early as 1892 Gustav Schmoller quite rightly described these censuses as "the best statistical material in this field at the disposal of any country" (1966, p. 318). All the other statistics[3] are restricted to samples of the structures of workplaces and employees. It is exactly this completeness which enables us to analyse the development of employment as well as the structural changes in the size of establishments with an unparalleled economic differentiation, without excluding certain size categories or sectors. The workplace censuses receive their data directly from the smallest economic units, the "workplaces" which are referred to as local units.[4]

In order to make a reanalysis of these statistics possible, a considerable amount of methodical and conceptional preparatory work had to be done. On the one hand, terminological and definitional problems had to be solved. On the other hand, the comparability of the different systematics of the individual economic sectors — subject to drastic changes in the course of the 120-year-old history of workplace censuses as a result of economic and technological developments — had to be achieved. This was the only way to formulate statements valid for the total period covered by the censuses.

The problem of comparability, resulting from territorial changes in Germany, could not be completely eliminated. However, this restriction only effects comparisons of pre-World-War-II censuses with post-war censuses. The destruction, dismantling, reconstruction and the new establishment of hitherto lacking or insufficiently represented industries on the territory of the Federal Republic of Germany and the influx of some millions of refugees brought about a change of the economic structure over the course of time. However, the two economic territories did not differ to such an extent after the Second World War that a comparison of the 1933 censuses with the 1950 censuses would be precluded. This argument holds all the more as this study only represents an aggregated data analysis at the level of sectors and size categories. In addition, it is solely relative changes in shares that are interpreted for the whole period of observation; absolute figures are used only where more recent censuses are available.

The work carried out within the framework of a research project (VASMA = Vergleichende Analysen der Sozialstruktur mit Massendaten),[5] aimed at achieving a comparability of individual censuses over the course of time, is well documented. This study therefore refrains from a detailed account.[6]

## 3. Long-term stability of the sector of small and medium-sized establishments

Table I shows the size structure of the establishments. It becomes evident that in terms of the total economy the number of units has fluctuated only slightly over the past 110 years. In 1882 about 3 million establishments were counted. The observable peak was reached in 1933 with 3.5 million units. Between 1950 and 1970 the number of establishments approached 2.1 million although the German territory was only slightly more than half its pre-war size. By 1987 this figure had increased by just under 250,000.[7]

The number of registered employees grew dramatically from the very beginning. It stood at 7.3 million in 1882 and reached its first peak in 1925 with just under 19 million employees. Between 1950 and 1987 this number almost doubled, reaching 27 million employees. These figures suggest that the sizes of the establishments must have changed significantly during the course of time.

### 3.1. *Development of establishments*

Table I shows that small establishments have at all times formed the backbone of the German economy. Even as late as 1987 98% of all units employ less than 50 persons! The share of large establishments (more than 1000 employees) can only just be stated statistically (0.1%). The development of the size structure is characterized by two contrary wave movements. The share of one-man and very small establishments (1—4 employees) decreased dramatically until 1925, grew again during the Great Depression of 1933 and became continually smaller after that. All the other size categories reached their first respective peak in 1925. After decreasing in 1933, the number of small establishments (5—49 employees) has risen continually since 1950 on a significantly higher level. The medium-sized and larger units reached a second peak in 1970, but have slightly declined in number since.

In the producing sector these processes are more marked, because the tertiary sector took a slightly different development. Thus, when taking an overall view of the situation, the wave pattern presents itself blurred. In the service sector it is again the one-man and very small units which reach their first low in 1925, so that all other size categories reach their respective peak. However, after the decrease during the Depression of 1933, all size categories (medium-sized and large businesses included) grew, whereas the one-man and very small establishments decreased in number. Nevertheless the latter still accounted for more than 70% of all establishments in the service sector.

### 3.2. *Development of employment*

Figures 1 to 3 show the impact of these changes on the social aggregation of the employees. In terms of the total economy (Figure 1) the dramatic reduction of one-man and very small establish-

TABLE I
Establishment shares by size, 1882—1987; Total economy of Germany*

| Size (*employees*)\Year | 1882 | 1895 | 1907 | 1925 | 1933 | 1950 | 1970 | 1987 |
|---|---|---|---|---|---|---|---|---|
| 1—4 | 96,8 | 93,3 | 91,2 | 89,1 | 91,9 | 81,3 | 71,9 | 67,7 |
| 5—9 | 1,4 | 3,6 | 4,3 | 5,4 | 4,4 | 11,1 | 15,6 | 18,9 |
| 10—49 | 1,5 | 2,5 | 3,5 | 4,2 | 2,8 | 6,2 | 10,0 | 11,2 |
| 50—199 | 0,3 | 0,5 | 0,8 | 1,0 | 0,6 | 1,1 | 2,0 | 1,7 |
| 200—999 | 0,1 | 0,1 | 0,2 | 0,2 | 0,2 | 0,2 | 0,5 | 0,4 |
| >1000 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,1 | 0,1 |
| Total (*per 1000*) 100% | 3.006 | 3.145 | 3.448 | 3.485 | 3.539 | 2.191 | 2.136 | 2.392 |

* Only establishments with gainful intent (see note 7); 1950—1987 F.R.G.

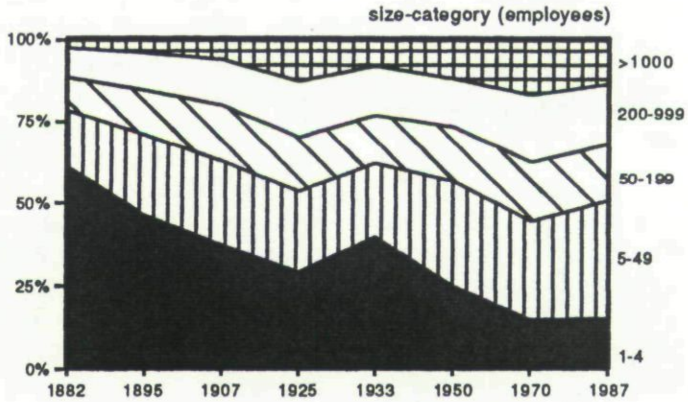


Fig. 1. Development of employment shares (total economy).

ments is particularly remarkable. While in 1882 almost two thirds of all the persons registered in the workplace censuses earned their living in one-man or very small units, they accounted for less than 40% by 1907 and for merely 12.8% by 1987.

At least up to 1925 the largest increase of employees was to be found in establishments with a workforce of more than 1000. By 1987, however, the share of employees of large enterprises had once more gone back to the level of 1925. The share of employees in establishments with a workforce of 50—199 and 200—1000 was only marginally higher than in 1925. The largest increase was to be found in units with 5—49 employees!

This means that the development of the sector of smaller establishments is of particular significance. The shrinking of one-man and very small establishments and the simultaneous expansion of the employment system as a whole did not only benefit large establishments; also small and medium-sized units profited proportionally. This observation shows that:

a) contrary to assumptions made by standard political economists a general decrease of small establishments cannot be observed, and that
b) even in view of the more recent debate, at least with regard to an extended observation period, the argument that a "renaissance" of small establishments occurred in Germany is valid only to a very limited degree. Even the small establishments, doomed to failure again and again in the opinion of many standard economists, have increased their employment shares almost continually over the past 100 years; the most significant increase, however, could be observed in recent years: the size category of establishments with 5—49 persons employed 17% of the total workforce in 1882, in 1925 it was 24%, in 1950: 32%, and in 1987: 36%.

## 4. The wave pattern of development and long-term growth from "bottom to top"

Why then is the notion of a long-term decrease of small establishment and of a new renaissance of these units still widespread? And how can the more recent development of establishment size be interpreted with reference to a historical retrospective?

A comparison of the complete censuses of 1970 and 1987 shows more clearly than all other data sources, even in absolute figures, that there is a clearly divided development between small-scale and larg-scale establishments. While the number of workplaces in establishments with less than 50 employees increased by 1.77 million, the higher size categories decreased by 970,000 (see Leicht and Stockmann, 1993, for details). Due to basically similar observations, the more recent development of small and medium-sized establishments is commonly described as a "V"-pattern:

> There is evidence of a "V"-pattern of declining small unit employment shares beginning at least as early as the late 1950s and continuing until the late 1960s — early 1970s, followed by a reversal to rising employment shares

> running to the late 1970s/early 1980s. (Sengenberger and Loveman, 1987, p. 9).

The "V"-pattern is, however, merely the result of the limited period of observation. The analysis of a longer historical period reveals that the development of small and medium-sized establishments rather follows a wave-pattern with a nevertheless great stability of employment shares. The recognition of changes in patterns and trends does not only depend on the historical period chosen but also on the size group selected. A study by Loveman and Sengenberger (1991) again provides a good example. The authors come to the following conclusion when interpreting time series data reaching back to 1882:

> Early time series data for Germany and the United States show a long and steady decline in small establishment employment shares into the late 1960s — early 1970s, with a significant blip during the Great Depression. (Loveman and Sengenberger, 1991, p. 11)

This result, however, largely depends on the selection of data. If we look at establishments with a workforce of less than 50 or less than 200 people, then the above result is corroborated by the data. A closer look, however, shows that we are confronted with a statistical artefact. In the past 100 years only the number of very small establishments (1—5 workers) decreased dramatically, the small and medium-sized ones remained largely stable. The "blip" of 1933 is by no means a signal for the growth of the small establishments. In the wake of the depression between 1925 and 1933 the number of small establishments even proportionally decreases. Thus the increase in the number of small establishments between 1925 and 1933 maintained by Loveman and Sengenberger is merely the result of an increase in the share of small establishments with less than 5 persons (by 10%-points).

For the more recent development in the post-war period such an aggregation is not very useful either. Even if we look at the fairly short period from 1950 to 1970, the share of employees in units with 5 to 49 employees decreased by merely 2%-points and had increased by 6%-points by 1987. The loss of significance regarding the total of employees of small establishments was chiefly a result of a decline in the number of very small establishments with less than 5 persons. If we look at the total of establishments, the number of small units belonging to higher size categories even increased in the first two post-war decades (see table I).

This historical retrospective supports Audretsch's claim that firms will grow into viably-sized enterprises if they learn successfully and adjust to their environment. If this is not the case, they will drop out of the market sooner or later (Audretsch, 1992, pp. 12—13). The aggregate data provided indicate at least that in the course of the past 100 years an ever decreasing number of very small establishments with less than 5 employees could be found on the market, whereas the number of larger small establishments increased proportionally.[8] This does not change the fact that even in more recent times a "Gründer-boom" could be noticed (Bögenhold, 1987). However, due to strong fluctuations on the market it resulted in a negligible surplus as regards very small establishments.

The pattern of changes found are, of course, also influenced by the kind of data source used[9] and the selection of economic sectors.[10]

The observed wave pattern of growth (W-pattern) as well as the declining significance of very small establishments with less than 5 employees is, once more, most evident in the producing sector (Figure 2). There is a constant increase in the number of the employment size categories of more than 50 persons between 1882 and 1925 and a decline up to the year 1987, whereas the employment categories of 5—49 persons remained remarkably stable in comparison, despite a slight decline of their share. The most marked difference, however, lies in the fact that the employment shares of this category distinctly increased between 1970 and 1987, whereas the number of large establishments was shrinking.

In the service sector (Figure 3) the size categories of over 10 employees follow the same pattern found for the producing sector, i.e., their shares increased up to 1925 and fell thereafter. The main difference lies in the fact that their shares grew continually from 1950 to 1987, i.e., the trend towards larger establishment units was not interrupted in the post-war era as was the case in the producing sector. With an overall growth of the service sector, which traditionally consisted of

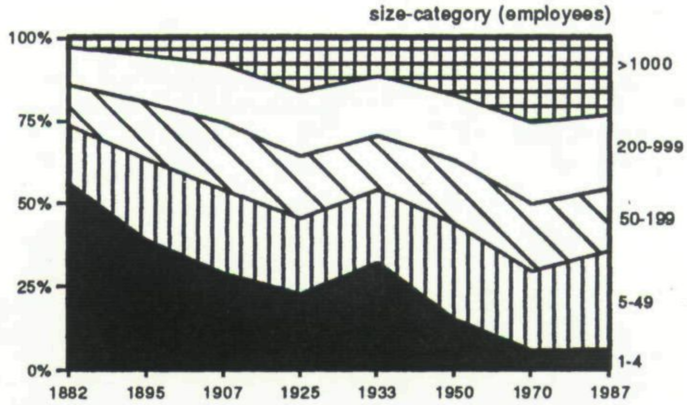


Fig. 2. Development of employment shares (producing sector).

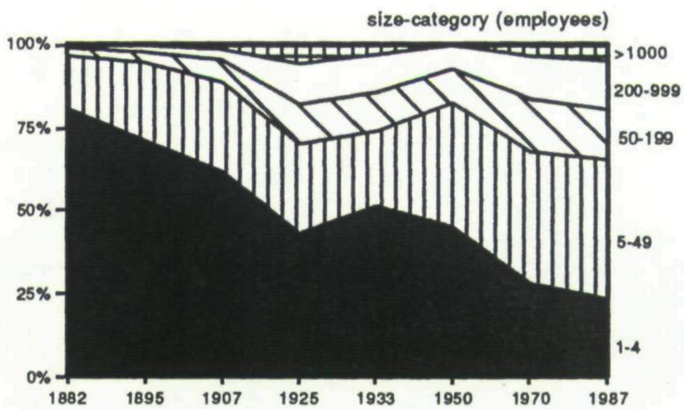


Fig. 3. Development of employment shares (service sector).

small establishments, the share of small establishments in the service sector decreased proportionally in the long term. However, this seeming decline merely conceals a drastic increase in the absolute number of establishments with 5 to 49 employees since 1950. This growth had a corresponding effect on the overall economic development.

These findings suggest that in the course of the past 100 years, with a relatively stable number of establishments and an enormous aggregation of employees in these establishments, a lasting — even if discontinuous — growth of size "bottom to top" took place, affecting the structure of shares in favour of small establishments of a certain size. This "bottom to top" growth is in line with Sombart's impression (1927, p. 837). Even back then he put the trend towards larger units down to an increase in production, i.e., an absorption of small establishments is out of the question.

Even though, in addition, an exceptional growth of smaller units could be noticed after 1925 as well as after 1970, there might have been different reasons for this phenomenon. While the more recent growth is primarily ascribed to the incursion of microelectronics and its flexible use in small establishments (see Piore and Sabel, 1984; Acs and Audretsch, 1990), in the past 100 years no parallels have been found between a broad prosperity of small establishments and simultaneously occurring drastic changes in technological conditions. Epoch-making inventions that were also relevant for the development of establishment sizes cannot be made responsible for the increase in the number of small establishments between 1925 and 1933. In the Weimar Republic changes in the structure of establishment size or rationalization processes were not a result of fundamental technological changes; they were rather caused by a concentration of capital, the specialization and reorganization of production facilitated by it, and a higher efficiency of work (see Bönig, 1980, p. 409). The short-term growth of very small establishments with up to 4 employees occurred during the depression. On the one hand, it is the result of a shrinking process, which, on balance, could be felt particularly in the area of large establishments. On the other hand, the absolute increase in the number of very small establishments illustrates that an escape into self-employment had taken place (see Stockmann, 1987).

A more precise comparison of the two periods of radical changes in the structure of establishment sizes — 1925/33 and 1970/87 — shows the peculiarities of the development after 1970. Whereas the first phase of extraordinary growth of small businesses was characterized by a general and drastic decrease of the workforce (accompanied by high unemployment), there has been an overall increase in the number of employees since the 1970s. Furthermore, only the very small establishments profited from the structural changes of the first phase. In contrast, the units with a workforce from 5—49 profited from the more recent change of 1970/1987 (as well as in number of establishments and in employees). This second growth is therefore less due (at least from an overall economic point of view) to the general shrinking process from "top to bottom", but rather to the stability and strength of small establishments.

Yet the overall growth of employment in more recent years has its origins not only in the techno-

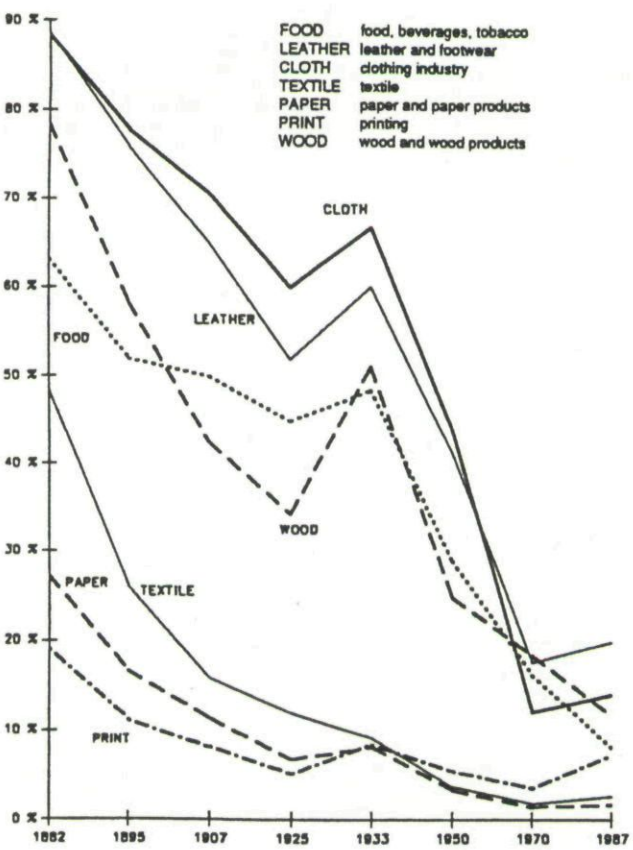


Fig. 4. Development of employment shares; *size 1—4* (consumer goods industry).

logical innovation processes taking place in small establishments in the producing sector, a fact that a large number of analyses fail to recognize due to their exclusion of the service sector. The major part of absolute increases in the number of small establishments has been achieved in the service sector in recent times, a sector that more or less stagnated between 1925 and 1933. The growth of the small units between 1970 and 1987, however, does not exclusively depend on the enormous movement of the workforce towards the tertiary sector, because small establishments in the producing sector grew as well.[11]

## 5. Sector analysis

So far the description of the development of establishment size was based on relatively rough data. We shall now take a closer look at the various sectors in order to answer the question whether our findings constitute a general pattern or whether there are differences between the various industries. We shall restrict our examination to lower size categories, i.e., the one-man and very small units (1—4 employees) and the small units (5—49 employees).

Figures 4 to 6 illustrate the dramatic decline of the one-man and very small establishments in all sectors without exception since the first census in 1882. From 1882 to 1925 the one-man and very small units decreased drastically. During the Depression of 1933 they experienced a renaissance, only to suffer another decline thereafter. Between 1970 and 1987 this size category stabilized itself on a distinctly lower level. Even the tendency towards a slight growth in many sectors can be observed.

The development of the employment shares of

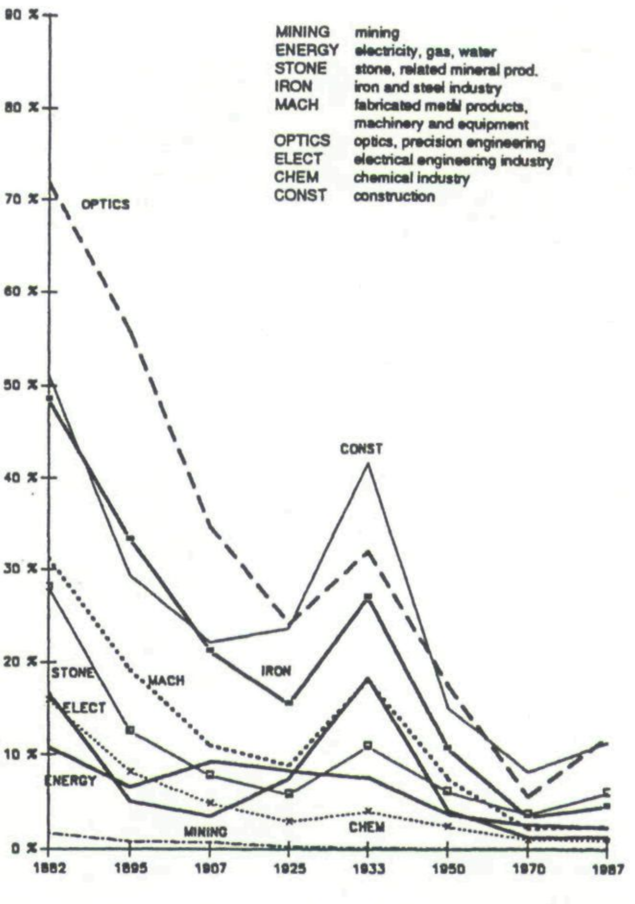


Fig. 5. Development of employment shares; *size 1—4* (basic, producer and capital goods industry).

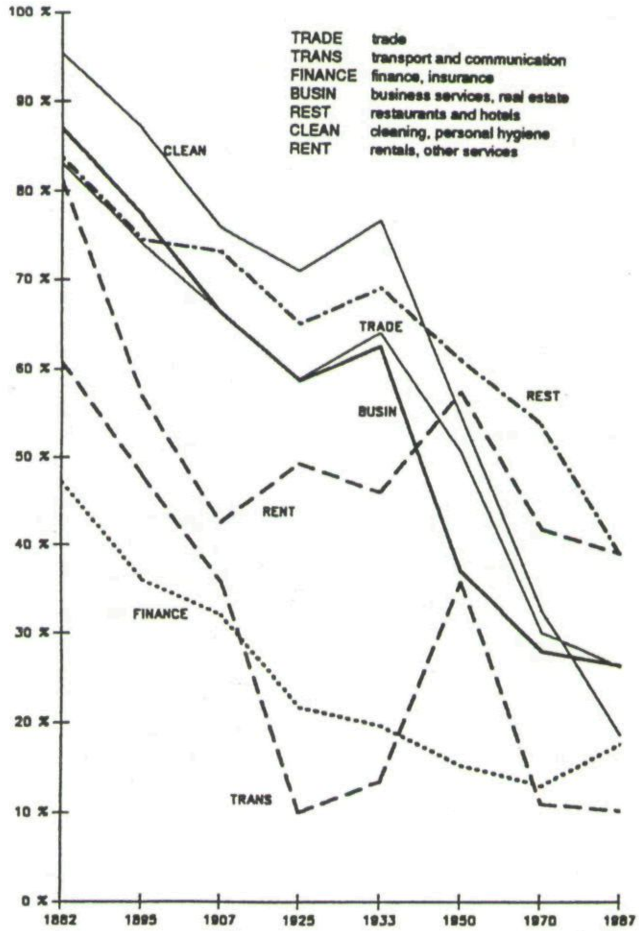


Fig. 6. Development of employment shares; *size 1—4* (service sector).

workplaces with 5 to 49 persons (small establishments) shows a contrary wave pattern. The consumer goods sectors differ from the basic goods, producer goods and capital goods sectors (see Figures 7 and 8). Whereas the shares of small units in the consumer goods sector increased sharply until 1925 (with the exception of printing and paper), they decreased in the other sectors of the secondary sector (e.g., chemical industries, electrical industries, energy and water) or stagnated (iron, machinery, precision engineering and optics). The decrease or stagnation of the small unit shares up to the year 1933 is common to almost all sectors, and so is the subsequent sharp rise until 1950 (above all in the consumer goods sector). Thereafter almost all branches of the producing sector show a proportional decrease in the size categories of 5—49 employees until 1970, only to sharply increase from then on.[12]

The development of the service sector (see Figure 9) also follows a wave pattern, but its amplitudes are different. As in the consumer goods sector, the share of small units grew until 1925 and decreased until 1933. However, the sharp rise in the share of small units, which witnessed a drop in nearly all branches of the producing sector up to 1970, which was then followed by another increase, continues in the tertiary sector until 1970 and decreases to some extent up to 1987 drastically (except for restaurants and hotels, trades, where the share of small establishments grew uninterruptedly).

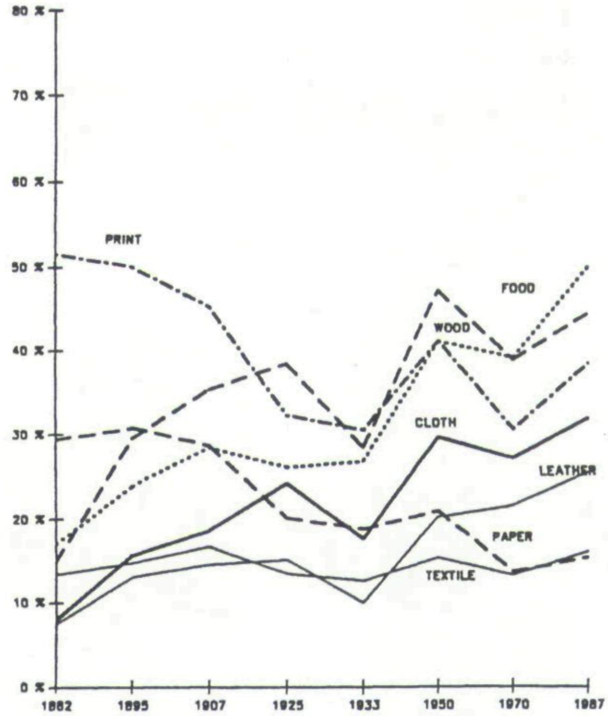


Fig. 7. Development of employment shares; *size 5—49* (consumer goods industry).

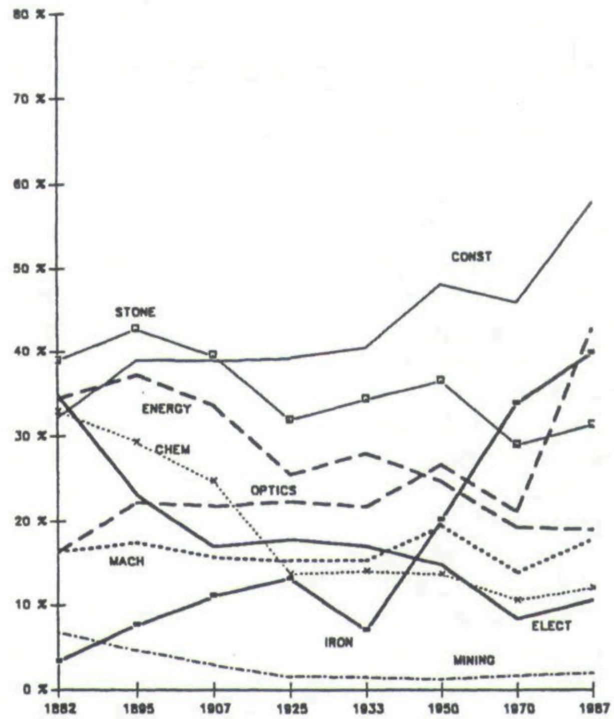


Fig. 8. Development of employment shares; *size 5—49* (basic, producer and capital goods industry).

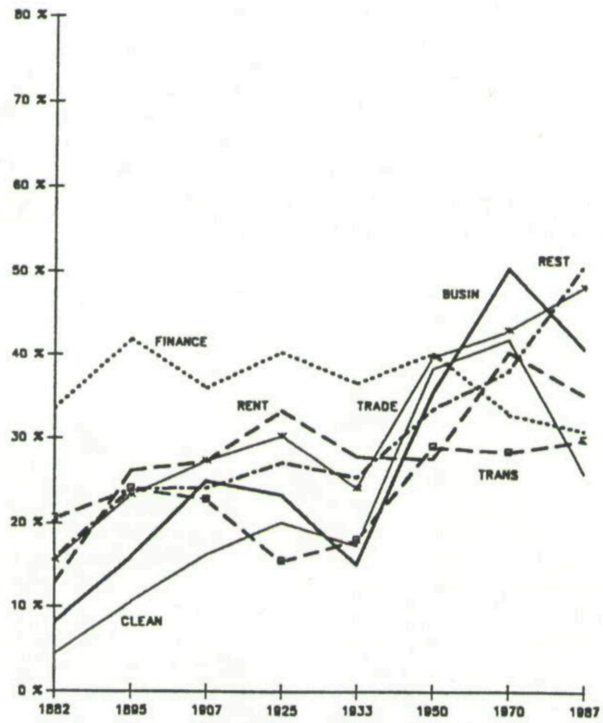


Fig. 9. Development of employment shares; *size 5—49* (service sector).

## 6. Conclusion

We can conclude that the renaissance of small establishments, which has been frequently observed since the late 1970s, and the "V"-pattern showing in the development of establishment sizes are merely the result of the chosen period of time and the selected size categories. A more extended historical analysis shows that the development of all establishment sizes follows a wave pattern. In this discontinuous process small business, contrary to all "standard" assumptions, did not continually, and not in all size categories, experience a loss of significance. Accompanied by a long-term growth of the workforce as a whole, it was only the one-man and the very small establishments with less than 5 employees that lost their relative significance, while the growth from "bottom to top" resulted in the long-lasting stability and strength of small units with 5 to 49 employees. If we look at the total period of 100 years and at the phases of economic expansion, their employment share has increased even more than has the share of large establishments. This suggests that the strength and the continuous presence of small establishments on the market must also be seen in the context of a viable establishment size, which is obviously larger than that of 5 employees.

This development of establishment sizes follows a contrary wave pattern with different amplitudes, which indicate significant changes in favour of small establishments between 1925—1933 and 1970—1987, respectively. A comparison of the two periods of radical change clearly shows that the more recent — and exceptional — growth occurred under different overall economic conditions and in other size categories. The small establishments have recently not merely benefited from the overall economic shrinking process characterized by crises; they rather determine the entire growth process of establishments and employees. This means that the total absolute growth between 1970 and 1987 is exclusively observable in the lower size categories. Thus the more recent period of change — seen against the background of a period of 100 years — is of particular historical significance. The relevance of this phenomenon is emphasized even more by the fact that the absolute prosperity of small establishments can be observed in the secondary as well as in the tertiary sector. And since, in addition, the relative growth of small establishments is not sector-specific, but a general phenomenon, we can assume that the inherent advantages of smaller units appear to win through at all levels and in all areas.

## Notes

[1] See e.g., Lilienthal (1952), Villard (1958), Bombach (1969), Galbraith (1956, 1957, 1973).

[2] In the majority of cases workplaces or "establishments" and "enterprises" are identical, i.e., the enterprise consists of a single establishment (see Federal Statistical Office, 1989, Fachserie 2, Issue 1, p. 11). See also Leicht and Stockmann (1991) on the question of comparability of the structural changes in size between establishments and enterprises.

[3] See Leicht and Stockmann (1991) for advantages and disadvantages of other statistical material on employees and enterprises.

[4] The long periods between the individual censuses are of disadvantage. A period of 17 years lay between the last two censuses. However, these long periods of observation allow to show structural changes of patterns particularly well — independent of short-term economic fluctuations. A disadvantage lies in the fact that it is only possible to compare cross sections.

[5] = Comparative Analyses of the Social Structure and Mass Data.

[6] See Stockmann and Willms-Herget (1985).

[7] All figures without central and local authorities, state social insurance carrier and organizations with no gainful intent.

[8] For the present this argument holds, no matter whether this relative growth observed on balance is the result of a large number of small establishments moving up out of the lower size categories, or the result of a shrinking process in higher size categories.

[9] If we use the set of industrial statistics, which does not include establishments with less than 20 employees, we would, for example, not be able to observe significant changes in the development of the structure of establishment size. Like, for example, the sharp decrease of very small establishments (1—4 people) until 1970, but also the stagnation of this size group and the steep increase in the share of small establishments (5—49 people) after 1970. Consequently the "V"-pattern for the post-war period, retraced by using data from industrial statistics, presents itself much flatter than would have been the case had workplace data been used. (See for details Leicht and Stockmann, 1991).

[10] See Leicht and Stockmann (1991).

[11] In the service sector the small establishments (<50 employees), with 1.77 million workplaces, expanded by exactly the amount this size category expanded on balance regarding the total economy. In the producing sector small establishments with 5—20 persons experienced an increase of 240,000 employees; however, the remaining size categories of small establishments suffered a decrease amounting to the same number (see Leicht and Stockmann, 1993, p. 225n).

[12] This relative growth since 1970 occurs against the background of a general shrinking process affecting the majority of sectors. However, it is remarkable that the uniform growth of the small establishments in some sectors (e.g., optics and precision engineering, office machines, construction) was not only relative but also absolute.

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