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Research Memorandum GD-94b

Rainer Fremdling

Groningen Growth and Development Centre
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German Industrial Employment 1925, 1933, 1936 and 1939: A New Benchmark for 1936 and a Note on Hoffmann's Tales

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Abstract:

The industrial census of 1936 did not include all industrial firms; for certain industrial groups data of small firms were not recorded. This article describes the estimation of employment (4 million) which has to be added to the recorded number of 8 million employees. The estimated figure is confronted with the figures of the workplace censuses of 1925, 1933 and 1939 on the one hand and with the compilation by Hoffmann on the other hand. Whereas the estimate is in line with the workplace censuses it deviates significantly from Hoffmann´s numbers. Scrutinising them reveals serious distortions in their level, trend and yearly fluctuations. By implication, this objection does not only hold for the employment figures but for time series on production and levels of labour productivity as well. Consequently, one should keep away from Hoffmann´s figures when discussing any aspect of economic failure of the Weimar Republic or economic recovery after Hitler came to power.

Introduction

This article deals with a component part of a research project (carried out together with Reiner Stäglin) to construct an input-output table for Germany in 1936. The unpublished records of the industrial census of 1936 are the most important source for this endeavour.[2] Unfortunately that census did not include all industrial firms; for certain industrial groups data of small firms were not recorded.[3] In the published version of the census, this omission was justified by claiming "… that the small companies, although large in number, did not comprise a large part of production."[4] For our purpose, however, i.e. for estimating the input-output flows and furthermore for measuring gross domestic product (GDP) we needed a full coverage of the industrial sector in 1936. Our estimates revealed that the *Reichsamt für Wehrwirtschaftliche Planung*, which was responsible for the publication of the census results, rather belittled the scope of underreporting. According to our estimates, the reported aggregate census values have to be augmented by the following percentages: Employment by 50%; wages by 16%; gross value added by 25% and gross production by 20%. As expected, small firms generated a low value added and paid their workers a low wage. In addition, however, these figures reflect the fact that mainly industrial branches with low wages and moderate labour productivity were covered incompletely by the census.

This article describes the first crucial step of the procedure namely estimating the missing number of people employed in 1936. The estimation of the inflated values of our input-output table for Germany in 1936, i.e. gross production, wages, gross value added and thus implicitly inputs and exports, is based on these employment estimations for small companies. In the first section of the article, the results (i.e. the inflated number of people employed) are given and put into an inter-temporal

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[2] For interim results and related publications, see: *R. Fremdling/R. Stäglin*, Die Industrieerhebung von 1936: Ein Input-Output-Ansatz zur Rekonstruktion der volkswirtschaftlichen Gesamtrechnung für Deutschland im 19. und 20. Jahrhundert – ein Arbeitsbericht, in: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte 90, 2003, pp. 416-428; *R. Fremdling*, The German Industrial Census of 1936, Statistics as Preparation for the War, in: Proceedings of the 54th Session 2003, International Statistical Institute. Berlin 2003, Vol. LX, Book 1, pp. 38-40; *R. Fremdling/R. Stäglin*, Der Industriezensus von 1936 als Grundlage einer neuen volkswirtschaftlichen Gesamtrechnung für Deutschland (Thünen Series of Applied Economic Theory, Working Paper No. 41), Rostock 2003; *R. Fremdling/R. Stäglin*, Eine Input-Output-Tabelle für 1936 als Grundlage einer neuen volkswirtschaftlichen Gesamtrechnung für Deutschland, in: Institut für Wirtschaftsforschung Halle-IWH (Hg.), Neuere Anwendungsfelder der Input-Output-Analyse, Halle: IWH 2004, pp. 11-32; *R. Fremdling*, The German Industrial Census of 1936, Statistics as Preparation for the War (Research Memorandum GD-77, Groningen Growth and Development Centre), 2005, 12 pp; *R. Fremdling*, The German Industrial Census of 1936, Statistics as Preparation for the War, in: Jahrbuch für Wirtschaftsgeschichte - Economic History Yearbook, (2005/2), pp. 155-165; *R. Fremdling/H. de Jong/M. P. Timmer*, British and German Manufacturing Productivity Compared: A New Benchmark for 1935/36 Based on Double Deflated Value Added, in: Journal of Economic History 67, (2007/2), pp. 350-378; *R. Fremdling/H. de Jong/M. P. Timmer*, Censuses Compared. A New Benchmark for British and German Manufacturing 1935/1936 (Research Memorandum GD-90 Groningen Growth and Development Centre), 2007, 40 pp; *R. Fremdling/R. Stäglin*, Der Industriezensus von 1936 – Input-Output-Tabelle, historische volkswirtschaftliche Gesamtrechnung und Strukturvergleich mit Nachkriegsdeutschland, in: Institut für Wirtschaftsforschung Halle-IWH (Hg.), Neuere Anwendungsfelder der Input-Output-Analyse, Halle: IWH 2007, (in print).

[3] The exemption list in the published version (*Reichsamt für Wehrwirtschaftliche Planung*, Die deutsche Industrie. Gesamtergebnisse der amtlichen Produktionsstatistik, Berlin: Verlag für Sozialpolitik 1939, pp. 44-55) is incomplete. See Bundesarchiv Lichterfelde (BA) R3102 3036.

[4] „… die nichterfaßten Kleinbetriebe [fallen] trotz ihrer großen Anzahl mit ihrer Produktion nur sehr gering ins Gewicht." Deutsche Industrie, p. 12f.

perspective by comparing them with the workplace censuses of 1925, 1933[5] and 1939 and additional data for those benchmark years. Furthermore, the work force is juxtaposed with the doubtful employment figures of Walther Hoffmann et al. My estimation procedure itself is discussed in detail in section two of the paper.

Results and Comparisons

Table 1 presents the results of the correction procedure for employment. In the 14 groups, which were of military strategic importance, all firms had to report their employment and details about production (input and output). It was therefore not necessary for me to apply a correction factor in order to estimate "true" employment for these production units (*Betriebsstätten*) here.[6] For the remaining groups, the degree of underreporting varied considerably: In Manufactured Wood Products (17), Wearing Apparel (25) and Food, Beverages and Tobacco (28), by far the most of the rather small firms were not included in the census. To a less degree, this held good for the Leather Industry (23). In Building & Construction (29), too, a significant portion of small companies did not show up in the census. Without going into further detail here, it turned out that the estimated work force amounted to nearly 12 million and hence was 50 % higher than the roughly 8 million registered[7] in the census. A way of checking the reliability of our estimated figures is to compare them with data from the workplace censuses.

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[5] For 1925 and 1933, the territory of the *Saarland* is not included.
[6] Our *census-figures* always refer to those figures based on our exploration of the unpublished archival sources, see the references in note 1.
[7] Note that for group 29 (Building & Construction) the *Statistische Reichsamt* (StRA) itself merely estimated the work force.

Table 1. *Industrial Employment in Germany 1936, in 1000.*

		Conversion factor	*Census*	*Census plus Estimate*
1	Bergbau	1.00	579.183	579.183
2	Kraftstoffindustrie	1.00	36.674	36.674
3	Eisenschaffende Industrie	1.00	205.667	205.667
4	Nichteisenmetallindustrie	1.00	76.557	76.557
5	Gießerei-Industrie	1.00	179.119	179.119
6	Eisen- u. Stahl(Metall)warenindustrie	1.00	453.389	453.389
7	Maschinenbau	1.00	572.821	572.821
8	Stahl- u. Eisenbau	1.33	149.620	199.443
9	Fahrzeugindustrie (einschl. Luftfahrtindustrie)	1.33	302.286	402.947
10	Elektroindustrie	1.00	309.816	309.816
11	Feinmech. u. optische Industrie	1.20	100.401	120.481
12	Metallwarenind. u. verwandte Gewerbe	1.20	228.047	273.656
13	Industrie der Steine u. Erden	1.04	360.548	374.970
14	Keramische Industrie	1.04	88.569	92.112
15	Glasindustrie	1.04	74.368	77.343
16	Sägeindustrie	1.25	101.389	126.736
17	Holzverarb. Industrie	3.33	262.330	873.559
18	Chemische Industrie	1.00	177.748	177.748
19	Chemisch-technische Industrie	1.00	87.603	87.603
20	Kautschukindustrie	1.00	58.091	58.091
21	Papier-, Pappe-, Zellstoff- u. Holzstoffindustrie	1.00	100.201	100.201
22	Druck- u. Papierverarb. Industrie	1.20	287.837	345.404
23	Lederindustrie	2.20	196.857	433.085
24	Textilindustrie	1.25	914.308	1,142.885
25	Bekleidungsindustrie	3.33	233.207	776.579
26	Ind. d. Öle u. Fette, Futterm. u. tier. Leime	1.00	37.872	37.872
27	Spiritusindustrie	1.22	25.859	31.548
28	Nahrungs- u. Genußmittelindustrie	3.33	513.208	1,708.983
29	Baugewerbe	1.80	1,075.675	1,936.215
30	Energiewirtschaft	1.00	180.900	180.900
	Total Employment	**1.50**	**7,970.150**	**11,971.589**

Source(s): see text

First, a possible caveat has to be dispelled. In order to estimate the missing data of the industrial labour force, I did not inter- or extrapolate between the time series data of the workplace censuses; I rather exclusively relied on their structural information concerning employment distribution according to firm size. For the estimation, I combined it with the reported employment in 1936 itself. Thus the inter-temporal comparison of my estimated data for the benchmark of 1936 with 1925, 1933 and 1939 is not spoiled seriously - if at all - by the estimation procedure itself.

Table 2 offers a comparison between those industrial groups of the 1936-census which covered all firms and the corresponding categories of the workplace censuses of 1925, 1933 and 1939.[8] On

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[8] For 1939, the territories of Austria and *Sudetenland* are excluded.

average, these industrial activities employed significantly more people in 1936 than in the slump year of 1933. Except for utilities (1925) and manufactured paper (1939), however, these branches engaged more workers both in 1925 and in 1939. During the three years between 1936 and 1939, employment increased much faster than in the period 1933-1936. This occurred mainly in the groups of basic and manufactured metals, electrical engineering and chemicals/fuel industries. These covered precisely those branches directly involved in final products for the army or indirectly for their inputs. With the Four Years Plan, the government concentrated its efforts on these industries in order to prepare Germany for the war.[9]

Table 2. *Employment of Industrial Groups Fully Covered by the Industrial Census of 1936 Compared with the Workplace Censuses 1925/33/39, in 1000 and Ratios*

Industrial Group Census 1936	*Mining* 1	*Basic Metals* 3, 4, 5	*Manuf. Metals* 6, 12	*Electr. Engin.* 10	*Chemic/ Fuel* 2, 18, 19	*Manuf. Rubber* 20	*Manuf. Paper* 21	*Utilities* 30	*Sum*
Censuses 1925/33/39	III, 300	V,VI, 500,600	VII, 700	IX, 900	XI, 1100	XVI, 1600	XIII.1, 1301	XXII, 2200	
1925	687.1	557.8	899.1	448.2	320.5	68.3	117.2	148.2	3,246.4
1933	401.1	283.7	591.9	251.5	249.0	49.0	88.3	139.7	2,054.2
1936	579.2	461.3	681.4	309.8	302.0	58.1	100.2	180.9	2,673.0
1939	725.0	699.5	1,102.6	639.6	476.5	78.0	98.3	216.0	4,035.6
Index (1936 = 1.00)									
1925	1.19	1.21	1.32	1.45	1.06	1.18	1.17	0.82	**1.21**
1933	0.69	0.61	0.87	0.81	0.82	0.84	0.88	0.77	**0.77**
1939	1.25	1.52	1.62	2.06	1.58	1.34	0.98	1.19	**1.51**

Source(s): Workplace census, *Statistik des Deutschen Reichs* (StR) Gewerbliche Betriebszählung 1933, Vol. 462.II, pp. 20-36; *Länderrat des Amerikanischen Besatzungsgebiets* (StH1949), Statistisches Handbuch von Deutschland 1928-1944, München 1949 pp. 266-269; For 1936 sources are described in *R. Fremdling*, The German Industrial Census of 1936, Statistics as Preparation for the War, in Jahrbuch für Wirtschaftsgeschichte - Economic History Yearbook, (2005/2), pp. 155-165

In Table 3, the estimated labour force of total industry and craft (*Industrie und Handwerk*) in 1936 is compared with the same category of the workplace census. In 1936, significantly more people were employed than in 1933, however, still less than in 1925. Whereas employment between 1933 and 1936 increased roughly by one third the growth rate until 1939 slowed somewhat down, still increasing by 20%, though. This is a remarkable contrast with the subgroup of industrial employment fully covered by the 1936-census (see Table 2). To some extent, this confirms the observation that these industries were involved in military-related activities over-proportionally. Probably in addition, however, this subgroup suffered more than the average from the downturn of the business cycle until 1933. Its employment in 1936 was still clearly below the level of 1925. The data of the *Institut für Konjunkturforschung,* compiled and extrapolated by Ritschl, are based on other sources and refer to the employment for the entire *Gewerbe*, which - more broadly defined - basically covers all non-

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[9] See the seminal work by *D. Petzina*, Autarkiepolitik im Dritten Reich, Der nationalsozialistische Vierjahresplan, Stuttgart 1968.

agricultural employment during the first quarter of the respective years.[10] They reveal the same cyclical pattern and above all nearly the same relative levels compared with the benchmark year of 1936 as my estimate compared with the data of the workplace censuses.

Table 3. *Employment in Germany, 1925/33/36/39, in 1000, ratios and percentages.*

	Industry/Crafts		Non-Agriculture	Total Dependent Labour Force		
	Workpl. Cens.	Hoffmann	IfK/Ritschl	Health Insured	Regist.Employment Exchange	
						Unempl.
				Employed	Unemployed	Quota
	(1000)	(1000)	(1000)	(1000)	(1000)	(%)
1925	12,905.6	12,451	16,500			
1933	8,993.8	8,713	11,690	13,433	4,804	26.34
1936	11,971.6	12,585	15,680	17,592	1,593	8.30
1939	14,553.5	16,227	19,640	20,813	119	0.57
Index (1936 = 1.00)						
1925	1.08	0.99	1.05			
1933	0.75	0.69	0.75	0.76	3.02	
1939	1.22	1.29	1.25	1.18	0.07	

Source(s): See text; StR 462.2, p. 20, StH1949,p. 262; Hoffmann, Wachstum, pp.195,199; Ritschl, Deutschlands Krise, Tabelle C.1; Statistisches Jahrbuch für das Deutsche Reich (StJR) 1941/42, pp. 410, 426.

At first glance, the figures of Hoffmann et al. seem to correspond with the findings here. On closer examination, however, they are odd in several respects: For 1925, 1933 and 1939, they deviate significantly from those of the workplace censuses although according to Hoffmann´s concept, definition and alleged sources they should exactly be the same.[11] Furthermore, they exaggerate the cyclical recovery after 1933. At the end of this section, the figures of Hoffmann et al. are scrutinised.

The figures (yearly averages) on the total dependent labour force (blue and white colour workers without drafted soldiers) are based on the members of the health insurance companies (*Mitgliederstatistiken der Krankenkassen*). The unemployed people of this category are those registered by the employment exchanges (*Meldungen der Arbeitsämter*). In addition to the observed cyclical pattern between 1933 and 1939, declining unemployment becomes visible. In 1933, more than one quarter of the labour force was out of work, but still in 1936, more than 1.5 million people were looking for gainful employment. By 1939, however, the unemployment quota had shrunk to a negligible proportion.[12]

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[10] *A. Ritschl*, Deutschlands Krise und Konjunktur 1924-1934 – Binnenkonjunktur, Auslandsverschuldung und Reparationsproblem zwischen Dawes-Plan und Transfersperre (Jahrbuch für Wirtschaftsgeschichte, Beiheft 2), Berlin 2002, p. 294.

[11] *W. G. Hoffmann et al.*, Das Wachstum der deutschen Wirtschaft seit der Mitte des 19. Jahrhunderts, Berlin 1965, pp. 180-199.

[12] Yearly data of unemployment between 1930 and 1938 are split up for 28 branches in: *Office of Military Government for Germany (US), Ministerial Collecting Center*, Statistisches Handbuch von Deutschland – Statistical Handbook of Germany, Fürstenhagen 1946 (*StH1946*), Teil I, B 4.

Unemployment is also reflected in the underutilization of available capacity. From spring 1928 onwards, the Institute for Business Cycle Research (*IfK*) regularly reported on German industry (*Industrieberichterstattung*) about the number of people employed and their working hours. They then related these indicators to the available workplace capacity (*Arbeitsplatzkapazität*). From 1933 onwards, the Imperial Statistical Office (*StRA*) took these reports over.[13] In fact, this is a very sensitive indicator for capital utilization and complements the figures on registered unemployment. Table 4 depicts employment (measured either in numbers or hours) in percent of workplace capacity. For the three reference years, the downs and ups of the business cycle are reflected very clearly: The share of hours worked indicates capital utilization better than merely the gap between available workplaces and people actually employed. Distinguishing between industrial capacity for producer and consumer goods reveals the fact that slump and revival hit the investment goods sector more severely than the consumer sphere. It shows furthermore that during the subsequent recovery and expansion after 1933, economic policy gave priority to investment and armament over consumption. The choice for guns instead of butter comes clearly to the forefront.

Table 4. *Industrial Employment in Germany in Percent of Workplace Capacity,   1933/36/39.*

	Total Industry		Producer Goods		Consumer Goods	
	Number	*Hours*	*Number*	*Hours*	*Number*	*Hours*
1933	46.3	41.0	41.5	36.9	52.5	46.3
1936	69.1	65.0	73.5	71.3	63.5	57.0
1939	85.6	84.4	92.8	93.3	72.7	68.7
Index (1936 = 1.00)						
1933	0.67	0.63	0.56	0.52	0.83	0.81
1939	1.24	1.30	1.26	1.31	1.14	1.21

Note(s): 1939: Average of January – June
Source(s): StH1946, Part III. A, I.u.H. A 14

Hoffmann´s Tales

For a detailed evaluation of the figures computed by Hoffmann et al., the data in Table 5 were compiled. I tried to follow the same procedure based on the same sources put forward in Hoffmann´s book.[14] I concentrated on those benchmark years, in which workplace censuses were conducted, i.e. 1925, 1933 and 1939. These workplace censuses were the basic sources for Hoffmann´s industrial employment figures. Numbers for all the other interwar years are inter- or extrapolated.[15]

The data of the workplace censuses (*Gewerbliche Betriebszählungen*) of 1925 and 1933 are conveniently summarised in the *Statistik des Deutschen Reichs* (StR) volume 462,1 (pp. 2.20-43); the

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[13] *E. Wagemann* (ed.), Konjunkturstatistisches Handbuch 1936, Berlin 1935, pp. 17 ff.; on the history of the *Industrieberichterstattung* see *Institut für Konjunkturforschung (IfK)*, Vierteljahrshefte zur Konjunkturforschung (VJK), Berlin 1930, pp. 44-6; *W. Fritz*, Historie der amtlichen Statistiken der Erwerbstätigkeit in Deutschland, Köln 2001, pp. 31 f.
[14] *Hoffmann*, Wachstum, pp. 182f., 190f.
[15] Except for mining.

planned volume with the results of the workplace census of the entire empire (*Reichsergebnisse*) for 1939 (StR vol. 567) was never published.[16] Hoffmann, however, explicitly mentions this non-existent volume as source for his figures in 1939.[17] For internal use, the Imperial Statistical Office (*Statistisches Reichsamt* StRA) made available a preliminary compilation of the 1939-workplace census in the *Statistisches Jahrbuch für das Deutsche Reich* (StJ 1941/42, pp. 172-187), then kept top secret. These aggregate figures for the entire German Empire include the workplaces (*Arbeitsstätten*) of *Sudetenland* and Austria (*Die Alpen- und Donau-Reichsgaue*). Probably, Hoffmann (mis)took these figures.[18] For numbers within the *Reich´s* boundaries of 1937 - the entity Hoffmann intended to document - one has to rely on a compilation which was done after the war and published in *Statistisches Handbuch* (StH1949, pp. 266-269).[19]

Table 5. *Industrial Employment: Hoffmann and Statistisches Reichsamt (StRA),*
1925/33/39, in 1000

Table 5.1		*Steine/Erden*		*Table 5.2*		*Metallerzeugung/-verarbeitung*	
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA*	*Diff.*
	1	*IV*			*2 and 3*	*V to IX*	
1925	704	687	17	1925	2858	3181	-323
1933	414	401	13	1933	1637	1736	-99
1939 (37)	821	675	146	1939 (37)	4544	4254	290
1939 (A/S)	821	799	22	1939 (A/S)	4544	4580	-36

Table 5.3		*Chemische Industrie*		*Table 5.4*		*Textilindustrie*	
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA*	*Diff.*
	4	*XI +XVI*			*5*	*XII*	
1925	380	389	-9	1925	1212	1214	-2
1933	292	298	-6	1933	857	857	0
1939 (37)	576	554	22	1939 (37)	1420	1279	141
1939 (A/S)	576	591	-15	1939 (A/S)	1420	1548	-128

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[16] The announced title was: *Statistik des Deutschen Reichs,* Band 568,1 (Volks-, Berufs- und Betriebszählung vom 17. Mai 1939, Die nichtlandwirtschaftlichen Arbeitsstätten im Deutschen Reich).

[17] *Hoffmann*, Wachstum, p. 183.

[18] Ibid, this source is mentioned as well. For Hoffmann´s figures see ibid, pp. 195, 198 f.

[19] *Länderrat des Amerikanischen Besatzungsgebiets*, Statistisches Handbuch von Deutschland 1928-1944, München 1949.

Table 5. *Continued.*

Table 5.5	Ledererzeugung			*Table 5.6*	Bekleidungsindustrie/Lederverarbeitung		
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA* XX+XV.2	*Diff.*
	6	*XV.1+XV.3*			*7*	*+15.04*	
1925	66	66	0	1925	1536	1469	67
1933	48	48	0	1933	1203	1117	86
1939 (37)	60	52	8	1939 (37)	1642	1327	315
1939 (A/S)	60	60	0	1939 (A/S)	1642	1538	104

Table 5.7	Verarbeitung von Holz-/Schnitzstoffen			*Table 5.8*	Papiererzeugung/-verarbeitung		
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA*	*Diff.*
	8	*XVII*			*9*	*XIII*	
1925	1003	969	34	1925	290	272	18
1933	639	607	32	1933	205	188	17
1939 (37)	1061	889	172	1939 (37)	383	295	88
1939 (A/S)	1061	1019	42	1939 (A/S)	383	342	41

Table 5.9	graphisches Gewerbe			*Table 5.10*	Schmuck-/Spielwaren/Musikinstrumente		
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA*	*Diff.*
	10	*XIV*			*11*	*XVIII+X*	
1925	286	307	-21	1925	252	271	-19
1933	251	271	-20	1933	110	140	-30
1939 (37)	238	240	-2	1939 (37)	200	290	-90
1939 (A/S)	238	264	-26	1939 (A/S)	200	308	-108

Table 5.11	Nahrungs-/Genußmittelindustrie			*Table 5.12*	Gas/Wasser/Elektrizitätsversorgung		
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA*	*Diff.*
	12	*IXX*			*13*	*XXII*	
1925	1387	1387	0	1925	152	148	4
1933	1419	1419	0	1933	143	140	3
1939 (37)	1736	1540	196	1939 (37)	249	216	33
1939 (A/S)	1736	1736	0	1939 (A/S)	249	239	10

Table 5.13	Baugewerbe			*Table 5.14*	Industrie/Handwerk (without mining)		
	Hoffmann	*StRA*	*Diff.*		*Hoffmann*	*StRA*	*Diff.*
	14	*XXI*			*Sum 1-14*	*IV-XXII*	
1925	1584	1530	54	1925	11708	11977	-269
1933	1066	1009	57	1933	8284	8336	-52
1939 (37)	2524	2218	306	1939 (37)	15454	13828	1626
1939 (A/S)	2524	2485	39	1939 (A/S)	15454	15509	-55

Table 5. *Continued.*

Table 5.15	*Bergbau/Salinen*		
	Hoffmann total	*StRA III*	*Diff.*
1925	743	804	-61
1933	429	451	-22
1939 (37)	773	725	48
1939 (A/S)	773	773	0

Note(s): Steine/Erden: Hoffmann (1) included peat, StRA (III.11) did not for 1925 (15315 people) and 1933 (7895 people) but well for 1939.
Source(s): See text.

In Table 5, the census data on industrial employment (*Industrie und Handwerk*) are classified according to Hoffmann´s categories.[20] The much more detailed workplace census data of the StRA were assigned accordingly. Arabic numbers refer to Hoffmann´s and Roman ones to StRA´s classification.[21] For 1939, two figures are presented: 1939 (37), these are the figures of the StRA referring to the territory of the German Empire in 1937; 1939 (A/S), these are the figures of the StRA referring to the territory of the German Empire in 1939, thus including Austria and *Sudetenland.*

Before discussing major spurious accounts in Hoffmann´s figures I want to give reasons why an exact reproduction of his data within the framework of his delimitation based on the sources he quotes is quite impossible and why minor deviations compared with the numbers of the StRA seem inevitable. First of all, Hoffmann did not describe explicitly from which industrial groups of the workplace census he compiled his rather crude delimitation. Thus inevitably, I had to rely on some guesswork in the matching procedure. Furthermore, one cannot be sure that the figures printed in Hoffmann always comply with his description of the alleged origin, generation and compilation of them.[22] Admittedly, StRA complicated the reconstruction work as it did not always publish exactly the same or unambiguous figures in subsequent statistical compilations. In the StJ and comparable secondary official statistics (*Wirtschaft und Statistik, Vierteljahrshefte zur Statistik des Deutschen Reichs*), preliminary results were published beforehand, which deviated slightly from later publications in StR. Furthermore, official comparisons between subsequent census results to some extent implied a regrouping of data due to changing classification. In 1939, two different concepts of workplaces were used, local units (*örtliche Betriebseinheiten*) and technical units (*technische Betriebseinheiten*). Local units could comprise different activities and were thus split up into different technical units in accordance with the classification of the census. I opted for technical units which comply with the workplace concept of 1925/33. With all these caveats in mind, one cannot expect an exact matching of the census figures organised here with the Hoffmann data.

The detailed comparison given in Table 5 reveals a systematic deviation of Hoffmann´s figures for 1939 compared with the intended figure, i.e. employment on the territory of the German Empire

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[20] *Hoffmann,* Wachstum, pp. 195-199.
[21] In publications of the 1939-census data the StRA also used arabic numbers for classification.
[22] This I will show in a forthcoming paper on the much more confined agricultural labour force.

exclusive Austria and *Sudetenland*.[23] For the aggregate of industrial employment (*Industrie/Handwerk*) without mining, Hoffmann registered about 1.6 million workers, thus well above 10 percent more than the StRA counted for the 1937-territory. This deviation of the aggregate and most subgroups does not fall within the margins of the described matching errors. Hoffmann´s spuriousness is directly confirmed by two industrial sectors for which a perfect matching was achieved, namely leather (*Ledererzeugung*) and the large group of food and beverages (*Nahrungs- und Genußmittelindustrie*). He obviously (mis)took the number including Austria and *Sudetenland* for the coverage of *Reich´s* 1937-territory. This is also pretty clear for mining (*Bergbau/Salinen*) with a perfect match in 1939.[24] For all the other groups listed in Table 5, Hoffmann´s systematic bias reveals itself at least at second glance.

In the category of metal-working industry (*Metallerzeugung/-verarbeitung*), Hoffmann lumped together various large industries ranging from basic metals to machinery production and electrical engineering etc. The comparative figures in Table 5 show a changing bias over time in the level of employment. For the early 1920s, Hoffmann is probably too low in relation with the late 1930s. This possibly systematic bias is of particular significance because Hoffmann directly linked the employment figures with an estimation of output. In order to estimate the production of these large industrial activities, Hoffmann used the employment figures and average wages as starting point. As has been criticised by Ritschl, Hoffmann´s index of metal processing is built on the assumption of constant wage shares. This implies an exaggerated growth during the 1920s compared with 1913.[25] Because of the enormous weight of these economic activities within Germany, Hoffmann´s picture of interwar industrial and total output is grossly distorted.[26] Ritschl suspects that the misleading growth rates are caused by the incorrect assumption of constant wage shares and I moreover blame the distorted employment numbers. In any case, Hoffmann´s three benchmark figures overstate trend growth of employment compared with the workplace numbers of the StRA.

Interwar Germany was characterised by heavy cyclical up- and downturns combined with extremely fluctuating employment. Thus the question arises whether and to what extent Hoffmann´s employment figures between the benchmark years actually reflect the business cycle. Or - the other way round - one may ask as to what extent Hoffmann´s estimation procedure shammed the fluctuations. The following brief discussion concentrates on the 1930s and thus the frequently discussed upswing after Hitler came to power.[27]

Hoffmann used data of occupational co-operatives (*Berufsgenossenschaften,* the members of which were compulsory insured against accidents) in combination with data of the factory inspection

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[23] On the intended territorial coverage, see *Hoffmann*, Wachstum, p. 2.

[24] For 1938, Hoffmann tried to adjust the official figure by subtracting 27000 Austrians from the *Reich´s* figure, ibid, p. 191.

[25] *A. Ritschl*, Spurious Growth in German Output Data, 1913-1938, in: European Review of Economic History 8, 2004, pp. 201-223. In publications to come, Ritschl elaborates on this subject. See also the detailed criticism by *T. Balderston*, The Origins and Course of the German Economic Crisis, November 1923 to May 1932, Berlin 1993, pp. 456.

[26] See, however, *S. Broadberry and C. Burhop*, Comparative Productivity in British and German Manufacturing Before World War II: Reconciling Direct Benchmark Estimates and Time Series Projections, in: Journal of Economic History, 67 (2007/2), pp. 315-349.

[27] See e.g. the *Jahrbuch für Wirtschaftsgeschichte* 2003/1: Neue Ergebnisse zum NS-Aufschwung.

(*Gewerbeaufsichtsbehörden*) to interpolate employment between the years of the workplace censuses.[28] Both benchmarks of the 1930s covered extremely different stages of the business cycle: In 1933, there was a trough in employment whereas in 1939, the German economy arrived at the production frontier in every respect. At the beginning of the Second World War, a hitherto unknown level of employment was achieved. Unfortunately, however, Hoffmann´s estimation procedure cannot be reproduced. Thus I can only infer the direction but not the extent of the bias generated by Hoffmann´s estimation procedure and I concentrate on the data of the factory inspection. Every two years, the factory inspection (*Gewerbeaufsichtsbehörden*) counted the number of business units and their employment.[29] In the 1930s, the years with even numbers were covered by the factory inspection (thus not 1933 but 1932 instead) and in 1932, the territory of Baden was not included. These statistics covered only establishments with five and more people employed. This cut-off point, however, makes it difficult to compare the results among different years at different stages of the business cycle. The StRA itself emphasized that the fluctuations of economic activity were exaggerated by these statistics: In periods of crisis, many small firms were missed out; during the upswing of the business cycle, however, with increased number of workers per unit they passed the threshold of five employees. Thus using the statistics of the factory inspection to interpolate employment figures between benchmark years at different stages of the business cycle is not feasible. Compared with the reality, the recovery after 1933 Hoffmann's figures suggest is probably exaggerated even without taking into account that Hoffmann´s benchmark figures for employment in 1939 include Austria and *Sudetenland*.[30]

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[28] *Hoffmann*, Wachstum, p. 191.
[29] *Wirtschaft und Statistik* 1938, pp. 310-313.
[30] It is not entirely clear whether Hoffmann interpolated his figures between 1934 and 1938 or merely extrapolated from 1933 onwards. In any case, his time-series on employment reveal very odd jumps between 1938 and 1939. In his aggregate time-series on output, net national product and national income 1939 is left out.

Table 6. *Industrial Employment: Hoffmann and the Industrial Census of 1936*
          (Estimate), in 1000

	Categories		Labour Force		Difference Hoffm.-	%-Deviation
	Hoffmann	*1936-Census*	*Hoffmann*	*1936-Census+*	*Census*	*Census=100*
Bergbau/Salinen		1	537	579	-42	-7.3
Steine/Erden	1	13,14,15	650	544	106	19.4
Metallerzeugung/-verarbeitung	2.3	3 to 11	3103	2520	583	23.1
chemische Industrie	4	2,18,19,20	410	360	50	13.9
Textilindustrie	5	24	1060	1143	-83	-7.3
Bekleidung/Lederverarbeitung/-erzeugung	6.7	23, 25	1425	1210	215	17.8
Verarbeitung von Holz/Schnitzstoffen	8	16,17,	904	1000	-96	-9.6
Papiererzeugung/-verarbeitung	9	21	279	100	179	178.4
graphisches Gewerbe	10	22	248	345	-97	-28.2
Schmuck-/Spielwaren/Musikinstrumente	11	12	171	274	-103	-37.5
Nahrungs-/Genußmittelindustrie	12	26,27,28	1517	1778	-261	-14.7
Gas/Wasser/Elektrizitätsversorgung	13	30	195	181	14	7.8
Baugewerbe	14	29	2086	1936	150	7.7
Total			**12585**	**11972**	**613**	**5.1**

Source(s): Hoffmann, Wachstum, pp. 195, 198 f.; Table 1.

In Table 6, Hoffmann´s data are confronted with the corrected data of the industrial census of 1936. As expected, Hoffmann´s aggregate is higher, namely more than six hundred thousands or five percent above my estimated labour force. This difference seems rather small compared with specific deviations for certain industrial sectors or groups, but the difference is significant. Rather disturbing, however, is the fact that virtually all these specific deviations are significantly larger than for the aggregate. This is an unexpected outcome. Partly this can be explained by some mismatching of categories. The available 30 categories of the 1936-census had to be matched with just 14 in the Hoffmann delimitation. Due to the estimation procedure for the missing employment numbers of the census I could not draw on a lower level of industries or groups and apply a sufficiently matching procedure the workplace censuses offered. Thus I had to stick to these 30 groups for which the correction was made. But even with that caveat in mind, the deviations underline very clearly fundamental errors in Hoffmann´s employment figures. Once again Ritschl´s crucial point is confirmed: The large metal-working industry - following Hoffmann´s delimitation - is grossly overrepresented in Hoffmann´s account. By using employment for deriving production for this group with an above average value-added per employee all aggregates from industrial production to domestic product are spoiled seriously.

In former publications, I criticised the aggregation procedure of Hoffmann´s index for industrial production:[31] "A special case is industry/craft. For 12 branches of industry/craft he relied on the industrial censuses [i.e. workplace censuses] of 1861, 1882, 1907 and 1933 to be representative for the work force in certain sub-periods and then took a survey of 1936 on the value of net output per employee in these branches to compute his weights. This procedure leads to a constant weighing scheme over long sub-periods and, moreover a scheme that assumes relative labour productivity among industrial branches (e.g. textiles and chemicals) to remain constant for the whole time span, 1850-1959." In addition, Fremdlin/Stäglin objected that the published version of the 1936-industrial census was seriously biased for reasons of camouflage. Certain industries considered important for warfare, e.g. aircraft production, were hidden under misleading groups or by the way the data were aggregated.[32] In the light of our estimation procedure to complement the results of the 1936-industrial census, Hoffmann´s index numbers for industrial output become even more doubtful:[33] The weights in combining his index series were based on the misleading gross value added per employee (*Nettoproduktionswert je Beschäftigten*). Gross value added per employee (or labour productivity) was derived from the published version of the 1936-industrial census. It was assumed to be the same also for small companies and their workers not covered by the census. For the interwar years, the workplace census in the slump year of 1933 alone was considered to be representative of the composition of the interwar work force and thus the shares in combining industrial groups´ indices to one index. The workplace censuses of 1925 and 1939 were neglected in fixing the weights. The resulting distortions are hardly predictable.[34] And in addition to that, Hoffmann´s labour force data reveal that doubtful employment figures were passed through to time series of aggregate production.

In conclusion, Hoffmann´s interwar figures on industrial employment are biased in their levels and misleading in their yearly fluctuations.[35] Using them for measuring labour productivity or as a basis for output estimates inevitably generates spurious results. Consequently, one should keep away from Hoffmann´s figures when discussing any aspect of economic failure of the Weimar Republic or economic recovery after Hitler came to power.

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[31] *R. Fremdling,* German National Accounts for the 19th and Early 20th Century: A Critical Assessment, in: Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte 75, 1988, p. 350; see also the revised and extended version of this article, *R. Fremdling,* German National Accounts for the 19th and Early 20th Century, in: Scandinavian Economic History Review 43, 1995, p. 91.
[32] *Fremdling/Stäglin,* Industrieerhebung.
[33] *Hoffmann*, Wachstum, pp. 389 ff.
[34] E.g. in the published version "construction" (*Baugewerbe*) comprises the aircraft industry with its high labour productivity whereas the bulk of petty companies with low labour productivity does not show up in gross value-added (*Nettoproduktionswert*).
[35] My preliminary research on agricultural employment confirms similar distortions.

The Estimation Procedure – Correction for Coverage

The industrial census of 1936 did not include all firms.[36] The coverage ratios, however, varied per group or specific industry. In groups which were of military strategic importance all firms had to report, in groups considered of less importance in most cases the exemption and cut-off point was less than 5 people employed. This rule was not followed strictly, thus production and capacity measures were applied as well. In these cases, probably due to heavy seasonal fluctuations, employment seemed to be no feasible yardstick. As guideline, however, I used the threshold of five or even ten people employed per production unit (*Betriebsstätte*) to close the information gap.

Thus in order to estimate a correction factor for the missing number of people employed not covered by the census the following procedure was applied. The non-agricultural or industrial workplace (*nichtlandwirtschaftliche* or *gewerbliche Arbeitsstätten)* censuses of 1925, 1933 (StR vol. 462 provides a comparison between both years) and 1939 (StR vol. 568.1 for Prussia)[37] were the starting point. In these statistical volumes, establishments were also classified according to the number of people employed. In most cases for 1925 and 1933, the size classes from 1-5 and 6-10 were used, for 1939 the more detailed classification among the sizes 1, 2-3, 4-5, 6-10, 11-20 was applied as well.[38] For the first time, the 1939 census recorded handicraft establishments (*Handwerksbetriebe*) separately, although this was not a statistical but a juridical category.[39] Mainly for ideological reasons, the regime tried to introduce a clear-cut distinction between industry and handicraft during the 1930s. Several laws were passed to reorganise the institutional and legal structure of entrepreneurship.

Unfortunately, the workplace censuses did not collect information on turn-over, capacity, etc., thus for this information as well I had to rely on the number of people employed given in the workplace censuses as a proxy for missing information. One should, however, keep in mind that the workplace census data refer to one day in the year with a seasonal peak in industrial activity (1925, June 16; 1933, June 16; 1939, May 17), whereas our employment data for 1936 are proxies for yearly averages (in most branches precisely the arithmetic mean of the workforce at the end of June and December 1936).

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[36] The exemption list in the published version (*Deutsche Industrie,* pp. 44-55) is incomplete. See BA R3102 3036.

[37] The volume with corresponding numbers according to firm size for entire Germany (StR 567) was never published. After the war, detailed figures of the workplace census of 1939 were compiled for the 1937-territory, however, without taking account of the firm size. The statistics were as well split up according to the Länder/occupied zones and the territory annexed by Poland and the Soviet Union, gathered up as East of Oder/Neisse (StH1949, table 4, pp. 246-269). For internal usage, The Office of the United States Military Government for Germany compiled extensive statistics on Germany (StH1946) after the war. Their figures of the 1939-census give detailed information on handicraft employment as well, however, not separately for the 1937-territory (StH1946, III.A, I.u.H.A 2 a-dd). For the 1937-territory, handicraft employment with a rather crude delimitation of 20 industrial groups is given in StH1949 (table 3. pp. 244f.)

[38] This detailed information was also given for 1933 (StR vol. 462.2, pp. 60-101). In general, however, the benchmark years of 1925 and above all of 1939 proved to be more useful for estimating coverage ratios for 1936. In 1933, the share of small companies increased above average because people, who had formerly been workless, started their own business. Thus, with the exception of food and beverages, a large part of the increase of small companies directly resulted from the former economic crisis (StR. 462.2, p. 9).

[39] StR 566 pp.14 f.

Thus employment shares according to firm size provided the most important information to estimate ratios/percentages of incomplete coverage. This was done separately for each industrial group or a cluster of groups. Numbers in *italics* refer to the classification of the 1936-census, the others to the workplace censuses.

Industrial groups *1* to *6*:
1 Bergbau Mining
2 Kraftstoffindustrie Fuel Industries
3 Eisenschaffende Industrie Basic Iron and Steel
4 Nichteisenmetallindustrie Basic Non-Ferrous Metals
5 Gießereiindustrie Casting of Metals
6 Eisen- und Stahlwarenindustrie (Manufactured) Fabricated Metal Products

All firms were covered by the 1936 industrial census.

Industrial group *7*:
7 Maschinenbau Machinery

The cut-off point was less than five people employed. Within category 8 of the workplace census (*Maschinen-, Stahl- und Fahrzeugbau*) the subcategories VIII.3 for 1925 and 1933 and 8.03-5 for 1939 (*Maschinenbau* or *Kraftmaschinen, Arbeitsmaschinen, Automaten* etc.) match large parts of group *7* of the 1936-census. Firms up to 5 people made up the following percentages of total employment:

1925	1.0
1933	2.3
1939	1.2

Unfortunately, there is no information on the percentage share of firms employing 1 to 4 people. The group 1-3 of the 1933-census, however, covered 1.2 % and in 1939 0.6 %. One can safely assume that in 1936 barely 1 % of employment was not covered by the census. Probably the firms not being registered consisted of mere repair shops, which are covered by groups *8* and *9*. I therefore refrain from applying any correction factor.

Industrial groups *8* and *9*:
8 Stahl- und Eisenbau Structural Metal Products (incl. shipyards, railway equipment)
9 Fahrzeugindustrie Vehicles (automobile, bicycle, airplane)

Independent repair shops were not included. According to category 8 of the workplace census (*Maschinen-, Stahl- und Fahrzeugbau*) dependent and independent repair shops together made up the following percentages of total employment (excluding machinery):

1925	32.5
1933	48.1
1939	16.0

The 1939-percentage for Prussia cannot be regarded as representative of Germany because major ship building cities (e.g. Hamburg, Bremen, Kiel etc.) are not included. Unfortunately, there is no information on the percentage share of independent repair shops. I thus assume the rather low correction factor of 33.3 % for employment.

Industrial group *10:*
10 Elektroindustrie Electrical Equipment

All firms were covered by the 1936 industrial census.

Industrial groups *11* and *12:*
11 Feinmechanische und optische Industrie Optics and Fine Mechanics
12 Metallwarenindustrie und verwandte Gewerbe Metal Products

Handicraft, self-employed home-workers and pure putting-out firms (*reine Verleger*) were not entirely included (e.g. clocks/watches, musical instruments were left out). In the 1939-census, handicraft establishments were counted separately. Just in category 10.04 (*Herstellung und Reparatur von Uhren*) and in category 18 (*Herstellung von Musikinstrumenten und Spielwaren*) handicraft comprised 17 percent of total employment of the groups 10 (*Optik und Feinmechanik*) and 18. I thus assume the rather low correction factor of 20 % for employment.

Industrial groups *13, 14* and *15:*
13 Industrie der Steine und Erden Stone and Clay
14 Keramische Industrie Ceramics
15 Glasindustrie Glass

Most establishments were covered. Some firms with a rather low turn-over (less than 5,000 RM for peat, gravel and potteries, 10,000 RM for stone-cutting and 15,000 RM for concrete) or a low wage-bill (less than 3,000 RM for glass refining) were left out. Category 4 (*Steine und Erden*) of the workplace census included all three groups of the 1936-census. It is rather difficult to determine a specific coverage ratio: Small firms (i.e. 1 to 5 employees) of those subcategories, however, made up somewhat more than 5 % in the 1933-census but probably less than 3 % in 1939 and 1925. In 1939, however, handicraft establishments comprised more than 5% of these activities. I thus assume a correction factor of 4 % for employment.

Industrial group *16:*
16 Sägeindustrie Manufactured Timber

Sawmills with less than 1000 cubic meter (*fm*) cut were not included. According to category 17.1 of the workplace census (*Säge- und Furnierwerke*), sawmills with 1 to 5 (1 to 10) workers made up the following percentages of total employment:

1925	8.6 (15.5)
1933	15.9 (25.9)
1939	7.1 (14.9)

It is assumed that no more than roughly 80 % were covered by the 1936-census. Based on the share of one to ten workers, I thus assume a correction factor of 25 % for employment.

Industrial group *17:*
17 Holz verarbeitende Industrie Manufactured Wood Products

Various exemption rules were applied for timber and wood manufacturing (subcategories 17.2-12 of the workplace census): Sales less than 1,000 or 5,000 RM, small handicraft establishments, firms consuming less than 40 cubic meter of timber, less than 5 workers and above all the by far largest subcategory of furniture and timber manufacturing (17.2 *Herstellung von Holzbauten, Bauteilen und Möbeln*) included only firms with 10 and more people in the 1936-census. The entire group of timber and wood manufacturing (17 *Holz- und Schnitzstoffgewerbe*), which comprises groups *16* and *17* of the 1936-census, is characterised by rather small establishments (see table 7).

Table 7. *Employment in German Timber and Wood Manufacturing (Group* 17*), 1925-1939*

Census Year	*1925*	*1933*	*1939*
Number of Establishments	219 179	214 754	206 996
Number of People Employed	969 154	607 453	889 298
Average	4.4	2.8	4.3

Source(s): StR 462.2: 32; StH1949: 268.

For furniture and timber (17.2 *Herstellung von Holzbauten, Bauteilen und Möbeln*), the 1939 census reported 4.4 people employed on average (StH1949 p. 268) whereas the 1936-census just covered firms with 41.8 workers per unit. Based on the archival sources of the 1936-census, groups *16* and *17* together comprised 363 thousand workers; it becomes clear that the data for 1936 reveal tremendous underreporting.

According to subcategories 17.2-12 of the workplace census with 1 to 5 (1 to 10), employees made up the following percentages of total employment:

1925	42.0 (54.0)
1933	61.2 (70.0)
1939	38.8 (51.1)

Taking into account the shares of firms up to 10 workers and the absolute census figures it seems quite sure that these firms were good for more than 60 % of employment. Given the high average employment of those production units covered by the 1936-census, however, I safely can assume that no more than 30 % of the establishment were accounted for. This makes the correction factor of even 233 % plausible.

Industrial groups *18, 19, 20* and *21:*
18 Chemische Industrie Chemical Industry (Basic and Manufactured Products)

19 Chemisch-technische Industrie Chemical Industry (Manufactured Final Products)

20 Kautschuk- und Asbestindustrie Manufactured Rubber and Asbestos

21 Papier-, Pappen-, Zellstoff- und Holzstoffindustrie Manufactured Paper and Cellulose

All firms were covered by the 1936 industrial census.

Industrial group *22:*

22 Druck- und Papierverarbeitung Paper and Printing

Establishments with less than 5 workers were not covered. For the large printing industry (*Druckgewerbe*), not even firms with less than 10 people were recorded. Industrial group *22* corresponds with group 14 (*Druck- und Vervielfältigungsgewerbe*) and concerning group 13 (*Papierindustrie*), the workplace census left out paper production.

According to the workplace census, units with 1 to 5 (group 13 without paper production) and 1 to 10 (group 14) employees made up the following percentages of total employment:

1925	11.7 and 15.4
1933	14.8 and 20.1
1939	11.8 and 19.9

The weighted average shares are 14.2, 18.7 and 17.4. In printing and related business firms, the share of small enterprises obviously increased and I suppose that about 17 % of employment was not covered by the 1936-census. This implies a correction factor of 20 % for employment.

Industrial group *23:*

23 Lederindustrie Leather Industry

The subgroup of leather tanning and dressing was covered nearly completely. Only firms with 5 and more people employed were included for the larger branches producing leather goods (shoes, gloves, bags etc.). In the workplace census, they were registered under XX.6 or 20.07 (*Herstellung von Lederhandschuhen*), XX.7 or 20.08 (*Herstellung und Reparatur von Schuhen*) and 15.02 (*Herstellung von Lederwaren*). Here, the bulk of people were self-employed or worked in rather small production units and repair shops. In Prussia, 1939 141,743 people worked in shoe-making and -repairing. The distribution according to firm size was as follows: 1 35%, 1-3 61%, 1-5 67%, 1-10 71% (StR 568.1 pp. 8-9). Table 7 shows that a tremendous number of people working in the leather trade were not covered by the 1936-census.

Table 8. *Share of Establishments Employing 1 to 5 People, 1925-1939 ratios.*

Census Year	1925	1933	1939
XX.6/20.07	0.3	0.3	0.3
XX.7/20.08	0.6	0.7	0.7
15.02	0.5	0.7	0.5

Note(s): XX.6/20.07 Herstellung von Lederhandschuhen; XX.7/20.08 Herstellung und Reparatur von Schuhen; 15.02 Herstellung von Lederwaren
Source(s): StR 462.2: 30-7; StR 568.1: 8-9

In order to get an overall cover ratio the weighted average of the three branches in table 8 was calculated. For 1925, 1933 and 1939, small establishments (1-5 people) comprised 57.3, 66.1 and 61.9 % of total employment on average. For all three census years, these three branches made up about 90 % of total employment of the industrial group leather (*Lederindustrie*) defined according to the 1936-census. Thus well above half of employment was not recorded. This implies a correction factor of 120 % for employment.

Industrial group *24:*
24 Textilindustrie Textile Industry

In nearly all branches of textiles, small establishments were not covered. This concerned firms with a production value of less than 15,000 RM or small business units just earning wages (*Lohnbetriebe*) below 3,000 RM. In my sample for textiles, average sales per worker made up 7,694 RM and average wages 1,555 RM. Thus with sales of 15,000 RM 1.9 and a wage bill of 5,000 RM 3.2 workers could have been employed compared with the average enterprise in my sample. As this reasoning did not yield any result to estimate the missing information the following strategy was pursued instead: The distribution of the numbers of firms and their share in employment according to employment classes was used as guideline.

Table 9. *Cumulative Share of Production Units and People Employed in Textiles, 1933 and 1939 in percent.*

Employment Class	1 to 3	1 to 5	1 to 10	1 to 20	1 to 50
Units 1933	83.8	87.0	90.1	92.7	95.5
Employment 1933	7.9	9.0	10.8	13.9	21.2
Units 1939	79.4	85.1	89.7	92.9	95.7
Employment 1939	8.5	10.3	12.9	16.5	23.3

Source(s): For Germany 1933 StR 462.2: 58-61; for Prussia 1939 StR 568.1: 2-3.

The 1936-census comprised 10,069 production units (*Arbeitsstätten*) which employed 914,308 people. Concerning the 1937-territory, the workplace census recorded 1,278,976 people working in 148,275 establishments in the year 1939 (StH1949, p. 267). Comparing both the number of units and employment for both years it seems that the 1936-census covered about 70 % of employment in less than 7 % of the recorded production units. Although this kind of comparison is not without problems, it seems plausible that the 1936-census took into account only firms with clearly more than 20 people employed. Thus it can be assumed that the 1936-census left out roughly about 20 % of employment. This implies a correction factor of 25 % for employment.

Industrial group *25:*
25 Bekleidungsindustrie Wearing Apparel

According to the published version of the 1936-census (*Deutsche Industrie*, p. 53), wearing apparel or clothing industry proper (*Bekleidungsindustrie*) was covered completely. This, however, cannot be true, because the industry was characterised by very small production units. In 1936, the authorities responsible for employment exchange counted more than two hundred thousand people working at home (*Heimarbeit*) in this trade (StJR 1936, p. 333). And in 1939, 70 percent of the establishments did not employ more than one single person which comprised nearly 30 percent of the total work force (StR 568.1, p. 8-9). Thus it is no surprise that according to the record in the *Bundesarchiv* (BA R3102 3036 T20) production units with less than 15,000 RM turnovers had not been registered. These units comprised the bulk of employment.

In order to estimate employment not covered I used the distribution of the numbers of firms and their share in employment as guideline. The figures in Table 10 make clear that roughly 60 % of the work force was employed in units with less than 6 people; these establishments comprised 95 % of all firms. The 1936-census, however, covered 7188 units with 223 thousand people. In the workplace censuses of 1925 (1933), 286 (187) thousand people worked in 7983 (4564) units with more than 10 workers. Given the average of 31 people per unit registered by the 1936-census probably less than 70 % was taken into account, thus a correction factor of 2.33 applies.

Table 10. *Production Units and People Employed in Wearing Apparel, 1933 and 1939 share in percent*

Employment Class	1 to 5	6 to 10	Total Number
Units 1925	94.7	3.4	407,857
Employment 1925	59.9	10.4	961,541
Units 1933	96.9	1.9	371,161
Employment 1933	67.3	7.0	728,277
Units 1939 Prussia	94.9	2.9	199,843
Employment 1939 Pr.	53.2	8.5	506,858

Note(s): Category XX, 20 (*Bekleidungsgewerbe*) without XX.6/7, 20.07/8 (*Lederhandschuhe, Schuhmacherei und Schuhindustrie*)

Source(s): For Germany 1933 StR 462.2: 36-7; for Prussia 1939 StR 568.1: 8-9.

In the fur trade (*Pelzveredelung* and *–verarbeitung*) firms with less than 5 people were not included. In the workplace census, they were registered under XX.2 or 20.02 (*Rauchwarenzurichtung und Kürschnerei*). According to the workplace censuses, this activity employed the following number op people (StR 462.2 pp. 36-7; StH1949 p. 269): 1925 30,035; 1933 17,907; 1939 23,346. Establishments with 1 to 5 employees made up the following percentages of total employment (1939 Prussia):

1925	13.4
1933	23.8
1939	41.9

Whereas this business as a whole obviously shrank, the number of smaller firms increased. The cumulative distribution according to firm size was as follows: 1 5.5%, 1-3 26.7%, 1-5 41.9%, 1-10 60.8% (Prussia 1939: StR 568.1 pp. 6-9). It seems reasonable to assume that one third of employment was not covered by the 1936-census. Taking into account that the fur business made up barely 4 % of employment in my sample for clothing I refrained from applying a special correction factor for this type of employment.

Industrial group *26:*
26 Industrie der Öle und Fette, Futtermittel und tierischen Leime Manufactured Fats

Almost all activities were covered completely with the exception of *Futtermittelindustrie* where the very small units (*Kleinstbetriebe*) were left out. Only a small fraction of workers was neglected and hence no correction was applied.

Industrial group *27:*
27 Spiritusindustrie Manufactured Spirits

In some subcategories very small distilleries (*Kleinstbetriebe* and units with a fairly low out- or input) were left out. In the workplace censuses for 1925 and 1933, I did not find a corresponding category. In the 1939 census, it was registered under 20.17 (*Spiritusindustrie*) as part of category 20 (*Nahrungs- und Genußmittel*). In May 1939, it comprised 35,857 people in 11,255 establishments (1937 territory: StH1949 p. 269). In my sample, I counted yearly average employment of 25, 859 workers in 5,520 production units. Thus probably half of the establishments were not registered. This industry was characterised by very small production units: According to the Prussian numbers of the 1939 workplace census half of the establishments did not employ more than three people representing 18 % of the work force (StR 568.1 p. 8-9). This implies a correction factor of 22 % for employment.

Industrial group *28*
28 Nahrungs- und Genußmittelindustrie Food, Beverages and Tobacco

The group was dominated by very small firms and various exemption rules were applied: E.g. less than 5 ton output capacity daily (grain mills), less than 10 people employed (bakeries), handicraft employment (meat production), very small firms (*Kleinstbetriebe*) in fish processing, less than 3,000 or 10,000 RM yearly turnover (tinned fruit and vegetables, fruit juice), less than 4,000 hectolitre yearly output (breweries) etc. were left out. Only the sugar and confectionary industries were covered completely.

Unfortunately, the distinction between handicraft and industry (*Handwerk und Industrie*) does not help to close the information gap. For Prussia, Group 19 (*Nahrungs- und Genußmittelgewerbe*) of the workplace census comprised 178,040 units out of which 78% were assigned to handicraft and home production. They employed 52% of the 846,060 registered people (StR 568.1 p. 22). Obviously, this share is too low to explain the unrecorded gap.

In order to estimate employment not covered I pursued the same strategy as for textiles. The distribution of the numbers of firms and their share in employment according to employment classes was used as guideline.

Table 11. *Cumulative Share of Production Units and People Employed in Food,*
Beverages and Tobacco, 1933 and 1939 in percent.

Employment Class	1 to 10	1 to 20
Units 1933	96.3	98.2
Employment 1933	63.1	68.9
Units 1939	95.2	97.8
Employment 1939	58.4	65.7

Source(s): For Germany 1933 StR 462.2: 58-9; for Prussia 1939 StR 568.1: 8-9.

The 1936-census comprised (the figures in brackets are without sugar and confectionary industries) 11,921 (10,591) production units (*Arbeitsstätten*) which employed 513,208 (389,188) people. Concerning the 1937-territory, the workplace census recorded 1,539,576 (1,454,887) people working in 320,407 (317,603) establishments in the year 1939 (StH1949, p. 269). Comparing both the number of units and employment for both years it seems that the 1936-census covered about 33.3 (26.8) % of employment in 3.7 (3.3) % of the recorded production units. Although this kind of comparison is not without problems, it seems plausible that the 1936-census took into account firms with more than 20 people employed. Thus it can be assumed that the 1936-census left out at least 70 % of employment. This implies a correction factor of 233 % for employment.

Note on sugar production (*Zuckerindustrie*): Employment in sugar production fluctuated heavily during the course of the year. A clear seasonal peak was always in fall. On November 2, 1936, the factories employed 81,451 people (BA R3102 3638 Na 12). This is precisely the figure reported in the official publication (*Deutsche Industrie* p. 54). In contrast to this rather high figure for November, at the end of June, 26,520 and the end of December, 38,944 workers are documented (BA R3102 3638 Na 12). For its internal compilation the StRA calculated 60,197 people (BA R3102 5922). I took this number as a yearly average for our tables.

Industrial Group *29*
29 Bauindustrie und sonstige Industriezweige Building & Construction and Other Industrial Branches

In the published version of the 1936-census (*Deutsche Industrie*), this group was registered under number *30*. Here I follow the classification of the StRA for its internal use (BA R3102 2994). Hence the number *30* was assigned to electricity, gas and water utilities (*Elektrizitäts-, Gas- und Wasserversorgung*).

The industrial census of 1936 did not collect data on building and construction (*Bauindustrie*). The published figures of the census, however, contain a category of building & construction and other industrial branches (*Bauindustrie und sonstige Industriezweige*). These approximate figures (*Annäherungswerte*) report 1,220,000 employees (*Deutsche Industrie*, p. 55). In Fremdling/Stäglin (forthcoming) it will be described in which way we removed the *sonstige Industriezweige* and arrived at 1,075,675 people employed in building & construction proper. Note, that this figure is the implicit estimate of the StRA. Although I do not have direct evidence of the coverage of this business it seems pretty clear that the estimate (*Annäherungswerte*) put forward by the StRA left out small firms. To demonstrate this fact I confront the 1936-figure with numbers compiled in the interwar workplace censuses.

Table 12. *Employment and Business Units in Building & Construction,*
        1925,1933 and 1939

Census Year		*1925*	*1933*	*1939*
Employment XXI	number	1,530,000	1,008,544	2,217,648
21.1	percent	73.5	64.7	75.5
21.2	percent	26.5	35.3	24.5
Units 21	number	220,183	260,890	244,195
21.1	percent	44.4	43.4	39.2
21.2	percent	55.6	56.6	60.8

Note(s): 21 *Bau- und Baunebengewerbe;* 21.1 *Bauunternehmungen und Bauhandwerk;* 21.2 *Baunebengewerbe;*
1939-census: 21.1 includes 21.01-21.03 and G 21.2 includes 21.04-21.06.
Source(s): 1925/33 StR 462.2: 36-7; 1939 StH1949: 269.

Based on the figures in Table 12, it becomes pretty clear that the StRA-number for 1936 is very close to the workforce employed in the slump year of 1933 but deviates significantly from the numbers registered in 1925 and 1939. It seems highly probable that the experts of the StRA intended to cover only group 21.1, building business proper or *Bauhauptgewerbe.* By taking the StRA-number for 1936 (1,075,675) as 100 the following percentages for group 21.1 are calculated: 1925 104.5; 1933 60.7 and 1939 155.6. In any case, I can conclude that group 21.2, which was characterised by smaller units than group 21.1 (see table 12), was not covered by the 1936-census. According to the census years of 1933 and 1939, this was about 30 % of total employment in this increasingly booming activity during the second half of the 1930s.

Based on Ritschl´s figures (Ritschl 2002, table B.3), building investment in 1936 amounted to 321 % of the volume in 1933 and 148 % in 1925.[40] For a somewhat broader definition of building activities we can draw on turnover figures (*Umsatzwerte der Bautätigkeit*; StH1949 p. 339). Turnover in 1936 amounted to 272% of the volume in 1933 and 66 % in 1939. Although no clear-cut quantitative relation between the investment and the few employment figures can be established it seems plausible that the StRA-number for 1936 did not cover all units of group 21.1. Thus I checked the share of units employing up to ten people (table CC6). Even within this specific core group of building activities, small firms comprised 11 to 31 percent of employment. Thus I can conclude that about 20 % employment of group 21.2 was not included altogether. Taking into account a missing gap of 20 % for group 21.1 and 30 % for entire building & construction a correction factor of 80 % for employment has to be applied. Extrapolating the StRA-number we estimate 1,936.2 thousand people working in building and construction in 1936. Compared with the census data for 1925 and 1939 (see table 12) this seems a reasonable estimate. One has to keep in mind, however, that census data refer to a qualifying date in summer whereas we strove for a yearly average of employment.

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[40] **Unfortunately, there is no figure available for 1939.**

Table 13. *Cumulative Share of People Employed in Building Proper, 1925, 1933 and 1939, in percent.*

Employment Class	1 to 5	1 to 10
1925	7.4	13.7
1933	17.8	30.9
1939	5.5	11.1

Note(s): Groups XXI.1 d,f,g; 21.03 *Hoch-, Straßen- und Tiefbau einschl. Betonbau*
Source(s): For Germany 1925/33 StR 462.2: 36-7; for Prussia 1939 StR 568.1: 8-9.

Industrial group *30*
30 Elektrizitäts-, Gas- und Wasserversorgung Utilities (Electricity, Gas and Water)

The coverage was nearly complete, only some small electricity works with a capacity of up to 50 kilowatt KW were left out. In the workplace censuses, the following employment figures for category 20 (*Wasser-, Gas- und Elektrizitätsversorgung*) were recorded: 1925 148,151; 1933 139,670 and 1939 215,990 people (StR 462.2 pp. 8-9; StH1949 p. 269). Based on the archival sources, we arrived at 180.9 thousand employees for 1936. I did not apply a correction factor.

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