



What Happened to Rosie?

Rosie the Riveter is an iconic figure in American history. As the symbol for women's home front labor force participation during World War II, she represents patriotism and duty. Many of these women who filled jobs vacated by men fighting in WWII (many in manufacturing) would not have otherwise participated in the formal labor market.

This labor movement was sizable, causing a temporary increase of over 30% in women's labor force participation rates, but the relationship between this temporary labor force participation and women's lifetime outcomes is still mostly unknown due to difficulty in identifying these women using historical data.

Later life outcomes for "Rosies" are the focus of *PERC* Working Paper 1501 by *Executive Associate Director* Andrew J. Rettenmaier and PhD candidate Jillian B. Carr. Using a dataset from which labor force participation during and after World War II can be determined, they identify women who are likely

Rosies because they participated in the labor force during the war and left it after. The authors compare these women to other women with different labor force participation patterns and a younger cohort with the same pattern.

Using data on quarters worked

“This labor movement was sizable, causing a temporary increase of over 30% in women's labor force participation rates.”

between 1937 and 1950 from the 1973 Current Population Survey matched to Social Security earnings records, the authors are able to identify four distinct work patterns. The likely Rosies worked during or before the war years (1937-1946), but not after the war (1947-1950). Other work patterns include never

working, always working, and joining the workforce only after the war.

The authors also focus on two separate age groups of women: those born between 1906 and 1915, and those born between 1916 and 1925. At the end of the war in 1945, these women were ages 30-39 and 20-29, respectively. Importantly, the measure of labor market participation during and immediately following the war is the most precise for this younger group.

The CPS data include whether a woman was married at the time of the survey in 1973. Marital status could have affected whether a woman chose to enter the labor force during the war or, conversely, it could have been affected by whether a woman entered the workforce during the war. Women who worked throughout the war and post-war period were (unsurprisingly) less likely to be married than those who never worked, but Rosies were not more likely to be married in 1973 than those who never worked. However, Rosies were more likely to be mar-

ried than the women who worked throughout and those who joined the labor force after the war.

In addition to whether a woman is married, the authors also consider whether later life labor force participation and earnings are related to working during the war. Using a Heckman selection model, they

“Rosies’ earnings are no different from the women who did not work during 1937-1950, conditional on working.”

find that the Rosies, as well as women who worked throughout the war period and after and women who joined the labor force after the war, are more likely to work in 1973 than those who never worked during the war and post-war period. In the second stage, they find that the Rosies’ earnings are no different from the women who did not work during 1937-1950, conditional on working. The women who worked throughout the war and post-war period

have higher earnings, as do those who joined the labor force after the war.

Wartime labor force participation may also be related to the attributes of married women’s husbands. Women who worked during and after the war and Rosies are more likely to be married to WWII veterans in 1973 than those who never worked or joined the labor force after the war. Husbands’ education levels were positively related to their wives’ education level. Also, wives who worked during the war and then exited had more highly educated spouses than nonworking women. Husbands’ earnings are positively related to both their own and their wives’ human capital indicators. Women who worked during the war and exited after it had higher earning husbands than the spouses of nonworking women and women who first entered the labor market immediately after the war.

The authors also compare the Rosies born in 1916-1920 to the group of women born in 1930-1934 and who followed a similar work pattern of temporarily working then leaving the workforce. These women were born too late to be able to

participate in the WWII labor surge. They find that the Rosies are slightly different from this group.

Unlike the war time Rosies, these comparison women were in fact more likely to be married in 1973 than women with other work patterns. The comparison women were also not more likely to work in later years than women who never worked, as opposed to the Rosies, who were more likely to work. The relationship between women’s early work patterns and their husbands’ future earnings were similar for the comparison group and the women who were in their 20s during the war. The authors believe that this is suggestive evidence that war time work had some effect on later life outcomes outside of what we would normally find for women who work when they are young then leave the labor force.

While many of these findings are expected, this study provides new evidence on how wartime labor market participation was related to women’s earnings and labor force participation later in life as well as how it was related to their spouses’ characteristics and earnings.

Testing Risk Dominance and Payoff Dominance in Repeated Global Stag Hunt Games

We use game theory to describe many economic situations, but sometimes the theory results in multiple strict equilibria. In order to narrow this down to a single equilibrium, the assumption that all players

have complete information can be relaxed. The resulting incomplete information game is called a “global game.”

In *PERC* Working Paper 1403, *PERC* *Rex Grey Professor* John Van

Huyck and PhD candidate Ajalav at Viriyavipart experimentally test the global game’s prediction for a specific classic game: the stag hunt. They test whether the subjects coordinate on the prediction or the effi-



cient outcome.

The stag hunt game models a group of individuals deciding between a safe alternative (catching a hare) and a risky alternative that requires a certain number of individuals to commit to guarantee success (catching a stag). There are two strict equilibria: all players cooperate to catch the stag or all players act individually to catch a hare. The cooperative equilibrium has a higher payoff for all players, but players may select the other equilibrium due to the strategy coordination problem. If players believe that not enough fellow players will cooperate in the stag hunt, they may choose to catch a hare instead.

The concept of Payoff Dominance suggests that the players should settle on the equilibrium with the highest payoff, so that as long as going after the stag yields a higher payoff, the players should all opt to cooperate. If the payoff for obtaining the hare becomes higher than that of the stag, they should switch strategies and all pursue the hare. The value at which they should change their actions is called the “payoff dominant threshold.” Alternatively, the players could operate according to the idea of Risk Dominance, seeking the less risky option. Again, there is a threshold at which the players should change their actions from cooperating in the stag hunt to seeking the hare independently, the “risk dominant threshold.”

The global stag hunt game introduces incomplete information by altering the quality of each player’s knowledge of the payoff of the safe alternative. Rather than observing the true value of the hare, they ob-

serve a noisy measure of it.

The authors used two experimental treatments, one in which the subjects played the complete information stag hunt game, and one in which they played the global game. In the complete information game, or the “common information”

“Neither common information or private information treatments yielded results consistent with the predictions for the global game.”

game, the participants knew the exact payoff for obtaining the hare, Q , which was a randomly selected integer between 0 and 600. In the global game, or “private information” game, each player was given a measure of the payoff from catching the hare that was equal to the true value Q plus an error component. Importantly, the error component was not the same for all players, and it ranged from -50 to 50.

There was no ambiguity in the payoff from all players choosing to cooperate; it was always 500. Similarly, participants knew that if they chose to cooperate and the other players didn’t, they would receive 100. The payoff dominant threshold was 500, and the risk dominant threshold was 300 in both treatments. The units are a twentieth of a cent, and players received their cumulative earnings as well as a \$5.00 show up fee at the end. On average, students received \$29.19, and the sessions lasted between 70 and 90

minutes.

The subjects, who were Texas A&M undergraduate students, played the game 100 times, allowing the iterative elimination of strictly dominated strategies to converge to equilibrium.

Neither common information or private information treatments yielded results consistent with the predictions for the global game. In fact, behavior was systematically biased towards efficiency, and a Mann-Whitney test failed to reject the hypothesis that the common information and the private information treatments were drawn from the same population.

In the complete information game, one cohort converged on payoff dominance, while many others converged on a threshold between 400 and 500, which is between the payoff dominance threshold and the risk dominance threshold. The authors suggest that this is evidence of multiple equilibria.

They also suggest that initial conditions and adaptive behavior play a large role in the final outcomes.

In a post-experiment survey, 92% of the subjects in the complete information treatment and 72% of the subjects in the incomplete information treatment confirmed that they chose according to a cutoff value. Also, more than half of students confirmed that they changed their strategy over time, and some cited that it was in response to the actions of the other participants.





PRIVATE ENTERPRISE
RESEARCH CENTER

Texas A&M University
4231 TAMU
College Station, TX 77843-4231

NONPROFIT ORG.
U.S. POSTAGE
PAID
COLLEGE STATION,
TEXAS 77843
PERMIT NO. 215



PRIVATE ENTERPRISE
RESEARCH CENTER
TEXAS A&M UNIVERSITY

PERCspectives on RESEARCH

The Private Enterprise Research Center was founded in 1977 as a research organization at Texas A&M University. The mission of the Center is to raise economic understanding and to increase awareness of the importance of individual freedom to the strength and vitality of our economy. The Center produces research that addresses important issues of public policy and educational materials that make the results available to the general public.

PERCspectives on Research are not copyrighted and may be reproduced freely with appropriate attribution of source. Please provide the PERC office with copies of anything reproduced.

The opinions expressed in PERCspectives on Research are those of the authors and not necessarily those of Texas A&M University.

Visit our website for current and archived copies of all of PERC's publications and information about donating to PERC.

perc.tamu.edu

Winter 2015

Private Enterprise Research Center
Texas A&M University
4231 TAMU
College Station, TX 77843-4231
(979) 845-7722
perc@tamu.edu