Expansion of the Service Sector

A Comparison of the Labor Markets in the USA, West Germany and Switzerland[†]

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1 Summary

The United States are seen as pioneers in the process of transition from an industrial to a service society who left all other developed countries far behind (figure 1). Especially in Germany the assertion of the "gap in service sector" still finds a lot of support and Germany's high unemployment rate is often attributed to the underdeveloped service sector (see, for example, Kommission für Zukunftsfragen 1998). Recent studies by the German Institute for Economic Research (DIW) and others, however, show that the official estimates of the size of the service sector and, therefore, the existence of a gap compared to the USA are debatable (Haisken-De New et al. 1996, 1997, 1998; Cornetz and Schäfer 1998; Klodt et al. 1997). Since the statistical offices usually focus on the economic sector of an enterprise, all employees, for example, of an industrial firm are counted to the industrial sector even though a lot of them might actually be doing service jobs (such as secretaries, people working in the food service and so on).[1] As a consequence, the relative importance of the service sector in different countries might be misinterpreted (for example, if the companies of the countries have different outsourcing strategies). Following the suggestion of the DIW we try to estimate the proportion of the service sector in the USA and Switzerland by looking at the occupations of the employees (using a classification proposed by Matheus 1995a, 1995b). The estimates for Switzerland are computed with the data of the Swiss Labor Market Survey (SLMS) 1998 (random sample of 3 000 respondents) and the Swiss Labour Force Survey (SLFS) 1992–1999 (annual rotating panel of 16 000 respondents). For the USA, we use the March Sample of the Current Population Survey (CPS) 1992–1999 (50–60 000 households).

First of all, we will show that the different methods of measurement of the relative size of the service sector do actually yield remarkably different estimates (figure 2).[2] Secondly, we will show that—in comparison to the USA—one cannot

[1] The standard method to measure the composition of an economy relies on the three-sector-thesis (see Clark 1957). Sectors one and two capture all the enterprises that are concerned with the production and/or winning of material goods (agriculture, mining, industrial production, etc.). Sector three (services) is a residual category that captures the remainder (Matheus 1995a).

[2] In figure 2, we compare four different measures. The first one is the same as used in official statistics, whereby employees are classified by the economic branch of their employer. The second

speak of a strongly underdeveloped service sector in Germany or Switzerland, even though the official estimates might suggest so (table 1). Furthermore, services are expanding more rapidly in Germany and Switzerland and the small lead of the USA that still exists will probably vanish soon.

However, a more detailed look reveals differences in the structure of the service sector (table 1). Most striking is the lead of the USA in the domain of organizational services (executive, managers, senior officials). This is probably due to generally deeper hierarchies in US enterprises (Haisken-De New et al. 1996: 225). But the difference might also be partially generated by incompatible classifications of occupations (many "managers" in the USA would probably be classified otherwise in Germany or Switzerland, see Cornetz and Schäfer 1998: 424, Haisken-De New et al. 1996: 225). This makes particular sense if one considers that the sum of organizational and administration services is about the same in the three countries.[3] Furthermore, it has to be mentioned that there is only little difference in consumption related services (personal services, food services, private household services, arts), which include a major part of the so called "simple services", for example, catering or cleaning. It is often said that European countries like Germany could raise their employment rate if—as is the case in the US economy—these services would be widely supplied on the market rather than produced within private households (Kommission für Zukunftsfragen 1998, Zukunftskommission der Friedrich-Ebert-Stiftung 1998). Our analysis shows that this is probably not true.[4] We even measure a higher proportion of simple services in Switzerland than in the USA when these are isolated as a separate occupational group (table 1).

measure has its focus on the occupations of the employees. It is a recoding of the International Standard Classification of Occupations (ISCO 88). The third measure has its focus on the jobs people actually do. Here, we have asked the respondents about their predominant activity at the workplace. For the fourth measure, we asked the respondents whether they consider the work they do to be a service or not. The first three methods are all based on the three-sector-thesis, where the service sector is defined as a residual category (everything else than production or winning of material goods). The fourth method leaves the definition of services open to the respondents. (See section 3 for details.)

[3] Organizational services are, strictly speaking, a subgroup of administration services.

[4] Similar conclusions are drawn, for example, by Wagner 1999.

An interesting thesis in the context of the expansion of service occupations states that a new "service proletariat"—that is a social class of low educated employees doing low skilled service jobs under poor working conditions and for low payment—is rising (Blossfeld and Mayer 1991). Especially in the domain of consumption related services and, to some extent, in the domains of administration services (simple office occupations like secretaries or accountants) and distribution services (sales, transportation, communications) we find some evidence for the existence of such a class. As our analysis for the USA and Switzerland shows, earnings and education levels are clearly below average in these domains (table 2). Typically, consumption related services and administration services also have very high proportions of female and part-time employees.

If it is true that a new "service proletariat" is expanding one should be able to measure growing earnings inequalities on the labor market due to two effects (see also Gustafsson and Johansson 1999: 586, Levy and Murnane 1992: 1347pp., Gottschlak and Smeeding 1997: 647): (1) In the domain of service occupations, earnings inequality is clearly higher than in the domain of agricultural and industrial occupations. If the size of the service sector increases, one would expect total earnings inequality to increase as well. (2) It might be the case that the labor market becomes more and more polarized into "good jobs" and "bad jobs" within the domain of service occupations itself. This would also contribute to larger earnings inequality.

In our analysis, however, we cannot find clear evidence for either one of these effects (table 3). The distribution of hourly wages in the USA has remained rather stable between 1992 and 1999.[5] In Switzerland disparity of wages has even slightly declined (in total *and* within service occupations).[6] Not surprisingly, the inequality level is much higher in the US. If one considers the official estimates of the economic sectors one could think that the difference is due to a more developed service sector in the US. As we have seen above, the results of a more detailed anal-

[5]The U.S. Census Bureau reports similar findings for aggregate household income: "Regardless of the measure used, it seems clear that income inequality rose substantially between 1967 and the early 1990s but has remained unchanged since then" (1999: 15).

[6]See also Gugler and Blank (1999) who reported a non-increasing wage disparity for full-time employees in Switzerland between 1992 and 1997.

ysis of the structure of the two labor markets do not support this view. We believe that the higher inequality level in the US is at least partly due to higher returns to education. The estimation of simple human capital functions (following Mincer 1974) not only reveals substantially higher rates of return to education on the US labor market, but also a further increase of the differences between the USA and Switzerland in the Nineties (figure 3). There can be various reasons for the higher rates of return in the USA. One might, for example, think of the differences in the education and training systems or the degree of unionization.[7]

In short, we derive two conclusions:

A. Compared to the USA, Switzerland and Germany seem to have more or less made up their leeway in the transition towards a service society. Still, though, there are some differences in the structure of the service sector.

B. The popular thesis, that the transition towards a service society leads to a polarization on the labor market and a further increase of earnings inequality cannot be supported for the period of the 1990s.

[7]More detailed analysis of the reasons for different income and earnings inequality levels can be found, for example, in Acemoglu (1999), Alderson and Nielson (1999), Altig and Carlstrom (1999), Gottschlak and Smeeding (1997) or Gustafsson and Johansson (1999).

2 Figures and Tables

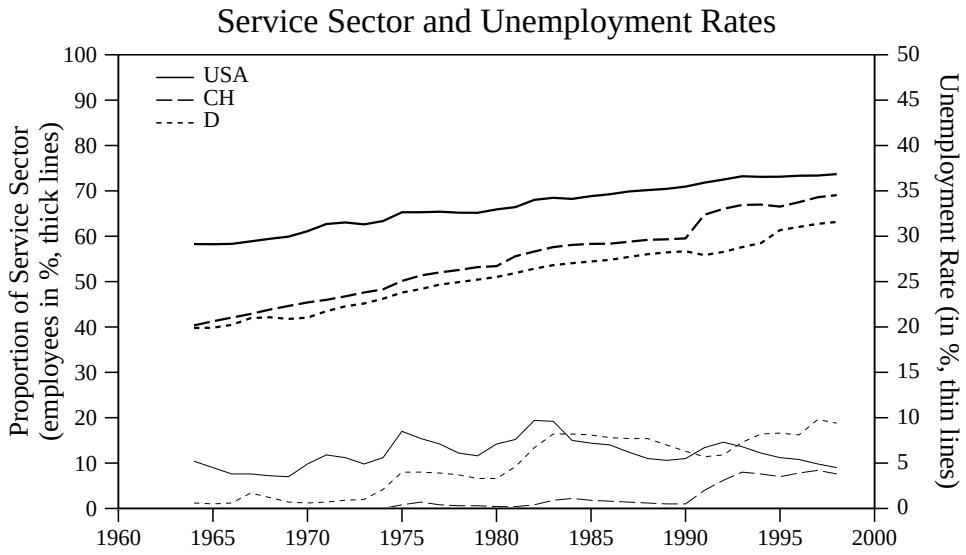

Figure 1: Service Sector and Unemployment Rates in USA, West Germany (D) and Switzerland (CH) (for details and sources see table 5)

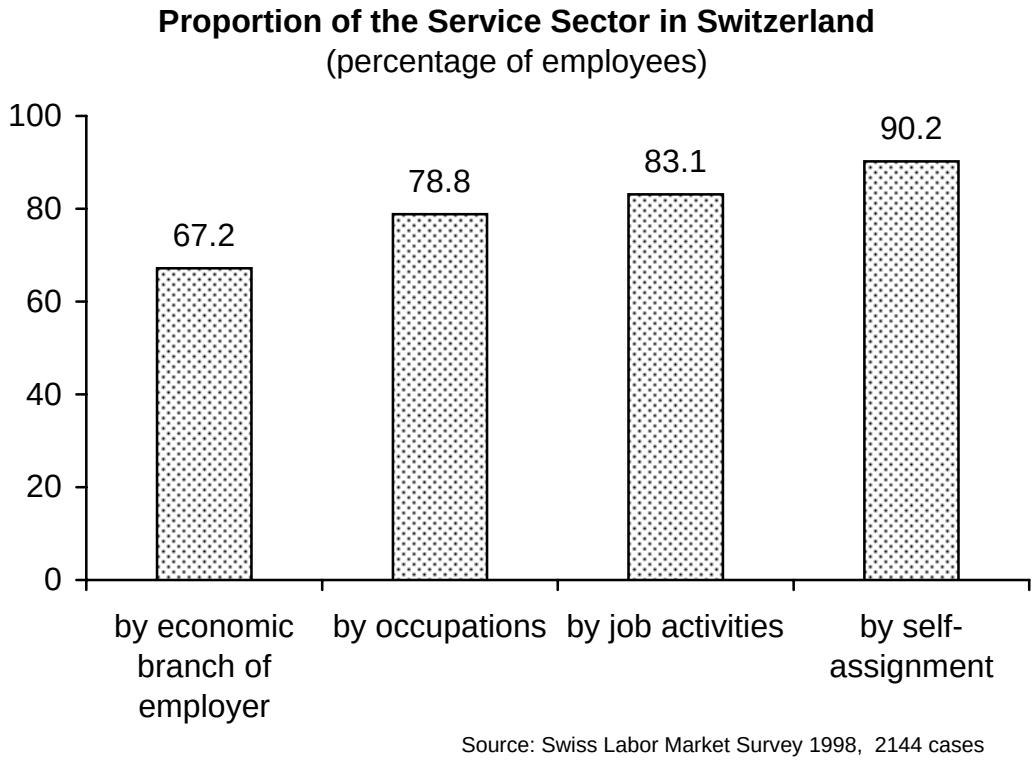

Figure 2: Different Estimates for the Proportion of the Service Sector in Switzerland in 1998 (see footnote 2 and section 3 for the definition of the measures)

Table 1: The Structure of the Labor Market in the USA, West Germany and Switzerland in 1997 (in proportions of employees)

	USA	Germany	Switzerland
Service sector (by economic branch of employer)	74.2	62.7	70.0
Farming, forestry and fishing occupations	2.5	2.5	5.5
Industrial occupations	21.0	22.5	19.7
Service occupations, of which:	76.5	75.0	74.8
– administration services	11.6	17.7	16.7
– organizational services	10.8	4.7	4.0
– services close to production	10.0	9.6	13.0
– distribution services	16.5	16.0	13.0
– consumption related services	12.7	11.7	11.2
– social services	13.1	13.4	15.3
– public services	1.7	1.8	1.0
– services n.e.c.	–	–	0.6
Total	100.0	100.0	100.0
Proportion of simple services	14.4	–	16.1
Cases	57 555	–	10 221
Service occs: change 1992–1999 (D: 1993–1997)	+0.7	+2.0	+1.5

Definitions: Service sector by economic branch of the employer: see section 3. Occupational domains and simple services (USA/Switzerland): classified via the CPS Occupation Classification and the International Standard Classification of Occupations 1988 (ISCO 88), respectively (see section 3 for details). Occupational domains (Germany): classified via the ISCO 68 (see Matheus 1995a, 1995b).
Universe: All employees (including self-employed).
Sources: USA: Current Population Survey (CPS), March Supplement 1992–1999, own computations, weighted by basic CPS weights. West Germany: Socio-Economic Panel (SOEP, cited after Haisken-De New et al. 1996, 1998) for the occupational domains, Statistisches Bundesamt (1999: 170) for the estimate by economic branches. Switzerland: Swiss Labour Force Survey (SLFS) 1992–1999, own computations, weighted by design weights.

Table 2: Characteristics of Different Service Domains in USA and Switzerland in 1999

	wage level	pct. of low paid workers	low education pct.	pct. of female workers	pct. of part-time workers
USA					
Administration services	.80	14	12	83	30
Organizational services	1.48	2	3	41	7
Services close to production	1.40	3	2	42	9
Distribution services	.94	9	11	36	17
Consumption related serv.	.63	25	26	64	39
Social services	1.20	6	4	73	22
Public services	1.36	4	2	20	6
Total	1.00	10	10	55	21
Cases	10 024	10 024	45 419	45 419	45 419
Switzerland					
Administration services	.95	4	14	71	44
Organizational services	1.41	1	7	27	15
Services close to production	1.25	1	6	20	13
Distribution services	.87	8	21	47	33
Consumption related serv.	.75	14	35	74	59
Social services	1.07	4	9	70	59
Public services	1.22	5	5	16	20
Total	1.00	6	15	56	40
Cases	6 536	6 536	8 783	8 803	8 529

Notes: Wage level: median wage of the group divided by the median wage over all groups. Percentage of low paid workers: proportion of employees, whose hourly pay is less than half of the median wage over all groups. Low education percentage: proportion of employees without high school degree (USA), without education other than mandatory school (CH).
Universe: Columns 1 and 2: all employees with earnings data eligible (excluding self-employed). Columns 3,4, and 5: all employees.
Sources: USA: Current Population Survey (CPS), March Supplement 1999, own computations, columns 1 and 2 weighted by earnings universe weights, columns 3, 4, and 5 weighted by basic CPS weights. Switzerland: Swiss Labour Force Survey (SLFS) 1999, own computations, weighted by design weights.

Table 3: Development of Wage Inequality in the USA and Switzerland between 1992 and 1999

	USA		Switzerland	
	1992	1999	1992	1999
Wage level (group med./total med.)				
– agricultural and industrial occs	.93	.94	.98	.93
– service occupations	1.01	1.02	1.02	1.03
– total	1.00	1.00	1.00	1.00
Percentage of low paid workers (relative to group median)				
– agricultural and industrial occs	9.1	5.4	5.7	3.5
– service occupations	10.3	10.1	8.0	5.5
– total	10.5	9.3	5.9	4.1
Dezile Ratio (P90/P10)				
– agricultural and industrial occs	3.68	3.74	2.29	2.12
– service occupations	4.42	4.53	3.25	2.90
– total	4.17	4.25	3.09	2.80
Gini				
– agricultural and industrial occs	.286	.275	.197	.183
– service occupations	.327	.337	.276	.250
– total	.320	.326	.263	.242
Cases	14 678	12 908	7 597	8 009

Notes: Percentage of low paid workers: proportion of employees, whose hourly pay is less than half of the median wage of the group.
Universe: All employees with earnings data eligible (excluding self-employed).
Sources: USA: Current Population Survey (CPS), March Supplement 1992 and 1999, own computations, weighted by earnings universe weights. Switzerland: Swiss Labour Force Survey (SLFS) 1992 and 1999, own computations, weighted by design weights.

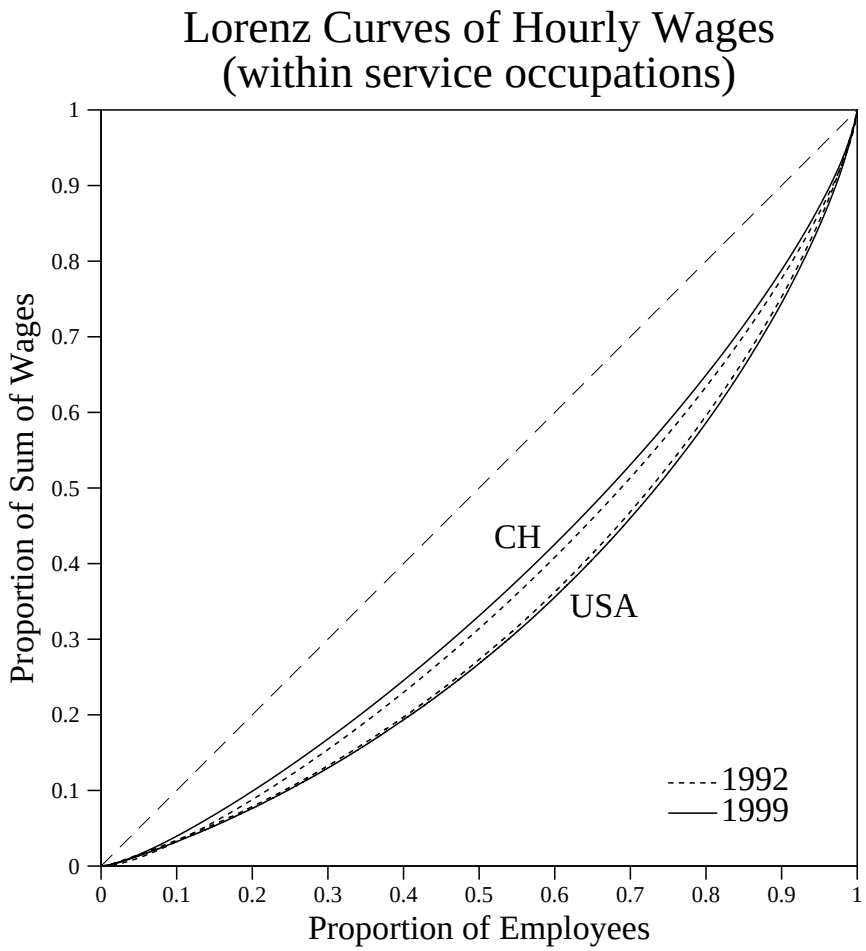

Figure 3: Lorenz Curves of the Distribution of Hourly Wages within Service Occupations in the USA and Switzerland in 1992 and 1998

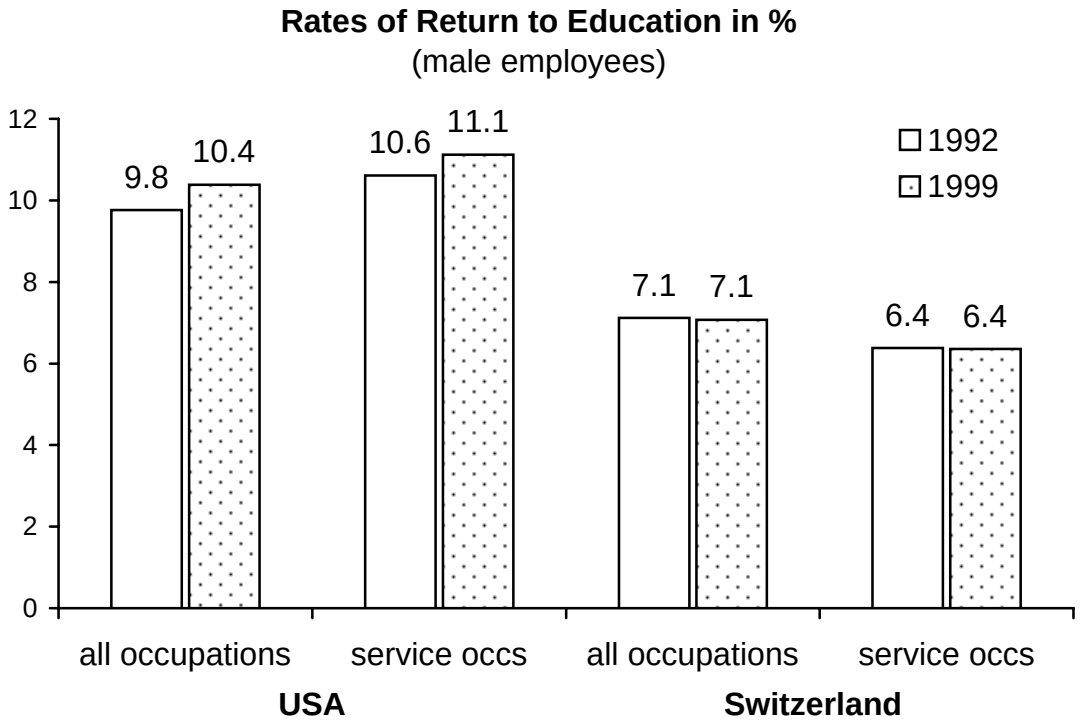

Figure 4: Rates of Return to Education (increase of expected hourly wages in percent for each additional year of education, see table 11 for details)

3 Classifications

3.1 Definition of Economic Sectors by Economic Branch of Employer

Definition of economic sectors for the Current Population Survey:

Sector I: 1 Agriculture, 21 Forestry and fisheries

Sector II: 2 Mining, 3 Construction, 4 Manufacturing – durable goods, 5 Manufacturing – nondurable goods

Sector III: 6 Transportation, 7 Communications, 8 Utilities and sanitary services, 9 Wholesale trade, 10 Retail trade, 11 Finance, insurance, and real estate, 12 Private household services, 13 Business and repair services, 14 Personal services, except private hhlds, 15 Entertainment and recreation services, 16 Hospitals, 17 Medical services, except hospitals, 18 educational services, 19 Social services, 20 Other professional services, 22 Public administration

Source: Industry classification codes (major industry recodes) of the CPS (see http://www.bls.census.gov/cps/bindcd.htm).

Definition of economic sectors for the Swiss Labour Force Survey (1991–1995):

Sector I: 0 Agriculture and forestry

Sector II: 10 Energy and water supply, mining, 23 Manufacturing, 40 Construction

Sector III: 50 Wholesale and retail trade, restaurants, repair services, 60 Transportation, Communications, 70 Finance, insurance, real estate, consulting, 89 Private household services, 80 Other services, 90 Public administration

Definition of economic sectors for the Swiss Labour Force Survey (1996–1999):

Sector I: 1 Agriculture, forestry, hunting, fisheries

Sector II: 3 Mining, 4 Manufacturing, 5 Energy and water supply, 6 Construction,

Sector III: 7 Wholesale and retail trade, repair services, 8 Restaurants, 9 Transportation, Communications, 10 Finance, insurance, 11 Real estate, informatics, research and development, business services, 12 Public administration, social security, 13 Education, 14 Health and social services, 15 Other public or private services, 16 Private household services, 17 Exterritorial organizations and corporations

Sources: General Nomenclature of Economic Branches 1985 (for SLFS 1991–1995) and General Nomenclature of Economic Branches 1995 (for SLFS 1996–1999) (Bundesamt für Statistik 1998).

3.2 Definition of Occupational Groups

Definition of the occupational groups for the Current Population Survey:

1. Farming, forestry and fishing occupations:
   473–499 Farm operators and managers, farm workers and related occupations, forestry and fishing occupations

2. Industrial occupations:
   363 Production coordinators, 368 Weighers, measurers, checkers, and samplers, 503–549 Mechanics and repairers, 553–599 Construction trades, 613–699 Other precision production occupations, 703–779 (except 773) Machine operators and tenders, except precision, 783–799 Fabricators, assemblers, inspectors and samplers, 864 Supervisors, handlers, equipment cleaners, and laborers, n.e.c., 865 Helpers, mechanics, and repairers, 866 Helpers, construction trades, 868 Helpers, extractive occupations, 869 Construction laborers, 874 Production helpers, 875–883 Freight, stock and material handlers, 885–889 Other handlers, equipment cleaners, and laborers
3. Administration services:
   276 Cashiers, 303 Supervisors, general office, 304 Supervisors, computer equipment operators, 305 Supervisors, financial records processing, 308–309 Computer equipment operators, 313–315 Secretaries, stenographers, and typists, 323–336 Information, classified-ad, correspondence, library, file and records clerks, 337–344 Financial records, processing occupations, 345 Duplicating machine operators, 347 Office mach. operators, n.e.c., 365 Stock and inventory clerks, 366 Meter readers, 377 Eligibility clerks, social welfare, 378 Bill and account collectors, 379 General office clerks, 383 Bank tellers, 384 Proofreaders, 385 Data-entry keyers, 386 Statistical clerks, 389 Administrative support occupations, n.e.c.
4. Organizational services:
   003–006 Administrators and officials, public administration, 007–022 Other executive (non-official), administrators, and managers
5. Services close to production:
   023 Accountants and auditors, 024 Underwriters, 025 Other financial officers, 026 management analysts, 027 Personnel, training, and labor relations specialists, 034 Business and promotion agents, 035 Construction inspectors, 036 Inspectors and compliance officers, except construction, 037 Management rel. occupations, n.e.c., 043 Architects, 044–059 Engineers, 063 Surveyors and mapping scientists, 064 Computer systems analysts and scientists, 065 Operations and systems researchers and analysts, 066 Actuaries, 069–079 Natural scientists, 213–225 Engineering and science technicians, technicians except health, 229 Computer programmers, 233 Tool programmers, numerical control, 234 Legal assistants, 235 Technicians, n.e.c., 316 Interviewers, 375–376 Investigators and adjusters, 426 Guards and police, except public service, 427 Protective service occupations, n.e.c., 867 Helpers, surveyor
6. Distribution services:
   028–033 Purchasing agents and buyers, 226 Airplane pilots and navigators, 227 Air traffic controllers, 228 Broadcast equipment operators, 243 Supervisors and proprietors, sales occupations, 253–278 (except 276) Sales representatives and sales workers, 283–285 Sales related occupations, 306 Chief communications operators, 307 Supervisors, distribution, scheduling, and adjusting clerks, 346 Mail preparing and paper handling machine operators, 348 Telephone operators, 353 Communications equipment operators, n.e.c., 354–359 Mail and message distribution, 364 Traffic, shipping, and receiving clerks, 373 Expediters, 374 Material recording, scheduling, and distributing clerks, n.e.c., 454 Elevator operators, 463 Public transportation attendants, 803–814 Motor vehicle operators, 823–859 Other transportation occupations and material moving
7. Consumption related services:
   175 Recreation workers, 183–199 Authors, designers, musicians, actors and directors, artists, photographers, dancers, athletes, 317 Hotel clerks, 318 Transportation ticket and reservation agents, 319 Receptionists, 403–407 Private household service occupations, 433–444 Food service occupations, 448–453 Cleaning and building service occupations, 455–469 (except 463) Personal service occupations, 773 Motion picture projectionists

8. Social services:
   067 Statisticians, 068 Mathematical scientists, n.e.c., 083 Medical scientists, 084–089 Health diagnosing occupations, 95–106 Health assessment and treating occupations, 113–154 Teachers, college and university, 155–159 Teaches, except college and university, 163 Counselors, Educational and Vocational, 164 Librarians, 165 Archivists and curators, 166–169 Social scientists, 173 Urban planners, 174 Social workers, 176–177 Clergy and religious workers, 203–208 Health technologists and technicians, 387 Teachers' aides, 445–447 Health service occupations

9. Public services:
   178–179 Lawyers and Judges, 413–425 Protective service occupations

Definition of simple services for the Current Population Survey:

263–278 Sales workers, retail and personal services, 357 Messengers, 366 Meter readers, 403–407 Private household service occupations, 434–444 Food service occupations (except Supervisors), 449 Maids and housemen, 453 Janitors and cleaners, 454 Elevator operators, 457 Barbers, 458 Hairdressers and cosmetologists, 464 Baggage porters and bellhops, 466 Family child care providers, 468 Child care wrkrs, n.e.c., 469 Personal service occupations, n.e.c., 809 Taxicab drivers and chauffeurs, 813 Parking lot attendants, 875 Garbage collectors

Sources: Detailed occupational categories (3-digit) of the CPS Occupation Classification (developed from the 1980 Standard Occupational Classification) (see http://www.bls.census.gov/cps/bocccd.htm).

Definition of the occupational groups for the Swiss Labour Force Survey and the Swiss Labor Market Survey (ISCO 88(COM)):

1. Farming, forestry and fishing occupations:
   1221 Production and operations department managers in agriculture, hunting, forestry and fishing, Major group 6 (except 6142) Skilled agricultural and fishery workers, 8331 Motorized farm and forestry plant operators, 9210–9213 Agricultural, fishery and related laborers

2. Industrial occupations:
   1222–1223 Production and operations department managers in manufacturing or construction, 3139 Optical and electronic equipment operators n.e.c., 6142 Charcoal burners and related workers, Major group 7 (except 7143) Craft an related trades workers, 8000–8290 Stationary plant and related operators, Machine operators and assemblers, 8330–8334 (except 8331) Agricultural and other mobile plant operators, 9160–9162 Garbage collectors and related laborers, 9300–9322 Mining and construction laborers, Manufacturing laborers

3. Administration services:
   2470 Public service administrative professionals, 3120–3122 Computer assistants, Computer equipment operators, 3430–3439 (except 3434) Administrative associate professionals, 3440–3449 Customs, tax and related government associate professionals, Major group 4 (except 4133, 4142, 4214, 4223) Office clerks, 9153 Vending-machine money collectors, meter readers and related workers

4. Organizational services:
   Major group 1 (except 1110, 1130, 1221, 1222, 1223, 1226, 1233) Senior officials and managers

5. Services close to production:
   2100–2114 Physicists, chemists and related professionals, 2130–2139 Computing professionals, 2140–2149 Architects, engineers and related professionals, 2210–2213 Life science professionals, 2410–2419 Business professionals, 2420–2429 (except 2422) Legal professionals, 3100–3119 Physical and engineering science technicians, 3123 Industrial robot controllers,

3150–3152 (except 3151) Safety and quality inspectors, 3210–3213 Life science technicians and related associate professional, 3410–3413 Securities and finance dealers and brokers, insurance representatives, estate agents, 3422 Clearing and forwarding agents, 3429 Business services agents and trade brokers n.e.c, 3434 Statistical, mathematical and related associate professionals, 5169 Protective services workers not elsewhere classified, 9152 Doorkeepers, watchpersons and related workers

6. Distribution services:
   1226 Production and operations department managers in transport, storage and communications, 1233 Sales and marketing department managers, 3132 Broadcasting and telecommunications equipment operators, 3140–3145 Ship and aircraft controllers and technicians, 3415–3419 Technical and commercial sales representatives, buyers, appraisers, valuers and auctioneers, finance and sales associate professionals n.e.c., 3421 Trade brokers, 4133 Transport clerks, 4142 Mail carriers and sorting clerks, 4214 Pawnbrokers and money-lenders, 4223 Telephone switchboard operators, 5112 Transport conductors, 5143 Undertakers and embalmers, 5220 Shop salespersons and demonstrators, 8300–8324 Locomotive engine drivers and related workers, motor vehicle drivers, 8340 Ships' deck crews and related workers, 9100–9113 Street vendors and related workers, 9150–9151 Messengers, package and luggage porters and deliverers, 9330–9333 Transport laborers and freight handlers

7. Consumption related services:
   2450–2455 Writers and creative or performing artists, 3130–3131 Photographers and image and sound recording equipment operators, 3414 Travel consultants and organizers, 3470–3475 Artistic, entertainment and sports associate professionals, 5110–5113 Travel attendants and related workers, 5120–5123 Housekeeping and restaurant services workers, 5131 Child–care workers, 5140–5149 (except 5143) Other personal services workers, 5210 Fashion and other models, 7143 Building structure cleaners, 9120 Shoe cleaning and other street services elementary occupations, 9130–9133 Domestic and related helpers, cleaners and launderers, 9140–9142 Building caretakers, window and related cleaners

8. Social services:
   2120–2122 Mathematicians, statisticians and related professionals, 2220–2229 Health professionals (except nursing), 2230 Nursing and midwifery professionals, 2300–2359 Teaching professionals, 2430–2432 Archivists, librarians and related information professionals, 2440–2446 Social science and related professionals, 2460 Religious professionals, 3133 Medical equipment operators, 3220–3229 Health associate professionals (except nursing), 3230–3232 Nursing and midwifery associate professionals, 3300–3340 Teaching associate professionals, 3423 Employment agents and labor contractors, 3460 Social work associate professionals, 3480 Religious associate professionals, 5130–5139 (except 5131) Personal care and related workers

9. Public services:
   0110 Armed forces, 1110 Legislators, 1130 Traditional chiefs and heads of villages, 2422 Judges, 3151 Building and fire inspectors, 3450 Police inspectors and detectives, 5160–5163 Protective services workers

10. Services n.e.c:
    3000 Technicians and associate professionals, 3400 Other associate professionals, 5000 Service workers and shop and market sales workers, 5200 Models, salespersons and demonstrators

11. Not assigned:
    9000 Elementary occupations

Definition of simple services for the Swiss Labour Force Survey (ISCO 88 (COM)):

> 4211 Cashiers and ticket clerks, 5120–5123 Housekeeping and restaurant services workers, 5131 Child-care workers, 5140–5149 Other personal services workers (except 5143), 5220 Shop, stall and market salespersons and demonstrators, 8322 Car, taxi and van drivers, 9110–9113 Street vendors and related workers, 9120 Shoe cleaning and other street services elementary occupations, 9130–9133 Domestic and related helpers, cleaners and launderers, 9140–9142 Building caretakers, window and related cleaners, 9150–9153 Messengers, porters, doorkeepers and related workers, 9160–9162 Garbage collectors and related labourers

Notes: The unit group level (4-digit) of the ISCO 88(COM) is usually used. Some cases, though, had to be classified on the major group (1-digit) or sub-major group level (2-digit) do to lack of detailed information (these cases are captured by numbers ending with 2 or 3 zeros, e.g., 9000, 5200).

Sources: ISCO 88(COM) (the European Union variant of ISCO 88) provided by the International Labour Organization (ILO) and the University of Warwick (see http://www.warwick.ac.uk/ier/isco/devt.html).

3.3 Further Definitions

Definition of economic sectors by activities on the job:

People are asked what the predominant activity they personally do on their job is. They are counted as belonging to the agricultural and industrial/manufacturing sectors if they choose one of the following categories:

> 1. Gewinnen, Herstellen, Bearbeiten, Verarbeiten, Maschinell fertigen, Bauen, Montieren, Anpflanzen, Züchten, Speisen zubereiten u.ä. [Production, manufacturing, etc.]
>
> 2. Maschinen einrichten/einstellen, Maschinen steuern/regeln/warten (u.a. Heizanlagen bedienen) [Install, adjust or operate machines, etc.]

They are counted to the service sector if they choose one of these:

> 3. Instandsetzen, Reparieren, Ausbessern, Restaurieren [Repair, etc.]
>
> 4. Waren/Briefe u.ä. sortieren, Einpacken/Auspacken, Verladen, Versenden, Material bereitstellen; Zustellen, Befördern, Fahrzeuge steuern [Sort, wrap, ship, conduct vehicles, etc.]
>
> 5. Einkaufen, Verkaufen, Handel treiben, Vermitteln, Versteigern, Taxieren; Werben; Finanzieren, Vermieten, Versichern, Kassieren/Auszahlen [Buy, sell, trade, finance, etc.]
>
> 6. Prüfen von Einzelteilen, Waren, Dokumenten/Fahrausweisen, Daten etc., Korrigieren [Examine parts, goods, papers, data, etc.]
>
> 7. Buchhaltung, Registrieren, Karteiführen, Korrespondieren, Übersetzen; Kartenlochen, Maschinenschreiben, Stenografieren, Fakturieren [Accountancy, register, translate, invoice, etc.]
>
> 8. Projektieren, Konstruieren, Entwickeln, Berechnen, Kalkulieren, Programmieren, Pläne erstellen, Vermessen, Zeichnen [Project, develop, program, draw, etc.]
>
> 9. Disponieren, Koordinieren, Organisieren, Dirigieren, Führen, Leiten, Delegieren, Verhandeln [Coordinate, manage, negotiate, etc.]

10 Reinigen, Bewirten; Erziehen, Forschen/Lehren; Pflegen, Behandeln, Untersuchen, Betreuen, Beraten, Gesetze anwenden, Sichern, Publizieren, Künstlerisch arbeiten [Cleaning, hospitality, teaching, nursing, arts, etc.]

Source: The classification was taken from the German Microcensus (Statistisches Bundesamt 1990: 108).

Definition of the service sector by self-assignment:

People are counted to the service sector if they say yes to the following question: "Kann man Ihre Tätigkeit als Dienstleistung bezeichnen?" ["Is it reasonable to designate the activities you do at work as services?"] (Note: no specific definition of "services" is given to the respondents).

4 Detailed Tables

Table 4: Cross-tabulation of Economic Sectors by Occupational Domains in USA, West Germany and Switzerland in 1993

	Size of	Occupations			Total	Cases
Branches	sectors	agricultural	industrial	services		
USA						
I. Sector	2	83	3	14	100	1 891
II. Sector	23	0	58	42	100	14 761
III. Sector	75	0	11	89	100	49 380
Total	100	2	21	77	100	66 032
West Germany						
I. Sector	2	84	1	16	100	–
II. Sector	39	0	57	43	100	–
III. Sector	59	0	5	95	100	–
Total	100	2	25	73	100	–
Switzerland						
I. Sector	5	89	3	8	100	371
II. Sector	26	0	55	45	100	2 739
III. Sector	69	1	10	90	100	8 277
Total	100	5	21	74	100	11 387

Universe: All employees (including self-employed).
Sources: USA: Current Population Survey (CPS), March Supplement 1993, own computations, weighted by basic CPS weights. Germany: Socio-Economic Panel (SOEP), cited after Haisken-De New et al. 1996. Switzerland: Swiss Labour Force Survey (SLFS) 1993, own computations, weighted by design weights.

Table 5: Economic Sectors (employees in %) and Unemployment Rates in USA, West Germany and Switzerland (1964–1998) (data to figure 1)

Year	USA			Germany (D)			Switzerland (CH)			Unempl. Rates		
	S. I	S. II	S. III	S. I	S. II	S. III	S. I	S. II	S. III	USA	D	CH
1964	6.7	35.1	58.3	11.4	48.8	39.8	10.9	48.8	40.4	5.2	0.6	0.0
1965	6.3	35.5	58.2	10.9	49.3	39.8	10.5	48.3	41.3	4.5	0.5	0.0
1966	5.6	36.1	58.3	10.6	48.9	40.5	10.2	47.8	42.1	3.8	0.6	0.0
1967	5.3	35.8	58.9	10.4	47.7	42.0	10.0	47.2	42.9	3.8	1.7	0.0
1968	5.2	35.4	59.4	9.9	48.0	42.1	9.4	46.8	43.8	3.6	1.2	0.0
1969	4.8	35.3	59.9	9.3	49.0	41.8	8.9	46.5	44.6	3.5	0.7	0.0
1970	4.5	34.4	61.1	8.6	49.3	42.1	8.6	46.0	45.4	4.9	0.6	0.0
1971	4.4	32.9	62.7	8.1	48.4	43.5	8.2	45.9	46.0	5.9	0.7	0.0
1972	4.4	32.6	63.0	7.7	47.8	44.5	7.9	45.4	46.8	5.6	0.9	0.0
1973	4.2	33.2	62.6	7.3	47.5	45.2	7.5	44.9	47.6	4.9	1.0	0.0
1974	4.2	32.5	63.4	7.1	46.7	46.2	7.5	44.3	48.3	5.6	2.1	0.0
1975	4.1	30.6	65.3	7.0	45.4	47.6	7.6	42.2	50.1	8.5	4.0	0.4
1976	3.9	30.8	65.3	6.7	44.9	48.4	7.8	40.8	51.4	7.7	4.0	0.7
1977	3.7	30.9	65.4	6.0	44.6	49.4	7.6	40.4	52.0	7.1	3.9	0.4
1978	3.7	31.1	65.2	5.8	44.3	49.9	7.3	40.1	52.6	6.1	3.7	0.3
1979	3.6	31.3	65.2	5.4	44.2	50.4	7.2	39.7	53.2	5.8	3.3	0.3
1980	3.6	30.5	65.9	5.3	43.7	51.0	6.9	39.6	53.4	7.1	3.3	0.2
1981	3.5	30.1	66.4	5.2	43.0	51.9	6.6	37.9	55.6	7.6	4.6	0.2
1982	3.6	28.4	68.0	5.0	42.1	52.9	6.5	36.9	56.6	9.7	6.7	0.4
1983	3.5	28.0	68.5	5.0	41.4	53.6	6.4	36.0	57.6	9.6	8.2	0.9
1984	3.3	28.5	68.2	4.8	41.2	54.1	6.2	35.7	58.1	7.5	8.2	1.1
1985	3.1	28.0	68.8	4.6	41.0	54.4	6.1	35.6	58.3	7.2	8.1	0.9
1986	3.1	27.7	69.3	4.5	40.8	54.8	5.9	35.7	58.4	7.0	7.8	0.8
1987	3.0	27.1	69.9	4.2	40.4	55.4	5.9	35.4	58.8	6.2	7.7	0.7
1988	2.9	26.9	70.2	4.0	39.9	56.1	5.7	35.1	59.2	5.5	7.7	0.6
1989	2.9	26.7	70.5	3.8	39.8	56.4	5.6	35.1	59.3	5.3	7.0	0.5
1990	2.9	26.2	70.9	3.5	39.8	56.7	5.6	34.4	59.5	5.5	6.3	0.5
1991	2.9	25.3	71.8	3.5	40.7	55.8	4.2	31.1	64.7	6.7	5.7	2.0
1992	2.9	24.6	72.5	3.5	40.0	56.6	4.2	29.7	66.0	7.3	5.9	3.1
1993	2.7	24.0	73.2	3.3	39.1	57.6	4.3	28.8	66.9	6.8	7.3	4.0
1994	2.9	24.0	73.1	3.2	38.3	58.5	4.1	28.9	67.0	6.1	8.2	3.8
1995	2.9	24.0	73.1	2.7	35.9	61.4	4.3	29.2	66.5	5.6	8.3	3.5
1996	2.8	23.9	73.3	2.8	35.2	62.1	4.5	28.0	67.5	5.4	8.1	3.9
1997	2.7	23.9	73.4	2.7	34.5	62.7	4.6	26.8	68.6	4.9	9.8	4.2
1998	2.7	23.6	73.7	2.7	34.2	63.2	4.8	26.1	69.1	4.5	9.4	3.8

Notes: Switzerland: The rapid growth of the service sector in Switzerland between 1990 and 1991 (+5.2 percent points) is largely due to the introduction of a new data source in 1991. Up to 1990 the official Swiss Employment Statistics (ES) were based on the Population Census (PC, every 10 years) and the Statistics on Jobs (JOBSTA, quarterly sample of employers). From 1991 on, the ES are based on the annual Swiss Labour Force Survey (SLFS). The shift in the estimates between 1990 and 1991 can be explained by the higher precision of the SLFS. Especially, atypical employment is now covered much better. Germany: The displayed estimates refer to Western Germany only. The estimates for 1991 to 1998 are not strictly comparable to the numbers before though. From 1991 on, the OECD statistics used usually refer to both, the old *and* new Länder, so we had to switch source.

Sources: Economic sectors for USA, West Germany 1964–1990, and Switzerland, unemployment rates for West Germany 1964–1990 and Switzerland: OECD (1985, 1998b, 1999). Unemployment rates for USA 1964–1997: OECD (1998a). Unemployment rate for USA 1998: International Labour Organization (ILO, July 2000: http://laborsta.ilo.org/). Economic sectors for West Germany 1991–1998: Statistische Bundesamt (1999: 165, 170). Unemployment rates for West Germany 1991–1998: Bundesanstalt für Arbeit [Federal Employment Services Germany] (in accordance with information given by the Federal Statistical Office Germany).

Table 6: Economic Sectors and Occupational Domains in the USA 1992–1999

	1992	1993	1994	1995	1996	1997	1998	1999	1999v
Economic Sectors									
I. Sector	2.6	2.5	2.7	2.9	2.7	2.6	2.4	2.4	2.2
II. Sector	23.3	22.7	22.5	22.8	22.7	23.2	22.5	22.2	24.0
III. Sector	74.2	74.7	74.7	74.3	74.6	74.2	75.1	75.4	73.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cases	66648	66032	63285	65040	56313	57555	58101	58554	53806
Occupations									
Agricultural occupations	2.5	2.5	2.7	2.7	2.6	2.5	2.3	2.3	2.1
Industrial occupations	21.1	20.9	20.9	21.3	20.8	21.0	21.0	20.6	21.3
Service occupations	76.4	76.6	76.4	76.0	76.5	76.5	76.7	77.1	76.6
– administration services	13.7	12.9	12.9	12.3	12.0	11.6	11.5	11.3	10.2
– organizational services	9.4	9.5	9.6	10.0	10.4	10.8	10.7	11.0	12.6
– services close to production	9.8	9.8	9.4	9.2	9.6	10.0	10.2	10.4	11.2
– distribution services	16.4	16.7	16.6	16.5	16.7	16.5	16.3	16.4	16.8
– consumption related services	13.0	13.0	13.2	12.9	12.9	12.7	13.0	12.8	10.5
– social services	12.3	12.7	12.8	13.3	13.1	13.1	13.2	13.3	13.2
– public services	1.8	1.9	1.9	1.9	1.8	1.7	1.9	1.9	2.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cases	66648	66032	63285	65040	56313	57555	58101	58554	53806

Notes: 1992–1999: Proportion of employees in percent. 1999v: Numbers of 1999 weighted by weekly working hours.
Universe: All employees (including self-employed).
Sources: Current Population Survey (CPS), March Supplement 1992–1999, own computations, weighted by basic CPS weights.

Table 7: Economic Sectors and Occupational Domains in Switzerland 1991–1999

	1991	1992	1993	1994	1995	1996	1997	1998	1999	1999v
Economic Sectors										
I. Sector	4.5	4.4	4.8	4.6	4.6	5.2	5.2	5.1	5.3	6.6
II. Sector	27.4	26.1	25.6	25.8	26.5	25.4	24.8	24.3	23.9	26.2
III. Sector	68.1	69.5	69.6	69.6	68.9	69.3	70.0	70.6	70.8	67.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cases	10464	11048	11559	11376	19950	10244	10273	10503	11403	11403
Occupations										
Agricultural occupations	4.9	4.8	5.1	5.1	5.3	5.7	5.5	5.6	5.7	7.2
Industrial occupations	22.3	21.5	20.9	20.5	22.4	20.0	19.7	19.0	19.2	21.9
Service occupations	72.8	73.7	74.0	74.5	72.3	74.3	74.8	75.4	75.2	70.9
– administration services	19.7	18.8	18.8	18.5	18.4	17.6	16.7	16.7	15.8	14.2
– organizational services	3.0	3.8	4.3	4.6	3.8	4.0	4.0	4.7	4.4	5.2
– services close to production	12.3	13.3	13.1	13.2	12.5	13.4	13.0	13.3	13.6	15.4
– distribution services	12.8	11.7	11.9	12.1	11.4	12.6	13.0	12.7	12.5	12.3
– consumption related services	10.1	10.7	10.9	10.7	10.5	10.6	11.2	10.9	10.8	7.9
– social services	13.9	14.4	14.0	14.4	14.6	14.8	15.3	15.6	16.5	14.2
– public services	0.6	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.1	1.1
– services n.e.c	0.5	0.3	0.2	0.2	0.3	0.5	0.6	0.5	0.5	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cases	9931	10849	11415	11287	19743	10159	10221	10433	11361	11361

Notes: 1991–1999: Proportion of employees in percent. 1999v: Numbers of 1999 weighted by weekly working hours.
Universe: All employees (including self-employed).
Sources: Swiss Labour Force Survey (SLFS) 1991–1999, own computations, weighted by design weights.

Table 8: Proportion and Characteristics of Simple Services in the USA and Switzerland

	1992	1993	1994	1995	1996	1997	1998	1999
USA								
Proportion of simple services (in % of all employees)	14.6	14.9	14.9	14.5	14.5	14.4	14.5	14.2
Cases (100%)	66648	66032	63285	65040	56313	57555	58101	58554
Characteristics of simple services								
– female percentage	60.3	60.5	61.6	61.7	60.7	61.8	60.7	60.6
– part-time percentage	34.8	34.9	49.1	47.7	45.9	45.3	45.3	44.5
– low education percentage	28.4	27.9	28.2	29.2	29.6	28.0	30.1	30.7
Switzerland								
Proportion of simple services (in % of all employees)	14.8	15.0	14.7	14.7	15.2	16.1	15.6	15.2
Cases (100%)	10849	11415	11287	19743	10159	10221	10433	11361
Characteristics of simple services								
– female percentage	77.6	77.9	78.5	78.5	78.5	75.4	74.3	75.5
– part-time percentage	55.2	58.6	60.5	57.3	59.1	60.7	58.6	58.9
– low education percentage	36.7	37.1	37.3	33.5	36.5	35.2	33.9	34.9

Notes: Low education percentage: proportion of employees without high school degree (USA), without education other than mandatory school (Switzerland).
Universe: All employees (including self-employed).
Sources: Current Population Survey (CPS), March Supplement 1992–1999, own computations, weighted by basic CPS weights. Swiss Labour Force Survey (SLFS) 1991–1999, own computations, weighted by design weights.

Table 9: Development of the Distribution of Hourly Wages in the USA (1992–1999)

	1992	1993	1994	1995	1996	1997	1999
Wage level							
All employees							
– agricult./indust. occs	.93	.90	.96	.94	.97	.95	.94
– service occupations	1.01	1.00	1.00	1.04	1.03	1.04	1.02
– total	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Full time labor force							
– agricult./indust. occs	.97	.90	.90	.88	.90	.88	.92
– service occupations	1.04	1.05	1.04	1.06	1.03	1.03	1.04
– total	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pct. of low paid workers							
All employees							
– agricult./indust. occs	9.1	6.5	8.2	7.3	6.5	5.3	5.4
– service occupations	10.3	9.0	10.7	12.6	12.8	11.7	10.1
– total	10.5	9.2	10.2	12.2	11.2	11.2	9.3
Full time labor force							
– agricult./indust. occs	8.3	7.2	5.7	6.1	7.1	7.4	4.7
– service occupations	11.1	10.0	10.3	11.0	10.3	9.9	9.9
– total	10.7	9.7	10.0	10.6	9.3	8.8	8.5
Dezile ratio (P90/P10)							
All employees							
– agricult./indust. occs	3.68	3.50	3.85	3.92	3.87	4.04	3.74
– service occupations	4.42	4.45	4.79	4.71	4.81	4.72	4.53
– total	4.17	4.19	4.49	4.52	4.56	4.53	4.25
Full time labor force							
– agricult./indust. occs	3.57	3.56	3.72	3.92	3.56	3.71	3.46
– service occupations	4.45	4.28	4.18	4.31	4.33	4.24	4.32
– total	4.22	4.12	4.14	4.25	4.16	4.06	3.99
Gini							
All employees							
– agricult./indust. occs	.286	.275	.296	.302	.287	.289	.275
– service occupations	.327	.326	.337	.334	.333	.330	.337
– total	.320	.318	.329	.328	.324	.322	.326
Full time labor force							
– agricult./indust. occs	.274	.266	.281	.290	.273	.277	.265
– service occupations	.312	.310	.306	.308	.310	.307	.318
– total	.306	.304	.302	.307	.304	.302	.308
Cases							
– all employees	14677	14591	12834	14029	12127	12329	12901
– full time labor force	12521	12383	10193	11318	9845	9981	10562

Notes: Hourly wages are calculated as Y_w/H_w where Y_w indicates the weekly earnings and H_w the weekly working hours (29 cases with a calculated value of $ 100 or more were excluded from analysis, the weekly earnings data of the CPS are topcoded at $ 1923). Wage level: median wage of group/total median wage. Pct. of low paid workers: proportion of employees, whose hourly pay is less than half of the median wage of the group. The numbers for 1998 are not displayed because of data inconsistency (unusually high proportion of missing data on working hours).
Universe: All employees with earnings data eligible (excluding self-employed).
Sources: Current Population Survey (CPS), March Supplement 1992–1999, own computations, weighted by earnings universe weights.

Table 10: Development of the Distribution of Hourly Wages in Switzerland (1991–1999)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Wage level									
All employees									
– agricult./indust. occs	.98	.98	.94	.93	.91	.95	.94	.94	.93
– service occupations	1.01	1.02	1.03	1.03	1.02	1.02	1.02	1.02	1.03
– total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Full time labor force									
– agricult./indust. occs	.95	.93	.92	.91	.90	.92	.92	.92	.90
– service occupations	1.03	1.05	1.06	1.07	1.07	1.07	1.06	1.05	1.07
– total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pct. of low paid workers									
All employees									
– agricult./indust. occs	7.0	5.7	4.8	5.8	5.5	4.2	3.7	3.2	3.5
– service occupations	7.9	8.0	8.2	8.1	8.0	6.5	6.3	5.9	5.5
– total	7.2	7.2	7.3	7.6	7.5	6.4	6.1	5.4	4.9
Full time labor force									
– agricult./indust. occs	3.5	3.9	3.1	3.1	3.8	3.5	2.7	2.3	2.2
– service occupations	5.2	4.9	5.6	5.6	5.8	4.8	4.4	4.5	3.8
– total	5.1	4.4	4.8	4.4	4.9	3.8	4.0	3.9	3.3
Dezile Ratio (P90/P10)									
All employees									
– agricult./indust. occs	2.22	2.29	2.29	2.28	2.37	2.22	2.17	2.08	2.12
– service occupations	3.30	3.25	3.32	3.30	3.31	3.08	3.07	2.99	2.90
– total	3.10	3.09	3.14	3.10	3.16	2.91	2.93	2.86	2.80
Full time labor force									
– agricult./indust. occs	2.00	2.04	2.08	2.07	2.17	2.04	2.02	1.92	2.01
– service occupations	2.88	2.83	2.84	2.88	2.92	2.83	2.81	2.74	2.69
– total	2.71	2.65	2.71	2.68	2.80	2.66	2.72	2.59	2.58
Gini									
All employees									
– agricult./indust. occs	.228	.197	.204	.201	.203	.197	.197	.181	.183
– service occupations	.273	.276	.277	.271	.281	.268	.265	.254	.250
– total	.266	.263	.267	.262	.270	.258	.256	.244	.242
Full time labor force									
– agricult./indust. occs	.208	.177	.175	.172	.182	.168	.178	.158	.164
– service occupations	.246	.243	.245	.239	.251	.239	.243	.237	.233
– total	.240	.232	.235	.231	.241	.230	.235	.226	.225
Cases									
– all employees	6673	7597	7931	8015	13314	7074	7100	7241	8009
– full time labor force	4876	5395	5584	5600	9328	4849	4790	4936	5381

Notes: Hourly wages are calculated as $Y_y/(52H_w)$ where Y_w indicates the yearly earnings and H_w the weekly working hours (199 cases with a calculated value greater than CHF 250 were excluded from analysis). Wage level: median wage of group/total median wage. Pct. of low paid workers: proportion of employees, whose hourly pay is less than half of the median wage of the group.
Universe: All employees excluding self-employed and apprentices.
Sources: Swiss Labour Force Survey (SLFS) 1991–1999, own computations, weighted by design weights.

Table 11: Human Capital Earnings Functions (Hourly Wages) in the USA and Switzerland (1992 and 1999)

	1992				1999			
	all occupations		service occs		all occupations		service occs	
	male	female	male	female	male	female	male	female
USA								
Constant	.616	.352	.486	.188	.753	.384	.626	.245
Education	.098	.117	.106	.130	.104	.130	.111	.141
Experience	.050	.033	.054	.033	.051	.032	.056	.033
Experience$^2 \cdot 10^{-2}$	–.078	–.057	–.085	–.058	–.086	–.057	–.098	–.057
Adjusted R^2	.330	.261	.344	.271	.336	.270	.354	.285
Cases	7369	7164	4799	6502	6401	6382	4081	5837
Switzerland								
Constant	2.221	2.227	2.301	2.269	2.294	2.280	2.368	2.320
Education	.071	.073	.064	.070	.071	.076	.064	.074
Experience	.052	.030	.055	.030	.047	.027	.051	.027
Experience$^2 \cdot 10^{-2}$	–.086	–.052	–.091	–.053	–.074	–.044	–.082	–.044
Adjusted R^2	.320	.140	.308	.138	.331	.182	.309	.179
Cases	3913	3592	2695	3325	4080	3879	2881	3612

Notes: Earnings (hourly wages) are calculated as Y_w/H_w for US data (selected range: \$ 1–100; Y_w indicates the weekly earnings, H_w the weekly working hours) and $Y_y/[(252 - v) \cdot H_w/5]$ for Swiss data (selected range: CHF 2.5–250; Y_y indicates the yearly earnings, v the number of paid vacation days). Education: years of education. Experience: age−education−7 for the USA and age−education−6.5 for Switzerland.
Universe: Employees excluding self-employed and apprentices (selected range of age: 15–70 years).
Sources: Current Population Survey (CPS), March Supplement 1992 and 1999, own computations, unweighted; Swiss Labour Force Survey (SLFS) 1992 and 1999, own computations, unweighted.

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