NBER WORKING PAPER SERIES

THE ROLE OF WORLD WAR II IN THE RISE OF WOMEN'S WORK

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Working Paper No. 3203

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
December 1989

This research has been funded by the Program to Assess and Revitalize the Social Sciences (PARSS) at the University of Pennsylvania. The data were skillfully collected by Andrew London. I thank Ann Miller for alerting me to the existence of the Palmer Survey data, Jerry Jacobs for his cooperation with the project, and Robert A. Margo and Elyce Rotella for their comments on an earlier version of the paper. This paper is part of NBER's research programs in the Development of the American Economy and Labor Studies. Any opinions expressed are those of the author not those of the National Bureau of Economic Research.

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ABSTRACT

The 1940's were a turning point in married women's labor force participation, leading many to credit World War II with spurring economic and social change. This paper uses information from two retrospective surveys, one in 1944 and another in 1951, to resolve the role of World War II in the rise of women's paid work.

More than 50% of all married women working in 1950 had been employed in 1940, and more than half of the decade's new entrants joined the labor force after the war. Of those women who entered the labor force during the war, almost half exited before 1950. Employment during World War II did not enhance a woman's earnings in 1950 in a manner consistent with most hypotheses about the war. Considerable persistence in the labor force and in occupations during the turbulent 1940's is displayed for women working in 1950, similar to findings for the periods both before and after. World War II had several significant indirect impacts on women's employment, but its direct influence appears considerably more modest.

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Why married women leave their households and enter paid employment is central to the history of the labor force. The proportion of married women engaged in paid work in the United States increased more than tenfold during the past century, from less than 5% in 1890 to more than 60%.[1] Much of the increased employment occurred in the years after 1940, and the 1940's mark an apparent break with the past in terms of women's work. The participation rate in 1940 of white married women 35 to 44 years old was 13.8% but was 25.3% in 1950, and most age groups experienced unprecedented increases of 10 percentage points during the 1940's.

The 1940's, it would appear, were a watershed in married women's labor force participation. The timing of the initial advance in women's employment and the extensive propaganda used to attract women into the labor force during the war, have led many to credit World War II with spurring the modern increase in married women's paid employment. This paper uses information from two retrospective surveys, one in 1944 and another in 1951, to resolve the role of World War II in the rise of women's paid work.

Long-Run Changes in Women's Employment

Over the long run, married women joined the paid labor force because of a series of changes affecting the nature of work (Goldin 1983, 1990). Primary among these was the rise of the clerical and professional sectors and the increased education of women at the beginning of the twentieth century. Reinforcing this movement were secularly declining fertility rates, labor-saving advances in household production, declining hours of work, and rising real wages for all Americans. The end result stemmed, then, from two sets of variables: cohort factors and contemporaneous (or period) effects. Advances in education, altered fertility patterns, and

[1] Although one can quibble with the accuracy of the data for the earliest date (Goldin 1986, 1990), an extensive movement of adult women out of the home and into the paid labor force is undeniable. Various adjustments affect primarily the paid labor of women within the home and on family farms, not their paid employment in the modern sector.

changed socialization of young women are cohort factors, which affect particular birth cohorts without necessarily influencing the entire society and economy. Changes in the sectoral distribution of labor, the earnings of families, unemployment, hours of work, urbanization, and the wages offered women workers are often contemporaneous factors, which affect all cohorts at a particular date in history.

Various pooled cross-section, time-series models have been estimated to separate these various effects. Cohort-specific factors, in one such study, account for about one-third or more of the total change over time (Goldin 1983, 1990; see also Smith and Ward 1984, 1985). If the models used in these studies are correct representations of the complex forces that resulted in the rise of paid women's work, the large increase in adult women's participation in the 1950's had roots in an earlier era. To understand why women participated in the 1950's requires knowledge of changes in the lives of these women some thirty years before. The observed increase in the 1950's was, in some sense, the tip of an iceberg. Much of the large increase was due to contemporaneous factors -- the heightened post-war demand for labor, the increase in real wages of women, and the decrease in unemployment. But many of the factors were hidden from view.

Several factors, however, delayed the increased labor force participation of women, particularly older married women. The Depression was a major setback for married women. "Marriage bars" -- the stated policies of firms, school districts, governments, and other institutions not to hire married women and to fire single women upon marriage -- were instituted long before the 1930's but were expanded during the Depression as a means of rationing employment in a "fair" manner. There is some evidence that the bars delayed the increase in adult women's employment (see Goldin 1988). The bars vanished sometime after the early 1940's and by the 1950's were rarely encountered.

World War II and the Rise of Married Women's Work

The various explanations offered for the rise of married women's paid employment still leave room for the impact of cataclysmic and unique events, such as World War II. Possible roles for World War II can be found on both the supply and demand sides of the market. Women were drawn into the war-time economy through a variety of mechanisms. For some, increased wages, in general and specifically for women, were the main factor.[2] A husband's absence meant a wife had less to do in the home, and patriotic duty was reason enough for others to join the war effort. Once in the labor market, various factors led women to remain employed.

On the supply side are various investments women made during the war, such as in job training and alternative housekeeping arrangements, that decreased the costs and increased the gains to post-war work. Other factors, still dimly understood, also operated to entice working women to remain in the labor force (see Goldin 1989, Smith and Ward 1984). Some might concern norms against a woman working by society or by her husband. As John Durand remarked when the impact of wartime employment was still uncertain, "It is not likely that the increase during the war period will be a complete exception to the rule . . . that a generation of women which once adopts a greater degree of participation in gainful employment tends to retain that characteristic throughout its potential working life" (Durand 1948, p. 168).

On the demand side, the war may have demonstrated to employers that women workers could function well in jobs that had previously been male domains. In fact, the ratio of female to male hourly wages in manufacturing continued to rise to 1948, "suggesting that factories which had overcome traditional stereotypes about the unsuitability of women were trying to keep women just as they were leaving the labor force" (Campbell 1984, p. 136).

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[2] Average hourly earnings of female manufacturing workers across 25 industries rose relative to that for male workers from 1943 to 1948 (U.S. Bureau of the Census 1975) and the earnings premium for war-related over consumer-related manufacturing was between 25% and 45% in 1944/45, depending on the war production area (U.S. Department of Labor 1946, p. 44).

There is substantial evidence that a pervasive ideology inhibited work for married women prior to 1950. And if the impediments to economic change were primarily ideological, then only a major break with the past, such as that effected by war, could have redefined economic roles. Many historians, including William Chafe, have concluded that World War II was that "watershed event." To Chafe, World War II "radically transformed the economic outlook of women" with an impact greater than even "the implementation of a well-developed ideology" (Chafe 1972, pp. 195, 135).

Until recently, Chafe's view was well accepted. It accorded with the timing of the increase in women's work and with the sense of those who lived through the 1940's that something fundamental changed in American society. In the past decade, however, a revisionist literature has emerged discounting the importance of World War II in inexorably altering the lives of American women (Anderson 1981, Campbell 1984, Milkman 1987).

American patriotism and inflated female wages during the war induced many women to enter the labor force, but they were not, according to this new literature, to become permanent participants. According to Campbell, "It is difficult to argue that World War II, in itself, constituted a watershed in the experience of American women," (1984, p. 236). Many of the jobs women were offered during the war -- Rosie the Riveter's is the perfect illustration -- were taken away from them at its conclusion and were not in sectors women had previously shown a desire to enter. Women had not been craft workers before the war and had been leaving the manufacturing sector for clerical, sales, and professional jobs ever since the early twentieth century. The rhetoric of wartime mobilization led many to believe there was real change, when in actuality, according to this new interpretation, there was none. Reinforcing the revisionist view on the role of World War II are the findings, summarized above, on secular changes in the evolution of the female labor force.

The hypothesis that World War II was a significant factor in the rise of women's work has been tested in a time-series and cross-section model, by the inclusion of a single dummy

variable for 1950 (Goldin 1990). The coefficient on the dummy variable was small and not significant in all estimations.[3] The method used was dictated by the available data, which are decadal rather than annual. The difficult question of whether the war had a residual impact, apart from reducing the Depression's high unemployment and increasing the wages of Americans, may be impossible to answer with these data. The strongest conclusion one can draw from past analyses, then, is that World War II, by itself, had a small, possibly negligible, positive impact. The large change in participation from 1940 to 1950 seems to have been due to the indirect effect of the war on the economy and to the aging of cohorts ripe for labor force participation.

But even though the conclusion is fully consistent with an emerging historical literature, the data available may be insufficient to account for this far-reaching event. Had the data been annual, rather than decadal, the precise role of the war could have been assessed, and its impact on various cohorts could have been traced.[4]

I have recently found a data set that contains retrospective work histories for 4,350 women, working full-time for at least one month in 1950, and that has most of the information

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[3] The model contains 37 observations, one for each cohort alive in each census year. When full-time female wages are included in the model (as well as education, unemployment, the sectoral distribution of the work force, and fertility, among other factors), the labor force participation rate increased by 0.0261 percentage points due to the "war dummy" (around a mean of 0.22). When female earnings are excluded, the war has no effect.

[4] See, for example, the econometric techniques used by Joshi, Layard, and Owen (1985) on British data and Smith and Ward (1984, 1985) on U.S. data to deal with the problem of serial correlation in a pooled cross-section, time-series analysis of annual data. Joshi et al. include a set of cohort dummies in a first-stage regression to explain within-cohort effects, and then use the cohort dummies in a second-stage regression to explain across-cohort differences. Smith and Ward estimate a similar first-stage equation in first-difference form from which they calculate cohort fixed-effects. These are then used in a second-stage regression to estimate across-cohort differences.

In their second-stage equation, Joshi et al. (1985, table 9) test whether cohorts of British women who were 20 to 29 years during World War II had changed labor force participation. "The Second World War enormously increased women's participation in all kinds of work [in Britain]. . . . The experience of warwork led many women (especially in their twenties) to acquire skills they would not otherwise have acquired. This," they hypothesize, "must have made many of them more willing to work later" (p. S168). They find a small, positive impact of the war, but do not discuss the finding.

needed to resolve the role of World War II in the working lives of American women.[5] A complementary set of data, in tabular form only and contained in Women's Bureau Special Bulletin No. 20 (Department of Labor 1944), are from a special question asked in the March 1944 Monthly Report on the Labor Force.[6] The remainder of this paper will discuss what these data reveal.

Retrospective Data on Work Histories, 1940 to 1951: The Palmer Survey and Women's Bureau Special Bulletin No. 20

The individual-level data come from a study directed by Gladys Palmer (1954), with the assistance of the U.S. Bureau of the Census, that assessed labor turnover and geographic mobility in the 1940's.[7] Coded versions of the original schedules, located at the University of Pennsylvania, have been put in machine-readable form. The data give information on the work histories of a probability-sample of urban women in the United States from 1940 to 1951.[8]

The coded schedules summarize much of the data in the original surveys, and the information they contain can be grouped in two categories: retrospective and contemporaneous variables. Among the retrospective variables are: the occupation and industry of work (if the

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[5] The original Palmer study also surveyed over 9,000 men, and the coded schedules for both men and women will be archived at Temple University Urban Archives in the papers of Gladys Palmer. See also Palmer (1954).

[6] Women's Bureau Special Bulletin No. 20 did not list the official name of the census report but it seems likely that it was the Monthly Report on the Labor Force, a precursor of the Current Population Survey.

[7] The Palmer Survey, funded in part by the U.S. Air Force, was intended to provide the Air Force with information about geographic mobility across labor markets. Six cities were selected for study: two in the East (New Haven, Philadelphia), two in the Mid West (Chicago, St. Paul), and two in the West (Los Angeles, San Francisco). The title of the published study was Labor Mobility in Six Cities (Palmer 1954). Curiously, the final report did not investigate the role of World War II in the lives of American women.

[8] The original schedules, not all of which have been located, contained detailed work histories. Although many of the coded schedules include transcribed versions of these accounts, they are difficult to read and transcribe, and only the coded portions have been used.

woman was in the labor force) as of January 1940, December 1944, December 1949, and January 1951. Occupation and industry are also given for the longest job in 1950, the longest job over the work history, the longest job from 1940 to 1949, and the woman's first job. Summary information is provided on months in the labor force from January 1940 to December 1949, the number of jobs during the same period, and the year in which work began prior to 1940. Variables pertaining to the individual in 1950, what might be called contemporaneous variables, include earnings at the longest full-time job in 1950 (unless the woman were self-employed), education, marital status, age, number of children less than 18 years, years living in the current area, and father's occupation and industry. Some of the contemporaneous variables probably did not change over the preceding decade (education, for example, for women older than 34 years in 1950). But some probably did (marital status, for example). An important, and somewhat limiting, aspect of the Palmer Survey is that all persons were working full-time for at least one month during 1950. The March 1944 census data are used to infer the work histories of women who were not in the labor force during 1950.

The central issue to address with these data is whether women who entered the labor force during World War II remained employed to 1950 and were, thereby, the main contributors to the vastly increased labor force participation of married women in 1950. An alternative scenario is that many women employed during the war left the labor force at its conclusion and that much of the sustained increase in employment by 1950 came from a post-war movement of women into the labor force. Part of this issue can be addressed with the Palmer Survey data, that concerning the work histories of women employed as of 1950; the remaining issues are answered with the 1944 census data. I begin with the Palmer Survey.

Consider, first, the work histories of white women, married by 1950 and between the ages of 35 and 64 in 1950. They were, therefore, 25 to 54 years old in 1940, at the start of the retrospective information. Recall that all these women were employed during 1950. The issue, then, is the progressive increase in the labor force for those at work in 1950. How many

entered during World War II, how many were drawn in after, and how do the groups differ from each other?

Although the entire Palmer Survey contains 4,350 women, just 1,198 were married, white, and between 35 and 64 years old (and, of course, working) in 1950. Of those working in 1950, fully 52% were also in the 1940 labor force. That is, half of those working in 1950 had also worked prior to America's entry into World War II. From 1940 to 1944 7% of the eventual 1950 participants left the labor force, but 22% of the 1950 workers joined during the war years. Thus part of the decade's increased participation occurred from 1940 to 1944, the peak year of women's involvement in the wartime economy. But an even greater increase occurred in the six years from 1944 to 1950, which includes the demobilization period. Fully 26% of married women workers (35 to 64 years old) in 1950 were drawn into the labor force between 1944 and 1950.

The retention rate of those in the labor force in 1944 (and, recall, also employed in 1950) was high; only 8% of those working in 1944 had exited by 1949. More importantly, the entry rate was high. By 1944, 33% of those who would eventually be employed in 1950 were still out of the labor force. Even between 1949 and 1950 there was an increase in the employment of married, white women that accounts for 15% of their eventual employment as of 1950.

In sum, among married white women who were employed in 1950, fully half were employed in 1940. The war was associated with a large increase in employment, but it was smaller than that occurring from 1944 to 1950, which was 33% of the eventual 1950 labor force. Fully 26% of the 1950 participants were never employed during 1940 to 1944. Table 1 summarizes the data for the 35 to 64 year old age group and for two subsets.

Another important feature of these retrospective work histories is the remarkable persistence of women in the work force. Summary data, from the coded forms for the Palmer Survey, on total months worked from January 1940 to December 1949, are given in Table 2.

Table 1: Labor Force Participation During 1940 and 1944 of White, Married Women Working in 1950

	White, Married (in 1950) Women		
In Labor Force in 1950 and in Labor Force in	**Age in 1950 35-64 years**	**Age in 1950 35-44 years**	**Age in 1950 45-54 years**
1940 and 1944	45.5	41.7%	48.1%
1940 but not 1944	6.6	8.2	5.3
1944 but not 1940	21.8	20.9	22.8
Neither 1940 nor 1944	26.2	29.1	23.7
Number of observations	1199	635	451

Source: Palmer Survey, see text.

More than 80% of the women employed during January 1940, December 1944, and December 1949 had worked between 9 and 10 years during the 1940's decade. Fully 72% were employed every month of the decade, one-half of whom stayed on the same job for all 10 years (not in table). Only 5% were employed fewer than 6 years.

Also revealed in Table 2 is that 52% of those who entered the labor force by 1944 accumulated 7 or more years of work experience over the decade. Only 12.5% had less than 5 years of work experience. The only reasonable inference to be drawn is that the majority of these women were continual participants from the time they entered the work force until 1950. Also consistent with this view is that the majority of those not employed in 1940 and 1944, yet who were working in 1949, had been employed for rather short durations during the 1940's. Almost 94% of this group had worked less than 5 years.

Because a large fraction of those working in 1950 were also employed in 1940, and had been continuously employed during the decade, the increase in the participation rate over the decade -- nearly a doubling among most of the age groups and cohorts -- must have come about by the entrance of women who had not been in the labor force in recent years.[9] The main inference from Table 2 is that married women who were 35 to 64 years old (and employed) in 1950 did not transit in and out of the labor force with much rapidity even during the 1940's. A slight qualification to this statement will be made concerning the participation of a young group of married women just after Pearl Harbor.

Persistence has been recently discovered in data for employed women in the period prior to 1940 (Goldin 1989, 1990) and after 1950 (Smith and Ward 1984). Married and adult women once in the labor market tend not to leave. Although the data in Table 2 demonstrate

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[9] One possible problem is that the inference comes from the aggregate labor force participation rate among white married women in the cohorts considered. The Palmer Survey data, however, do not give the length of time a woman was married, just whether she was married in 1950. It is assumed, therefore, that a very large fraction of women who were married by 1950 and 45 to 54 years old in 1950 were also married in 1940 when they were 35 to 44 years old. The same inference would be more troublesome for the younger group.

Table 2: Work Experience During the 1940's of White, Married Women, 35 to 64 Years Old, Employed in 1950

Work Experience, 1940 to 1949	If at Work During the Following Years (and 1950): 1949, 1944 and 1940	1944 and 1949 (not 1940)	1949 (not 1940 and 1944)
0 < 1 years	0.00%	0.00%	19.44%
1 < 2	0.20	1.23	19.44
2 < 3	0.39	1.64	18.52
3 < 4	0.20	3.28	13.43
4 < 5	0.20	6.97	24.07
5 < 6	0.79	15.57	2.31
6 < 7	3.54	21.72	1.39
7 < 8	6.09	26.23	0.46
8 < 9	5.89	16.39	0.93
9 < 10	11.00	6.56	0.00
10	71.71	0.41	0.00
Number of observations	509	244	216

Source: Palmer Survey, see text.

persistence for women employed by 1950, the question is whether this was also true of all women in the 1940's.

The data in Tables 1 and 2 do not reveal the number of women who entered the labor force during the 1940's yet who exited by 1950. One possibility is that increased wages and patriotic sentiment led women to enter the labor force during World War II, and that, once in the labor force, women did not leave. Even though a minority of employed women (22%) in 1950 had entered the labor force from 1940 to 1944, they may have been a large fraction of the women who were employed at all during the war. Another possibility is that a large fraction of women who entered the labor force during the war left during demobilization.

An analysis of turnover among women during World War II requires additional data concerning those not in the labor force in 1950. Such data are available from a special question asked in the March 1944 Monthly Report on the Labor Force. At the request of the Women's Bureau of the Department of Labor, the Bureau of the Census asked women in 1944 what they were doing the week preceding Pearl Harbor, December 1-6, 1941.[10] The census data yield labor force transitions from December 1941 (henceforth 1942) to March 1944, the first two sets of branches in Table 3. The Palmer Survey contains information on the distribution of those "in the labor force," that is "In," during 1950. By dividing the Palmer Survey numbers by the relevant labor force participation rate in 1950 and then inflating further for comparability with the census data, one can easily obtain the entire transition matrix. Two such transition trees are given in Table 3 -- one for married women 20 to 44 years old in 1944 and another for women of all marital statuses in this age group.

The linkage of the census data with the Palmer Survey is not without possible biases, and the biases seem more severe for married women. The Palmer Survey listed a woman's

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[10] The Bureau of the Census chose December 1-6, 1941, because they thought women would remember what they were doing the week before Pearl Harbor better than any other week just prior to America's entry into World War II.

Table 3: Labor Force Transitions of Women, December 1941 to 1950

	Married Women			Women of All Marital Statuses		
Year	**1942[a]**	**1944**	**1950**	**1942[a]**	**1944**	**1950**
Age	**18-42**	**20-44**	**30-50[b]**	**18-42**	**20-44**	**30-50[b]**
			In 89.5% (1820)			In 57.6% (4077)
		In 65.2% (2033)			In 81.3% (7079)	
			Out 10.5% (213)			Out 42.4% (3002)
	In 18.2% (3117)[c]			In 32.5% (8710)[c]		
			In 36.6% (397)			In 37.3% (609)
		Out 34.8% (1084)			Out 18.7% (1631)	
			Out 63.4% (687)			Out 62.7% (1022)
			In 52.5% (874)			In 63.6% (2311)
		In 11.9% (1666)			In 20.1% (3631)	
			Out 47.5% (792)			Out 36.4% (1320)
	Out 81.8% (13992)			Out 67.5% (18066)		
			In 8.2% (1015)			In 11.8% (1705)
		Out 88.1% (12326)			Out 79.9% (14435)	
			Out 91.8% (11311)			Out 88.2% (12730)
Labor Force Participation Rate	18.2[d]	21.6	24.0	32.5	40.0	32.5
Total Number	17,109,000			26,776,000		

(Table 3, continued)

(Continuation of Table 3)

[a] The precise date is December 1941.

[b] See text concerning the use of ages 30 to 50 rather than 26 to 50 years old.

[c] All numbers are in thousands and are the actual numbers of women in the age and marital status group in or out of the labor force.

[d] The figures of 18.2 and 21.6 are from census data (U.S. Department of Labor, 1944). The increase from 1940 to 1944 was greater. Among white, married women 18 to 44 years old in 1940, the labor force participation rate was 15.3. The figure of 24.0 for 1950 is from U.S. Bureau of the Census (1953) and is for women of all races.

Notes and Sources:

The data for December 1941 (1942) and 1944 are from U.S. Department of Labor (1944) and are derived from census data. The data for 1950 are derived from the Palmer Survey (see text for a description of the sample). The Palmer Survey gives only the number of women in the "In" branches for 1950. The total number for all the branches in 1950 is derived by dividing by the aggregate labor force participation rate (e.g., 32.5% for all women in 1950) and a blow-up factor is then computed for consistency with the national data for 1942 and 1944. For example, the Palmer Survey number for the In-In-In branch in 1950 for all women is 1,492. The aggregate number of women in the labor force in this age group is 3,185 using the Palmer Survey and dividing by the aggregate labor force participation rate of 0.325 gives 9,800 women, including those not in the labor force. But the entire population of women (from the census data for 1944) is 26,776, which gives a blow-up factor of 2.73. The original number $1,492 \times 2.73 = 4,077$.

marital status in 1950 but not in any of the previous years. Young married women in 1950 were likely to have been unmarried in 1944. Because the census data are given only for women 20 to 44 years old and those greater than 44 years in 1944, one cannot use older age groups to get around this problem. The only solution is to use the Palmer Survey data for women in a slightly older group, 30 to 50 years old, rather 26 to 50 years, in 1950.[11]

The primary reason for constructing the tree diagrams in Table 3 is to compute the percentage of women drawn into the labor force during World War II who remained employed to 1950. The data for married women indicate that almost 90% of the women employed in 1942 and 1944 were similarly engaged in 1950. (The persistence rate drops to 83% when only white women are considered.) The data, once again, reinforce the findings of other studies that show a tendency of women in the labor force to remain employed.

There is, however, a substantial attrition of employed married women from 1942 to 1944, when 35% of women employed just before the war exited. The decreased employment among this group deserves further comment. Because the census data include young women and give marital status in 1944, but not 1942, many of these women may have been married just after Pearl Harbor. Others, married before Pearl Harbor, may have become pregnant to enable their husbands to be deferred from the draft. The reasoning accords well with the finding, also in Table 3, that women of all marital statuses who were 20 to 44 years old in 1944, had a persistence rate of more than 80% from 1942 to 1944. The war years, however, do appear peculiar with regard to persistence of women workers.

Of greater interest is how women working in 1944, but out of the labor force on the eve of World War II, responded at the war's conclusion. These may be called the "Rosies" of the war effort and are contained in the "Out-In" branch, from 1942 to 1944. In 1944, this group contained 45% of married women workers 20 to 44 years old (but 34% of all women workers

[11] Other possible biases may stem from the fact that the women in the Palmer Survey were all residents of large cities, while the data in the census are a national sample.

20 to 44 years old). Part of the reason the new entrants were such a large proportion of all working married women is that a large fraction left the labor force after Pearl Harbor, although it is also true that the entry rate among those "Out" in 1942 (12%) is higher than in 1944 (8%).

Of the war-time entrants, only 53% of the married women remained employed to 1950 (64% of women of all marital statuses did). The "Rosies" of 1944 composed 22% of the eventual 1950 employment among married women, but, at that time, they were barely half their original number.[12] Rosie and her compatriots did not remain in the post-war labor force to the degree entrants had in normal times.

Aspects of the exodus are well known. Many women were forced out of high-paying jobs in traditionally male industries, such as aircraft and machinery, through seniority systems that favored returning servicemen (Milkman 1987). But the relative magnitude of those who remained in the labor force and those who exited had previously not been known. Women employed in wartime industries could have been pushed out at the war's conclusion but been reemployed in other sectors, and it is this possibility that has dominated one interpretation of the war's impact. Increased employment of women during the war, according to an extensive literature, greatly affected their employment after. But the data in Table 3 indicate that almost half the wartime entrants had exited the labor force by 1950. Their rate of exit is considerably higher than that experienced by women employed in both 1942 and 1944.

[12] The conclusion that about half of all the wartime entrants left the war before 1950 is duplicated in an analysis of the Palmer Survey data supplemented with aggregate labor force information from the Current Population Reports (U.S. Bureau of the Census n.d.). In that analysis, performed before I discovered the data in Women's Bureau Special Bulletin No. 20, the trees of Table 3 are underidentified by one branch. Information from the Palmer Survey on the survival in the labor force of women from 1950 to 1951 is used to identify all branches. The analysis can only be done for women of all marital statuses.

Occupations and Earnings of Women Workers, 1940 to 1950

Occupation distributions for 1944 and the persistence women demonstrated in them are given in Table 4. In general, women remained employed in a particular occupational group from year to year even during the turbulent 1940's. More than 90% of women in operative positions in 1942 remained in them to 1944. Among the least persistent, not surprisingly, were those in the operative group in 1944, who remained in that category to 1949 and were employed in 1940, 1949, and 1950. The divergent findings regarding industrial jobs during and after the war are to be expected. It is the persistence across the spectrum of occupations that is surprising. Among all women employed in 1940, few, it seems, altered their occupations during and after the war. Of those employed in both 1942 and 1944, only 14% changed their major occupational group, and of those employed in 1944 and 1949, only 15% did.

Also of interest in Table 4 is the occupational distribution of those who entered the labor force during the war years. Rosie the Riveter and her fellow workers are apparent in the 37% who were operatives and craft workers in 1944 among those not in the labor force in 1942, a figure that is 10 percentage points higher than among those in the labor force in 1940 and 1950 (column 7).

In discussing occupational and labor force persistence during the 1940's, one should not forget that there was a substantial shift of workers across industries and often across sectors. Fully 1 in 6 women working in 1944 was in a war-related industry (e.g., fabricated metals, airplane assembly), and even in the Palmer Survey, which includes only those in the labor force in 1950, 1 in 6.26 or 16% were in these industries in 1944 (U.S. Department of Labor 1944, p. 26). One-third of the Palmer Survey women, however, were not operatives and craft workers, but were in clerical positions. Among those in the Palmer Survey in war-related industries in 1944, 45% (> 24 years in 1950) were not in the labor force in 1940 and 36% of those more than 34 years old in 1950 were. There was greater persistence in the war-related sector than has previously been thought. Of those in war-related industries in 1944 and also

Table 4: Occupations of Women During World War II (All Ages and Marital Statuses)

Occupational Groups[a]	(1) Persistence Rates 1942-1944/ 1942[b]	(2) Persistence Rates 1944-1949/ 1944[c]	(3) Occupational Distributions in 1944 for[d] Entrants in 1944	(4) Employed in 1944	(5) Employed in 1942 & 1944	(6) Employed in 1944 & 1950	(7) Employed in 1940, 1944, & 1950
Professional and semiprofessional	93.3%	92.9%	5.4%	9.0%	11.4%	11.2%	12.9%
Managerial and proprietary	93.5	76.2	1.8	3.9	5.4	6.1	7.4
Clerical	95.6	88.9	27.4	26.5	25.9	37.2	35.3
Sales	67.1		9.7	7.5	6.0		
Operative, craft, and laborer	91.3	79.7	37.3	33.2	30.5	30.5	28.0
Domestic	71.4	86.5	7.0	9.5	11.2	15.1	16.5
Other service	71.6		10.9	10.0	9.4		
Across all	85.1	85.5					

Sources: Columns (1), (3) through (5), Department of Labor (1944); columns (2), (6), and (7), Palmer Survey (see text).

[a] Farm sector employment is included in the operative-laborer category.
[b] Persisters are women who remained in the same occupational category in both 1942 and 1944. The numerator for column (1) is the number of women employed in both years who were in the occupational group in 1942.
[c] Persisters are women who remained in the same occupational category in both 1944 and 1949, and who were in the labor force in 1950. The numerator for column (2) is the number of women employed in both years who were in the occupational group in 1944.
[d] Information for columns (3), (4), and (5) comes from the census data for which there is information about 1942 and 1944. Therefore, column (4) gives information for those women employed in 1944 who could have been in or out of the labor force in 1942. Similarly, columns (6) and (7) refer to the Palmer Survey data. Column (6), for example, gives the occupational distribution of women employed in 1944 and 1950 who could have been in or out of the labor force in 1940.

in the labor force in 1950, 45% remained in war-related industries (e.g., metals, rubber, chemicals) in 1950 and 66% were in the manufacturing sector in general.

Large differences in the occupational distributions of female workers exist between those who entered in 1944 and those who were employed in 1940 or 1942. New entrants (Table 4, column 4) were far less likely to be in the professional and managerial groups, and more likely to be in the operative and service groups, than those previously employed. The group of wartime entrants who exited the labor force by 1950, as was just demonstrated, were a substantial group. Although there are enough conditional distributions in Table 4 to prove that this group was rather different from those who remained employed, the computation of the precise distribution is complicated. It is likely that 67% of the Rosies who exited at the war's conclusion were operatives and domestics in 1944, a figure substantially higher than that for other groups. Among all new entrants the figure is 55% and among those who remained employed to 1950 it is 47%.

It is even clearer from the bottom portion of Table 5 that differences in the occupational distributions among the new entrants and those previously employed had less to do with changes in the economy than in difference among the individuals. Women who were not in the labor force in 1940 had rather similar occupational distributions, when employed, in both 1944 and 1950, as did those who were in the labor force in 1940 and in various subsequent years. But differences in the occupational distributions between the two groups are substantial.

The reason for the large differences in occupations among those employed in 1940 and those not, can be found in Table 5. The Palmer Survey clearly shows that women employed in 1940 and during any other date in the survey, were considerably more educated and had far fewer children than were those not in the labor force in 1940, but who entered at some subsequent date. There is more than a one-half year difference in education between those who were employed in 1940 and those who were not, twice as many had attended college, and one-third more had graduated high school. Because many of these women's children were

Table 5: Characteristics of Workers and Nonworkers Among White, Married Women, 35-64 Years Old Employed in 1950

	Not in Labor Force in 1940 but in During		In Labor Force in 1940 and in During		
	1944	1950	1940	1944	1950
Age, in 1950	45.0	44.3	45.2	45.6	45.2
Weekly earnings, in 1950	$44.41	$40.88	$49.72	$50.76	$49.72
Education, years	9.58	9.58	10.27	10.23	10.27
% graduating H.S.	34.0%	33.0%	45.0%	44.1%	45.0%
% with some college	7.8%	9.0%	19.0%	17.8%	19.0%
Children under 18 years, in 1950	0.593	1.03	0.363	0.299	0.363
Occupational distribution, if in civilian labor force					
Professional	5.6%	5.5%	12.9%	12.3%	12.6%
Managerial	6.7	6.1	8.7	10.0	12.1
Clerical and sales	33.2	37.4	34.8	35.6	34.3
Operative and craft	41.8	35.2	31.0	31.6	29.9
Domestic and service	12.7	15.9	12.6	10.4	11.3
Number of observations	268	586	612	528	612

Source: Palmer Survey, see text.

Notes: The number of observations refers to the age variable and differs somewhat by variable. The condition for inclusion in this table is whether the individual was employed, rather than in the labor force at a particular date. Individuals employed in 1940 and 1950, for example, were not necessarily employed in 1944. The column for those employed in 1940 and during 1950 is virtually identical to that for 1940 alone because all women were at work in 1950. The difference is in the occupational distribution which is specific to the year.

older than 18 years by 1950, and thus not included in the survey's question, it is useful to consider only the younger group in comparing the number of children. The differences here are much greater. Of those less than 45 years old in 1950, the mean number of children under 18 years old was 1.78 for those in the labor force in 1950 but not working in 1940 and 1944; it was only 0.48 for those in the labor force in 1940 and 1944.

Even though the increase in employment among those working in 1950 was greater after World War II than during the war, there is still the question of whether wartime employment increased women's marketable skills. One way of testing this hypothesis, and also of evaluating the determinants of earnings during the 1940's, is to estimate a standard earnings function that includes variables to reflect a woman's participation during the war. Columns (1) and (2) of Table 6 contain such regressions.

The functions estimated are similar to those in other studies of earnings. The dependent variable is the log of weekly earnings for the longest full-time job in 1950. The sample for the column (1) estimates includes, therefore, all white, married women in the Palmer Survey who meet the age criterion. Work experience across the 1940's decade increased earnings by 3.5% for each year and schooling increased earnings by 2.3%, again for each year. High school graduation and college attendance added little extra (although see column 2 results). Continuity in a particular geographic area had benefits; moving away from a home of 25 years meant a woman forfeited 7% of her income.

Of particular interest for this study is the variable indicating whether a woman had entered the labor force between 1940 and 1944 and its interaction with age. Earnings for the wartime entrants were higher (although not statistically significant) for those under 45 years (.260/.00577), but lower for those over 45 years. According to these coefficients, a 29-year-old woman (born in 1915) who began employment in 1944 earned a 9% premium for the rest

Table 6: Earnings Functions for Married, White Women (35 to 54 Years Old), 1950

	(1)	(2)	Means of columns (1)	(2)
Dependent variable: Log of weekly earnings from longest full-time job in 1950			3.75	3.84
Constant	3.091 (39.70)	3.093 (26.72)		
Work experience (in years) during 1940's	0.0348 (7.77)	0.0236 (3.162)	6.54	8.63
Schooling, in years	0.0232 (3.02)	0.0169 (1.64)	9.96	10.32
High school graduate	0.0619 (1.49)	0.153 (2.66)	0.387	0.450
Attended college	0.0335 (0.72)	0.891 (1.53)	0.134	0.183
Years living in area	0.00271 (3.13)	0.00375 (3.04)	26.1	27.3
Entered labor force between 1940 & 1944	0.260 (1.36)		.246	
Interaction of above with age	-0.00577 (1.34)			
Entered labor force between 1944 & 1949	0.626 (3.12)		.203	
Interaction of above with age	-0.0145 (3.19)			
Occupation same in 1940 & 1950[a]		0.0891 (2.23)		0.777
R^2	0.22	0.25		
Number of observations	900	449		

Source and Notes: Palmer Survey sample for white, married women 35 to 54 years old. Other variables included: regional dummy variables for West (Los Angeles and San Francisco) and Mid West (Chicago and St. Paul). Absolute values of t-statistics are in parentheses.

[a] Occupations are in five groups: professional, managerial, clerical and sales, craft and operative, and service.

of her working life in relation to a comparable individual who entered prior to 1940.[13]

But note that there is nothing unusual about the war. An even larger premium exists for a woman less than 43 years (.626/.0145) who entered the labor force between 1944 and 1949. A 32-year-old woman (again born in 1915), who entered the labor force in 1947 earned a 16% premium in comparison with a woman who entered prior to 1940 and a 7% premium in comparison with the woman above who entered in 1944.[14] Even though one of these women has 3 more years of job experience, the difference in their earnings is only 3.6%. These results suggest a vintage effect in new hires and, perhaps, that women over age 45 were less able to adapt to new technologies or were discriminated against at the time of hire. I have not encountered a similar variable included in earnings functions using recent longitudinal data and therefore do not know if the result is a product of the time period or is a more pervasive vintage effect.

The regression of column (2) contains a variable indicating whether the woman was in the same occupation in 1940 and 1950. The sample, therefore, includes only (white, marred) women employed in 1940. There was a 9% premium for remaining in the same occupational group in both years, which is evidence that continuity in an occupation, not just wartime work, enhanced a woman's earning ability.

Concluding Remarks: World War II and Women's Economic Status

Is there no truth, then, to the notion that World War II was a watershed in the lives of American women and altered the way in which women were perceived as workers? The primary conclusion from the Palmer Survey data is that more than 50% of the women working in 1950 had been employed in 1940, and that more than half of the decade's new entrants

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[13] The woman would be 29 years old in 1944 but would be 35 years old in 1950.

[14] A 32-year-old woman in 1947 was 35 years old by 1950, and could be the same individual who was 29 years old in 1944.

entered after the war. Just 20% of those working in 1950 had entered the labor force during World War II and about half the wartime entrants left the labor force sometime after V-J Day.

But the Palmer Survey does not enable a direct test of the hypothesis concerning a changed ideology. The war could still have altered the norms that circumscribed the behavior of married women. There is, however, mounting evidence that the wide-ranging shift in women's economic role after World War II was primarily due to longer-run factors, such as the rise of the clerical sector and increased education for all Americans. I mentioned earlier that a pooled cross-section, time-series study of women's employment trends across the last century allows just a small role for World War II. Research on "marriage bars" suggests that the rhetoric surrounding married women's work changed only when the supply of young, single women was substantially reduced and when the supply of well-educated older, married women was increased. Demographic events culminated in the 1950's to bring about these changes. If the war had anything to do with these changes it was to rekindle family values in Americans, thus deplete the already reduced labor supply of younger married women, and to restore the full-employment economy, thus to create a demand for older married women.

It has been difficult to isolate the impact of World War II from that of the ending of the Great Depression, but there is mounting evidence from a variety of sources that the war had far less of a direct influence on female labor supply than was believed. The Palmer Survey data have reinforced the conclusions of a growing historical literature that war-time work did not by itself greatly increase women's employment nor advance gender relations in the work place.

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