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be calculated only roughly, by assuming that it bore the same ratio to 1941 as trade unions' idleness. Because of the weakness of the 1939 estimate of labor force, the crudeness of the annual interpolations and the lack of age and sex detail during 1942-44, most of the wartime analyses are confined to comparisons of June 1945 with June 1941.<sup>7</sup>

The labor force data of Germany are from the official census of 1939 and from the Kriegswirtschaftliche Kräftebilanz (War Economy Manpower Balance Sheet) of the Statistisches Reichsamts for 1940-44. The latter "were not always reliable and had frequently changing conceptual and territorial coverage", were based on questionnaires to be returned by employees, self-employed professional workers, and the like, on the membership lists of industrial, trade, and cultural organizations, and were subject to some gaps and duplications among organizations. The data were used in the study as adjusted for the above discrepancies by the *Strategic Bombing Survey*. They cover all gainfully occupied persons counting, beginning 1944, a small number of home workers, i.e., persons engaged in industrial work at home.<sup>8</sup>

### 3 THE LABOR FORCE IN MOBILIZATION: UNITED STATES, GREAT BRITAIN, GERMANY

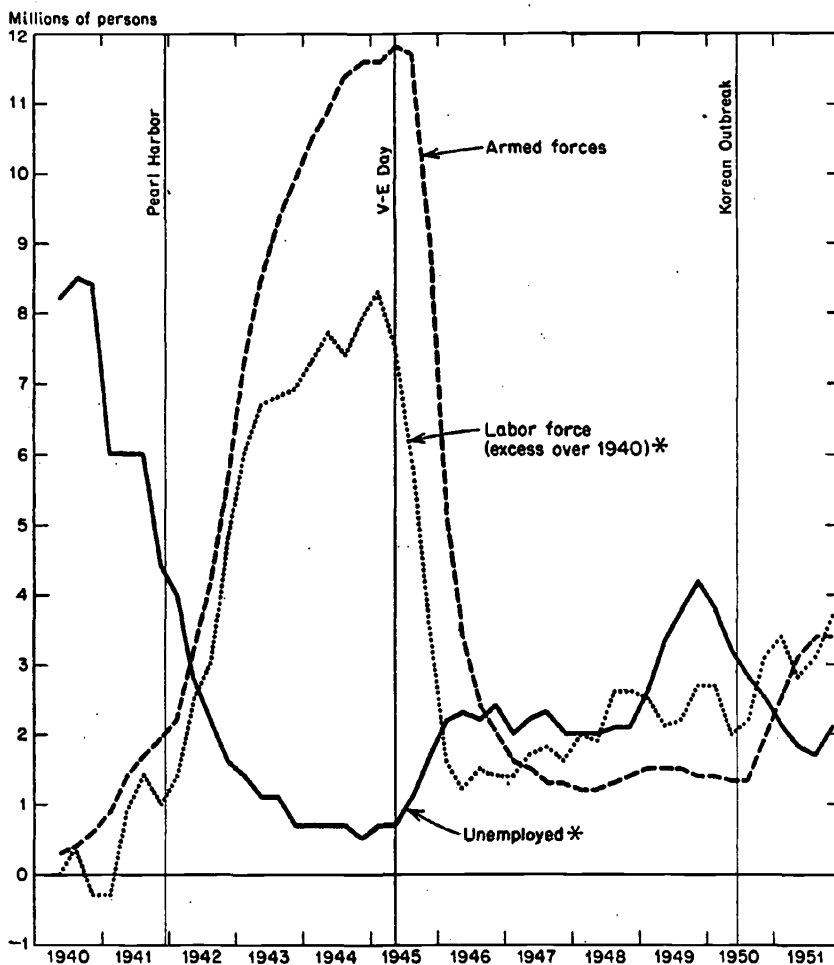
It is convenient to divide the half dozen years of war into three 2-year periods: the first ending with Germany's attack on Russia, the second with its surrender in North Africa, the third with its defeat in Europe. The last few months of World War II get incidental attention, for Japan's surrender was an anticlimax to the German collapse. This section describes in some detail the assembling of labor resources by the three major countries and carries a statistical account for Canada in Charts 1, 7, and Tables 1, 2, 5-8.

<sup>7</sup> Canada: *Canada Yearbook, 1945 and 1947; Census of Canada, 1941, VII, Occupations, 12; Canadian Statistical Review; Labour Force Bulletin*; Department of Labour, Ottawa: *Labour Force Gazette, Estimates of the Canadian Labour Force and its Composition, 1941-47* (mimeographed).

<sup>8</sup> Germany: *Statistisches Jahrbuch fuer das Deutsche Reich, 1938; Wirtschaft und Statistik*, Feb. 1941, p. 50, Dec. 1940, p. 519; *Effects of Strategic Bombing on the German War Economy, U. S. Strategic Bombing Survey* (Overall Economic Effects Division, Oct. 31, 1945), Appendix Tables 1, 6, pp. 199, 202, 207; *Statistical Yearbook of the League of Nations, 1941-42* (Geneva, 1943), Table 3, p. 26; Frank Notestein, *Future Population of Europe and the Soviet Union* (Geneva, 1944), pp. 264-5.

**Chart 1**  
**Labor Force, Armed Forces, and Unemployed**

**A United States, 1940-1951, Quarterly Averages\***



For sources of data and some discussion of their nature, see Section 2; notes 1-8, 42.

\* Population changes eliminated from labor force; both labor force and unemployed adjusted for seasonal variation.

**MID-1939 TO THE INVASION OF RUSSIA**

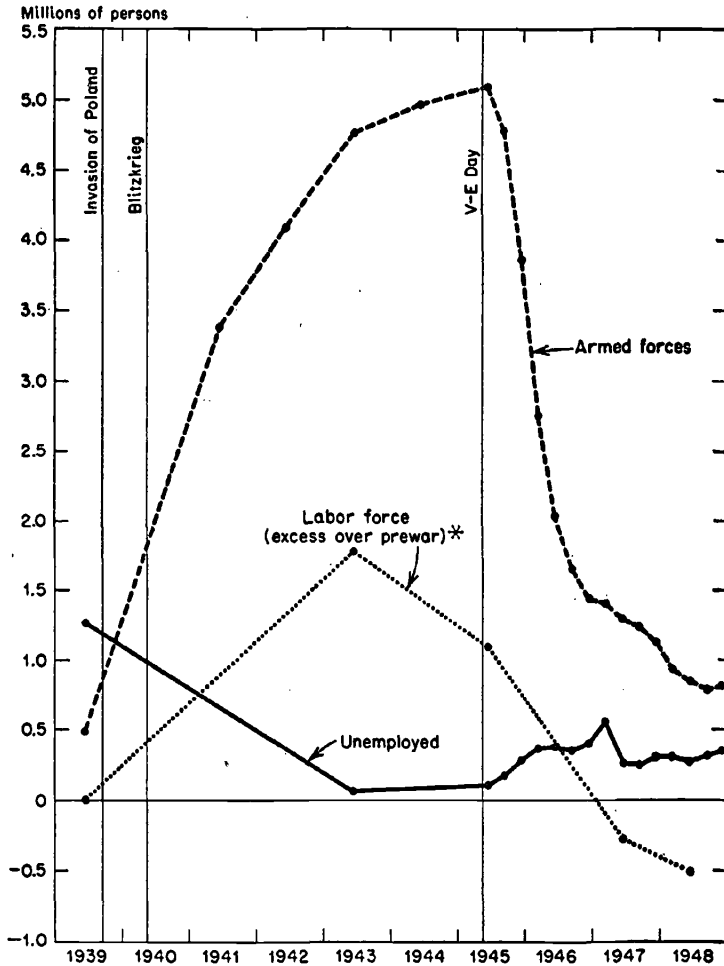
During April 1939-41 the United States drafted a million men and took 4.5 million into civilian employment besides. About six in ten of the increase came from reduction in unemployment and the rest from a rise

Chart 1 (cont.)

Labor Force, Armed Forces, and Unemployed

B Great Britain, 1939-1948\*

Armed Forces and Unemployed Quarterly Beginning Mid-1945

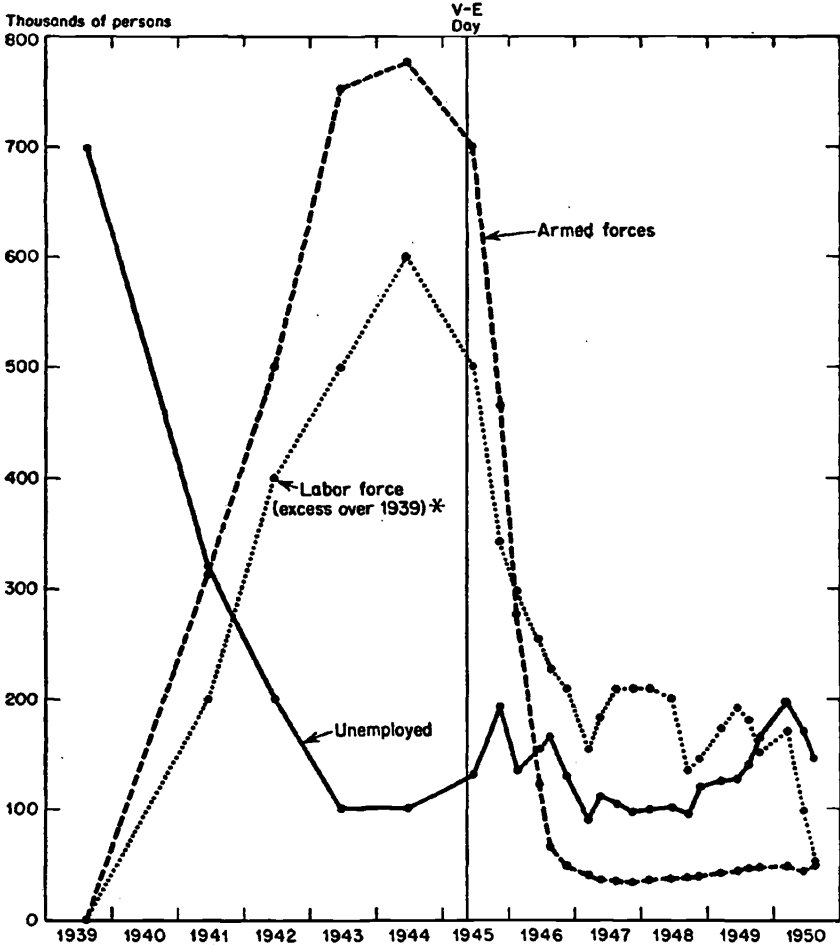


in the labor force. The only industry that did not gain workers was agriculture, which gave up almost half a million (Chart 2). Acquisitions were least, under a tenth, in trade, distribution, and finance, public utilities, mining, and services; most in transportation (a ninth), manufacturing (a fourth), and contract construction (nearly two-thirds).

Chart 1 (cont.)

Labor Force, Armed Forces, and Unemployed

C Canada, 1939-1950, Quarterly Beginning 1945\*



\* Population changes eliminated from labor force; beginning 1945 both labor force and unemployed adjusted for seasonal variation.

Combined trade, distribution, and finance reached a peak during 1941.

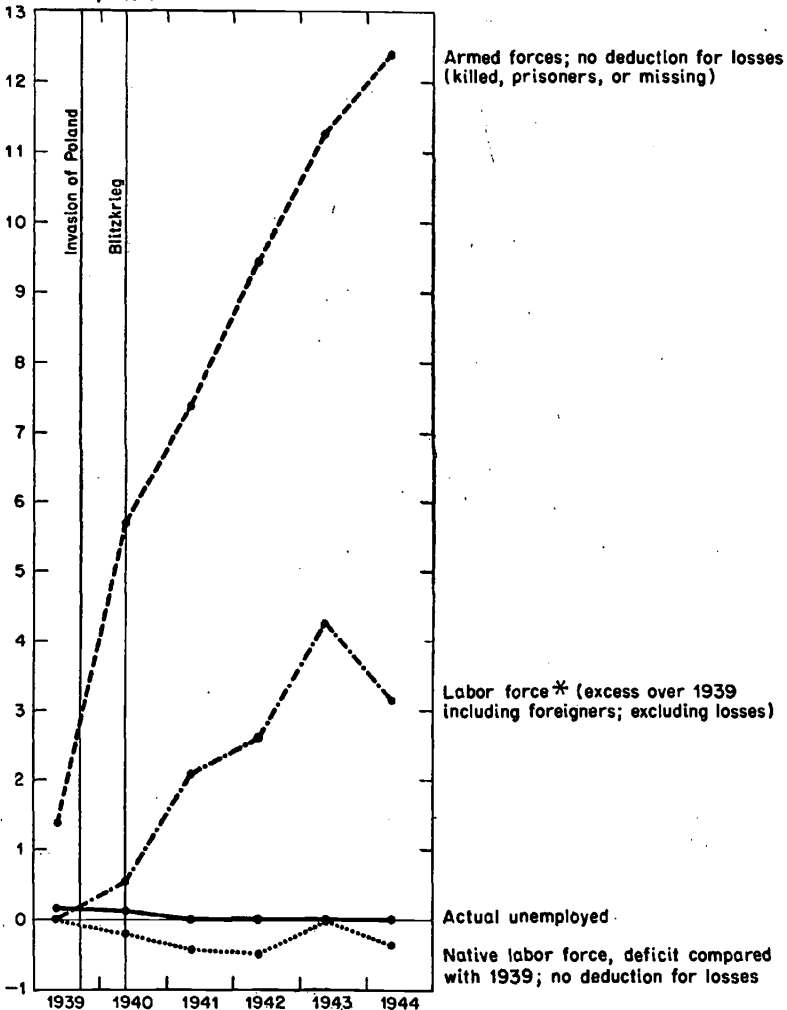
A pinch of skilled craftsmen, felt particularly in the metal trades, was relieved by upgrading workers and breaking down complex jobs and training persons to do semiskilled suboperations. Location of defense demands in areas of short supply stimulated tremendous migration. In general, however, the critical items were not labor but raw materials,

Chart 1 (concl.)

Labor Force, Armed Forces, and Unemployed

D Germany, May 1939 - 1944 \*

Millions of persons



\* Population changes eliminated from the labor force.

machine tools, components, ships, freight cars, and (in defense areas) housing and public facilities.<sup>9</sup>

<sup>9</sup> Historical Reports on War Administration, No. 1: *The United States at War (Development and Administration of the War Program by the Federal Government)*, prepared under the auspices of the Committee of Records of War Administration by the Bureau of the Budget, War Records Section (G. P. O., 1946), pp. 173-5.

Britain's economy in this time of its defiance was under intense strain but did not suffer from general labor scarcity until July 1941.<sup>10</sup> Limiting factors throughout 1940 were skilled workmen, especially in aero engine and ordnance factories, and in industrial facilities: steel, alloy steel, machine tools, fabricated items. These bottlenecks kept a famine of unskilled and semiskilled labor from manifesting itself until nearly two years after the start of the war.

Over 3 million men and women went into its armed forces. Only a few were at the expense of civilian employment, for possibly two-thirds came from reemployment and shifts out of non-industrial areas, the other million from a 4 percent net increase in the proportion of population in the labor force, about half of labor force accretions for the war. Employment declined in most industries, particularly those in which payroll accessions in the United States were moderate — commerce, distribution, and banking — and public utilities, miscellaneous services, and mining (not charted separately). Some industries that gained a lot in this country lost a lot in Britain, notably construction (not charted separately). On the other hand, agriculture, which gave up workers here, took on a few in Britain during this period and continued to do so for the duration. Increases were concentrated in fewer industries: engineering, vehicles, and shipbuilding and government (not charted separately) each expanded employment about a third.

The heavy emphasis on defense production called for mass shifts of workers to new industries. In these transfers compulsion played a role not to be entirely ignored. During those first years, however, it "was proceeding but slowly. Its influence in the big migration into war industry between mid-1940 and mid-1941 must not therefore be overestimated . . . industrial conscription was operating as yet only on the difficult margins of the war economy."<sup>11</sup> In the sense that workers had rather

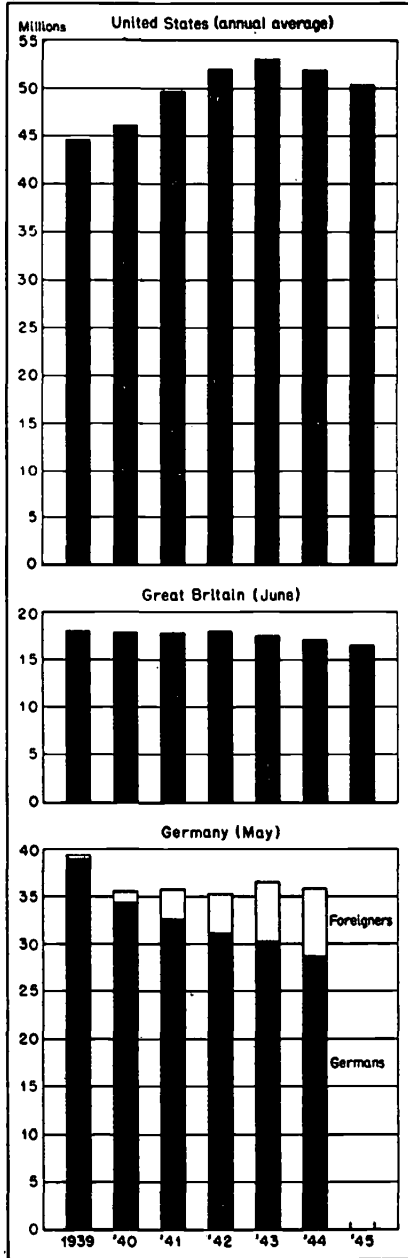
<sup>10</sup> History of the Second World War, United Kingdom Series: *British War Economy*, ed. by W. K. Hancock and M. M. Gowing (His Majesty's Stationery Office, London, 1949), pp. 291-2.

<sup>11</sup> *Ibid.*, p. 309. "The award of government contracts, fortified by grants of priority for materials and labour, was perhaps the most important of all the forces that were building up munitions employment. For many workers, perhaps for the majority, transfer from civilian industry to war industry did not mean either a change of neighborhood or of factory or of occupation; it was the factory itself that was switched over. . . . The change was frequently a matter of the product, rather than of the processes upon which labour was engaged. Workers did also, of course, change their jobs, their factories and their neighborhoods. A variety of 'pulls' and 'pushes' moved them. Patriotism drew many into war work, the desire to shelter from the Forces drew a few. Higher wages . . . were often a powerful incentive. Meanwhile, the decline of the unessential industries exerted a steady 'push'."

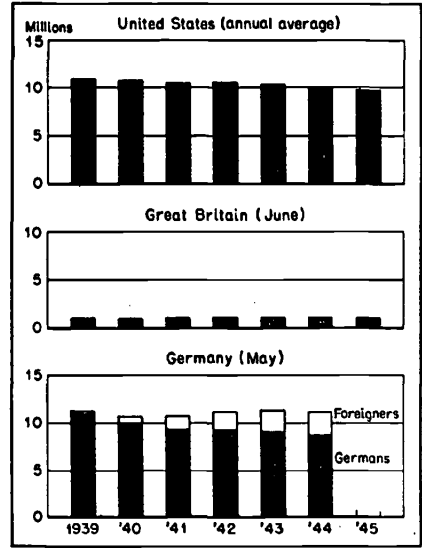
Chart 2

Civilian Employment by Industrial Divisions, World War II

A Total



B Agriculture, Fishing and Forestry



C 'Industry' (manufacturing, mining, and construction)

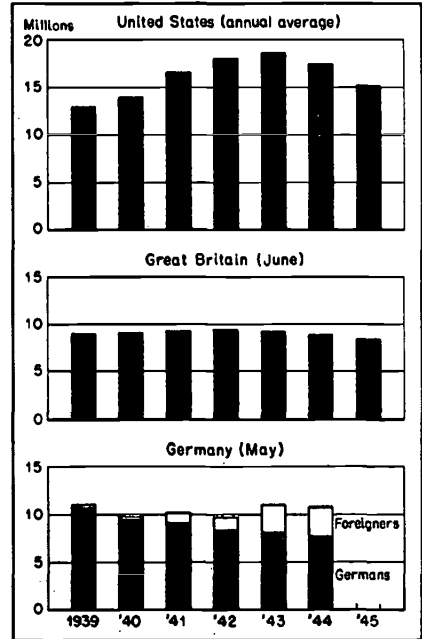
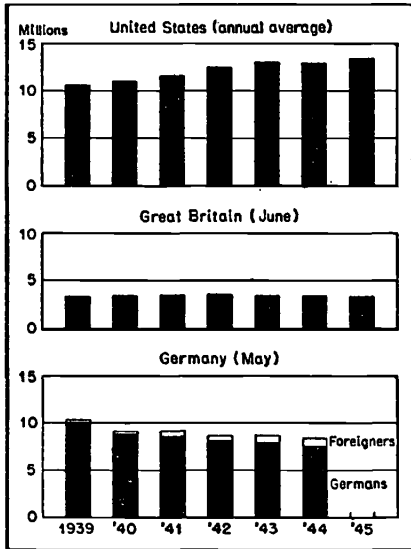




Chart 2 (concl.)

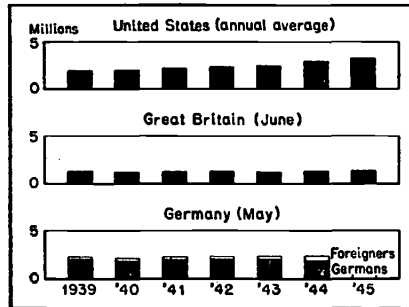
Civilian Employment by Industrial Divisions, World War II

D Services (government and administrative services, domestic and miscellaneous services; in Germany also handwork)

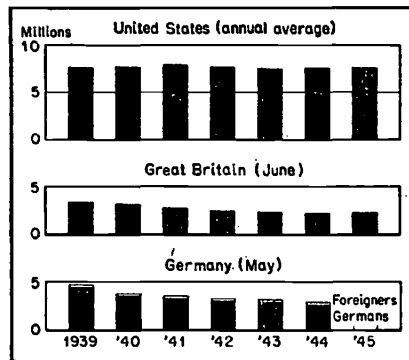


Sources: United States, *Economic Almanac for 1950*, p. 162.  
 Great Britain, *Annual Abstract of Statistics*, No. 86, 1938-1948, p. 97.  
 Germany, *Strategic Bombing Survey*, pp. 204-5.

E Transportation



F Commerce, Trade, Distribution, Banking, and Finance



wide choice of time and place, their movement must for the most part be regarded as voluntary.

Germany, as a result of its victories, did not experience real manpower stringency during this biennium. The use of steel output to sustain current consumption rather than to expand facilities, the enormous capacity in conquered and intimidated countries, and the herds of foreign replacements imparted a sense of strength that could not have made it easy to call on civilians for sacrifices. Focusing of production in the most efficient plants to save fuel, labor; and transportation was opposed by management and minor party leaders (as in the United States and, for a time, in Britain). In 1940 it was urged that women be conscripted and the workweek lengthened in order to replace drafted labor. But virtually nothing of this sort was done; instead, more emphasis was laid

upon recruiting non-Germans. The easy going administration of the war, especially in the first years, was reflected in the mere 4 percent rise of output up to 1941.

Indeed, Germans were not drawn into the work force even as fast as they increased among the working age population, and the civilian labor force was not replenished for any citizens called to its armed forces. 'Industry' (manufacturing, mining, and construction), despite reinforcement by nearly 1 million aliens, parted with almost that number. Employment decreases were particularly severe, about a fourth, in hand work and in combined trade, banking, and insurance. A net half a million left agriculture despite reinforcement by three times as many foreigners. Clearly women did not go into work in sufficient number to make up for men drawn into the army, navy, and air force. Females

Table 1

Labor Force by Employment and Military Status: Four Countries  
Both Sexes 14 and Older (millions of persons)

A UNITED STATES, APRIL 1940-1945

	1940	1941	1942	1943	1944	1945
Total labor force (civilian & military)	54.8	56.3	58.8	63.2	65.2	66.3
Armed forces	0.3	1.3	2.9	8.3	10.9	12.1
Labor force (civilian)	54.5	55.0	55.9	54.9	54.3	54.2
Unemployed	8.4	6.4	3.1	1.0	0.7	0.5
Employed	46.1	48.6	52.8	53.9	53.6	53.7
Labor force increase over 1940	.....	1.5	4.0	8.4	10.4	11.5
Due to population growth	.....	0.7	1.3	1.9	2.5	3.0
Excess over part due to population growth	.....	0.8	2.7	6.5	7.9	8.5
Unemployment compared with 1940	.....	-2.0	-5.3	-7.4	-7.7	-7.9
Employment increase over 1940	.....	2.5	6.7	7.8	7.5	7.6
Civilian	.....	2.5	6.7	7.8	7.5	7.6
Total (civilian & military)	.....	3.5	9.3	15.8	18.1	19.4

B GREAT BRITAIN, JUNE 1939-1945

	1939	1943	1945
Total labor force (civilian & military)	22.9	25.2	24.6
Armed forces	0.5	4.8	5.1
Labor force (civilian)	22.4	20.4	19.5
Unemployed	1.2	0.0	0.1
Employed	21.2	20.4	19.4
Labor force increase over 1939	.....	2.3	1.7
Due to population growth	.....	0.5	0.6
Excess over part due to population growth	.....	1.8	1.1
Unemployment compared with 1939	.....	-1.2	-1.1
Employment increase over 1939	.....	-0.8	-1.8
Civilian	.....	-0.8	-1.8
Total (civilian & military)	.....	3.5	2.8

C CANADA, AUG. 1939, JUNE 1941-45

	1939	1941	1942	1943	1944	1945
Total labor force (civilian & military)	4.4	4.7	5.0	5.1	5.3	5.3
Armed forces	0.0	0.3	0.5	0.7	0.8	0.7
Labor force (civilian)	4.4	4.4	4.5	4.4	4.5	4.6
Unemployed	0.7	0.3	0.2	0.1	0.1	0.1
Employed	3.7	4.1	4.3	4.3	4.4	4.5
Labor force increase over 1939	.....	0.3	0.6	0.7	0.9	0.9
Due to population growth	.....	0.1	0.2	0.2	0.3	0.4
Excess over part due to population growth	.....	0.2	0.4	0.5	0.6	0.5
Unemployment compared with 1939	.....	-0.4	-0.5	-0.6	-0.6	-0.6
Employment increase over 1939	.....	0.4	0.6	0.6	0.7	0.8
Civilian	.....	0.4	0.6	0.6	0.7	0.8
Total (civilian & military)	.....	0.7	1.1	1.3	1.5	1.5

D GERMANY, MAY 1939-1944

	1939	1940	1941	1942	1943	1944
NATIVES MOBILIZED (MILITARY LOSSES NOT DEDUCTED)*						
Total labor force (civilian & military)	40.5	40.5	40.5	40.7	41.5	41.4
Armed forces mobilized	1.4	5.7	7.4	9.4	11.2	12.4
Labor force (civilian)	39.1	34.8	33.1	31.3	30.3	29.0
Unemployed <sup>b</sup>	0.2	0.1	.....	.....	.....	.....
Employed	38.9	34.7	33.1	31.3	30.3	29.0
Labor force increase over 1939	.....	0.0	0.0	0.2	1.0	0.9
Increase called for by population growth	.....	0.3	0.6	0.8	1.1	1.3
Deficit below increase called for by population growth	.....	-0.3	-0.6	-0.6	-0.1	-0.4
Unemployment compared with 1939	.....	-0.1	-0.2	.....	.....	.....
Employment increase over 1939	.....	-4.2	-5.8	-7.6	-8.6	-9.9
Civilian	.....	-4.2	-5.8	-7.6	-8.6	-9.9
Total (civilian & military)	.....	0.1	0.2	0.4	1.2	1.1
NATIVES AND FOREIGNERS (MILITARY LOSSES DEDUCTED)						
Total labor force (civilian & military)	40.8	41.6	43.4	44.2	46.1	45.2
Armed forces active	1.4	5.6	7.2	8.7	9.6	9.1
Labor force (civilian)	39.4	36.0	36.2	35.5	36.5	36.1
Labor force increase over 1939	.....	0.8	2.6	3.4	5.3	4.4
Due to population growth	.....	0.3	0.6	0.8	1.1	1.3
Excess over part due to population growth	.....	0.5	2.0	2.6	4.2	3.1

For sources of data and some discussion of their nature and adjustment, see text Section 2; notes 1-8, 42.

\* The purpose in not deducting military losses is to show the labor force contributed by the German population. The number actually available for work or military service was, of course, smaller by the number of war dead or missing, which were (in thousands) 1939, 0; 1940, 85; 1941, 185; 1942, 800; 1943, 1,680; 1944, 3,285.

<sup>b</sup> Unemployment was assumed to be negligible after 1940.

employed on family farms as parttime 'helping members' had always been supposed to constitute a hidden reserve that could shift to industry without taking much away from agriculture, but no more than a few hundred thousand were, in fact, released. Little help came from increases in hours. The average workweek was lengthened only 4 percent from March 1939 to its high for the war, 49.5 hours in September 1941. As an interesting commentary on the Nazi myth of total warfare, domestic service, almost entirely native German, relinquished relatively few in this or subsequent periods.<sup>12</sup>

#### TO THE TRIUMPH IN NORTH AFRICA

A general labor deficit did not appear in the United States between April 1941 and 1943.<sup>13</sup> More moved into its labor force than in any other period — nearly 7 million. This almost matched the rise in armed forces, so that civilian employment could profit by the entire 5 million decline in unemployment (Tables 1 and 2). Gains of a tenth were registered in services and transportation, and of a fourth in manufacturing. But mining, public utility, and agricultural employments barely

<sup>12</sup> *Strategic Bombing Survey*, pp. 21-33, 35, 215.

<sup>13</sup> *The United States at War*, p. 173. "Officials concerned with manpower [in, say, 1942] were shadow-boxing with a problem which had not yet developed. There was a great output of plans and much controversy over what should be done and who should do it, but few actions of any importance were taken. Yet this lack of action did not appreciably retard war production. Workers continued to show up at the factories, employers continued to hire and train them, and Government for the most part observed the process from the sidelines."

Table 2

#### Additions to Employment and Labor Force by Sources

Both Sexes 14 and Older (all data except percentages in millions of persons)

##### A UNITED STATES, APRIL 1940-1945

	1940-41	1941-42	1942-43	1943-44	1944-45	1940-45
1 Employment (civilian & military) rise	3.5	5.8	6.5	2.3	1.3	19.4
2 Unemployment fall	2.0	3.3	2.1	0.3	0.2	7.9
3 Labor force rise	1.5	2.5	4.4	2.0	1.1	11.5
4 Due to population growth	0.7	0.6	0.6	0.6	0.5	3.0
5 Excess over part due to population growth	0.8	1.9	3.8	1.4	0.6	8.5
6 Taken into armed forces	1.0	1.6	5.4	2.6	1.2	11.8
7 Civilian employment rise	2.5	4.2	1.1	-0.3	0.1	7.6
8 Labor force rise as % of additions to armed forces (line 5 ÷ 6)	80	119	70	54	50	72

B GREAT BRITAIN, JUNE 1939-1945		1939-43	1943-45	1939-45
1	Employment (civilian & military) rise	3.5	-0.7	2.8
2	Unemployment fall	1.2	-0.1	1.1
3	Labor force rise	2.3	-0.6	1.7
4	Due to population growth	0.5	0.1	0.6
5	Excess over part due to population growth	1.8	-0.7	1.1
6	Taken into armed forces	4.3	0.3	4.6
7	Civilian employment rise	-0.8	-1.0	-1.8
8	Labor force rise as % of additions to armed forces (line 5 ÷ 6)	47	-200	30

C CANADA, AUG. 1939, JUNE 1941-45		1939-41	1941-42	1942-43	1943-44	1944-45	1939-45
1	Employment (civilian & military) rise	0.7	0.4	0.2	0.2	0.0	1.5
2	Unemployment fall	0.4	0.1	0.1	0.0	0.0	0.6
3	Labor force rise	0.3	0.3	0.1	0.2	0.0	0.9
4	Due to population growth	0.1	0.1	0.0	0.1	0.1	0.4
5	Excess over part due to population growth	0.2	0.2	0.1	0.1	-0.1	0.5
6	Taken into armed forces	0.3	0.2	0.2	0.1	-0.1	0.7
7	Civilian employment rise	0.4	0.2	0.0	0.1	0.1	0.8
8	Labor force rise as % of additions to armed forces (line 5 ÷ 6)	67	100	50	100	100	71

D GERMANY, MAY 1939-1944		1939-40	1940-41	1941-42	1942-43	1943-44	1939-44
NATIVES MOBILIZED (MILITARY LOSSES NOT DEDUCTED)							
1	Employment (civilian & military) rise	0.1	0.1	0.2	0.8	-0.1	1.1
2	Unemployment fall*	0.1	0.1	.....	.....	.....	0.2
3	Labor force rise	0.0	0.0	0.2	0.8	-0.1	0.9
4	Due to population growth	0.3	0.3	0.2	0.3	0.2	1.3
5	Excess over part due to population growth	-0.3	-0.3	0.0	0.5	-0.3	-0.4
6	Taken into armed forces	4.3	1.7	2.0	1.8	1.2	11.0
7	Civilian employment rise	-4.2	-1.6	-1.8	-1.0	-1.3	-9.9
8	Labor force rise as % of additions to armed forces (line 5 ÷ 6)	-7	-18	-0	28	-25	-4
NATIVES AND FOREIGNERS (MILITARY LOSSES DEDUCTED)							
1	Labor force rise	0.8	1.8	0.8	1.9	-0.9	4.4
2	Due to population growth	0.3	0.3	0.2	0.3	0.2	1.3
3	Excess over part due to population growth	0.5	1.5	0.6	1.6	-1.1	3.1
4	Added to armed forces	4.2	1.6	1.5	0.9	-0.5	7.7
5	Labor force rise as % of additions to armed forces (line 3 ÷ 4)	12	94	40	178	220	40

For sources of data and some discussion of their nature and adjustment see Section 2; notes 1-8, 42.

\* Unemployment was assumed to be negligible after 1940.

held their own (agriculture despite wholesale deferment). Trade, distribution, and finance parted with a small percentage. Construction dwindled almost to 1939 levels. Some industries had their top employments in the middle of this biennium.

As the conflict passed through different stages, British workers shifted out of nonessential into higher priority areas. Main expansions up to mid-1943 took place in the armed forces, agriculture, government, and the manufacture of metals, vehicles, ships, and chemicals. Losses continued to be suffered in food, clothing, and shoe manufacturing, utilities, construction, commerce, distribution, and other services. Transportation and mining employment held their own. Altogether, Britain made the remainder of its labor force increments, about a million, and apparently attained its peak mobilization at the close of this period.

Nevertheless a gap opened between labor needs and supply two years before there was even a moderate divergence in the United States (see below). Failure to fill requirements began in Birmingham and Sheffield areas and led quickly to the manpower survey of mid-1941, the first step in allocating supply where it was most needed. This survey forecast large new demands for 1942. Partly as a result, Britain passed its National Service Act just before Japan's attack on Hawaii, extending obligation of defense work to all persons 18 and 60, raising the age for military service from 41 to 50, and applying conscription to women 20-30, with option to enter Auxiliary Service, civil defense, or essential industry. By Pearl Harbor day, shortages had intensified, become acute in coal mining, shipbuilding, aircraft production, and armed services. Plans to relieve them with labor from construction, which had been due to shrink, were shelved by the need to build camps and airfields for American forces, scheduled to begin disembarking in 1942. A second manpower budget, drawn up in mid-1942 for the next 18 months, indicated additional demand for 2.7 million workers and extra supply of only 1.6 million. To cut demand and allocate output to industries with the most urgent requirements, Supply Ministries were told to economize on labor or curtail contracts. "Manpower had become an almost continuous pre-occupation of the War Cabinet."<sup>14</sup>

Britain even turned to women with household responsibilities. The manpower authority interviewed them during late 1941 and early 1942 and, when they had free time, asked them to take parttime work, em-

<sup>14</sup> *British War Economy*, pp. 313, 438-49.

phasizing inducement rather than compulsion. Britain exempted workers doing 30 hours or less per week from Unemployment Insurance Acts and Essential Work Orders in order to relieve them from insurance deductions and from fear that they could not withdraw if the burden of working both in and out of the home became too heavy. Parttime employment grew three quarters of a million.<sup>15</sup> "The extent of the mobilization was considerably greater than was achieved during the first world war. . . . Women were brought directly into the war effort to a far greater extent . . ." (*ibid.*, pp. 3-4).

NUMBER OF PARTTIME WORKERS IN BRITISH EMPLOYMENT  
UNADJUSTED FOR LENGTH OF TIME WORKED

1941	1942	1943		1944		1945
June	June	June	December	June	December	June
Negligible	380,000	750,000	840,000	900,000	870,000	900,000

In autumn 1941 Hitler ordered a production cutback in the belief that victory was in sight, but rescinded it after the Moscow defeat in early 1942. Instead of taking effective measures to recruit nationals, however, Germany stepped up immigration. Its attempt to draw in women through the registration of January 1943 had negligible results. The labor force reached its maximum with a million workers and fighters more than in 1939. As this increase was under that which could have come through population growth, its native labor force remained below the proportion of working age population that had prevailed in 1939. It was a small amount below that level even before battle deaths are deducted, and when these are taken out, nearly 2 million. Another 3 million aliens were drawn into work, but civilian employment climbed only a few hundred thousand — to the highest it was to achieve. Minor gains were realized in agriculture, transportation, and industry, major ones in armed forces administration. In May 1943 employment in agriculture and industry counting foreigners, was at about 1939 levels. But extensive use of Poles, French, Belgians, Dutch, and other nationals could not prevent employment from falling a tenth in trade, banking, and insurance, or in administration and services, and a sixth in handwork. Hours worked by the average wage earner went back to prewar levels, as the workweek of females steadily shortened through the war.<sup>16</sup> Even domestic help fell off a bit!

<sup>15</sup> *Ministry of Labour and National Service Report, 1939-46*, p. 65. Counting two parttime workers as one fulltime, following the British, yields 190,000 for June 1942, 375,000 for June 1943, and so on.

<sup>16</sup> *Strategic Bombing Survey*, pp. 35, 215.

## TO THE VICTORY IN EUROPE

During the last two years of war the labor forces of the three countries did not change much. The United States gained 3.1 million new workers and its total labor force grew almost up to V-E Day but since nearly 4 million men were taken by the armed forces civilian employment arrived at its maximum in 1943. Munitions employment also got to its summit in the last months of that year.<sup>17</sup> Transportation continued to add to payrolls; and services, trade, distribution, and finance recovered slightly. All other industries, particularly manufacturing, mining, construction, and agriculture, yielded up workers. Employment declined even in government.

Labor, not theretofore critically short, became in autumn 1943 an 'ultimate' limit on production; on the Pacific Coast female workers were scarce in all industries. As the drafts to the services outpaced inflows to the labor force and reductions in unemployment, civilian employment fell behind for the first time, dropping over a million in 1944 (Table 2). "The labor reserves with which the United States had entered the war had been fully mobilized . . . everybody who would willingly take a job already had a job, and door-to-door recruiting campaigns conducted by the Civil Service Commission and the War Manpower Commission yielded negligible results."<sup>18</sup> Marked outflows from war production centers began with the Italian surrender and Russian successes,<sup>18</sup> and during 1943-45 half the personnel of manufacturing firms were quitting each year, four times the rates in 1940 and double those after the cessation of hostilities.<sup>19</sup>

By spring 1944 the acute phase of labor scarcity had passed. Spot shortages were made up to some extent by spot measures: special deferments from the draft; emergency campaigns by the Employment Service for particular plants and industries; Army furloughs for skilled workers; and special wage boosts allowed by the War Labor Board. The real relief of the stringency, however, probably came from the debouching of pro-

<sup>17</sup> *The United States at War*, p. 433 (Chart 51). Munitions production, which had been increasing faster than munitions employment, declined from 1944 to mid-1945 at about the same rate as employment.

<sup>18</sup> *Ibid.*, pp. 421-33.

<sup>19</sup> Bureau of Labor Statistics, *Fact Book on Manpower, 1951*, p. D-4. The Boeing Plant in Seattle hired 250,000 in the 3 years after June 1940 but had only 39,000 workers in mid-1943 (*The United States at War*, p. 432).



duction pipelines which had been filling during the preceding several years, not from any canny disposition of manpower. A few contracts were diverted to surplus labor areas, but on the whole such attempts were defeated by opposition of Congressmen, business men, and even industry divisions of the War Production Board (p. 434). In regions such as the West Coast, programs of the War Manpower Commission to allocate tight supply through urgency lists and employment ceilings had limited success, for the WMC, powerless to enforce priorities or require employers to hire exclusively through Employment Offices, was regarded by both industry and the WPB as a mere recruiting agency.

Congress, doubtless reflecting the temper of its constituents, refused repeatedly to conscript labor. It furthermore exempted farmers from the draft and backed up Selective Service Boards in deferring for dependency rather than occupation: "The great majority of men over 30 continued for the remainder of the war in the deferred classes — nominally on the basis of occupational essentiality, rather liberally interpreted, but actually on the basis of age and family status."

As the end of the European phase came in sight, workers hesitated more and more to take temporary situations. As it neared, production schedules were cut and unemployment cropped up here and there.<sup>20</sup> The munitions industries, from which 1.5 million had departed between late 1943 and early 1945, gave up a million in the last three months before V-E Day.

In Britain the armed forces took on a few hundred thousand. Employment held its own in agriculture, transport, and shipping, but gave ground in the other industries, in defense manufacturing most of all. "It became apparent that Great Britain had reached the limits of mobilization; during the rest of the year recruitment from the nonindustrial population would not be sufficient to offset the normal wastage from industry. Before long the labour force would decline." The workweek, up 9 percent since 1938, was also at its limit by mid-1943, especially in view of the spare hours spent at homeguard exercises and fire watching.<sup>21</sup>

The dim prospects led to stricter budgeting of labor as well as in-

<sup>20</sup> *Ibid.*, pp. 433, 442-3, 445-9.

<sup>21</sup> *British War Economy*, pp. 447, 454. According to my estimates, population 14-64, which had grown only 300,000 during the preceding 4 years, actually shrank from mid-1943 to mid-1945. The population of young males and females 14-24 declined throughout the war under the erosion of birth deficits during the two preceding decades.

creased pressure, even "regretful ruthlessness", on females to take essential work or to migrate from surplus labor areas, such as Wales, into the Midland, Northwestern, and London areas where labor needs were even more concentrated than population. Most women who could go elsewhere were already employed. It was necessary to shift them to the tight areas, putting into their jobs those who were tied by child and household cares to their own neighborhoods. Despite the National Service Act and in face of moral pressure to get girls and women into war duties, both essential employment and the labor force fell off; the latter had dropped perhaps half a million by V-E Day. "Lack of replacements for ordinary industrial wastage was probably as important as actual labour withdrawals in decreasing labour force of the less essential industries."<sup>22</sup>

Up to May 1944 Germany's combined labor and fighting forces dwindled slightly, the civilian labor force of its own nationals somewhat more. A few hundred thousand females left industry, transport, and domestic service, some others took on home work or returned to agriculture, but the over-all proportion of its females in work did not change. Albert Speer, Minister for Armament and War Production, reported to Hitler in July 1944 that 588,000 able-bodied men 18-34 could be combed out to the armed forces and replaced by women. His proposal that 300,000-400,000 domestic servants and 30,000 college girls be diverted to war production was in vain. Not until the last year of war did Germany take drastic measures. When Allied successes followed the landings in France, foreign replacements became a trickle. A real shake-up was instituted and large sections of industry closed — newspapers, printing, amusements, railroad travel, teaching, and research. By this time bombing was disrupting factory routine, paralyzing key industries, and interfering with mobility, the consequence being that much of the labor turned loose by austerity measures became unemployed. Between March 1943 and 1944 average hours worked per week went down half way to prewar levels in both production and consumption. They declined for all workers, male and female, skilled and unskilled. From January 1945 on, the war economy was disintegrating.<sup>23</sup>

The Allies experienced their best victories, the Germans their worst defeats, in this period, but all three major countries lost manpower from manufacturing, and fought to some extent with guns and materials put

<sup>22</sup> *Ibid.*, p. 460.

<sup>23</sup> *Strategic Bombing Survey*, pp. 38-9, 215.

into pipelines in the preceding four years. Only the United States expanded its total labor force.

#### LABOR FORCE, ARMED FORCES, AND UNEMPLOYMENT

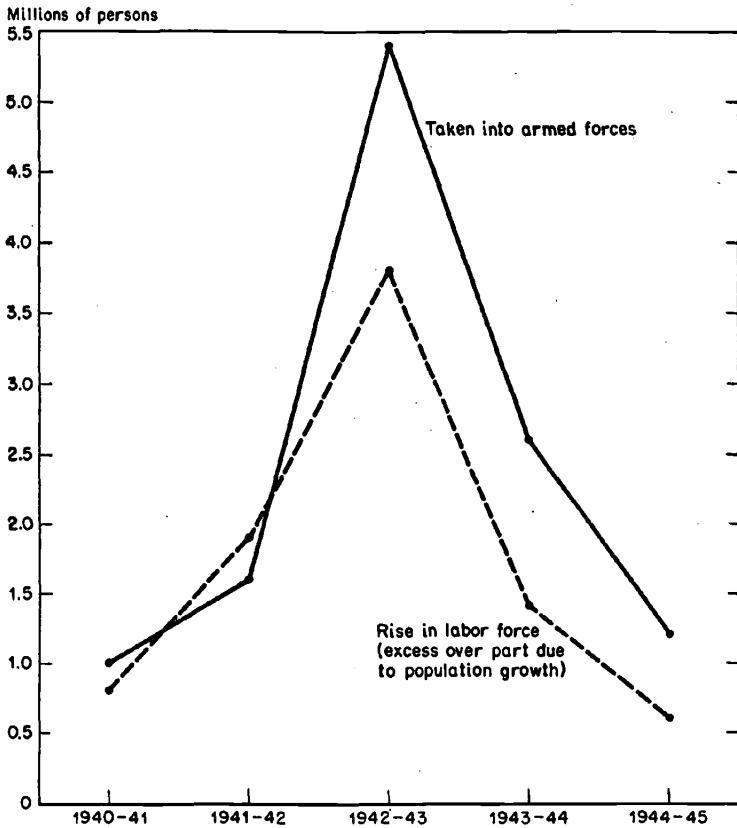
In none of the three countries whose nationals moved into gainful occupations in extra numbers during the war have any such inflows been recorded in time of peace. In each of the three, as will subsequently become manifest, the labor force gave up virtually all its wartime gains as soon as, even before, the armed forces disbanded. Only in the United States are data adequate to test the association in detail (Charts 1 and 3).

Until the armed forces enlarged, the labor force of this country about held its own, aside from population increase. Most of the influx occurred in the years when recruiting camps were jammed with inductees (Chart 3). It does not seem too much, therefore, to suppose that it was brought about by the military draft. The immense levies drew young men from schools into the armed forces and therefore into the labor force; reduced the number at home for whom women had to keep house; took away the main breadwinner of many families, putting new burdens of earning upon wives, sisters, and mothers; and, by removing husbands, fiancés, and boyfriends, created a vacuum in the social life of women which millions filled by taking defense jobs.

It has been this writer's observation that the burden of housekeeping is determined primarily by the number for whom beds must be made, meals cooked, shirts ironed, and food and clothes purchased, and only secondarily by the size of the house or its equipment — vacuum cleaners, electric ironers, and automatic dishwashers. If millions of boys and men were conscripted, fewer houseworkers would be needed and more women would presumably be available for the labor force. How can this hypothesis be tested statistically?

In 1940 the ratio of the number of females engaged in housework to the number of persons living in private households of two or more was 0.228, slightly under one houseworker for four persons. Multiplying the household population by 0.228 yields an estimate of females needed in housework. Tested against an actual number in Table 3 (lines 3 and 4), the figure is strikingly close, in most years within 2 percent (Chart 4). Not even in the first demobilization years, when women were leaving jobs to get homes ready for their menfolk, was the excess as much as 5 percent.

Chart 3  
**Armed Forces and Labor Force, Annual Increases**  
**World War II, United States**



Source: Table 2.

The difference between total active females 14 and older (excluding the disabled and institutional inmates) and the number of houseworkers needed, plus the number attending school, is assumed to be available for the labor force. The actual labor force may of course be smaller, for there will always be some women who do not wish or feel competent to earn a living. Nevertheless, during World War II the number in the labor force fluctuated with the number available (Table 4, lines 4 and 5, and Chart 5). Aside from population growth and the decline of girls attending school, it seems possible to attribute nearly all the increase in the labor force during April 1940-45 to the shrinkage in the requirement

for female houseworkers as a result of millions of men being drained out of private homes to the armed forces. The relation after the war is less impressive. During 1946-47 women quit jobs more rapidly than men left the armed forces and in larger number than were required to keep house for the returning servicemen. Undoubtedly this excessive outflow from the labor force was a reaction to the years of work and separation. During 1948-51, on the other hand, females increased more rapidly in the labor force than in the number available, until in April 1950 and 1951 the gap was nearly closed and barely more than half a million females were unaccounted for.

But the association with the armed forces was apparently not independent of changes in unemployment. The United States had only partly recovered from the great depression of the 1930's when Hitler's divisions broke through into the Low Countries. Over 7 percent of its work force were still seeking jobs 19 months later when the Japanese dropped their bombs on Hawaii. Although my studies elsewhere have shown that the peacetime labor force has borne a stable ratio to the working age population from one high employment period to another, they have shown also that it shrinks a bit when jobs become hard to find, then expands again when employment recovers and people with new hope rejoin the labor market.<sup>24</sup> The labor force of this country has been close to 56 percent of the population 14 and older in years of peace and high employment such as 1947 or 1930 (1930 data adjusted to the 1945 measurement technique). In April 1940, however, it was only 54.1 percent, hence 1.8 percent too low. The deficiency may have been due to the fact that since one in six persons already in the job market could not get work 1.8 million persons may have been discouraged from even seeking it, remaining out of the labor force altogether.

Certainly, the ratio to armed force increases was high in years such as 1940-43 when unemployment was falling most rapidly, highest of all (1.19) in 1941-42 when  $3\frac{1}{3}$  million idle persons were being absorbed into jobs, and relatively low, close to 0.50, in the last two years when few unemployed were left to be absorbed (Chart 6).

<sup>24</sup> C. D. Long, *The Labor Force in Wartime America*, NBER *Occasional Paper 14*, March 1944; 'The Labor Force and Economic Change', Chapter 13, *Insights into Labor Issues*, ed. by R. A. Lester and Joseph Shister (Macmillan, 1948); 'Labor Force, Income, and Employment' (mimeographed manuscript, NBER, 1950, now being revised).

Table 3

## Need for Females in Housework Based on Population to be Cared for United States, April 1940-1951 (millions of persons)

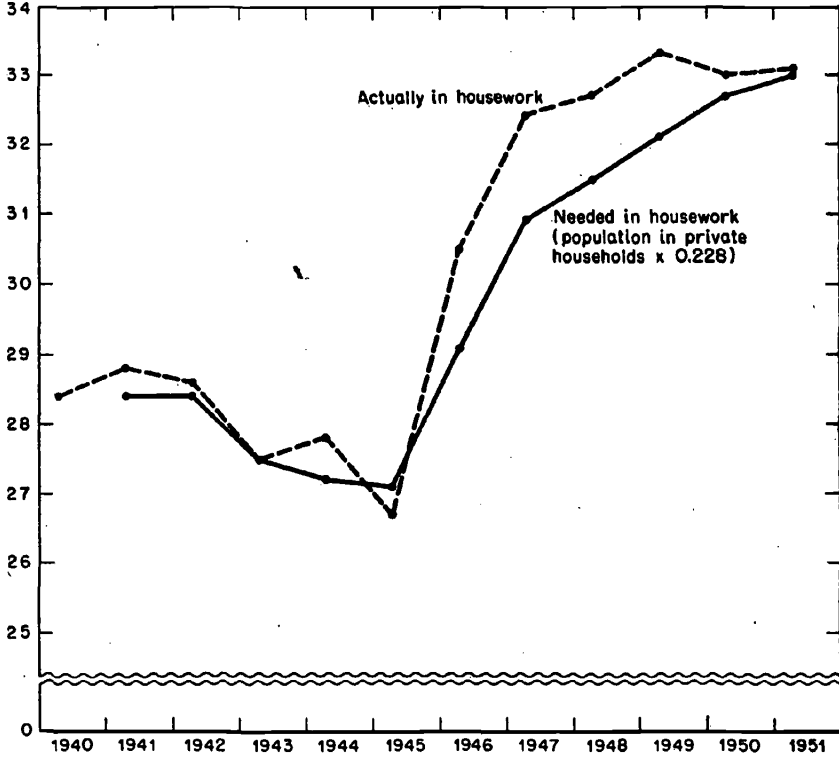
	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
1 Population in private households of 2 or more	124.6	124.7	124.4	120.7	119.5	118.7	127.7	135.4	138.2	140.8	143.4	144.7
2 Ratio of houseworkers to population in households (1940)	0.228											
3 Est. need for houseworkers (line 1 x 0.228)	.....	28.4	28.4	27.5	27.2	27.1	29.1	30.9	31.5	32.1	32.7	33.0
4 Actual number in housework	28.4	28.8	28.6	27.5	27.8	26.7	30.5	32.4	32.7	33.3	33.0	33.1
5 Excess of actual over need	.....	0.4	0.2	0	0.6	-0.4	1.4	1.5	1.2	1.2	0.3	0.1
6 % excess is of need	.....	1.4	0.7	0	2.2	-1.5	4.6	4.6	3.7	3.5	0.9	0.3

Source of data on which calculations were based: Bureau of the Census.

Chart 4

Females Needed in Housework Based on Population to be Cared for United States, April 1940-1951

Millions of females 14 and older



Source: Table 3.

To be sure, the rise in the armed forces was doubtless partly responsible for reducing unemployment in the early years of World War II. Many idle persons were absorbed directly into the military, many others into tank arsenals and electronic assembly lines, to supply the armies that were in the making. Thus unemployment may not have been an independent factor. But independent or not, it was a factor and it would not be safe to ignore the effect that reemployment of 8 million had on the size and rapidity of the labor force increase. Suppose that at the outbreak of World War II the United States had had only 4, instead of 15, percent unemployed and that its labor force had been at the same proportion of the population as ordinarily prevails in years of peace and

Table 4  
Need for Houseworkers as Factor Determining Size of Female Labor Force  
United States, April 1940-1951 (millions of females)

	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
1 Females 14 & older (excl. disabled & inst. inmates)	49.5	.....	50.8	51.4	51.9	52.5	53.0	53.7	54.2	54.8	55.5	56.1
<i>Minus:</i>												
2 School attendance	4.6	n.a.	4.5	3.7	3.5	3.4	4.1	4.0	3.7	3.7	3.9	3.9
3 Needed in housework (Table 3, line 3)	28.4*	.....	28.4	27.5	27.2	27.1	29.1	30.9	31.5	32.1	32.7	33.0
4 Residual 'available' for labor force	16.5	.....	17.9	20.2	21.2	22.0	19.8	18.8	19.0	19.0	18.9	19.2
5 Actual labor force	13.8	.....	15.5	18.2	18.6	19.8	16.7	16.3	17.2	17.2	18.1	18.6
6 'Available' but not in labor force	2.7	.....	2.4	2.0	2.6	2.2	3.1	2.5	1.8	1.8	0.8	0.6

Source of data on which calculations were based: Bureau of Census.

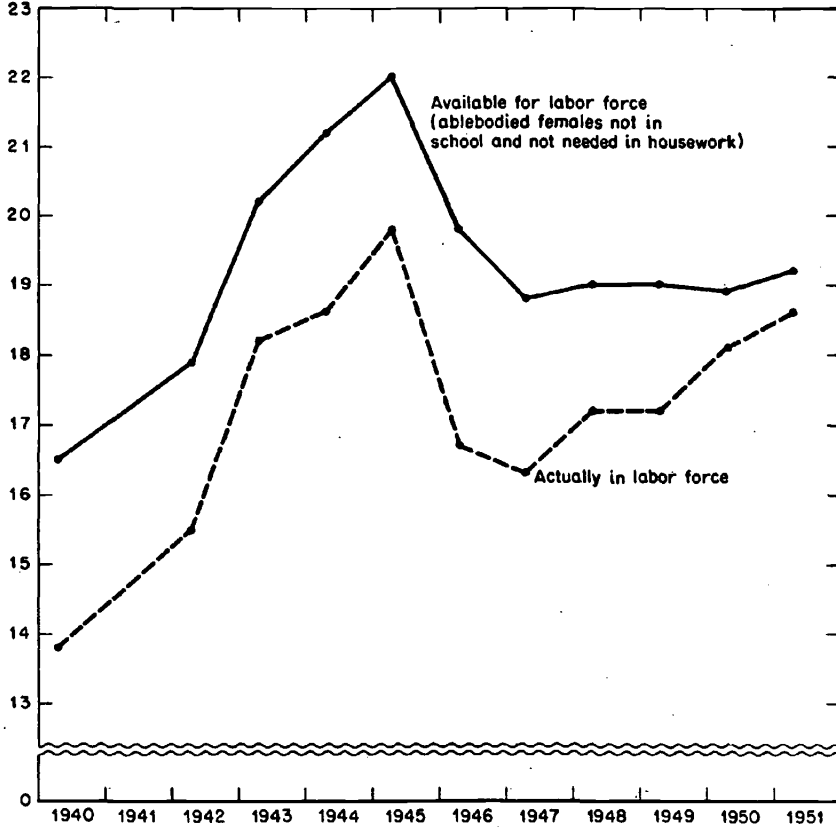
n.a.: not available.

\*Actual number in housework.



Chart 5  
**Female Labor Force and Number Available**  
**United States, April 1940-1951**

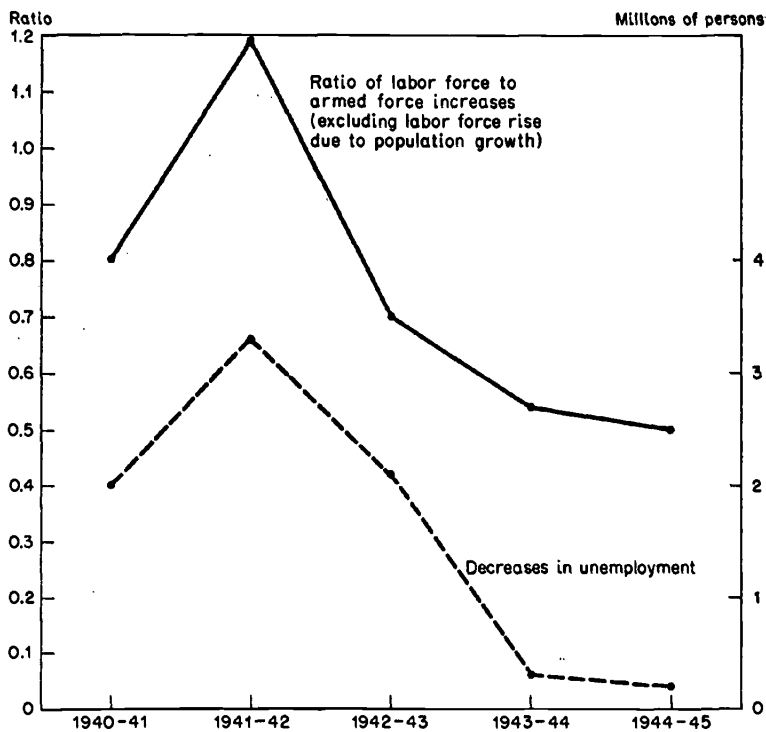
Millions of females 14 and older



Source: Table 4.

high employment. Could the labor force have been expected to rise as fast as it did in those early war years? We shall have an opportunity to test this in the Korean War, for when the Communist equipped battalions swept across the 38th parallel, unemployment in the United States was no more than a third of its pre-World War II level and its labor force was 3 million larger than if 1940 proportions had prevailed. It will be interesting to see whether the labor force increases bear as high a relation to armed force inductions as in the early years of World War II.

Chart 6  
**Ratio of Labor Force to Armed Force Increases  
 and Annual Decreases in Unemployment  
 United States, April 1940-1945**



Source: Table 2.

#### 4 THE WAR PEAK: UNITED STATES, GREAT BRITAIN, CANADA, GERMANY

In World War I the United States, Great Britain, and Germany did not add appreciably to their labor forces, the illusion of an over-all increase having arisen from transfers out of domestic service and other paid employment to factories and shipyards.<sup>25</sup> In all three countries the civilian labor force was depleted by the full number drafted, and labor needed in war work had to be pulled from the small pool of prewar unemployed or from industries turning out goods of less urgency.

During World War II, on the contrary, the labor forces unquestionably increased (Chart 7), though the number varied widely among the countries. Nonexistent in Germany unless one counts foreigners, and

<sup>25</sup> *Occasional Paper 14*, pp. 39 ff.