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Gendered Employment in the U.S. Auto Industry: A Case Study of the Ford Motor Co. Phoenix Plant, 1922-1940

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Historical accounts of the establishment of a gender division of labor in the United States have helped make sense of the distinct patterns of wages and employment characteristic of capitalist labor markets. The theory of segmented labor markets provides an especially useful insight into the development of enduring labor market structures.

This paper argues that the establishment of a division of labor founded on gender difference represents a strategy which combines capitalist control with patterns of working-class resistance and accommodation. However, the usual connection between a gender division of labor and gendered wage differentials is called into question through a case study of wages and production relations at Ford Motor Company's Phoenix, Michigan plant. In particular, this paper claims that, while Ford Motor instituted a gender division of labor, the particular system of labor relations and the structure of wages earned by female producers of auto parts suggest that Ford was responding to the joint worker-consumer identities of its employees. While women did not participate in the five-dollar day

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(Meyer 1981), this did not mean that Ford was a low-wage employer of women.

HISTORICAL BACKGROUND: FORD'S VILLAGE INDUSTRY PROJECT

The Phoenix, Michigan plant, upon which this empirical case study is built, was part of a Ford Motor Company effort to decentralize production tasks during the 1920s and 1930s (Pietrykowski 1995a). The Phoenix plant was part of a cluster of five plants located some 35 miles northwest of Detroit, Michigan.

Phoenix workers produced half of Ford's supply of generator cutouts, voltage regulators and stoplight switches. The plant employed an almost entirely female work force. In fact, Ford explicitly barred married women from employment at Phoenix.

The technology involved in production at Phoenix was classified as light assembly. While female manufacturing employment was hardly rare in the first decades of the 20th century (Tentler 1979), the auto industry was one of the most highly segregated industries. Labor historians argue that most women employed in the auto industry were segregated into departments such as upholstery or light assembly (Milkman 1982, 1989; Babson 1985; Glucksmann 1990).[1]

WORKERS AT PHOENIX — A STATISTICAL OVERVIEW

The data set used in this study is based on the employment records of 228 Phoenix plant workers (265 employment spells) employed between 1922 and 1940. The data were obtained from Ford Motor Company hourly employee files. I constructed a profile of Phoenix workers based on the following characteristics: age, marital status, number of dependents, previous employment, job tenure and reasons for leaving Phoenix.

Age: The average worker was 24 years old. While the bulk of the work force at Phoenix consisted of women under the age of 25, about one-third of the employees were age 25 or older. The simple correlation coefficient between age of worker and average wage is 0.1903, significant at the 10% level (N=228).

Marital Status: The majority of workers (70%) were single women, never married. Another 12% were either divorced or separated. Fourteen percent of the women were widowed, and the remaining

4% were married. Since Ford Motor explicitly barred married women from employment at Phoenix, the few married women who gained employment did so because their husbands were disabled and unable to work at all. A test for differences in group means (ANOVA) when women are classified according to marital status suggests that there was no statistically significant difference in wages between workers with different marital statuses.

Dependents: Slightly over half of the Phoenix plant workers (54%) claimed no dependents. It may be the case that single women living at home with their family did not report parents or siblings as dependents. Thirty-four percent of the women claimed either one or two dependents. The remaining 12% of workers had anywhere from 3 to 10 dependents.

Previous Employment: Almost two-thirds of Phoenix workers listed previous employment experience outside of the home. Another 35% list housework or "at home" as their previous occupation. Finally, 3% list farming as their previous employment.[2]

Therefore, most Phoenix workers in this sample had already embarked on a process of initial proletarianization (Gordon, Edwards and Reich 1982).[3]

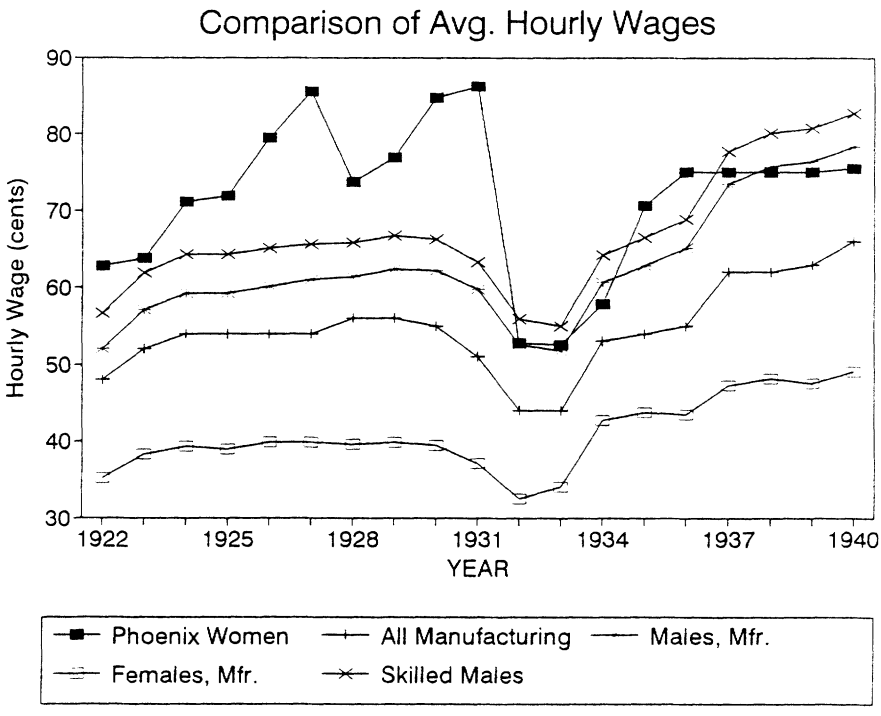
Job Tenure and Reasons for Leaving: It was no secret that Ford denied married women access to jobs (Ford 1988: 145). Therefore, women had to quit their jobs in order to get married. Thirty-four percent of Phoenix women quit their jobs for this stated reason. Another 30% quit for a variety of other reasons including health, working conditions (inability to keep pace with the line) and alternative job opportunities. Two percent (six cases) were discharged because it was discovered that the employee was married. The average length of job tenure for Phoenix workers was a little less than two years (1.91 years).

WAGES AT PHOENIX

Comparison With Manufacturing and Core Industry Wages

Women working at the Phoenix plant were paid high wages relative to women employed in other industries. Figure 1 shows the wages earned by Phoenix women relative to all manufacturing workers, male manufacturing workers, female manufacturing employees and the particular category of skilled males in manufacturing. The data extend from 1922 through 1940.[4] For the decade of the 1920s,

FIGURE 1



(Source: U.S. Bureau of the Census. 1975. Historical Statistics of the United States: Colonial Times to 1970. Washington: Government Printing Office.)

Phoenix workers received hourly wages well above those paid to other women employed in manufacturing. The data also show that Phoenix wages exceeded the wages paid to men, including males in skilled occupations. Some of the wage premium paid to Ford workers is due to the position of Ford Motor in the U.S. economy. Ford occupied the industrial core of the U.S. economy. Core industries within the U.S. economy are characterized by high levels of capital intensity, large size (measured in terms of scale of output and total production workers employed) and high value-added. When compared to the wages paid in core industries as a whole (Table 1), it is evident that wages at Phoenix are consistently above the average wage earned by workers in the core sector of the economy.

Notice that Ford wages follow the trend of manufacturing wages shown in Figure 1, falling precipitously after 1931 and beginning to recover in 1933-1934. After the Depression, the wages of skilled males and all male manufacturing employees began to surpass the wages paid at Phoenix.

TABLE I
Core Industry Wages Compared to Phoenix Wages
1922-1930

(Data are in dollars)

Year	1922	1923	1924	1925	1926	1927	1928	1929	1930
CORE	0.51	0.60	0.61	0.61	0.62	0.63	0.63	0.64	0.64
PHO.	0.63	0.64	0.72	0.72	0.79	0.86	0.74	0.77	0.85

Source for core wage series: Gordon, Edwards and Reich (1982): 195.

Ford's Wage Policy and Intra-Plant Wage Differentials

What reasons are there for Ford's high wage policy? One possible explanation for the wage levels at Ford lies in the link between mass production and mass consumption emblematic of a "Fordist" regime.

The theory of Fordist regulation maintains that large-scale production requires its concomitant in mass consumption. High wages thereby stimulate product demand (Aglietta 1987). However, the particular high wage policy adopted at Phoenix requires further empirical investigation. To better understand the association between individual worker characteristics and the wage, the average wage of each Phoenix worker was regressed on a set of individual characteristics as reported in an employee's record. The wage model is specified as follows:

$$Wage_i = \alpha_i + \beta_1 Tenure_i + \beta_2 Age_i + \beta_3 Prevemp_i +$$

$$\beta_4 Rehire_i + \beta_5 Depend_i + u_i$$

where

Wage: the average wage earned by the ith worker
Tenure: worker job tenure with Ford (measured in terms of years of continuous employment)
Age: age of worker at time of hiring
Prevemp: previous employment type (takes a value of 1 if employed in manufacturing or service sector and 0 if employed in a household or on a farm)
Rehire: would employer wish to rehire the employee (1 = Yes, 0 = No)
Depend: number of dependents

Table 2
Phoenix Wage Regression Results

VARIABLE	COEFFICIENT	T-STATISTIC
CONSTANT	65.587	25.058**
TENURE	1.490	5.950**
AGE	0.279	2.970**
PREVEMP	2.557	2.277*
REHIRE	3.285	2.725**
DEPEND	-0.311	0.970

F statistic = 19.76**
Adjusted R Squared = 0.297
(** and * designate statistical significance at the 1 and 5 percent levels respectively.).

It is hypothesized that workers with longer tenure will receive higher wages due to improvements in productivity attributable to learning on the job ($\beta_1 > 0$). On the other hand, controlling for productivity differences, high wages granted workers with long job tenure may provide an incentive for younger workers to minimize shirking in order to remain with the company (Lazear and Moore 1984; Bowles 1985).

The jobs at Phoenix were governed by the pace of the conveyor. If older workers are less productive due to deterioration/ obsolescence of skills/dexterity then one would expect $\beta_2 < 0$. However, if older workers help to supervise and monitor younger workers, then higher wages may be paid to them for the additional labor effort extracted from younger workers and $\beta_2 > 0$.

Workers with previous employment experience within the capitalist sector of the economy have prior experience of proletarianization and thus should be able to adapt better to the pace of production at Phoenix. Therefore one should expect $\beta_3 > 0$.

The variable Rehire is used as a proxy measure of worker productivity. If the supervisor at Phoenix had a favorable assessment of the worker's job performance, she would want to rehire the worker after a layoff or quit. If it is hypothesized that more productive workers receive higher wages, $\beta_4 > 0$. The same shop-floor supervisor was employed at Phoenix from 1922 until 1940.

Although this suggests a consistent level of evaluation over time, the Rehire variable is nevertheless subject to errors of interpretation and rehire decisions may have been based on factors other than worker productivity. Nevertheless, care was taken to utilize all the relevant information when deciding how to code this variable.[5]

Finally, if Phoenix workers are paid wages in relation to the size of their family, as measured by the number of dependents, one would expect $\beta_5 > 0$. The results of the OLS model are reported in Table 2.

The coefficient on tenure is positive and statistically significant, meaning that higher wages are associated with longer tenure. In addition, older workers receive higher wages, even after controlling for supervisor's assessment of productivity. As expected, workers who receive favorable evaluations are workers with higher wages. Workers who had previous employment experience in manufacturing or services also received higher wages. Finally, there is no statistically significant relationship between family size as measured by number of dependents and the average wage paid to Phoenix workers. While Depend is not intended to indicate the presence or absence of a family wage policy, it appears that similar wages were paid to women at Phoenix regardless of family size.[6]

The wage equation accounts for approximately 30% of the variation in worker wages at Phoenix. The remaining 70% of the variation can likely be attributed to two sets of factors. First, wages at Phoenix were, in part, set in accordance with Ford's overall wage structure. So, when a company-wide wage policy was announced, wages were adjusted accordingly. For example, on December 1, 1929, Ford implemented a seven-dollar-a-day minimum wage (Nevins and Hill 1957). While Phoenix women did not universally participate in this plan, wages did rise for workers at the plant from an average of 77 cents an hour in 1929 to 85 cents in 1930 while the variance around the mean fell.[7] The second factor that may help account for the distribution of wages at Phoenix is related to the system of capital-labor relations in force at Phoenix.

Social relations on the shop floor at Phoenix were characterized by a paternalistic management style in which a single shop forewoman together with a single male plant manager controlled all the hiring and firing decisions and set the pace of production. Personal control did not, however, result in a completely ad hoc system of wage determination. Pay was linked to tenure, productivity and age. Yet, neither the number of dependents a worker had nor the marital status of the employee was statistically related to worker wages. So, differences in wages were not clearly

linked to differential family burdens. Rather, it can be hypothesized that older women workers – those over 25 years of age – helped to reinforce a familial system of labor control. They may well have identified more with the shop forewoman. If older women did represent a hierarchy-influenced (Gintis 1976) segment of the Phoenix work force, they may have assisted in the enforcement of work norms such as punctuality and behavioral traits like deference. Seen in this light, the productivity variable (Rehire) may represent a crude measure of actual output while the age variable measures the degree to which work norms are internalized. In addition, since older workers suffered from discrimination in the labor market, their cost of job loss is higher because their actual expected spell of unemployment would be longer or their expected reemployment wage would be lower than for similarly discharged younger workers (Bowles 1985). This may have helped to enforce a "loyalty norm" among this segment of the work force (Hirschman 1970; Pietrykowski 1995b).

CONCLUSION

The labor force employed at the Phoenix plant represents an important exception to the rule that links gender segregation in the workplace to a search for a low wage labor pool. While there is little reason to doubt that women workers at Phoenix earned lower wages than men working at other Ford plants, there is evidence to suggest that Phoenix workers earned a wage premium equal to or above that earned by the average male manufacturing worker, including those workers employed in core industries. The particular influence that high wages had on female workers at Phoenix was mediated through a system of paternalistic labor relations in which gender, age, marital status and previous experiences of proletarianization intervened to secure compliance on the shop floor.

NOTES

1. Yet the designation of work as "light" and hence appropriate for females or "heavy" and hence only suitable for men has been challenged by research on women's work in radio manufacturing (Cooper 1991: 327).
2. It may well be the case that some household labor was performed in farm homes so that the category of housework captures some of the farming category.

3. Perhaps the process cited by Gordon, Edwards and Reich (1982) should be referred to as "industrial" proletarianization because it takes factory production as the standard case. The question raised by the experience of the Phoenix workers is whether proletarianization processes differ by industry segment. Do service-sector workers become differently incorporated into the working class and, if so, along which dimensions does this difference manifest itself? This issue, while not addressed in the present paper, will be the subject of future investigation.
4. The sample size falls to under 30 for the years 1932, 1933 and 1935 through 1940, so care should be taken when interpreting the data for these years.
5. In a few cases, for example, the supervisor indicates that she would not rehire a worker even though the worker was productive and capable of keeping up with the pace of the conveyor. Further evidence indicated that personal differences between supervisor and worker affected the rehire decision. In these cases, since the Rehire variable is meant to capture productivity, the variable was coded "1" to reflect information regarding worker productivity.
6. The notion of a family wage implies that a worker was paid a wage sufficient to alone raise a family (Humphries 1977; Land 1980). If applied to Phoenix workers, a family wage would imply that women, not men, were seen as the family breadwinners.
7. The coefficient of variation was 0.187 for 1929 and 0.137 for wages in 1930.

REFERENCES

Aglietta, Michel. 1987. *A Theory of Capitalist Regulation: The U.S. Experience.* London: Verso.

Babson, Steve. 1985. *Working Detroit.* Detroit: Wayne State University Press.

Bowles, Samuel. 1985. The Production Process in a Competitive Economy. *American Economic Review* 75(1): 16-36.

Cooper, Patricia. 1991. The Faces of Gender: Sex Segregation and Work Relations at Philco, 1928-1938. In, *Work Engendered*, Ava Baron (ed.). pp. 220-250. Ithaca: Cornell University Press.

Davis, Rusty. 1983. Village Industries. *V-8 Times* 20(4): 24-29.

Ford, Henry. 1988. edition. *Today and Tomorrow.* Cambridge: Productivity Press.

Gintis, Herbert. 1976. The Nature of Labor Exchange and the Theory of Capitalist Production. *Review of Radical Political Economics* 8(2): 36-54.

Glucksmann, Miriam. 1990. *Women Assemble: Women Workers and the New Industries in Inter-War Britain.* London: Routledge.

Gordon, David M., Richard Edwards and Michael Reich. 1982. *Segmented Work, Divided Workers: The Historical Transformation of Labor in the United States.* Cambridge: Cambridge University Press.

Hirschman, Albert. 1970. *Exit, Voice, and Loyalty.* Cambridge: Harvard University Press.

Humphries, Jane. 1977. Class Struggle and the Persistence of the Working-Class Family. *Cambridge Journal of Economics* 1: 241-258.

Land, Hilary. 1980. The Family Wage. *Feminist Review* (4): 55-77.

Lazear, Edward P. and Robert L. Moore. 1984. Incentives, Productivity, and Labour Contracts. *Quarterly Journal of Economics* 99 (May): 275-296.

Meyer, Stephen. 1981. *The Five Dollar Day*. Albany: State University of New York Press.

Milkman, Ruth. 1982. Redefining "Women's Work": The Sexual Division of Labor in the Auto Industry During World War II. *Feminist Studies* 8(2): 337-372.

Milkman, Ruth. 1989. Rosie the Riveter Revisited: Management's Postwar Purge of Women Automobile Workers. In, *On the Line: Essays in the History of Auto Work*, Nelson Lichtenstein and Stephen Meyer (eds.). pp. 129-158. Urbana: University of Illinois Press.

Nevins, Allan and Frank Earnest Hill. 1957. *Ford: Expansion and Challenge, 1915-1933*. New York: Charles Scribner & Sons.

Oster, Gerry. 1979. A Factor Analytic Test of the Theory of the Dual Economy. *Review of Economics and Statistics* 51(1): 33-39.

Pietrykowski, Bruce. 1995a. Fordism at Ford: Spatial Decentralization and Labor Segmentation at the Ford Motor Company, 1920-1950. *Economic Geography* 71(4) (forthcoming).

Pietrykowski, Bruce. 1995b. Beyond Contested Exchange: The Importance of Consumption and Communication in Market Exchange. *Review of Social Economy* 53(2) (forthcoming).

Scharf, Lois. 1980. *To Work and To Wed: Female Employment, Feminism, and the Great Depression*. Westport, Connecticut: Greenwood Press.

Tentler, Leslie Woodcock. 1979. *Wage-Earning Women: Industrial Work and Family Life in the United States, 1900-1930*. New York: Oxford University Press.