

Collateral damage? How World War One changed the Way Women Work

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Introduction

Changes in paid work, wage earning, and labor force participation for both men and women have been linked to family and social structure (see for instance Ruggles 2015). In particular the demise of the male breadwinner model is a prominent feature of the evolution of many Western countries in the 20th century, as well as the participation of women and men in the public and private spheres (Stanfors and Goldscheider 2017). However, despite a large, and somehow growing, literature, the causes of this increase are still debated, for instance the respective role of supply (more women willing and able to work in paid employment) and demand (changes in firms willingness to hire women, e.g. motivated by technological changes). In this paper we look at the specific context of post-WWI France to assess how these two factors matter for the evolution of women employment.

In this context, the standard story tends to focus on the replacement of male workers by women during the war and the subsequent reflux of women work as men came back from the war and female were again pushed out of, or in the margin of, employment. On face value, then, not only was the increase in wartime employment of women hardly liberating –as it mostly means hard labor with low wages in bad conditions (Downs 1995), it was also short-lived as the end of the war and the return of the soldiers forced coming back to a *status quo ante*. But recent works emphasize the consequences of skewed sex ratios, related to high male mortality during the war, on both marriage (Abramitzky *et al.* 2011) and labor market (Boehnke and Gay 2019). In this case, women were forced to enter the labor force as a result of deteriorating economic conditions for them.

Drawing on census micro data, we aim at measuring the impact of WWI on the labor supply of women after the war. More precisely, we do three things: (1) We look at change in the situation of women on the labor market immediately after the war, in terms of both participation and type of jobs. Hence we aim at investigating whether or not the war does bring increased participation in the labor market; (2) By linking individuals between the two census immediately before and after the war, we study the characteristics of the women working before and after, in order to understand the change in the composition of the women labor force (if any); (3) We link, at the local level, the situation of women on the labor market (participation and type of job held) to the mortality of men (*ie* the deficit in male labor force) to investigate whether the mechanisms that explain the change in labor market participation, namely: whether it's from increased opportunity (and willingness) for women on the labor market, linked for instance with wartime participation, or more drawn from necessity, as women with less source of income –for instance as widow of war– are forced to go to the labor market. The implication of which mechanism dominates for the general history of women participation on the labor market is very different.

Context and literature

A few papers investigate the role of specific shocks on the labor market participation of women, in particular the two world wars (e.g. Goldin 1991 on WWII in the US). But the specific effect of such shock, as well as its persistence over time, is still debated: whereas Goldin and Olivetti (2013) favor the role of both male mobilization and wartime female employment in post-war female participation, Rose (2018) tends to nuance these findings and shows that manpower mobilization had little effect on later women employment.

France is a good place to look at that kind of shock since the country experienced incredibly large soldier mortality during World War One in a situation where the participation of women on the labor market was very low¹. Indeed, Boehnke and Gay (2019) uses aggregate data to investigate the change in labor force participation (LFP) of women, taking advantage of the spatial variation of military causality within France. They show an increase in female employment during the war that disappear after. But comparing how *département* are differentially affected by military fatalities allow them to demonstrate that “the war increased women’s presence in the labor force, but only as a result of marriage market disruptions that mostly materialized after the war.” Due to the lack of individual data, however, they are not able to explore the specific mechanisms that explain this spatially-differentiated increase. This is what we aim at doing here.

Data

Our main sample comes from individual-level census data (*listes nominatives du recensement*) which detail both household composition and characteristics of every person within the household. The census registers do not provide a direct measure of income but do collect both occupation and employer (which is usually the name of the boss, an individual, a company or the state, or whether the individual is self-employed, *patron/patronne*). We take advantage of these information to qualify not only the labor market participation but also the characteristic of the job (whether someone is wage earning, independent worker, or an employer herself). It will also help us measure the demand-side to women participation (whether firms are more willing to employ women).

We have collected full count census data for four districts (*cantons*²) of one *département* in France, Haute-Vienne (in the center of France, its main city is Limoges). The choice of the *département*, is motivated by data availability, industrial characteristics (strong presence of war industries, not only in Limoges but also in the countryside), and high rate of war mortality. In the end we have a sample of around 30 000 individuals in 1911 and 25 000 in 1921 from 25 municipalities (out of 66 municipality in the *arrondissement* of Bellac and 204 in the *département* of Haute-Vienne).

We use automated linkage techniques both within this dataset and between this dataset and other sources of information. First, we look for each individual in 1921 back in 1911. To link individuals between the censuses we use both individual characteristics –first and last name, year and municipality of birth– and household information –relationships within the household at both point in time. In the end, the linkage rate is relatively high (more than 50%, certainly higher if we consider mortality) with a very low rate of false positive (from the sub-sample on which we tested it). Second, we match the young males to the military death during the war (*Morts pour la France*³) both to identify directly war widows and to measure the war mortality rate at the local (meaning municipality and *canton*) level.

¹ The low participation on the labor market was also related to the fact that women were often working alongside their husband on the farm. Thus they were not registered as worker even though they working (and should have been registered according to the census rules). Indeed, many non-working women appear as “farmers” in the post war as they replace their husband (dead or invalid) as heads of the farm (Thébaud, 1986). In this paper, we are careful to distinguish farm and non-farm occupation and we will focus on industrial employment.

² Metropolitan France is divided in approximately 90 *départements*, each *départements* being in turn divided in a few *arrondissements* that are themselves divided in a handful of *cantons*. A *canton* is thus the smallest administrative level beyond municipality itself. Each *canton* would have around ten municipality on average, a large town and many smaller villages. We consider a *canton* as a proxy for local market.

³ We already have the complete database, compiled by the Defence Ministry, of all French men who died during WWI. It gives the name, date and place of birth of each of these young men, hence enabling an easy linkage with the census.

Third, and finally, we link our census data to many characteristics of the local environment, in particular in order to measure the conditions of the local labor market. Hence, to assess the presence of war industries at the local level, we collected information on individual war contracts between the French state and local companies (data on each contract that give amounts, dates, and type of contract) from the *jury de révision* archives.

Empirical strategy and expected findings

The popular hypothesis is that many women entered the labor force during the war in war industries and kept working after the war. But the historiography tends to contradict this view and shows that women employed in war factories were for the most part already working before the war (e.g. in textile manufacturing). In some sense, female wartime employment was just a displacement of the labor force from manufacturing firms that had to close down at the beginning of the war. This is something we might investigate as a preamble. Moreover, female labor in war industries was increasingly “de-skilled”, further perpetuating the pre-war sexual division of labor. But another issue is that many women exited war-related industries at demobilization, either back to their former sectors of activity or, again, out of the labor force. However, some area of France were severely affected by mortality during the war and, as a result, they had either to rely more on women labor force or to invest in machinery, it seems that the second effect dominated (Boehnke and Gay 2019). In these areas –areas with large male mortality in the war–, then, women may have had more opportunity to work as the male labor force was reduced (and even when firms were investing in physical capital, it could certainly be complemented by less skilled women labor force). But, at the same time, women in these areas had also less possibility to rely on a husband income (either because they were unable to marry, as there was a shortage of men or because they had lost their husband in the war) which could be another, but very different, reason to go to the paid labor force.

Our main focus, then, will be to investigate whether women were more willing and are more access to the labor force, e.g. as a result of increasing wartime employment or if they were forced to work because of increased hardship resulting from less, and lower quality, opportunities on the marriage market.

In the first case, we will investigate the situation of women on the labor force by comparing women that were not working before the war, whether they live in a municipality with or without war industries. If it is changes in access to employment that drive women’s increased participation, then we would expect women not-working before the war but living in a municipality with war industries more likely to work than those living in a place without war industry.

For the second analysis, we will look at various channels through which women had less income. The first will be to look at the situation of war widows⁴, with the hypothesis that married women losing their husbands due to the war should be more likely to enter the waged labor force after the war. Concretely we will compare, among the married women before the war, those who are still married after the war to those who are widows. So we compare all married women in a municipality in 1911, matched with 1921. In a second step, we will directly identify war widows (through combining census with military death certificate) and perform the same comparison.

The second channel would be to look at married women depending on the local military death rate, with the hypothesis that married women in high death rate markets should have higher bargaining power in the household due to the deteriorated conditions on the marriage

⁴ It should be noted that there were pensions for war widows but they were, at least in the 1920s, very limited in amount and certainly did not allow someone to live off it (Bette 2017).

market. So we compare married women before and after the war depending on the war mortality level in the local area and we expect those living in low death rate marriage market would be more likely to work.

The third strategy will be to look at single women, using the local military death rate as a measure of the difficulty to marry (or make them marry lower “quality” husbands). This should decrease their (expected) income in relative terms, leading them to increase their supply of labor. In other words, we compare single women before the war depending on the local military death rate, with the hypothesis that those living in low death rate marriage market (after the war) are less likely to participate on the labor force.

Conclusion

Almost a million and half young French men never came back from WWI trenches and millions more did come back but without a limb or with considerable psychological scars. This had dramatic consequences on French society, changing not only the equilibrium on the labor force but also the conditions on the marriage market. Moreover, the lack of labor force resulted in increasing appeal to immigrants, with France becoming, in the interwar period, the country with the most immigrants in the world, in relative terms. Replacing men in the factory during the war, women were then soon pushed out of them to make way for wounded soldiers and immigrants; widowed or with less opportunities to marry they had to work more but probably in worse conditions: were they “collateral damage” of the killings of WWI?

Looking at the US case after WWII, Goldin and Olivetti (2013) shows that the increase participation on the labor force is driven by women from the top half of the education distribution, hence . Thus, France seems to be an important example, or counter-example, as it seems that it was less affluent women –women from the lower part of the occupational or income distribution– that were disproportionately driven to the labor market in the immediate after-war.

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