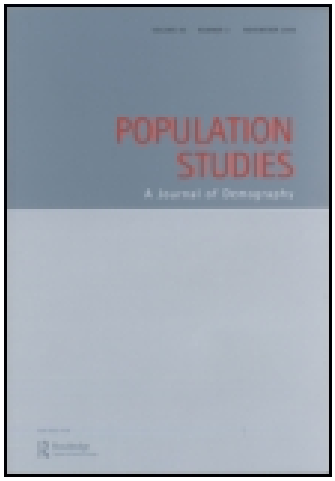

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The compensation of Nazi Germany's forced labourers: Demographic findings and political implications

MARK SPOERER AND JOCHEN FLEISCHHACKER

Abstract. The debate on financial compensation for former forced labourers in Nazi Germany has raised the question of how many victims are still alive and eligible for compensation. Historical research has so far focused on qualitative aspects of the forced labour system. There are at best ad hoc estimates even for the number of foreign labourers in Nazi Germany during the war. We combine Nazi statistics with post-war demographic data for 20 countries to estimate the number of victims still alive. We then compare our estimates of survivors in mid-2000 with the numbers compensated under the German compensation settlement of July 2000. Although all parties involved in the settlement say that the compensation should benefit those victim groups most discriminated against in Nazi Germany, we find that the actual distribution of compensation payments is strongly influenced by bargaining power and political preferences.

1. INTRODUCTION

During World War II, Nazi Germany established an extensive forced labour system without parallel in Europe's modern history. In clear violation of international law, Germany deported millions of men, women, teenagers, and even children from the occupied territories and put them to work in its war economy. Immediately after the war, all governments whose populations had been affected by the German forced labour system compiled evidence for reparation claims. However, in the London Debt Settlement of 1953 the German government managed to postpone the question of reparation claims to a future peace treaty. Not until the Two-plus-Four agreement of 1990, which paved the way for German unification and is regarded as a peace treaty, was the reparation issue reopened. The fact that German companies had made extensive use of forced labourers during the war made them vulnerable to class action suits, other legal action, and boycott threats in the United States. After mounting public and juridical pressure, the German government and a group of leading German multinationals each agreed in late 1999 to provide 2.5 billion Euros for compensation purposes. Austria followed suit and agreed to pay 0.44 billion Euros. Half a year later, both countries passed compensation laws which guaranteed that, 55 years after the end of the war, those victims who were still alive and whose fate during the war had been especially severe were eligible for compensation.

During the negotiations, one of the most intricate issues was the allocation of the compensation sum (4.14 billion Euros) among the groups representing the victims. In this process, the German government relied on the expertise of historians, but only insofar as the latter helped to identify the victim groups that had suffered the most discrimination. From these, the government excluded former prisoners of war (POWs) because it feared that compensation for this group would lead to claims from German POWs. The next question was how many survivors there were of the two remaining victim groups, inmate labourers (mainly from concentration camps) and victims of severe discrimination among civilian labourers. In order to determine the size of these groups, the German government did not rely on demographic evidence, but on the information supplied by the six organizations engaged in the negotiations. The government decided to allocate the money among the victims represented by these organizations. These six groups were (1) the Jewish Claims Conference (JCC), which represented Jewish victims irrespective of their place of residence who were put to work as concentration camp inmates, or as 'working Jews' or in ghettoes; and so-called reconciliation foundations representing (2) Poland, (3) Ukraine and Moldova, (4) Belarus and Estonia, (5) Russia and all other successors of the Soviet Union and (6) the Czech Republic. All other possible claimants were put together in a group that was officially designated 'rest of the world'. This group

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was not represented in the negotiations. Only after the agreement on the allocation of the compensation sum was the International Organization for Migration in Geneva (IOM) entrusted with the processing of claims from this group.

Inevitably this allocation mode established an incentive problem. The foundations competed against each other for their share of the compensation sum fixed by the German government. Although most of the foundations had already been established by the early 1990s, when Germany paid minor amounts of compensation, they did not and could not know precisely how many victims they actually represented. Even if a foundation planned to state a number of victims it believed to be fairly correct, it had to take into account the possibility that another foundation would exaggerate its numbers and receive an undue share. In game-theoretic terms, the players faced a typical moral hazard problem in which an outcome in honest strategies was not an equilibrium, whereas cheating, i.e. over-reporting the number of surviving victims, was the dominant strategy for all players (except the German government). In fact, according to press reports, only the data supplied by the Czech government were assumed to be more or less accurate. The numbers supplied by the other groups were believed to be inflated. But this was pure speculation. In the logic of the mode employed by the German government there was no way of checking the claimed survivor figures, or of calibrating them against each other or against any other benchmark.

In this paper we use an alternative method of estimating survivors, a method developed by Spoerer (forthcoming) for the Austrian government. This procedure consists of two steps. In the first, we estimate the number of survivors in mid-1945 from contemporary data. As there are at best ad hoc estimates of the total sum of foreign workers in Germany during the war and none at all of those who survived the war, this is an extremely intricate task which we leave to a companion paper (Spoerer and Fleischhacker forthcoming). Here we focus on the application of our demographic methods and data sources, and the political implications of our findings. In the process of computation, we have to make some assumptions that are not supported by compelling evidence. With this in mind, we try to be as explicit as possible about our procedures and encourage others to improve our estimates where feasible.

In the next section, we review the historical evidence and identify those groups who suffered most from the German forced labour system and who should therefore be eligible for compensation. In Section 3 we discuss our methods and data sources, with the details left to an appendix. The main results of our computations are presented in Section 4. In Section 5, we compare our findings with the number of survivors specified by the German government, the number on which the compensation settlement of July 2000 was based. Section 6 summarizes our conclusions.

2. NAZI GERMANY'S FORCED LABOUR SYSTEM: A BRIEF OVERVIEW

After the Red Army had stopped the German advance in the autumn of 1941, lack of manpower became the foremost problem of the German war economy. Millions of men had been drafted into the armed forces, whereas the labour allocation bureaucracy only reluctantly enforced the employment of women. In spite of the xenophobic Nazi ideology, the lack of manpower had prompted the regime to encourage foreigners to work in Germany for some time. Thus, already in the 1930s, there were Italians, Poles, and other foreign labourers in the German labour force. After the occupation of the Czech lands in 1938–39 and the occupation of Poland in 1939, the regime started not only to recruit foreign volunteers, but to draft and even deport men and women from the occupied territories. In Germany, both volunteers and forced labourers were subjected to a highly differentiated set of regulations that determined their conditions of life and work. The basis of this unequal treatment was racial prejudices and political considerations. Foreigners from Scandinavia, the Netherlands, and Flanders were seen as 'Germanic', while those from most other countries were divided into axis and non-axis aliens. At the very bottom of the Nazis' racial scale were Poles, Soviet citizens, Gypsies, and Jews. Hence, civilian labourers and prisoners of war (POWs) from Poland and the Soviet Union were subjected to very harsh conditions of life and work. Hundreds of thousands died of malnutrition, disease, and violence. The fate of the Jews and the Gypsies was even worse. To be sent to work units instead of the gas chambers was often simply a temporary reprieve: they risked 'annihilation by work', especially in subterranean construction units,.

Except for workers from the Balkans and the Baltic states, historical research of the past twenty years has been able to identify the varying degree of discrimination to which the foreigner groups were subjected in Germany (Herbert 1997, 1999, 2001; Spoerer 2001). Table 1 summarizes the main results for the three large foreign labour groups – civilian labourers, POW labourers, and inmate

Table 1. *Main foreign labour groups in Germany during World War II ranked by degree of discrimination*

	1. Privileged exit and voice	2. Forced no exit but voice	3. Slave no exit, no voice		2. Forced no exit, but voice	3. Slave no exit, no voice	4. Less-than-slave
Civilian Labourers				POWs			
Croats	X			French	X		
Italians	X[a]		X[b]	Serbs	X		
Slovaks	X			UK/US citizens	X		
Balts		X		Italians		X	
Belgians		X		Poles		X[c]	X[d]
Czechs		X		USSR citizens			X
Dutch		X					
French		X		Inmates			
Serbs		X		CC inmates			X
Poles			X	'Working Jews'			X
USSR citizens			X	WEC inmates			X

Notes: CC – concentration camp, POW – prisoners of war, WEC – work education camp. [a] Until July 1943. [b] From September 1943. [c]Non-Jews. [d]Jews.
Source: Spoerer and Fleischhacker (2002).

labourers. This distinction is based on formal work status, but we also classify the groups by degree of discrimination, using the following three criteria: whether the foreign labourer was able to leave Germany ('exit' in the terminology of Hirschman (1970)); whether the labourer had a chance of being heard when complaining about conditions of life and work ('voice'); and whether the labourer's probability of surviving the war was not extremely lower than that of the German population. Hence we classify the foreign labour groups in four categories. In the first category are privileged labourers who came voluntarily to Germany, were allowed to leave the country if they wished and thus were able to exert influence on their conditions of life and work. In the second category are forced labourers (in the narrow sense of the word) who were not entitled to leave Germany yet had some influence on their conditions of life and work. Third are the slave labourers who were denied both exit and voice. Fourth are the workers we call, following Ferencz (1979), less-than-slaves because their survival probabilities were so low that it is difficult to reconcile them with any notion of effective economic exploitation. For practical reasons, we will use the term 'foreign labourers' for all four groups and 'forced labourers' in a broad sense for what we define in Table 1 as forced labourers (in the narrow sense), slave labourers, and less-than-slave labourers, if not otherwise specified.

3. METHODS AND DATA SOURCES

Our primary aim is to estimate the number of former forced labourers who were still alive in the year 2000 and who thus may be eligible for compensation. As already outlined in the introduction, our approach consists of two steps. In the first step, we estimate the number of survivors in mid-1945 from contemporary data. The total number of survivors has to be differentiated by birth cohort, sex, country of origin, worker status, Jewish/non-Jewish, place of work, and country of residence after the war. Forced labour status and place of work are important because compensation from Germany can be granted only to inmate workers and civilian labourers who suffered severe discrimination while working in what the German compensation law defines as 'industry'. This includes all economic sectors except agriculture, forestry, fishing, and domestic services. In these sectors foreign labourers were not normally squeezed into camps in which they were at risk of becoming infected by diseases, and had much better access to food than in the cities. In contrast, Austria does grant compensation to persons employed in these sectors, but less than to those who worked in 'industry'. Whether the survivor was Jewish is important, since Jewish survivors receive their compensation through the JCC irrespective of their place of residence. Apart from that, Jewish victims are also eligible for compensation if they were employed outside the borders of the *Reich*. The other specifications are necessary since, in a second step, we calculate the probability of surviving 55 years from the end of the war, using post-war demographic data.

The basic sources for estimating the number of foreign labourers in Nazi Germany are the figures supplied by a confidential contemporaneous publication, the *Arbeitseinsatz im Großdeutschen Reich*

(1938–44), and cumulated recruiting figures of German occupation forces which recorded how many persons they sent to Germany. These sources provide us with relatively unproblematic estimates of the size of the civilian labourer and POW groups. The number of concentration camp inmates and 'working Jews' is estimated using data from other sources. Although there are severe problems in estimating casualties, especially among the Soviet POWs, estimates of the number of foreign workers who survived the war seem to suffer from only small errors. The one group for which our estimates rest on several assumptions that cannot always be substantiated by good evidence is the Jewish survivors, for whom we derive results suggesting a number of survivors larger than previously supposed (Dinnerstein 1982, pp.14, 18, 42; Friedlander 1995, p.24; Spoerer and Fleischhacker forthcoming).

Another problem is the fluctuation of work status. Among the POWs, most of the Poles and Italians and some of the French were released from POW status and became (forced) civilian labourers by decree. Since forced labourers who remained in POW status until their liberation will not be compensated, we group 'transformed' POWs with civilian labourers. Another change of status occurred when civilian labourers or POWs were sent to concentration camps. Since concentration camp inmates will receive higher compensation than civilian labourers, we count these persons as inmates.

Although there is a quite rich historical literature on forced labour in Germany, hardly anything is known about the workers' age structure. Only very recently have archive lists of foreign labourers been recorded electronically, with up to 15,000 individual entries. With the information from these sources, we are able to split the sex-specific, country-specific, and status-specific subtotals for each group into birth cohorts which we classify as pre-1908, 1908–12, 1913–17, …, and 1928–32.

Post-war migration is another problem. It consists of two flows, both of which are adequately documented in the literature. First, several hundred thousand Balts, Poles, and Ukrainians chose not to be repatriated to their country of origin, a country that was directly or indirectly controlled by Stalin. They stayed in Germany and Austria as 'displaced persons' (DPs) and then migrated to host countries in the western world. Second, most Eastern European Holocaust survivors, even if repatriated in 1945/46, left their home countries in the second half of the 1940s and in the 1950s because of post-war anti-Semitism. Hilberg (1985, p.1151) reports that 57 per cent of Jewish DPs emigrated to Israel and 29 per cent to the United States. Thus for the Jewish inmates, we calculate survival probabilities by taking demographic data from Israel and the United States weighted 2:1. Using these values for the non-Jewish DPs as well seems reasonable, given that the survival probabilities in the western countries and Israel do not differ significantly (see Table 4 below).

After employing these procedures, we have subtotals for each group of forced labourers classified by birth cohort, sex, country of origin, worker status, Jewish/non-Jewish, place of work, and post-war country of residence. In the second step, we have to calculate survival probabilities, i.e., we have to establish how many of 100,000 members of a group of foreign labourers alive in mid-1945 were still alive in mid-2000. Because the available demographic data are from censuses and are calculated for a country's population as a whole, we must ask whether there might be systematic differences between the post-war health status of the whole population and that of the sub-population of people forced to labour in Germany. We do not have robust evidence on this issue. For the privileged foreign labourers and the forced labourers (in the narrow sense), there is no reason to assume that their post-war health status differed systematically from that of their countrymen who stayed at home. Admittedly, the risk of dying was presumably higher in Germany because of air raids, infectious diseases, and arbitrary massacres committed by German security forces towards the end of the war. However, we are interested in those who survived the war, and we have no evidence that conditions of life and work in Germany had a greater impact on their post-war health status than was the case in their home countries. Presumably, this argument also holds for civilian labourers from Eastern Europe, who suffered much more from malnutrition than their fellow-victims from Western Europe. Those employed in construction and manufacturing experienced especially dreadful living conditions, and many have suffered from health problems ever since. The situation in the occupied parts of Poland and the Soviet Union was no different. Hunger was ubiquitous, even in the non-occupied part of the Soviet Union (see for example Dallin 1981; Gerlach 1999; Umbreit 1999; Pohl 2000b). Moreover, the fate of the repatriated Soviet forced labourers has often been exaggerated. Although the Stalinist Soviet Union suspected its 5.2 million repatriates of collaboration with the Germans, only 6.5 per cent were actually sent to GULAG camps after being screened in special camps (Polian 2001, p.166). Thus we do not assume that there are significant differences in the survival probabilities of 'eastern workers' and their contemporaries who

were not deported to Germany. We do not wish to extend this argument to concentration camp inmates and other less-than-slave labourers. Longitudinal medical studies show that both their physical health and their mental health were severely damaged. Persons who suffer from excessive-stress-syndrome are much more likely to commit suicide than the average member of a population (Eitinger and Krell 1985). In sum, we assume that demographic data computed for birth cohorts of their originating populations represent the sub-populations of most forced labour groups, including the Eastern European civilian labourers, quite well. For inmates and Soviet POWs, the data clearly overstate the unknown true survival probabilities.

The question of how many forced labourers who survived the war were still alive in the year 2000 may be answered in full only by means of life tables. For our purpose, cohort life tables and period life tables are adequate. Different input data are used for these tables. The cohort method tracks the actual, i.e. historical, course of survival and mortality. The period life table, in contrast, is constructed for a hypothetical population under the assumption of constant mortality. It does not take into account advances in medical treatment after the war; advances which led to much longer life expectancies (Preston, Heuveline, and Guilot 2001, p. 42).

The kind of demographic data that would ideally be suitable for our purposes are cohort life tables, but we could find tables which address our problem only for France (Vallin 1973) and Italy (Ventisette 1997). Because these cohort life tables only cover the period up to the 1960s or 1980s respectively, we had to rely on period life tables for the remaining years up to 2000 and all other countries. When available, we used for our analysis complete period life tables which provide the death and survival probabilities of each age group. For those countries for which complete life tables were not available, we relied on abridged period life tables. Starting from 1-year-olds, these combine five subsequent age groups. Since our data are quite heterogenous, we have to combine both complete and abridged period life tables. Here we followed Chiang (1984, p.138) in calculating age-specific death rates and death probabilities. Finally, we chained survival probabilities of subsequent period life tables, following the procedure described by Dinkel (1996) for 23 countries.

For our purposes, the relevant information from cohort and period life tables is:

- l_x, which is the number of survivors of a birth cohort of 100,000 persons who reach age x. E.g., l_{30} is the number of cohort members who experience their thirtieth birthday.
- ${}_nq_x$, which is the probability of a person of age x dying before he or she reaches age x+n. E.g., ${}_5q_{30}$ is the probability of a 30-year-old dying before his or her thirty-fifth birthday.

What we are interested in is the conditional probability that a forced labourer of a given birth cohort who survived until 1945 was still alive in 2000. As an example, we take the survival probability for the year 2000 of an Italian male born in 1920 who survived to 1945. For the 1920 birth cohort, Ventisette (1997, p.63) reports that l_{25} is 68.727 and l_{65}, the last available for our purposes, is 50.465. This means that, of those who were alive in mid-1945, 73.4 per cent were still alive in 1985. Since the cohort life tables reported by Ventisette end in 1988, we turn to period life tables for 1985 onwards. The closest available is the life table for 1977–79, which reports ${}_5q_x$-values (*Demographic Yearbook* 1985, p.1001) From this life table, we take ${}_5q_{65}$, which is 2.75 per cent annually, or 13.75 per cent for 5 years. Because $l_{70} = l_{65} * (1 - {}_5q_{65})$, we can conclude that in 1990, 63.3 per cent were still alive. Now we take ${}_5q_{70}$ from the 1992 period life table for 1990 (*Demographic Yearbook* 1996, p.1033), calculate l_{75}, and so forth.

Only a few countries were able to undertake a census immediately after the war. Thus for most countries, especially in Eastern Europe, there are life tables for the 1930s and early 1950s only, which means that in some cases we have to interpolate to derive figures for 1945. This is very unlikely to produce other than negligible errors because the age groups of interest are those from 15 to 35 years which have ${}_5q_x$–values of more than 90 per cent. Quantitatively much more important is the use of accurate data for the 1990s, since it is the life expectancy of the elderly that has been affected most by recent advances in medical technology. In western countries, life expectancy rose, whereas it fell in some post-Soviet countries. If there are large gaps in consecutive period life tables for a certain country, we try to overcome the problem by interpolating between preceding and succeeding life tables or by taking survival probabilities from countries with a similar mortality pattern. In the appendix, we describe the data and methods employed for each of the 25 countries under investigation.

4. RESULTS

As in the preceding section, we start with the historical part. Table 2 shows how many of a total

Table 2. *Total surviving foreign labourers, Germany mid-1945*

Foreign labourers by work status (i)	Survivors mid-1945 (ii)	Survival rate (per cent) (iii)	Foreign labourers by degree of discrimination (iv)	Survivors mid-1945 (v)	Survival rate (per cent) (vi)
Civilian Workers	7,945,000	94	Privileged labourers	1,055,000	99
POWs	2,575,000	70	Forced labourers	4,500,000	98
CC Inmates	475,000	31	Slave labourers	4,015,000	89
'Working Jews'	30,000	55	Less-than-slaves	1,455,000	41
Total	11,025,000	82	Total	11,025,000	82

Notes: Germany with boundaries of 1942.
Source: Spoerer and Fleichhacker (2002).

of 13.5 million foreign labourers, of whom at least 12 million were forced labourers, survived the war.

In columns (i) to (iii) we group the foreign workers according to their formal worker status. We regroup them using our forced labour categories in columns (iv) to (vi). The 30,000 'working Jews' that appear in the table are Hungarian Jews who were marched to Austria in 1944–45. The remaining 'working Jews' are 152,000 who were not employed on German soil but who will also be compensated.

The survival rate in columns (iii) and (vi) is quite a crude measure because it mixes worker groups who spent five years or more in Germany, such as the Poles or French POWs, with those who were among the many deportees of the years 1942–43. Nevertheless, the rate gives a clear picture of the gruesome effects of the National-socialist scale of racial hierarchy on the lives of slave labourers and, especially, less-than-slave labourers. In this respect, the seemingly low survival rate of the slave workers may be puzzling. In view of the abundant evidence of inhuman treatment towards Poles, 'eastern workers' and Italian POWs, we expected a much lower survival rate. On reflection the result may be not that surprising. Those who were sent to concentration camps and perished there are included among the less-than-slaves. Reports of the sad fate of slave labourers employed in the cities are somewhat counterbalanced by the many accounts indicating that the situation was much less dramatic in the countryside, where most Poles and many eastern workers were deployed. In any case, the sheer number of nearly half a million casualties among five million slave labourers and the fact that the mortality rate was at least six times higher than that of the German population of the same age (see Spoerer and Fleischhacker forthcoming) speak for themselves. Evidently our findings do not contradict the prevailing view that forced labourers of these groups were subjected to especially inhuman conditions. What our findings do show is the sharp contrast between the conditions of life and work faced by the groups we categorize as slave labourers and those we categorize as less-than-slaves. It is a contrast between merciless economic exploitation and ideologically motivated mass murder. Hence the slave labourers should not be compared with the less-than-slaves, but with the other foreign labour groups.

In order to account for post-1945 migration flows, we have to determine the number of Polish, Ukrainian and Baltic civilian labourers who decided not to return to their country of origin. This group comprises 285,000 citizens of the USSR (as of 1938), mainly Ukrainians, 220,000 Balts, and 300,000 Poles among whom were 50,000 ethnic Ukrainians (Jacobmeyer 1985, p.83, p.85, p.97, p.122; Elliott 1986, p.103). The group contained both former forced labourers and refugees who fled the Red Army without ever having been forced to work in Germany. Subtelny (1992, p.14) puts the fraction of former forced labourers among the Ukrainians at two-thirds. We assume the same magnitude for the ethnic Poles, but not for the Balts. The difference between the 45,000 Balts who were working in Greater Germany in September 1944 and the 220,000 who fled indicates that most Baltic emigrants joined the German forces at the time of their retreat and presumably did not serve as civilian labourers in Germany. In the following, we assume that 50,000 were former forced labourers. Taking the constituent groups together, our estimate for the 'rest of the world' totals 440,000 persons. Stebelsky (1992, p.34) reports that 70 per cent of the Ukrainians found a new home in the English-speaking countries of North America and Australia and that the others also emigrated to developed countries. A similar migration pattern is assumed for the other groups.

What remains to be calculated is the age structure. The age distributions derived from several recently compiled databases are quite congruent and give a coherent picture. Table 3 summarizes our findings for several groups.

Table 3 suggests that there is a correlation between age and degree of discrimination. In May 1939, the median age of male and female German

Table 3. *Age structure of selected forced labourer groups (per cent) in Nazi Germany, by year of birth*

	Privileged labourers			Forced labourers					Slave labourers					Less-than-slaves	
	Bulgarians	Croats	Italians	Belgians	Czechs	Dutch	French	Greeks	Italians	Poles		USSR citizens		Concentration camp	
Year of birth	male	male	male	male	male	male	male	male	POW	male	female	male	female	male	female
n	370	429	3,560	1,139	2,395	352	6,782	5,255	753	1,095	2,546	569	3,867	2,957	117,385	51,490
pre-1908	47.8	28.0	47.9	35.7	15.9	14.2	20.4	34.0	11.3	4.3	26.5	15.4	20.3	7.1	24.2	20.3
1908–12	20.5	17.5	18.8	13.6	9.0	14.2	12.3	31.8	10.0	12.8	12.6	10.7	10.4	4.4	10.9	10.3
1913–17	16.2	11.2	10.8	15.1	10.5	21.6	12.7	26.8	17.3	21.6	12.2	12.9	10.2	7.3	12.9	14.0
1918–22	8.9	19.8	11.4	21.8	55.2	37.2	46.7	7.5	32.7	35.1	24.4	21.3	18.1	22.5	15.8	19.6
1923–27	6.2	22.4	10.8	13.6	9.3	12.8	7.6	0.0	27.4	26.2	23.3	36.0	38.0	55.5	24.1	23.9
1928–32	0.3	1.2	0.4	0.2	0.1	0.0	0.2	0.0	1.5	0.0	0.9	3.7	2.9	3.1	12.1	11.9
Median	1908	1915	1908	1913	1919	1918	1918	1910	1919	1919	1917	1920	1920	1923	1918	1919

Note: Civilian labourers unless stated otherwise.
Sources: Electronic databases were kindly supplied by Andreas Leuchtenmüller, Oliver Rathkolb, municipal archives Frankfurt on Main and Reutlingen. Age structure of concentration camp inmates calculated from Herzog and Strebel (1994, p.18), Maršálek (1995, p.112) and Stein (1998, p.185f.).

workers was 36 and 33, respectively (*Statistisches Jahrbuch für das Deutsche Reich* 1941/42, p.39). Among the millions of foreigners who worked in the German war economy, only volunteers from axis countries such as Bulgaria or Italy and (because they had already been captured in 1940) French POWs exhibited an age structure similar to that of German workers. Not only is the median instructive, so is the age distribution. Whereas for the forced labour groups (in the narrow sense) the distribution centres around the birth cohorts whose members were drafted by the German occupation forces, the much larger variance among the civilian slave labour groups indicates that the German forces were much more discriminatory in Eastern Europe. Half of the Polish women in Germany were 24 or younger, and half of the Soviet women 21 or younger. The age distribution of concentration camp inmates was similar, since it was only the young who were exempted from immediate annihilation and who survived the labour camps. Without further evidence, we assume that this age structure applies also to the surviving 'working Jews', since they faced similar selection criteria and cruel conditions of life and work. The low average age of Holocaust survivors is corroborated by Palestine immigration statistics (*Statistical Handbook of Jewish Palestine* 1947, p.90, p. 434).

We have finished the historical part of the computation procedure and now proceed to the demographic part. In contrast to what we did to produce Tables 1 and 3, from now on we base our data on countries as they exist today. Up to the present, the Soviet Union has been treated *en bloc* (but without the Baltic States). We now split the 1945 data into separate numbers for the Ukraine, Russia, Belarus, the Baltic states, and other Soviet nationalities, following Soviet repatriation data as reported by Polian (2001, p.165). Our use of cohort and successive period life tables as described in the preceding section leads to the results shown in Table 4. The results are as one would expect: women live longer than men, and life expectancy in Eastern Europe is far lower than in Western Europe, Israel, and the United States, especially for men.

With these data to hand, we are able to calculate how many forced labourers survived until mid-2000. As the Russian foundation will compensate forced labourers from other ex-Soviet nationalities (except for Estonia), we consolidate their numbers with those of the Russians. From the ethnic split reported by Polian, we derive absolute survivor figures of 1.21 million civilian labourers for Ukraine, 1.0 million for Russia and other former Soviet states, and 0.32 million for Belarus and

Table 4. *Probability of persons alive in 1945 being alive in 2000, for 18 countries by country, birth cohort, and sex (per cent)*

Birth cohort	Baltic	Belarus	Belgium	Croatia	Czech Republic	France	Hungary	Israel	Italy	Nether-lands	Poland	Russia	Serbia	Slovakia	Spain	UK	Ukraine	USA
Men																		
1910	2.7	1.4	4.8	1.2	1.8	7.7	1.2	7.0	5.8	4.9	3.0	1.3	4.7	2.8	6.6	4.5	3.3	7.7
1915	11.0	8.3	15.0	11.3	10.5	20.7	10.1	22.7	21.4	20.2	13.4	7.2	14.4	11.1	22.2	16.4	8.9	18.6
1920	23.4	20.0	31.9	28.0	25.1	36.6	23.5	42.8	38.9	40.3	27.9	17.4	28.9	24.9	40.6	34.3	20.0	33.6
1925	36.7	33.5	49.4	44.0	40.6	52.2	38.6	59.3	54.9	59.4	42.6	29.5	45.0	40.3	57.7	51.4	32.3	49.0
1930	48.4	44.9	60.6	57.5	56.7	63.7	50.7	72.2	67.9		56.4	41.1	57.6	55.3			43.2	62.1
Women																		
1910	10.5	9.2	16.5	6.5	7.5	21.9	6.5	15.5	20.0	22.9	12.2	7.1	8.1	9.4	17.5	17.5	9.6	22.0
1915	28.7	25.3	36.7	24.6	26.6	43.9	27.0	34.9	44.6	47.8	36.2	23.5	22.9	27.4	43.2	37.0	22.9	39.0
1920	47.6	44.3	56.6	47.9	48.5	61.7	46.9	53.9	63.2	64.5	52.3	42.0	43.8	48.2	62.7	54.9	41.1	54.7
1925	63.2	62.2	71.0	63.1	65.2	74.7	63.6	70.1	76.0	77.6	68.1	58.4	59.9	68.8	75.7	68.3	57.7	67.3
1930	74.0	72.7	78.4	75.3	77.6	82.3	74.0	80.2	83.5		78.9	71.1	72.2	77.2			70.0	76.7

Notes: For countries from which no adolescents were deported, we did not calculate values for the birth cohorts around 1930. The survival probabilities for the Baltic states are calculated by use of population weightings of the censuses around 1930.
Sources: See appendix.

Estonia. From the Ukrainian figures, we have to subtract the emigrants. In accordance with the arguments we used above, we assume that the emigrants comprised two-thirds of the 0.29 million Soviet citizens and 0.05 million ethnic Ukrainians of Polish nationality, which gives a result of 0.22 million Ukrainians who survived and were not repatriated. Most of them found a new home in the United States, Canada, or the United Kingdom. We report them separately in the last line of Table 5.

The survival rates of inmate labourers pose a difficult methodological problem. Numerically, they are 39.5 per cent of concentration camp inmates and 'working Jews'. This is partly a result of the fact that surviving inmates and 'working Jews' were very young, that many were female, and that many migrated to western countries with high life expectancies. But it is also partly a consequence of using life tables for the population as a whole, ignoring the fact that surviving inmate labourers suffered severe damage to their health. Although there is quite a rich literature on medical problems among these groups, it provides no indication of the extent to which we should reduce the calculated survival probabilities to more plausible values. We have opted for a reduction factor of a third for concentration camp inmates, though we assume this is still overly optimistic.

A comparison of the survival probability rates in columns (iii) and (vi) of Table 5 and within each column may be puzzling. For example, why are there so few surviving Italians but so many Russians? Again, the answer lies in the sex ratio and the age structure: 49 per cent of the Soviet civilian labourers were female, and most were not older than 21. That is why so many of them are still alive today, although life expectancy in Russia is much lower than in Italy. The age structure also explains why Italian POWs have a greater survival probability than Italian civilian labourers.

Of the 13.5 million foreign men and women who had to work for the German war economy in World War II, approximately 2.7 million were still alive in mid-2000. But less than two-fifths of them have any chance of receiving compensation, as we will show in the next section.

5. COMPARISON WITH THE GERMAN COMPENSATION SETTLEMENT OF JULY 2000

After the war, West Germany paid some 54 billion Euros in compensation to victims of the Nazi regime (Brodesser et al. 2000, p.249). But most beneficiaries were (former) Germans. The fact of having been a forced labourer did not itself qualify

Table 5. *Former foreign labourers employed in Nazi Germany during World War II alive in 1945 and 2000*

	Civilian labourers			POWs			Inmates		
	Alive mid-1945 (i)	Alive mid-2000 (ii)	Survival probability (per cent) (iii)	Alive mid-1945 (iv)	Alive mid-2000 (v)	Survival probability (per cent) (vi)	Alive mid-1945 (vii)	Alive mid-2000 (viii)	Survival probability (per cent) (ix)
Jews							307,000	73,000	23.8
Baltic st.	75,000	*6,000	*25.3				2,000	0†	13.4
Belarus	320,000	108,000	33.7	80,000	14,000	17.8	13,000	2,000	14.8
Belgium	365,000	98,000	26.8	65,000	5,000	7.9	6,000	1,000	14.7
Czech R.	330,000	77,000	23.3				11,000	2,000	16.8
France	1,015,000	267,000	26.3	1,035,000	111,000	10.7	36,000	8,000	22.1
Italy	940,000	178,000	18.9	15,000	5,000	33.4	12,000	3,000	21.6
Netherl.	465,000	135,000	29.1				1,000	0†	15.9
Poland	1,470,000	*368,000	*28.2	35,000	2,000	6.6	92,000	19,000	20.5
Russia	995,000	310,000	31.2	590,000	92,000	15.6	42,000	6,000	13.5
Serbia	100,000	18,000	18.3	105,000	8,000	7.5	4,000	1,000	18.4
UK				105,000	9,000	8.4			
Ukraine	1,210,000	*314,000	*31.9	280,000	50,000	17.8	42,000	6,000	14.3
Other	660,000	154,000	23.3	265,000	75,000	28.1	50,000	10,000	19.3
Migrants	§440,000	163,000	37.0						
Total	7,945,000	2,196,000	27.6	2,575,000	370,000	14.4	°618,000	°131,000	21.0

Notes: Germany with the boundaries of 1942. * Excluding migrants (see last line). § Not included in total to avoid double counts. ° Non-Jewish German inmates not included. † All figures rounded. Jews 1945 include 152,000 working Jews employed outside Germany.
Sources: See the appendix.

an individual for compensation. Indeed only a tiny fraction of former forced labourers received compensation, and when they did so it was usually because their health had been damaged. The main reason for this failure to compensate was that the Western Allies did not want to choke West Germany's economic recovery by making it pay reparations to Soviet-controlled Eastern Europe. Germany, which still pays pensions to former members of the SS, always rejected appeals for compensation of forced labourers by referring to the London Debt Settlement of 1953. The incidents described in the introduction brought a change. After one and a half years of intense negotiations, Germany, the United States, Belarus, the Czech Republic, Poland, Russia, Ukraine, and the JCC signed an agreement in July 2000 which allocates 4.14 billion euros to former forced labourers. Officially, the compensation sums allocated to the parties to the settlement are in proportion to the estimated survivors. Heirs are eligible only if the testator died after mid-February 1999.

The settlement distinguishes between two types of former forced labourers in a way that differs from our definitions above. In the official terminology, those who had to work for the German economy as concentration camp inmates, as 'working Jews', or in ghettos are classified as slave labourers (Type A in Table 6, column (i)). They are entitled to receive 15,000 DM (7,670 Euro) each. Civilian forced labourers who were subjected to especially harsh conditions of life and work are classified as Type B workers (column (ii)) and receive 5,000 DM (2,560 Euro) each. Civilian labourers are classified as Type B if they were employed in 'industry' as defined above. Because the treatment of workers from Eastern Europe was generally much worse than the treatment of those from Western Europe, only survivors who originally came from the countries listed in Table 6 plus several other ex-Soviet territories (represented either by Belarus, Russia or Ukraine) are eligible for compensation of Type B. In contrast, eligibility for Type A workers is not restricted geographically. Among the slave labourers, the JCC represents all Jewish survivors regardless of country of residence. The IOM, which did not take part in the negotiations, has agreed to organize the compensation of the 'rest of the world'. Table 6 illustrates the allocation of compensation payments.

Columns (i) and (ii) show the official number of survivors on which the allocation of funds is said to be based. Although one should expect an allocation scheme in line with column (iii), the actual allocation, shown in column (iv), is quite different. No official statement is available about why the actual allocation of compensation differs so markedly from the figures that can be calculated from the stipulated number of survivors, especially in the Czech case.

Table 6. *Stipulated number of eligible survivors among foreign labourers in Germany during World War II and allocation of funds*

	Type A 15,000 DM (persons) (i)	Type B 5,000 DM (persons) (ii)	Total (i + ii) (million DM) (iii)	Actual Compensation (million DM) (iv)	Deviation (iv) / (iii) (per cent) (v)
Jewish Claims Conference	126,800	0	1,902	2,072	+9
International Organization for Migration	50,000	10,000	800	540	–32
Poland	36,000	175,000	1,415	1,812	+28
Ukraine (+ Moldova)	6,800	260,000	1,402	1,724	+23
Russia (+ Latvia, Lithuania and Eurasia)	7,200	105,000	633	835	+32
Belarus (+ Estonia)	8,800	98,000	622	694	+12
Czech Republic	3,200	12,000	108	423	+292
Total	238,800	660,000	6,882	8,100	+18

Sources: Columns (i) and (ii) as stipulated by the German government (*Deutsche Presse-Agentur*, 7 July 2000); column (iv) *Bundesgesetzblatt* (2000, p.I.1265f.).

In order to avoid double payments, the German and Austrian compensation schemes are mutually exclusive. Germany will compensate all concentration camp inmates regardless of their place of work, including Austria, which in turn compensates the surviving 'working Jews' who were marched to Austria in 1944–45. 'Working Jews' employed outside the *Reich* will be compensated by Germany. Neither Germany nor Austria will provide POWs with compensation in any form. In principle, civilian labourers employed outside the *Reich* are also eligible if they are able to prove that they endured humiliating conditions of life and work. In practice only very few persons are able to meet these criteria. Moreover, there is practically no evidence compiled by historians on work camps outside Germany, except those for Jewish inmates. In order to make our estimates compatible with the figures stipulated by the German government, we only have to subtract from our figures in Table 5 (which are calculated for 'Greater Germany' with its 1942 borders) the survivors who will be compensated by Austria. Spoerer has estimated their numbers using the same methods as those presented here.

Our findings on which group deserves compensation most, and its size, differ from the stipulations underlying the German compensation settlement in two respects. First, there are differences about the forced labour groups eligible for compensation. It is a laudable achievement of the settlement that it encompasses former concentration camp inmates, 'eastern workers' from the former Soviet Union, and Polish civilian labourers. Workers from these countries employed outside of agriculture and domestic services faced appalling and even lethal conditions of life and work. The inclusion of Balts and Czechs, however, seems somewhat arbitrary. Moreover, if Czech civilian labourers are eligible, one might ask why former French, Dutch, and Belgian civilian labourers, to name but a few, are not (see Table 1). They have never received any compensation for forced labour.

Given their fate in the Third Reich, the exclusion of Italian and Eastern European POWs and, especially, Soviet POWs is striking. Their exclusion is partly explained by the fact that, as war veterans, POWs receive pensions from their governments, albeit very small ones in the Soviet case. A more compelling consideration was that any suggestion of compensating former Soviet POWs would immediately have prompted a demand for compensation for German POWs, who were subjected to gruesome conditions in the Soviet Union. The idea that Russia, Belarus or Ukraine would pay compensation to German POWs is clearly unrealistic. It is not clear why Italian POWs were excluded from compensation. Like the Polish POWs, who for that reason will be compensated, most Italian POWs were transformed to civilian status in the period 1944–45. Their conditions of life and work were at least as bad as those of East European civilian labourers.

The second difference between our findings and the stipulations of the German government is in the assumed number of survivors. In Table 7, we compare a scheme that is in accord with our historical and demographic findings with the actual compensation scheme as agreed in July 2000. Our 'ideal' scheme is based on the notion that those who were treated worst should be included in the settlement. Thus, we rely on our classification in Table 1 but accept the exclusion of Italian and Soviet POWs.

Column (i) repeats the results of Table 5 but without the 'working Jews' and Type B civilian labourers who will both be compensated by the

Table 7. *Surviving former forced labourers in Nazi Germany and the compensation scheme of the year 2000*

	Type	Survivors mid-2000 Total (i)	Eligible for compensation (ii)	Ideal compensation million DM (iii)	Ideal share of compensation per cent (iv)	Stipulated to be eligible (v)	share of compensation million DM (vi)	Actual share of compensation per cent (vii)	Actual compensation per head DM (viii)
JCC	A	75,000	75,000	1,097	17.0	126,800	2,072	25.6	28,324
Poland	A	35,000	35,000	1,338	20.7	36,000	1,812	22.4	15,000
	B	330,000	165,000			175,000			7,889
Ukraine	A	10,000	10,000	1,180	18.3	6,800	1,724	21.3	15,000
	B	265,000	200,000			260,000			7,718
Russia	A	10,000	10,000	1,237	19.1	7,200	835	10.3	15,000
	B	285,000	215,000			105,000			3,120
Belarus	A	5,000	5,000	430	6.7	8,800	694	8.6	15,000
	B	100,000	75,000			98,000			8,580
Czech	A	5,000	5,000	80[a]	1.2	3,200	423	5.2	15,000
Republic	B	55,000	*50,000*			12,000			6,617
'Rest of	A	40,000	40,000	1,099	17.0	50,000	540	6.7	13,273
world'	B	145,000	100,000			10,000			0
Total	A	180,000	180,000	6,461	100.0	238,800	8,100	100.0	15,000
	B	1,180,000	750,000			660,000			7,188

Note: [a] Excluding Czech type B workers.
Sources: Tables 5 and 6, *Bundesgesetzblatt* (2000, p.I.1265f.).

Austrian government. The figures in column (ii) are corrected for civilian labourers who had been active solely in agriculture, forestry, fishing or domestic services, but not in 'industry' as defined by the law. The sums in column (iii) result from multiplying the number of eligible Type A workers by 15,000 DM and eligible Type B workers by 5,000 DM. The share each country should receive according to this calculation is given in column (iv). Columns (v) to (vii) repeat the actual compensation scheme. In column (viii), we allocate the actual sums in column (vi) to our estimated survivors in column (ii). For the sake of the argument, we assume that each country gives priority to Type A workers and allocates the remaining money among Type B workers.

The comparison of the results in columns (iv) and (vii) is quite striking. According to our calculations, the compensation settlement is very favourable for the Jewish Claims Conference, which was able to secure a sum that is nearly twice as large as that shown in our ideal scheme. Note that we assumed a much higher number of Jewish concentration camp survivors in mid-1945 than do other authors, and that we think our survival probabilities are still quite optimistic. The number of Jewish survivors we calculated for mid-2000 probably still underestimates the fatal consequences for the survival probabilities of Holocaust survivors of malnutrition, over-exertion, and abuse. Another winner is the Czech Republic, which managed to have its forced labourers classified as Type B. Since the Czech Republic, whose civilian labourers will be eligible for compensation, is a candidate for membership of the European Union, as is Poland, a certain political bias may have influenced the results of the bargaining process. With regard to the distribution among the successor states of the Soviet Union, no clear picture emerges. Although the compensation allocated to Ukraine and Belarus will cover the claims, this will probably not be the case in Russia and other non-Baltic parts of the former Soviet Union. The losers in the agreement are former forced labourers who now live in the 'rest of the world'. This group never had a lobby in the negotiations. Although our estimate for this group may suffer from larger error margins than for most other groups, we find such a high number of survivors that the sum allocated to them will probably not even fulfil the needs of Type A workers.

6. CONCLUSION

In this paper we make the first attempt to estimate the number of forced labourers who were employed in Nazi Germany between 1939 and 1945 and who were still alive in 2000, when Germany and Austria passed compensation laws. We find that around 11 million foreign labourers survived the war. Roughly a quarter of them, 2.7 million, were still alive in mid-2000.

Comparing our findings, which are based on historical and demographic evidence, with the number of survivors stipulated by the German government,

which did not make use of demographic data or methods, we find two major flaws in the government's compensation scheme. One concerns the nationalities chosen for eligibility for compensation. Historical evidence casts doubt on the decision to include Balts and Czechs among the groups that experienced the most severe discrimination, but to exclude Western, Southern and South-Eastern Europeans from this category. If, as the public rhetoric had it, the compensation was intended as an apology for injustice done to former forced labourers, the exclusion of two of the groups that suffered the most severe discrimination, the Italian and Soviet POWs, was not justifiable.

The other flaw concerns the distribution of the compensation among national foundations, the Jewish Claims Conference, and the International Organization for Migration. Although our calculations are based on several bold assumptions, we feel confident in concluding that the JCC will receive a much higher share of money per surviving victim than would be expected from the historical and demographic evidence. In contrast, we fear that those forced labourers who live outside the countries represented in the negotiations will not receive adequate compensation. This is a criticism not of the parties involved in the negotiations, which simply sought to defend the interests of the victims they represented, but of the compensation procedure chosen by the German government. This procedure strenghened the incentive to inflate claims rather than to reconcile them, and thus created room for manoeuvring. Political interests took advantage of this lack of leadership and biased the final outcome against the historical and demographic evidence.

APPENDIX

Data sources

Estimating the total number of forced labourers from a given country and the number of those who survived until mid-1945 is an extremely intricate task. Here we focus on the description of the demographic data. A full account of how the totals for 1939–1945 and mid-1945 are estimated is given for Poland and the successor states of Czechoslovakia and the Soviet Union in Spoerer (forthcoming: ch. 2.2) and for all others in Spoerer (2001). The figures below do not include concentration camp inmates. Estimates of the composition of the inmates by nationality are presented in Table 5. Mortality rates are taken from Table 2.

Note that all summary figures which have been published covering foreign, forced, slave, or less-than-slave labourers in the German economy were based on those given on reporting dates, the last of which were 30 September 1944 for civilian labourers, 1 January 1945 for POWs, and 15 January 1945 for concentration camp inmates. While these numbers were compiled by the Nazi bureaucracy for administrative use and are very probably accurate, this is not the case for statistics referring to the accumulated number of workers over the whole war period or statistics on how many survived the war. In this respect, we agree with Isajiw and Palij (1992: xii, fn. 13), that the Displaced Person statistics of the Allies generally under-represented the actual numbers. Many liberated forced labourers were able to reach their home country on their own before they could be recorded by post-war refugee organisations such as the United Nations Relief and Rehabilitation Administration and its successor, the International Refugee Organization. Our calculations described below are the very first attempt to establish estimates of accumulated totals and survivors. As we lack precise data, we often have to use assumptions that are quite *ad hoc*. We are fully aware of the shortcomings of our estimates and would like to encourage other scholars to use our description of the available data below as a starting point for more accurate estimates.

Baltic states

Historical data (H): total ethnic Balts recruited (78,249) up to 30 June 1944 is given by Dallin (1981, p.452). However, many more may have fled with the German army in the second half of 1944 and sought labour in Germany. The highest number reported in *Arbeitseinsatz* (1944, no. 11/12: 11) is 44,799 for the end of September 1944. Double counts are presumably not high, and mortality is nearly normal. Results: estimated total civilian labourers 1941–45 and survivors in mid-1945 75,000. Because many ethnic Balts chose not to be repatriated after their liberation, migration has to be taken into account, see text. Very few Balts served in the Red Army (cf. Polian, 2001, p.165) and those captured were generally released by the Germans and not sent to forced labour units.

Demographic data (D): A compound of data from Estonia, Latvia, and Lithuania using weightings derived from censuses from the early 1930s (*Statistisches Jahrbuch für das Deutsche Reich*, 1938: 7*), which are 0.21, 0.36, and 0.43, respectively. For post-war data, see Estonia.

Belarus

H.: See Soviet Union. Total recruited 384,975 according to Gerlach (1999, p.462), slightly modi-

fied by Spoerer (forthcoming). As the share of Belarussians among Soviet civilian labourers was approximately 14 per cent, the results are: estimated total civilian labourers 350,000, survivors mid-1945 320,000; total POWs 165,000. survivors mid-1945 80,000.
D.: Until 1990 see Soviet Union; complete period life table 1992 *Demographic Yearbook* (1996).

Belgium
H.: Total recruited 586,746 (until mid-August 1944) as reported by Warmbrunn (1993, p.236); maximum reported in Germany 233,081 (mid-August 1943) by *Arbeitseinsatz* (1943, no. 10/11, p. 5). Very probably many double counts, nearly normal mortality. Results: estimated total civilian labourers 1940–44 375,000, survivors in mid-1945 365,000. Number of POWs slowly decreases from 65,100 in January 1941 (Durand, 1982, p.137) to 57,392 (Umbreit, 1999, p. 212); casualties 1,700 (Lagrou, 2000, p. 83). Results: estimated total Belgian POWs 65,000, estimated survivors in mid-1945 65,000.
D.: Abridged period life tables 1943/47 Keyfitz and Flieger (1968), 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1984 *Annuaire Statistique* (1988, pp. 62f.); complete period life tables 1991/93 *Tables de Mortalité* (1994).

Bulgaria
H.: No recruiting figures available. Maximum reported in Germany 23,443 (end-June 1943) by *Arbeitseinsatz* (1943, no. 10/11,p. 5). Bulgarians were volunteers throughout the whole war, thus high fluctuation and low mortality assumed. Results: estimated total civilian labourers 1939–45 and survivors in mid-1945 30,000.
D.: Abridged period life tables 1950/52, 1953/55, 1959/61, and 1965 Keyfitz and Flieger (1968); complete life tables 1967, 1974/76, 1978/80, 1991/93, and 1992/94 *Demographic Yearbook* (1974, 1980, 1985, 1996).

Croatia
H.: Total recruited 185,000; maximum reported 73,000 (August 1943). Many were volunteers, hence high fluctuation and low mortality. Results: estimated total civilian labourers 1939–45 and survivors in mid-1945 100,000.
D.: Until 1980/81 see Yugoslavia; complete period life table 1988/90 *Demographic Yearbook* (1996).

Czech Republic
H.: Total recruited 420,224; maximum reported in Germany 286,663 (end-September 1943). For details of the computation see Spoerer (forthcoming: 36f.). Mortality might have been above average because many Czech workers were sent to concentration camps; we assume a mortality rate similar to that of the French. Results: estimated total civilian labourers 1938–45 355,000; estimated survivors in mid-1945 330,000.
D.: Abridged period life tables 1930, 1950/52, 1953/55, 1959/61, 1964 Keyfitz and Flieger (1968), 1970, 1977, 1983, 1984; complete period life tables 1993 and 1994 *Demographic Yearbook* (1974, 1980, 1985, 1996).

Estonia
H.: See Baltic states.
D.: Abridged period life tables 1932/34, 1958/59, 1969/70, 1978/79, and 1988/89 kindly supplied by Estonian Statistical Office; complete period life table 1993 *Demographic Yearbook* (1996).

France
H.: Following the careful compilations of Bories-Sawala (1996: I.246–9) we agree that around 913,000 French civilian labourers were employed in the *Reich*. Among them, around 185,000 are regarded as volunteers and thus include double counts, whereas most others were deportees. We have to add around 222,000 French POWs who were 'transformed' into civilian labourers (Durand, 1982, p.332). Allowing for double counts, around 1,050,000 seems a quite reliable estimate. Subtracting 35,000 casualties reported by Azéma (1979, p.180) we estimate that the number of survivors in mid-1945 was 1,015,000. Of the 1.85 million French POWs, 1.58 million were transferred to Germany (including officers, who did not have to work). The maximum number of French POWs working in Germany, 1,192,500, is reported for January 1941. At that time, 90,000 had already been repatriated. In 1943/44, 222,000 were transformed. A total of 71,000 French POWs managed to escape, and 37,000 perished in German custody (Durand, 1982, p. 21, p.215, p.332; Cochet, 1992, p. 18). Results: estimated total French POWs 1940–45 1,285,000, estimated survivors mid-1945 1,250,000. Both figures include the transformed POWs.
D.: Berkeley Mortality Database ($_5q_x$).

Greece
H.: Both the total number of Greek civilian labourers 1941–45 and survivors in mid-1945 are estimated from several sources at 35,000.
D.: No life tables available for the period 1930–1959, so Italian data used.

Hungary
H.: Both the total number of Hungarian civilian labourers 1941–45 and survivors in mid-1945 are estimated at 45,000.
D.: Abridged period life tables 1950/52, 1953/55, 1959/61, and 1965 Keyfitz and Flieger (1968);

complete period life tables 1941, 1972, 1978, 1979, 1984, 1994, and 1995 *Demographic Yearbook* (1953, 1974, 1980, 1985, 1996).

Israel
H.: Following Hilberg (1985, p.1151) we assume that two-thirds of Jewish DPs emigrated to Palestine/Israel.
D.: Abridged or complete period life tables 1942/44, 1950, 1955, 1960, 1965, 1972, 1977, 1978, 1984, and 1990 *Demographic Yearbook* (1953, 1957, 1961, 1966, 1974, 1980, 1985, 1996).

Italy
H.: Germany employed 400,000 Italian workers up to the date of Italy's surrender in September 1943, after which a further 100,000 were employed. In late summer 1944 and early 1945, around 460,000 Italian POWs ('military internees') were transformed into civilian labourers (Schreiber, 1990, pp.305–312). Results: total civilian labourers 960,000, survivors in mid-1945 940,000. Only around 15,000 Italian POWs remained in that status. Mortality among Italian civilian labourers was low, but 32,000 Italian POWs perished in German custody (Schreiber, 1990, p.579). We assume that two-thirds of them died before the beginning of the transformation and one-third afterwards. Results: total POWs 495,000, survivors in mid-1945 465,000 (both include the transformed).
D.: Until 1985 cohort life tables Ventisetti (1997), then complete period life tables 1977/79, 1992, and 1993 *Demographic Yearbook* (1985, 1996).

Latvia
H.: See Baltic states.
D.: Until 1990 see Estonia; complete period life table 1995 *Demographic Yearbook* (1996).

Lithuania
H.: See Baltic states.
D.: Until 1990 see Estonia; complete period life table 1990 *Demographic Yearbook* (1996).

The Netherlands
H.: Total recruited workers 531,200 up to July 1944 (Hirschfeld, 1988, pp. 220f.), after which another 140,000 were deported before the end of the war. The highest figure reported in *Arbeitseinsatz* (1944, no. 6–8, p. 43) is 277,171 (mid-May 1944). Sijes (1990, p. 696) reports 8,500 casualties. The fluctuation was presumably quite high. Results: estimated Dutch civilian labourers 475,000, estimated survivors 465,000.
D.: Abridged period life tables 1943/47, 1948/52, 1953/57, 1958/62, 1965 Keyfitz and Flieger (1968), complete period life tables 1972, 1977, 1979, 1983/84, 1993/94, 1994/95 *Demographic Yearbook* (1974, 1980, 1985, 1996).

Poland
H.: Pre-war Poland had ethnic minorities of considerable size, especially Ukrainians and Jews. As is the case for the other countries, the Jews are counted among the inmates. After the war, voluntary and forced migration between Poland on the one hand and the Ukrainian and Belarussian SSR on the other resulted in ethnic homogeneity: Poles (were) settled in Poland, Ukrainians and Belarussians in the USSR. We count only ethnic Poles here. From numerous sources described in Spoerer (forthcoming), the number of Poles employed was 1,540,000, including double-counts, plus 205,000 transformed Polish POWs. We put the number of civilian labourers including transformed POWs at 1,600,000, of whom around 130,000 may have perished or been sent to concentration camps, which is presumably a rather conservative estimate. The number of surviving Polish civilian labourers is put at 1,470,000. As many ethnic Poles chose not to be repatriated after their liberation, migration has to be taken into account, see text. Herbert (1999, p. 78) puts the maximum number of Polish POWs working in the *Reich* at 294,393 in February 1940 and the total may have reached 300,000, of whom 205,000 were transformed into civilian labourers in 1940/41. A total of 60,000 Jewish POWs were separated from the others and worked to death (Krakowski and Gelber, 1990, pp.1188–90). From 1942 to early 1945 the number of Polish POWs fluctuated around 35,000. Thus the number of survivors is also put at 35,000.
D.: Complete period life tables 1948 Vielrose (1951, pp. 1–14), 1952/53 *Przeglad Statystyczny* (1956), 1956 *Demographic Yearbook* (1961), 1960/61, 1975/76 *Statystyka Polski* (1964, 1978), 1965/66, 1980/81, 1985/86 *Studia i Prace Statystyczne* (1968, 1983, 1987), 1970/72 *Rocznik Demograficzny* (1973), 1990/91, 1995/96 *Studia i Analizy Statystyczne* (1993, 1997).

Russia
H.: See Soviet Union. The Russian figures include all other Soviet nationalities except the Balts, Belarussians, Ukrainians, and Moldovians as claimants from these countries will receive their compensation via the Russian foundation. As the share of Russians and other nationalities among Soviet civilian labourers was approximately 0.43, the results are: total civilian labourers 1,100,000, survivors mid-1945 995,000; total POWs 1,210,000, survivors mid-1945 590,000.

D.: Until 1990 see Soviet Union; complete period life table 1995 *Demographic Yearbook* (1996).

Serbia
H.: No reliable recruiting figures available. The highest number given on a reporting date, 78,107, is recorded for mid-January 1942 (*Arbeitseinsatz*, 1942, no. 6, p.12). Mortality was normal, fluctuation is difficult to assess. We estimate total civilian labourers and survivors at 100,000. The maximum reported number of POWs is 107,976 in July 1942, the latest recorded is 100,830 in early January 1945. Thus we estimate total POWs 1941–45 at 110,000 and survivors at 105,000.
D.: See Yugoslavia.

Slovakia
H.: Foreign labourers from Slovakia were volunteers and were mainly employed in agriculture. The figures of *Arbeitseinsatz* given on reporting dates follow a seasonal pattern and show a maximum in September 1941 (80,037). Thus we estimate total civilian labourers and survivors at 100,000.
D.: Until 1985 see Czech Republic; complete life tables 1993 and 1995 *Demographic Yearbook* (1996).

Slovenia
H.: Many Slovenian workers employed in Germany were ethnic Germans. Slovenian demographic data are used to provide a benchmark for the Croatian and Serb data.
D.: Complete period life table 1948/52 Blejec (1955); 1952/54, 1960/62, 1970/72 *Savezni Zavod za Statistiku* (1960, 1968, 1976); abridged period life tables 1981/82, 1985/86, 1990/91, and 1994/95 Šircelj et al. (1997).

Soviet Union (German-occupied, excluding ethnic Balts)
H.: Totals 2,810,000 (Dallin, 1981, p. 452; Polian, 1995, p. 133) plus around 315,000 Ukrainians of former Polish nationality. The maximum recorded number in *Arbeitseinsatz* (1944, no.11/12, p.12) is 2,410,000 in September 1944 (excluding Balts). Mortality was comparatively high, fluctuation very low. In combination with other sources, Spoerer (forthcoming, pp. 29–36) estimates the total number of Soviet civilian labourers at 2,850,000 (including Balts), of whom 250,000 died or were sent to concentration camps, thus resulting in 2,600,000 survivors.

Because of their high mortality, the total number of Soviet POWs who worked in the German economy is extremely difficult to assess. The deployment of Soviet POWs on a large scale did not start before spring 1942. From that time until the end of the war, around 1.3 million POWs perished in German custody (Streit 1997, pp. 191–216; Spoerer, 2001). Without good evidence, we assume that among them 1 million were employed as forced labourers in the German economy. The maximum number of Soviet POWs employed is reported for January 1945 (972,388) by Umbreit (1999, p.212). We presume that the number of newly captured Soviet POWs in 1945 was lower than the number of casualties, resulting in 950,000 surviving Soviet POWs in mid-1945. Thus we estimate that the number of Soviet POWs employed in Germany totalled around 1,950,000, a figure roughly in line with that of Polian (2001, p.45), whose estimate of Soviet PoWs in Germany is 2.0–2.2 million.
D.: Meslé et al. (1996).

Spain
H.: The number of Spanish civilian labourers in Germany was negligible. Spanish demographic data are used for concentration camp inmates.
D.: Complete period life tables 1940, 1950, 1980/82, 1985/86 *Demographic Yearbook* (1974, 1996); abridged period life tables 1960 and 1963 Keyfitz and Flieger (1968).

Ukraine
H.: See Soviet Union. As the share of Ukrainians among Soviet civilian labourers was approximately 0.43, the results are: total civilian labourers 1,320,000, survivors mid-1945 1,210,000; total POWs 575,000, survivors mid-1945 280,000. Because many Ukrainians chose not to be repatriated after their liberation, migration has to be taken into account, see text. Concerning the ethnic split of Soviet forced labourers, we follow the archival evidence presented by Polian (2001, p. 165) rather than the figures of Dyczok (2000, p.17, p.166f., p.173) which we find not always plausible.
D.: Until 1985 see Soviet Union; complete period life tables 1990 and 1995 kindly supplied by Ukrainian Statistical Office.

United Kingdom
H.: The highest number of British POWs in the German war economy is recorded for January 1945 at 101,564 (Umbreit: 1999, p.212). Among all POWs, the British and Americans received the best treatment by the German army, which generally abided by the Geneva Convention. Thus mortality was low. Total British POWs and survivors mid-1945 are estimated at 105,000.
D.: Abridged period life tables 1945/47, 1950/52, 1955/57, 1960/62, and 1963 Keyfitz and Flieger (1968), 1970/72; complete period life tables 1994 and 1995 *Demographic Yearbook* (1975, 1996).

United States
H.: Employment of US POWs in the German

economy was negligible. Following Hilberg (1985, p.1151) we assume that a third of Jewish survivors emigrated to the United States.
D.: Berkeley Mortality Database ($_5q_x$).

Yugoslavia
H.: See Croatia and Serbia.
D.: Abridged period life tables 1950/52, 1953/55, and 1961 Keyfitz and Flieger (1968), 1961/62, 1970/72, 1980/81; complete period life table 1988/90 *Demographic Yearbook* (1966, 1980, 1985, 1996).

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