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Military Service and Future Earnings Revisited

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Abstract

Utilizing particularities in the Israeli laws and regulations, that exempt married women and ultra-orthodox Jewish men from military service, we provide evidence about the effects of compulsory military service on future earnings of veterans. The quasi-experimental estimates suggest that women experience a 4.6 percent military wage premium, while men experience a premium of 11.6 percent. These effects are far smaller than those experienced by minority groups, confirming the common notion in this literature. Finally, the discrepancies we found between the naïve and the consistent estimates suggest that people who voluntarily avoid service are those who face the highest opportunity costs of service.

Keywords: Compulsory military service; quasi-experiment; early marriage; ultra-orthodox; majority

JEL Classification: J24, J31, J15

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I. Introduction

The growing body of evidence suggests that military service causes a loss in civilian labor market experience. The literature, however, is not unanimous about the net effect of service (Routon, 2014). It is possible that the benefits of military service more than compensate for the lost experience, providing a net positive effect on future earnings (e.g., Asali 2015). Moreover, serving members of minorities are likely to benefit more from (or be harmed less by) military service than their counterparts in the majority group (Hirsch and Mehay, 2003; Phillips et al., 1992; Angrist, 1990).

Using evidence from Israel, this study sheds light on both issues.[2] In particular, it uses law-induced random exemption from service to consistently estimate the effects of service for the majority (Jewish) group, and compares these with earlier findings for minorities. The exemption of married women from service is used to identify the effect among female workers; and the exemption of ultra-orthodox men is used to identify the effect among male workers. The decade of birth, proxying the changing attitudes towards early marriage, is used as an instrument for early marriage in the female regressions. The religiosity of the head of the household is used as an instrument for being ultra-orthodox in the male regressions.

The study finds a significant effect of military service on future earnings of both male and female workers. Female workers experience a wage premium of 4.6%; male workers experience a wage premium of 11.6%. Comparing these findings with earlier evidence about the effects among Arabs in Israel, as shown in Asali (2015), it is evident that the effects experienced by minorities are much larger, and can be twice as large as those experienced by members of the majority group; an outcome that resonates with evidence from this literature. Finally, the evidence incidentally suggests that people who voluntarily avoid service are those who face the highest opportunity costs of service.

[2] As argued in Kollias (1995), evidence from individual countries, like Israel in this case, can nevertheless contribute to the general understanding of an important question.

II. Data

We use data from the Israeli population census of 1995, a representative sample that includes 20% of the whole population, covering Israeli citizens of all religions (Jewish, Muslim, Christian, and Druze). We limit our sample to workers with positive income, in the post-service, pre-retirement ages of 25-64. The main results use the Jewish population of the samples, but we also use a subsample of Arab women for one class of falsification tests. Table 1 reports summary statistics of the main variables used in this study.

[TABLE 1]

The table shows summary statistics for the whole sample of Jewish women, as well as for the subsample of "serving" women, defined as women who were not married at the official service age (18-19), and hence had to serve in the military by law. In the second panel, the table reports the summary statistics for Jewish male workers: for the whole sample and for the subsample of "serving" men, defined as men who are not ultra-orthodox, and thus are not exempt from service by law. (An ultra-orthodox person is defined as somebody who attended a Yeshiva for at least one year; alternatively, we define an ultra-orthodox as somebody who attended a Yeshiva for five or more years; the results are virtually identical.)

The average log hourly wage of a serving woman is 3.178, while that of a non-serving (early-married) woman is 3.090, yielding a gross wage gap of about 8.8%. The short specification of Table 2 for women shows this outcome as well. The respective figures for a serving man versus a non-serving (ultra-orthodox) worker are 3.443 and 3.389, resulting in a gross wage gap of about 5.4%, as confirmed in the fourth column of Table 2. While the non-ultra-orthodox men are comparable to the whole sample of male workers, it is clear that early-married women differ slightly from the general population of women workers: they are less likely to attain higher education, and they are older—this latter fact suggests that early marriage is more likely to be associated with earlier generations.

III. Methods

The Israeli law exempts early-married women (those who are already married at the age of 18-19, the official age of compulsory military service), and ultra-orthodox men (whose main occupation is to study the Torah)

from military service.[3] We use these facts to identify the effect of military service on the future earnings of Jewish male and female workers. In particular, we estimate the following equation for the post-service (ages 25-64) groups, separately for each gender, by OLS:

$$\ln wage_{ig} = X_{ig}\beta_g + \gamma_g SERVE_{ig} + \varepsilon_{ig}, \quad i = 1,2,\dots,n; \quad g = 1,2$$

where $wage_{ig}$ is the hourly wage of worker i of gender g; X_{ig} is a vector of control variables that includes the age of the worker, the squared age, dummies for schooling categories, and dummies for marital status. $SERVE_{ig}$ is a dummy variable that takes on the value zero if the worker is a female who married at or before the age of 18-19, that is before service age (and thus did not have to serve); or if the worker is a male who is defined as an ultra-orthodox Jew and does not serve in the military (in our data this is proxied by whether he attended a Yeshiva or not; alternatively, whether he attended a Yeshiva for 5 or more years, or not). Otherwise, $SERVE$ takes on the value one. ε_{ig} is the error term. The coefficient of interest is γ_g which measures the effect of military service on the earnings of men ($g = 1$) and women ($g = 2$).

Since service, defined in the above manner, is a choice variable—i.e., a woman can choose to marry early, or a man can choose to become religious—the variable $SERVE$ is likely to be endogenous, in that it is correlated with omitted variables in the error term. This renders the OLS estimates prone to bias. We, therefore, estimate the above equation by two stage least squares (2SLS) as well.

The instrument for $SERVE$ of females (i.e., early marriage) is the decade of birth year. This captures the societal and conventional changes in the cultural perception of early marriage, such that early marriage was more acceptable among earlier generations than contemporary ones.[4] The instrument for $SERVE$ of males (i.e., being ultra-orthodox) is the religiosity of the head of the household or his/her spouse, as measured by the years he or she attended a religious school. This discerns the tendency to religiosity that runs in families from that which is motivated by avoidance of service. That is, it captures the exogenous variation in being ultra-orthodox.

[3] See Asali (2015) for a background and thorough description of these laws and regulations.
[4] Other forms of the instruments were used (like a cubic form of the decade of birth, or an early-marriage of the head of household or his/her spouse), and all produced similar results.

IV. Empirical Results

Table 2 reports the main results of this study. The first panel provides estimates of the effect of military service for women, and the second panel for men. Under each panel, the first column estimates the main equation without any control variables, hence provides an estimate of the gross wage gap between the serving and non-serving groups separately for each gender. The second column provides the OLS estimates from the full specification, and the third provides the 2SLS estimates.

[TABLE 2]

The gross wage gap between serving and non-serving women is 8.8%. The naïve estimate of the part of this wage premium that can be associated with military service is 3.3% as appears in the OLS column. The consistent estimate, as reported by 2SLS, is 4.6%. For male workers, the gross gap is 5.4%, but the consistent effect of military service on their wages, as appears in the last column, is 11.6%. These effects are statistically significant at all conventional levels.

The downward bias of the OLS estimates is a sign that people who avoid military service do so because they are likely to face higher opportunity costs of service. The absolute bias being small, however, suggests that this avoidance activity is not of a major concern.

As a falsification test, we estimate the main equation for *Arab* women, who do not serve regardless of their marital status. We find slightly negative but statistically insignificant coefficients of *SERVE*, like -.03 (SE .027) from OLS and -.04 (SE .031) from 2SLS, suggesting that the effects reported in Table 2 can indeed be attributed to military service. This test should be viewed with caution, however, since the very variable of early marriage can capture other cultural differences between Arabs and Jews that can themselves account for observed wage differentials. Also, discrimination in the Israeli labor market can mar such comparison (Asali, 2010).

V. Conclusion

In a quasi-experimental approach, this study finds a statistically and economically significant effect of military service on future earnings of both male and female Jewish workers in Israel. These experience a wage premium of 11.6% and 4.6%, respectively. Comparison with earlier evidence on the effects of military service among Israeli Arabs shows that the benefits experienced by minorities are considerably larger than those experienced by members of the majority group—a finding that is in line with evidence from this literature. Incidentally, our evidence also suggests that people who voluntarily avoid service are likely those who face the highest opportunity costs.

References

Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records." *American Economic Review* 80(3): 313–36.

Asali, Muhammad. 2010. "Jewish-Arab Wage Gap: What Are the Causes?" *Defence and Peace Economics* 21(4): 367–80.

Asali, Muhammad. 2015. "Compulsory Military Service and Future Earnings: Evidence from a Quasi-Experiment," *IZA Discussion Paper,* No. 8892.

Hirsch, Barry T., and Mehay, Stephen L. 2003. "Evaluating the Labor Market Performance of Veterans Using a Matched Comparison Group Design." *Journal of Human Resources* 38(3): 673–700.

Kollias, Christos G. 1995. "Preliminary Findings on the Economic Effects of Greek Military Expenditure." *Applied Economics Letters* 2(1): 16-18.

Phillips, Robert; Andrisani, Paul; Daymont, Thomas; and Gilroy, Curtis. 1992. "The Economic Returns to Military Service: Race-Ethnic Differences." *Social Science Quarterly* 73(2): 340–59.

Routon, P. Wesley. 2014. "The Effect of 21st Century Military Service on Civilian Labor and Educational Outcomes." *Journal of Labor Research* 35(1): 15–38.

Table 1: Summary Statistics

	Women		Men	
	All	Serving	All	Serving
Log hourly wage	3.143	3.178	3.442	3.443
	(.735)	(.726)	(.756)	(.755)
Age	40.37	38.59	41.48	41.52
	(9.698)	(9.751)	(10.339)	(10.336)
With 11+ years of schooling	.839	.891	.780	.778
	(.367)	(.311)	(.415)	(.415)
With 13+ years of schooling	.472	.536	.407	.404
	(.499)	(.499)	(.491)	(.491)
Observations	90,287	54,521	94,914	92,506

Notes: Samples include Jewish workers aged 25-64, with strictly positive income. "Serving" for women is defined as a woman who was not married at or before the age of 18. "Serving" for men is defined as someone who is not ultra-Orthodox (with no studies at a Yeshiva). Standard deviations in parentheses.

Table 2: The Effects of Military Service on Future Earnings

	Women			Men		
	OLS	OLS	2SLS	OLS	OLS	2SLS
Serve	.088***	.033***	.046***	.054***	.109***	.116***
	(.005)	(.005)	(.014)	(.016)	(.015)	(.016)
Age		.048***	.048***		.070***	.072***
		(.002)	(.002)		(.002)	(.002)
Age^2(x1000)		-.428***	-.433***		-.678***	-.703***
		(.024)	(.024)		(.023)	(.023)
Schooling and marital status controls	No	Yes	Yes	No	Yes	Yes
Constant	3.090***	1.338***	1.319***	3.389***	1.045***	.980***
	(.004)	(.046)	(.049)	(.016)	(.048)	(.049)
First-stage R^2			.253			.913
R-squared	.004	.175	.175	.0001	.158	.151
Observations	90,287	90,287	90,287	94,914	94,914	90,167

Notes: The dependent variable is the log of hourly wage. Samples include Jewish workers aged 25-64, with strictly positive income. Robust standard errors in parentheses. The 2SLS estimator for women uses the decade of birth as an instrument for early marriage; the 2SLS estimator for men uses years of yeshiva studies of the head of the household or his/her spouse as an instrument for being ultra-orthodox.
*** Significant at the 1% level.