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LOW WAGE SERVICES:
INTERPRETING THE US - GERMAN DIFFERENCE

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ABSTRACT

Is the expansion of jobs in low-wage services in Europe restricted by high wages? With services now the main sector source of employment growth this question becomes crucial and we examine it through a detailed comparison of the role of low-wage services in the US and Germany. We find a clear low-wage service 'jobs deficit' in Germany but this is not due to excessively high German wages. Relative wages in low-wage sectors are extremely similar in the two countries. This is a striking finding given the much wider wage distribution in the US. The explanation for this phenomenon is the much greater intra-industry wage dispersion in the US producing similar industry mean wages as the much narrower German distribution.

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Services are the main sector of employment growth in advanced countries, and the principle area of difference between US and Western European employment. Between 1970 and 1995 the US increased the ratio of service employment to adult population by 15 percentage points while manufacturing employment per adult fell. In Germany (West) manufacturing employment relative to the population also fell while service sector employment per adult rose. Employment in service sector jobs per adult increased by about 9 percentage points in Germany -- 6 points less than in the US. The 6 point difference in the growth of service sector jobs per adult accounts for about 75% of the 1980-1995 increased gap between the German and US employment-population ratios. Since Germany and the US had similar employment-population rates in 1970, the service sector difference also explains roughly 3/4ths of the actual 1995 US-German difference in employment-population ratios overall. Thus, service industries are crucial for any explanation of the US-German differentials in employment trends.

The part of the service sector that has attracted most attention in discussions of German unemployment are low wage service industries, where many low skill workers who make up a disproportionate share of the unemployed might seek work. Analysts have argued that more flexibility in both supply and demand at the low-wage end of the labour market would increase employment in Germany and in the EU more broadly (e.g, Siebert 1997). Welfare state arrangements in Germany, like social assistance, may create reservation wages for low-skilled workers above the wages in low-paid jobs. On the demand side, collectively bargained wages may set a wage floor, which pushes costs for low-skilled services to a level prohibitive for private service demand, particularly when combined with non wage labour costs like social security contributions. Reductions in social assistance and in labour costs would presumably generate more low wage service employment, and thus lower German and EU unemployment.

Despite much policy discussion, there is little detailed empirical work comparing US and German low-wage services. Analyzes have been either highly aggregative or based on a priori thinking, rather than quantitative estimates of the key differences between low wage services in the US and Germany, much less of the relevant elasticities of demand or supply that might explain these differences. As a result there is some confusion about the basic facts regarding employment and wages in low wage service sectors in the two countries, and little hard evidence about the nature and causes of differences.

How much, in fact, does employment differ in low wage service sectors between the US and Germany?

Are the same sectors low wage in both countries, and if so, how far are they below average pay in each country?

Do the service sectors use similar proportions of low wage or low skill labour or do they employ different skill mixes in the two countries?

What explains any low wage service sector jobs “deficit” in Germany relative to the US -- high reservation wages? High labour costs? Or other differences between the two economies?

This paper seeks to provide facts to answer these questions and to clarify debate about the contribution of the low wage service sector to the German employment problem. We find that:

1. Germany has a smaller low wage service sector than the US, though the ratio of low wage service employment to population rose in Germany relative to the US from 1980 to 1995.
2. Low wage service industries are further below the national average in wages in Germany than in the US. Adding to this difference, low wage service industries employ proportionately more skilled workers in Germany than in the US, though women workers make up a much larger share of

employees in these areas in Germany.

3. A majority of low wage workers in Germany are found in a limited number of low wage service sector industries and in a few low-paying occupations. By contrast, low wage workers are found throughout the US job market.

In short, we find little support for the notion that the German-US deficit in low wage services is due to excessively high wages in those industries in Germany. Given the existence of open unemployment, we also see little support for the claim that low wage services face a labour shortage due to high reservation wages in Germany. The difference in sectoral employment must thus lie in some other differences between the economies, on which we offer some speculations.

1. The service sector employment difference

The starting point for our analysis is the basic fact that Germany has a smaller service sector than the US. In Germany shares of national production, consumption and employment in services fall below the equivalent shares in the US. (See table 1). Differences in shares, however, have no clear implications for employment since by definition, a smaller share in one sector implies a larger share in another. In this case the lower share of services in Germany implies that the country has relatively higher output and employment in manufacturing than in the US.

To analyze the link between levels of employment and sector, we calculated the ratio of employment in a sector to adult population: the number of workers employed in that sector per person of working age. Since sectoral employment-population ratios add up to the total employment-population ratio, they provide the appropriate statistic to assess the contribution of sectors to aggregate employment. These statistics, also given in table 1, show that Germany has a **somewhat** higher manufacturing employment to population ratio than the US but a **much** lower service sector employment ratio. As noted in the opening paragraph, it is this difference that accounts for the decline and gap in the employment–population ratio in Germany relative to the US.

Where do the low wage service industries fit into this picture?

To answer this question and provide a more detailed analysis of low wage services in Germany and the US we use data from a new micro-based data set, the **Comparable German-American Sectoral Database (CGAS)**. The CGAS classifies workers in the two countries into comparable detailed occupations (about 95) and industries (about 65) for the period 1970 to 1995. Within industry and occupation it contains cells based on wages, occupation, industry, age, sex, and nationality, rather than observations on individuals (which we could not get for Germany). Theoretically the data allows for differentiation of about 1.2 million cells per year. The underlying sources of the data for the CGAS database are the US Census of Population, the Current Population Survey, the German Mikrozensus and German social security data (Beschäftigtenstatistik). Combining these data files provides us with hundreds of thousands of cells which allow for the detailed analysis of international employment growth differentials after controlling for educational variables, gender, age etc. (for more details see Freeman/ Schettkat 1998).

The first step in our analysis was to identify the major low wage services. We rank-ordered industries in the CGAS by mean level of pay within Germany and the US. Table 2 lists the 15 industries at the low end of the distribution and gives their share of employment and employment to population ratios in 1989 and 1995. The upper panel uses the US wage structure to order the industries. The lower panel uses the German wage structure. Both wage structures place essentially the same industries at the bottom. Twelve out of the fifteen lowest paying industries are identical, and six of the seven low paying service sector industries are the same. The key low wage services in terms of number of employees are (in order) eating, drinking, and care facilities, retail trade, non-food, retail trade, non-food. The other low wage services are private households, personal services, services to dwellings, and business services, and other repair services. The figures on the share in overall employment show that the service industries dominate the low wage sector.

Looking across countries, the share of workers in the low-paying industries in overall employment is substantially higher in the US (27% upper panel, 28% lower panel) than in Germany (22% upper

panel, 20% lower panel), independent of the US or German ranking. The difference is almost entirely due to low wage services. In particular, the US employs a higher share of workers in 'eating, drinking, care facilities' (7.7% compared to 4.9% in Germany), 'retail trade' (10.5% in food and non-food retail trade compared to 9% in Germany), 'business services' (2.3% compared to .3% in Germany). In 'personal services' relatively more persons are employed in Germany (1.7%) than in the US (1.0%).

From 1989 to 1990, however, the employment to population rate for low wage service sectors in the US barely changed, while the rate rose by about 2 percentage points in Germany. This reduced the gap or deficit with the US by about one third. In 1989, the US had 6 percent more adults employed in low wage services than Germany. In 1995, the US had about 4 percent more adults employed in low wage services than Germany. Put differently, during the period of rising joblessness in Germany, low wage services expanded more than in the US.

2. Low paying services in the industry wage structure

One possible reason for Germany having fewer workers in the low paying service sector than the US is that wages in this 'low pay' area are higher relative to average pay than in the US. Given that Germany has a much narrower distribution of wages overall than the US, this would seem to be a reasonable possibility. If true, higher relative pay in German low wage services would provide some support for a demand side interpretation of the German low wage service employment deficit: the workers cost too much.

Surprisingly, the “wage difference” story turns out to be false. Table 3 displays industry-specific wages relative to the mean wage in the US and Germany respectively. These data show that relative wages of low-pay industries are strikingly similar in the two countries. Indeed, in 1995 the seven lowest paying service sectors have an average pay that is 67 percent of mean wages in the US and 61 percent of mean wages in Germany. The lowest paying service, private households, pays about 45% of the overall mean wage in both sectors; while pay in retail trade, both food and non-food, is 9 percentage points closer to the average in the US than in Germany. It is hard to argue, on the basis of

this evidence, that German low wage services are paying such relatively high wages as to reduce greatly demand for these services, and thus that high wages in those sectors explains the lack of employment.

The similarity in the position of low wage services in the industry wage structure between the US and Germany seems to conflict with the well-established fact that the US has a much wider distribution of wages overall than does Germany and that the bottom deciles of the US wage distribution are much further from the median than the bottom deciles of the German wage distribution (OECD, Employment Outlook, 1993).

The explanation that reconciles the difference between the distribution of wages among industries and the overall distribution of wages is that the US has much greater intra-industry dispersion in wages (Freeman/ Schettkat 1998). Table 3 records the standard deviation of log wages among cells within the sectors. Taking the low pay industries, the average (unweighted) standard deviation of log wages among cells within industry is about 0.4 in the US compared to 0.3 in Germany for the fifteen lowest paying industries ranked by US wages. The main differences in the within-industry differentials occur at the higher end of the low-paying industries rather than at the low end.

The similarity in the difference in pay by industry in the US and Germany also seems in conflict with the fact that the distribution of wages by occupation is wider in the US than in Germany (Freeman/Schettkat, 1998). The explanation that reconciles similarity in the distribution of wages among industries and differences in the distribution of wages among occupations is partly arithmetic. Consider pay in an industry that employs two types of workers, high wage and low-wage workers. In the country with the wider skill structure for wages (the US) let high paid workers receive 1.50 while the low paid workers receive .50. Then an industry that employs high and low-wage workers in equal proportions will pay 1.00 on average. Compare this to the pay in a country (Germany) where high skill occupations are paid 1.10 and low skill occupations are paid .90. Here, too the industry average pay will be 1.00. More broadly, by mixing high and low paid workers, a country with a highly unequal skill structure can produce the same industrial wage structure as a country with a more narrow distribution of wages overall.

3. Occupations in low wage services

Do low wage services in the US and Germany use the same types of workers (as in the preceding example) or does their employment composition differ in response to differences in the skill structure of pay or relative supplies of workers with different skill attributes?

Labor demand analysis suggests that faced with differences in relative wages, the same industry should employ different skill mixes of workers. The industry in the high skill premium country should economize on skilled workers and hire disproportionately more less skilled workers than the industry in the low skill premium country. This would reduce average pay in the industry in the high skill premium country, though it would not necessarily lower pay relative to other industries, which would face a similar incentive to substitute less skilled for more skilled workers. In any case, substitution in response to differences in the structure of pay across skill groups should produce differences in the composition of workers in low paid services in Germany rather than in the US.

Table 4 presents evidence that suggests considerable substitution of workers within sectors. It records the proportions of workers working in low-paying occupations and high wage occupations and the proportions with the characteristics (age, sex, education, and occupation) that would make them high or low paid. Consistent with substitution, German low paying services have proportionately more high wage workers defined by occupation or detailed characteristics than American low paying services. For example in the large eating, drinking, and care facilities category, 40 percent of Germans compared to 33 percent of Americans are in high-paying occupations, and 50 percent of Germans compared to 28 percent of Americans are in high paying cells.

4. Low-wage workers vs low-wage services

To what extent are low wage workers concentrated in low wage service industries or in particular low wage service type occupations rather than being dispersed throughout the economy? How

important are low wage services in the employment of low-wage workers in the US and Germany?

Defining low pay as wages below two-thirds of the mean wage, about 15% of workers in the CGAS are in cells with a wage below two-thirds of the German mean wage (below median wage: 15%) in Germany. In the US the proportion with wages below 2/3rds the mean is about 30% (while those with wages 2/3rds below the median is 24%)¹. The share of low-wage workers is thus twice as high in the US than in Germany.

Who are these workers, and where do they work? Table 5 presents information on their demographic characteristics and their concentration among sectors. The most striking difference in demography is that women workers are more highly represented among low wage employees in Germany than in the US. Given male-female wage gaps, this may help explain why relative wages in low-pay services are further below the average wage in Germany compared to the US.

To examine the concentration of employment of low wage workers among sectors we calculated Herfindahl indices by industry and occupation. A larger Herfindahl implies a greater concentration of employment in a limited number of sectors. The Herfindahls in table 5 show a striking difference between Germany and the US in the concentration of low wage workers by industry and occupation. In the US low wage workers are widely distributed across the economy. In Germany low wage workers are highly concentrated in low pay industries and occupations. Fully 70 percent of low wage workers work in the fifteen lowest paying industries. This contrasts to fifty-eight percent of low

¹ These shares are bit higher if one computes the share of German workers who are below two-thirds of the US mean wage. Using OECD-PPPs for 1989 (1 PPP US \$ = 2.104 DM) we find 19% of German workers below the two-third limit.

wage workers in the US employed in the fifteen lowest paying industries. The situation with respect to occupations is even more striking: 37 percent of low wage Americans work in the fifteen lowest paying occupations whereas 63 percent of low wage Germans work in the fifteen lowest paying occupations.

Table 6 displays the industries and occupations that have shares of low-wage workers above the economies average. By themselves, the major low paying services – eating, drinking facilities; retail trade food; retail trade nonfood, and personal services – account for over half of Germany’s low wage workers, and for around 40 percent of US low wage workers. Nearly 30 percent of all low wage German workers are in sales, which is nearly twice the contribution of sales to low wage work in the US.

The underlying reason for these differences is the very different within-industry or within-occupation dispersions of wages in the two countries. A wide within-sector dispersion of wages translates into low wage workers throughout the economy while a narrow within-sector dispersion translates into a concentration of low wage workers in low wage industries and occupations.

5. Skill and the low wage services

The analysis thus far has treated workers within the low wage sectors in Germany and the US as comparably skilled. A worker in an eating or drinking facility in Germany is similar to one in the US. While this is a defensible proposition for at least some activities -- the hamburger flipper does pretty much the same task in a German McDonald’s as in an American McDonald’s -- it is also a proposition that is probably wrong for other activities. The bottom tail of Germans on educational tests is invariably closer to the German mean than the bottom tail of Americans is to the American mean, and the German mean score on tests usually exceeds the American mean.² This suggests that

² The International Adult Literacy Survey shows the following distribution for three different skills on a scale from 0 to 500:

	Prose			Document			Quantitative		
	5 th percentile	mean	95 th percentile	5 th percentile	mean	95 th percentile	5 th percentile	mean	95 th percentile
US	140	270	375	125	260	370	150	280	375
Germany	210	275	350	210	290	360	225	300	370

one important reason why the US has a higher share of low-wage workers within services and a higher share of low wage service employment per adult in the population may simply be that the US has more less skilled workers.

Comparing skills across countries is difficult. The standard measure of skills are inputs like years of schooling or the highest degree achieved, which differ depending on the institutional features of educational systems. In addition if the quality of education differs, even well-chosen comparisons of educational levels may be misleading. The fact that the US educational system is based at a local level, with relatively little national or even state control, implies moreover that to a greater extent than in most countries, a year of schooling has different meaning within the country.

Still, difficulties notwithstanding, we want to assess the extent to which US-German differences in low wage employment can be attributed to differences in the distribution of skills between the countries. In the following analysis we use two different classifications of skill: one that we have derived that seeks to transform German and US schooling levels into comparable measures on the CGAS; and one based on Green-Steedman, who have developed another such comparison (see table 7).

We begin with years of schooling as derived from the national data sets. Then we develop a comparable classification scheme, which accounts for differences in skill levels attached to years. We distinguish four levels, in which to classify workers into equivalent skill groups. Hillary Steedman and Andy Green developed a somewhat different classification scheme, based on 'detailed scrutiny of syllabuses, examination papers and assessment procedures' (Green/ Steedman, 1997, 2) that provides

a useful alternative to ours. Green and Steedman correct for the difference in actual skill levels by

shifting the German scale up across the entire skill levels. i.e., the German educational system is estimated to produce higher skill levels in general. Our classification scheme shifts the German scale up only at the lower end of the schedule.³ We do not regard years of schooling in Germany at the higher levels to be superior to the American schooling. Since this paper focuses on the lower end of the scale, the two systems of contrasting education should yield roughly comparable results in terms of explaining differences in employment.

Table 8 shows the share of employment in the four levels of education by the two categorizations. For the lowest level the two systems give comparable employment and log wages. Our categorization puts more US workers in the second and third lowest levels and fewer in the highest level than does Green/Steelman. For Germany our scheme gives more weight to the second level and much less to the third and fourth level whereas in the Green-Steelman scheme level three covers almost 60% of the workforce and level four constitutes 25% of the workforce. Our top group are masters' and above whereas their top group consists of all bachelors' degrees and above, on the US schooling. If one takes the standard deviation of log wages as a measure for the quality of the classification schemes – the lower the standard deviation for wages within a grouping the better the grouping – there is no difference between the two schemes for the US but our scheme produces substantially lower standard deviations for Germany.

Whether the skill distribution is based on the Green-Steelman or on our classification does not make a difference in the US. The fifteen lowest paying industries in the US are also low-skill industries. In many industries about 80% of all workers are in the lowest skill level. For Germany, however, the distribution differs strongly between the Green-Steelman and our skill classification. In general, skill level 1 has a much lower share in Germany than in the US and our classification puts a high share on skill level II. According to skill classification the low-paying industries would be low skill in the sense that the lion share of workers in these industries is in skill level II or below. Using the Green-Steelman classification however, would make these industries high skill, which we feel is probably

³ This may be justified by the fact that in the International Adult Literacy Survey (OECD 1997) among the low educated adults (not completed upper secondary education) about 50% scored at level 3 and 4/5 on the document reading scale but only about 18% of the Americans.

inappropriate.

6. Conclusion: Wages or Wedges or What?

This paper has documented that Germany does indeed have fewer workers in low wage service industries than the US and that this difference is closely linked to Germany's overall lower employment to population rate compared to the US.

There are four possible reasons why Germany has fewer workers in the low wage service sector.

The first is that the cost of labour in Germany for those sectors is sufficiently high as to produce high prices that discourages consumer purchases. This paper finds little evidence in support of this proposition in terms of wages. Still, the fact that our data relate to the hourly wage 'normally paid' leaves open the possibility that non-wage costs or charges may contribute to lower service sector employment. Labour costs include paid vacation time, which adds additional costs of 4% in the US and about 12% in Germany. This difference would eliminate the lower relative wages found in several low wage services in Germany in Table 3. Social security contributions are an additional 7.5% of employer costs in the US but 20% in Germany. If we assume that the incidence falls largely on employers and consumers, this would create a sizeable labour cost gap, but the higher labour costs would be found in all industries in Germany. Any impact on demand for low wage services would require that low wage services have higher labor shares in gross output (so that the same change in cost would produce a greater change in prices) than other sectors and/or higher elasticities of demand for the product. There are a lot of dubious assumptions for this explanation to fly.

The second explanation is that high social assistance payments reduce the supply of workers to low wage industries in Germany. In Germany, workers have to pay social security contributions and income taxes, which reduces their take-home pay to about 64% in Germany, compared to about 76% of gross earnings in the US. But the fact that Americans purchase their health care at the workplace or at home and must buy other services which taxes pay for in Germany would reduce this

differential. In any case, our analysis of the German benefit structure (Freeman and Schettkat, table 9) suggests that this is an improbable explanation as well.

The third explanation is that Germany's work force is too skilled for low wage service jobs. The evidence that Germany uses more skilled occupations and workers in low wage services than the US raises doubts about this explanation, though we have not finished our analysis of this issue.

The fourth explanation is a more subtle one, regarding the interrelation between other aspects of the German economy and life-style and demand for low wage services. Germans work shorter hours and they may substitute service consumption by 'do-it-yourself'. This reasoning would fit the desire of Germans to work less and Americans to work more (Bell/ Freeman 1996). For it to stand up, however, we would need time use data showing that low wage services are purchased disproportionately by workers who put in many hours and that the specific services bought in the market in the US are in fact produced in the home in Germany.

Table 1: The sectoral distribution of the German and US economies

Years	Employment to population Ratio			Shares in overall employment			Shares in GDP (current prices)			Shares in GDP (constant 1990 prices)			Shares in Final Demand (constant 1982/85 prices)		
	Total	Manu- factur- ing	Ser- vices	Agri- culture	Manu- factur- ing	Ser- vices	Agri- culture	Manu- factur- ing	Ser- vices	Agri- culture	Manu- factur- ing	Ser- vices	Agri- culture	Manu- factur- ing	Ser- vices
US															
1960	61.0	21.5	34.3	8.49	35.27	56.24	4.45	42.46	53.09	3.72	41.31	54.97	n.a.	n.a.	n.a.
1970	61.9	21.3	37.9	4.53	34.35	61.11	3.23	39.66	57.11	2.58	39.28	58.14	1.0	47.0	51.0
1980	65.9	20.1	43.4	3.55	30.53	65.92	2.86	37.98	59.16	1.94	34.07	63.98	1.0	45.0	57.0
1989	71.8	19.1	50.6	2.88	26.66	70.46	2.29	32.07	65.64	2.15	31.71	66.13	1.0	43.0	56.0
1995	72.6	17.4	52.9	2.82	23.85	73.34	1.95	29.27	68.77	2.37	30.71	66.91	n.a.	n.a.	n.a.
Germany															
1960	68.8	32.3	26.9	13.96	46.97	39.07	6.41	58.36	35.23	2.82	56.39	40.79	n.a.	n.a.	n.a.
1970	67.8	33.4	28.5	8.64	49.33	42.03	3.80	58.20	38.00	2.08	57.33	40.59	n.a.	n.a.	n.a.
1980	65.0	28.4	33.1	5.29	43.70	51.02	2.52	51.54	45.94	1.85	52.38	45.76	1.0	58.0	41.0
1989	63.0	25.1	35.5	3.76	39.81	56.43	2.00	46.79	51.21	1.84	46.85	51.30	1.0	58.0	41.0
1995	64.2	24.3	38.2	3.34	37.54	59.12	1.26	41.10	57.64	1.80	41.71	56.49	n.a.	n.a.	n.a.

Source: computations are based on OECD Labour Force Statistics (CD-Rom), International Structural Data Base (CD-Rom). Final demand categories computed with data from the OECD Input-Output database, constant prices 1982 for the US, 1985 for Germany, exact years: 1972, 1982, 1990 for the US, 1978 1990 for Germany (Russo/Schettkat 1998).

Table 2: Employment in the 15 lowest-paying industries in the US and Germany; shares and employment-population ratios (working age population 15-65)

Industry	classification*	Shares in overall employment				Employment-population (15-65)			
		US		Germany		US		Germany	
		1989	1995	1989	1995	1989	1995	1989	1995
According to US wages 1989									
1095 Private households (88)	s	1.04	0.77	0.27	0.41	0.66	0.46	0.15	0.23
1001 Agriculture	a	1.45	1.19	0.78	0.95	0.92	0.71	0.44	0.54
1075 Eating, drinking & care facilities	s	7.40	7.70	3.50	4.94	4.66	4.60	1.98	2.79
1020 Apparel etc.	m	1.28	1.03	0.98	0.42	0.81	0.62	0.56	0.24
1096 Personal services	s	1.16	1.01	0.90	1.74	0.73	0.60	0.51	0.98
1086 Services to dwellings etc.	s	0.55	0.54	0.55	0.66	0.34	0.32	0.31	0.37
1068 Retail trade, food	s	3.02	2.92	2.46	1.97	1.91	1.74	1.39	1.11
1010 Meat products	m	0.43	0.42	0.66	0.56	0.27	0.25	0.37	0.32
1030 Leather, leather products	m	0.14	0.13	0.28	0.17	0.09	0.08	0.16	0.10
1065 Retail trade, non-food	s	7.22	7.54	5.73	6.93	4.55	4.51	3.24	3.92
1004 Fishing	a	0.03	0.03	0.01	0.01	0.02	0.02	0.01	0.01
1087 Business services	s	1.08	2.34	0.41	0.32	0.68	1.40	0.23	0.18
1022 Carpets and rugs	m	0.47	0.46	1.08	0.91	0.30	0.27	0.61	0.51
1031 Lumber and wood products	m	1.28	1.21	1.61	1.65	0.81	0.72	0.91	0.93
1049 Toys, amusement, sporting goods	m	0.12	0.14	0.32	0.20	0.08	0.09	0.18	0.11
Total Manufacturing		3.72	3.39	4.92	3.91	2.35	2.03	2.79	2.21
Total Services		21.47	22.82	13.82	16.98	13.53	13.64	7.82	9.59
Overall		26.68	27.43	19.53	21.84	16.82	16.40	11.05	12.34
According to German wages 1989									
1095 Private households (88)	s	1.04	0.77	0.27	0.41	0.66	0.46	0.15	0.23
1001 Agriculture	a	1.45	1.19	0.78	0.95	0.92	0.71	0.44	0.54
1096 Personal services	s	1.16	1.01	0.90	1.74	0.73	0.60	0.51	0.98
1068 Retail trade, food	s	3.02	2.92	2.46	1.97	1.91	1.74	1.39	1.11
1075 Eating, drinking & care facilities	s	7.40	7.70	3.50	4.94	4.66	4.60	1.98	2.79
1086 Services to dwellings etc.	s	0.55	0.54	0.55	0.66	0.34	0.32	0.31	0.37
1065 Retail trade, non-food	s	7.22	7.54	5.73	6.93	4.55	4.51	3.24	3.92
1010 Meat products	m	0.43	0.42	0.66	0.56	0.27	0.25	0.37	0.32
1004 Fishing	a	0.03	0.03	0.01	0.01	0.02	0.02	0.01	0.01
1094 Other repair services	s	0.39	0.39	0.13	0.07	0.25	0.23	0.07	0.04
1025 Paper and allied products	m	0.72	0.66	0.72	0.62	0.45	0.39	0.41	0.35
1064 Wholesale trade, nondurable	s	0.90	0.91	0.63	0.65	0.57	0.54	0.35	0.37
1020 Apparel etc.	m	1.28	1.03	0.98	0.42	0.81	0.62	0.56	0.24
1030 Leather, leather products	m	0.14	0.13	0.28	0.17	0.09	0.08	0.16	0.10
1087 Business services	s	1.08	2.34	0.41	0.32	0.68	1.40	0.23	0.18
Total Manufacturing		2.57	2.24	2.63	1.78	1.62	1.34	1.49	1.01
Total Services		22.76	24.12	14.57	17.69	14.35	14.42	8.25	10.00
Overall		26.82	27.58	17.99	20.43	16.90	16.49	10.18	11.55

According to German wages, industries ranked 11 and 14 exists in German only and were dropped.

* a=agriculture, m=manufacturing, s=services,

Table 3: Wages in low-paying industries; ranked according US 1989 wages

Industry	classification*	United States						Germany					
		1989			1995			1989			1995		
		Wage relative to mean	Standard deviation	Wage- rank	Wage relative to mean	Standard deviation	Wage- rank	Wage relative to mean	Standard deviation	Wage- rank	Wage relative to mean	Standard deviation	Wage- rank
1095 Private households	s	0.41	0.38	1	0.45	0.36	1	0.45	0.39	1	0.51	0.34	1
1001 Agriculture	a	0.57	0.29	2	0.58	0.33	2	0.50	0.34	2	0.52	0.35	2
1075 Eating, drinking & care facilities	s	0.62	0.37	3	0.66	0.40	4	0.63	0.33	5	0.67	0.31	6
1020 Apparel etc.	m	0.64	0.37	4	0.68	0.42	6	0.76	0.30	15	0.76	0.30	16
1096 Personal services	s	0.66	0.37	5	0.66	0.37	5	0.52	0.40	3	0.73	0.43	11
1086 Services to dwellings etc.	s	0.66	0.34	6	0.65	0.35	3	0.66	0.29	6	0.65	0.32	5
1068 Retail trade, food	s	0.70	0.36	7	0.69	0.38	8	0.60	0.35	4	0.60	0.32	4
1010 Meat products	m	0.70	0.36	8	0.68	0.37	7	0.69	0.25	8	0.71	0.25	9
1030 Leather and leather products	m	0.71	0.45	9	0.75	0.44	10	0.77	0.34	16	0.81	0.31	23
1065 Retail trade, non-food	s	0.73	0.36	10	0.75	0.37	11	0.66	0.34	7	0.68	0.33	7
1004 Fishing	a	0.73	0.58	11	0.74	0.71	9	0.70	0.28	9	0.73	0.26	12
1087 Business services	s	0.81	0.42	12	0.86	0.45	15	0.78	0.26	17	0.81	0.23	24
1022 Carpets and rugs	m	0.81	0.35	13	0.81	0.42	13	0.87	0.28	26	0.92	0.26	32
1031 Lumber and wood products	m	0.82	0.35	14	0.81	0.39	12	0.94	0.20	30	0.94	0.19	35
1049 Toys, amusement, & sporting goods	m	0.83	0.52	15	0.91	0.56	18	0.90	0.27	29	0.92	0.26	33
1094 Other repair services	s	0.90	0.39	22	0.92	0.45	20	0.72	0.28	10	0.68	0.26	8
1064 Wholesale trade, nondurable	s	0.96	0.39	27	0.95	0.43	25	0.75	0.30	13	0.75	0.28	14
1025 Paper and allied products	m	1.14	0.41	41	1.10	0.43	41	0.75	0.33	12	0.80	0.31	19

According to German wages, industries ranked 11 and 14 exists in German only and were dropped.

* a=agriculture, m=manufacturing, s=services,

Table 4: Intra-industry wage distribution

Industry			Relative Industry Wage	Low paying		High paying	
				Wage Relative to Industry Mean	Share in Industry Employment	Wage Relative to Industry Mean	Share in Industry Employment
US							
Occupations							
1095	Private households	s	0.41	0.93	86.66	1.63	13.34
1001	Agriculture	a	0.57	0.91	81.64	1.45	18.36
1075	Eating, drinking & care facilities	s	0.62	0.81	66.96	1.31	33.04
1020	Apparel etc.	m	0.64	0.81	74.14	1.51	25.86
1096	Personal services	s	0.66	0.88	74.70	1.35	25.30
1086	Services to dwellings etc.	s	0.66	0.90	77.90	1.30	22.10
1068	Retail trade, food	s	0.70	0.93	80.20	1.26	19.80
1010	Meat products	m	0.70	0.85	75.67	1.41	24.33
1030	Leather and leather products	m	0.71	0.83	77.87	1.56	22.13
1065	Retail trade, non-food	s	0.73	0.92	84.92	1.38	15.08
1004	Fishing	a	0.73	0.69	21.57	1.08	78.43
1087	Business services	s	0.81	0.78	60.14	1.32	39.86
1022	Carpets and rugs	m	0.81	0.83	72.07	1.42	27.93
1031	Lumber and wood products	m	0.82	0.88	75.62	1.36	24.38
1049	Toys, amusement, and sporting goods	m	0.83	0.78	71.99	1.49	28.01
Cells							
1095	Private households	s	0.41	0.79	67.58	1.44	32.42
1001	Agriculture	a	0.57	0.85	76.43	1.48	23.57
1075	Eating, drinking & care facilities	s	0.62	0.76	71.83	1.47	28.17
1020	Apparel etc.	m	0.64	0.78	76.79	1.70	23.21
1096	Personal services	s	0.66	0.76	66.64	1.44	33.36
1086	Services to dwellings etc.	s	0.66	0.80	72.83	1.46	27.17
1068	Retail trade, food	s	0.70	0.76	68.37	1.39	31.63
1010	Meat products	m	0.70	0.77	68.37	1.44	31.63
1030	Leather and leather products	m	0.71	0.74	71.98	1.63	28.02
1065	Retail trade, non-food	s	0.73	0.76	69.27	1.42	30.73
1004	Fishing	a	0.73	0.61	54.51	1.43	45.49
1087	Business services	s	0.81	0.72	67.15	1.54	32.85
1022	Carpets and rugs	m	0.81	0.78	70.38	1.49	29.62
1031	Lumber and wood products	m	0.82	0.78	64.87	1.39	35.13
1049	Toys, amusement, and sporting goods	m	0.83	0.69	72.55	1.75	27.45

Table 4: continued

Industry			Relative Industry Wage	Low paying		High paying	
				Wage Relative to Industry Mean	Share in Industry Employment	Wage Relative to Industry Mean	Share in Industry Employment
Germany							
Occupations							
1095	Private households	s	0.45	0.87	66.46	1.18	33.54
1001	Agriculture	a	0.50	0.92	75.64	1.25	24.36
1075	Eating, drinking & care facilities	s	0.63	0.87	60.41	1.18	39.59
1020	Apparel etc.	m	0.76	0.87	75.38	1.35	24.62
1096	Personal services	s	0.52	0.80	59.51	1.32	40.49
1086	Services to dwellings etc.	s	0.66	0.92	84.59	1.29	15.41
1068	Retail trade, food	s	0.60	0.85	67.86	1.29	32.14
1010	Meat products	m	0.69	0.85	50.14	1.13	49.86
1030	Leather and leather products	m	0.77	0.87	70.84	1.29	29.16
1065	Retail trade, non-food	s	0.66	0.82	56.49	1.21	43.51
1004	Fishing	a	0.70	0.90	61.14	1.17	38.86
1087	Business services	s	0.78	0.92	76.34	1.27	23.66
1022	Carpets and rugs	m	0.87	0.88	66.60	1.22	33.40
1031	Lumber and wood products	m	0.94	0.94	67.61	1.13	32.39
1049	Toys, amusement, and sporting goods	m	0.90	0.89	64.39	1.18	35.61
Cells							
1095	Private households	s	0.45	0.77	53.77	1.26	46.23
1001	Agriculture	a	0.50	0.77	51.70	1.25	48.30
1075	Eating, drinking & care facilities	s	0.63	0.75	50.14	1.25	49.86
1020	Apparel etc.	m	0.76	0.79	60.74	1.31	39.26
1096	Personal services	s	0.52	0.73	59.65	1.41	40.35
1086	Services to dwellings etc.	s	0.66	0.78	59.72	1.25	40.28
1068	Retail trade, food	s	0.60	0.74	54.71	1.28	45.29
1010	Meat products	m	0.69	0.81	53.81	1.20	46.19
1030	Leather and leather products	m	0.77	0.75	55.45	1.28	44.55
1065	Retail trade, non-food	s	0.66	0.75	55.68	1.28	44.32
1004	Fishing	a	0.70	0.78	44.41	1.15	55.59
1087	Business services	s	0.78	0.83	59.30	1.23	40.70
1022	Carpets and rugs	m	0.87	0.79	53.45	1.23	46.55
1031	Lumber and wood products	m	0.94	0.86	54.06	1.16	45.94
1049	Toys, amusement, and sporting goods	m	0.90	0.80	53.08	1.21	46.92

Source: computations are based on CGAS

Table 5: Characteristics of low-wage workers (data for 1989)

Mean low-wage wage divided by overall mean	Age	Education (mean of years of schooling)	Share of women	Industry concentration	Occupational concentration
US					
.521	32.8	11.8	.63	.0754	.0531
Germany					
.517	33.7	10.9	.86	.0924	.1199

Source: computations based on CGAS

Industry concentration: Herfindahl index, industry shares among low wage workers

Occupational concentration: Herfindahl index, industry shares among low wage workers

Table 6: Industry distribution of low-wage workers (Industries with an above average share of low-wage workers, 1989)

Industries		Share of low wage workers in industry employment [%]	Industry share in total low wage employment [%]
United States			
1095	Private households	91.5	3.1
1001	Agriculture	85.2	4.0
1075	Eating, drinking & care facilities	76.7	18.2
1020	Apparel etc.	78.6	3.2
1096	Personal services	74.1	2.7
1086	Services to dwellings etc.	72.8	1.3
1068	Retail trade, food	65.7	6.4
1010	Meat products	66.2	0.9
1030	Leather and leather products	64.8	0.3
1065	Retail trade, non-food	61.5	14.2
1004	Fishing	40.9	0.0
1087	Business services	49.9	1.7
1022	Carpets and rugs	44.2	0.7
1031	Lumber and wood products	38.3	1.6
1049	Toys, amusement, and sporting goods	53.3	0.2
	Fifteen lowest paying industries		58.4
1003	Forestry	42.3	0.1
1029	Rubber and misc. plastics	33.1	0.8
1035	Pottery and related products	46.1	0.0
1050	Miscellaneous manufacturing	47.6	0.5
1062	Wholesale trade, misc.	31.5	0.5
1102	Entertainment, sports	47.5	2.0
1110	Membership organizations	35.8	1.4

Table 6: continued

Industries		Share of low wage workers in industry employment [%]	Industry share in total low wage employment [%]
Germany			
1095	Private households	93.2	1.7
1001	Agriculture	87.3	4.6
1096	Personal services	79.0	4.8
1068	Retail trade, food	69.3	11.6
1075	Eating, drinking & care facilities	56.9	13.5
1086	Services to dwellings etc.	59.7	2.2
1065	Retail trade, non-food	56.4	21.9
1010	Meat products	45.5	2.0
1004	Fishing	44.4	0.0
1094	Other repair services	39.4	0.3
1025	Paper and allied products	34.8	1.7
1064	Wholesale trade, non-durable	36.6	1.6
1020	Apparel etc.	42.7	2.8
1030	Leather and leather products	40.9	0.8
1087	Business services	27.5	0.8
	Fifteen lowest paying industries		70.4
9720		45.1	0.1
9611		36.1	1.1
1011	Food industries	29.7	3.1
1022	Carpets and rugs	20.1	1.5
1049	Toys, amusement, and sporting goods	14.8	0.3
1060	Wholesale trade, durable	19.9	0.4
1061	Wholesale trade, misc.	31.4	1.5
1063	Wholesale trade, misc.	37.3	0.5
1113	Legal, management, accountancy, PR	22.5	1.7
9700		19.8	0.3

Source: Computations are based on CGAS

Table 7: Equivalent skill levels

Level	Ours			Green-Steedman		
	US	Years of schooling	Germany	US	Years of schooling	Germany
1	9 th grade -	9-	No certificate Hauptschule	High school Graduate	9-	Hauptschule
	10 th grade	10	Realschule		10	Realschule, Apprentice of less than 3 years
	11 th grade	11			11	
	Highschool graduate	12	Hauptschule + Apprenticeship		12	Abitur, Fachhochschulreife
2	Some college, no degree	13	Realschule + Apprenticeship; Abitur	Some college	13	Apprentice 3 years or more
	Associate degree	14	Hauptschule + Meister	Associate degree and equivalent qualifications	14	All Meister and Techniker
		15	Realschule + Meister		15	
3	Bachelor's degree	16	Fachhochschule	All 4 years Bachelor degrees & higher	16	
		17	Abitur + Fachhochschule		17	
4	Master or higher	18+	University degrees		18+	

Source: Own estimates and Green and Steedman (1997).

Table 8: Wages, wage dispersion and skill distributions according to different classification schemes (1989)

Skill level	Ours			Green/ Steedman		
	Log wage	Standard deviation	Share in employment	Log wage	Standard deviation	Share in employment
	US					
Level 1	2.08	.40	45	2.08	.40	45
Level 2	2.29	.42	30	2.20	.42	21
Level 3	2.57	.38	17	2.33	.41	8
Level 4	2.79	.39	8	2.64	.39	25
	Germany					
Level 1	2.71	.37	16	2.7	.37	13
Level 2	2.98	.30	69	2.75	.36	2
Level 3	3.32	.19	7	2.96	.29	58
Level 4	3.32	.15	8	3.25	.22	26

Source: computations based on the CGAS

Table 9: Skill distribution within the fifteen lowest paying industries (1989)

Industry		Skill level							
		I	II	III	IV	I	II	III	IV
		US				Germany			
1001	Ours	0.80	0.13	0.05	0.02	0.29	0.66	0.03	0.02
	G/St	0.80	0.05	0.08	0.07	0.28	0.02	0.56	0.15
1004	Ours	0.73	0.13	0.12	0.02	0.15	0.85	0	0
	G/St	0.73	0.01	0.12	0.14	0.15	0	0.78	0.07
1010	Ours	0.89	0.07	0.04	0.01	0.23	0.77	0.00	0.01
	G/St	0.89	0.02	0.04	0.05	0.21	0.02	0.68	0.09
1020	Ours	0.86	0.08	0.05	0.01	0.31	0.66	0.02	0.01
	G/St	0.86	0.03	0.05	0.06	0.28	0.02	0.60	0.09
1022	Ours	0.81	0.11	0.07	0.01	0.39	0.58	0.02	0.01
	G/St	0.81	0.05	0.06	0.08	0.37	0.02	0.51	0.10
1030	Ours	0.83	0.09	0.08	0.00	0.41	0.56	0.01	0.02
	G/St	0.83	0.04	0.05	0.09	0.40	0.02	0.51	0.08
1031	Ours	0.81	0.12	0.06	0.01	0.21	0.77	0.02	0.01
	G/St	0.81	0.05	0.07	0.07	0.20	0.01	0.69	0.10
1049	Ours	0.73	0.19	0.07	0.00	0.27	0.68	0.04	0.01
	G/St	0.73	0.07	0.12	0.08	0.25	0.02	0.61	0.12
1065	Ours	0.62	0.24	0.12	0.02	0.13	0.82	0.02	0.03
	G/St	0.62	0.10	0.15	0.13	0.11	0.02	0.74	0.13
1068	Ours	0.75	0.19	0.05	0.01	0.20	0.78	0.01	0.01
	G/St	0.75	0.09	0.10	0.05	0.18	0.02	0.74	0.06
1075	Ours	0.68	0.20	0.09	0.02	0.32	0.63	0.03	0.02
	G/St	0.68	0.08	0.12	0.12	0.29	0.03	0.55	0.13
1086	Ours	0.79	0.16	0.05	0.01	0.55	0.44	0.01	0.01
	G/St	0.79	0.07	0.09	0.05	0.53	0.02	0.39	0.06
1087	Ours	0.54	0.26	0.16	0.04	0.22	0.70	0.05	0.03
	G/St	0.54	0.10	0.16	0.20	0.19	0.03	0.60	0.17
1095	Ours	0.86	0.10	0.03	0.01	0.48	0.51	0.01	0.00
	G/St	0.86	0.04	0.06	0.04	0.44	0.03	0.49	0.03
1096	Ours	0.76	0.17	0.07	0.01	0.20	0.78	0.01	0.01
	G/St	0.76	0.07	0.09	0.08	0.18	0.02	0.70	0.10
Total, fifteen lowest paying industries	Ours	0.71	0.19	0.08	0.02	0.24	0.72	0.02	0.02
	G/St	0.71	0.08	0.11	0.10	0.22	0.02	0.65	0.11
Total, all industries	Ours	0.56	0.22	0.16	0.07	0.18	0.69	0.06	0.07
	G/St	0.56	0.08	0.14	0.23	0.16	0.03	0.60	0.22

Source: computations are based on CGAS

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