Hours worked

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Abstract

To be written.

1 Basic PSID Statistics

1.1 Sample

PSID 1968-2003, including early release files.

Most stats are for men.

Observations are dropped if: wage > 2000, wage < 0.1, wage growth > 20, wage growth $< 1/20$.

1.2 Key findings

These are the key findings:

1. Hours vary a lot across persons. The std deviation is about 900 hours, pooling all ages and years.

2. Most of the variation in hours (about 75%) is preserved when long averages are taken. Hours inequality is not just short fluctuations of measurement error.

3. Hours differences are quite persistent across decades.

4. Those who work hard work hard at all ages.

5. Observable characteristics "explain" only about 20% of the variation in hours across prime age men.

6. Those who work few hours report few weeks/year for "main jobs."

7. The std dev of hours is U-shaped in age.

1.3 Details

1.3.1 Basic stats by year

Figure 1 shows basic stats by year for men/women.

Mean hours are slightly falling for men / rising for women. This is consistent with the literature.

Std dev of hours is rising for men.

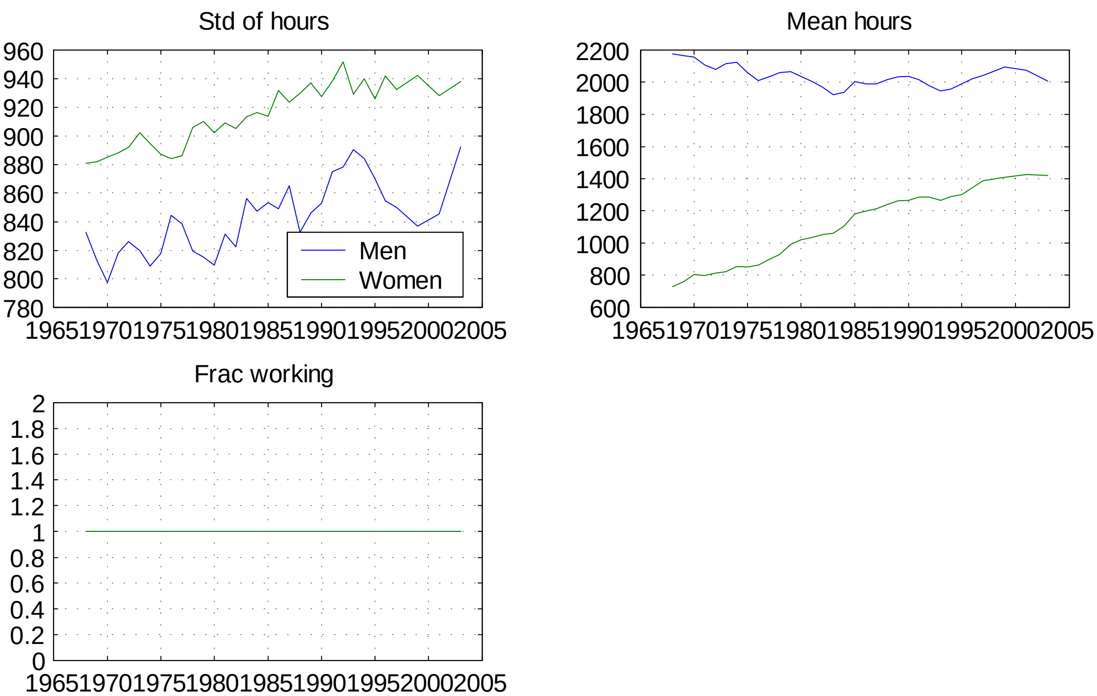

Figure 1: Basic hours stats

1.3.2 Hours averages around age 40

Figure 2 shows mean and std dev for hours averages. Each data point is an average centered around age 40. Interval is the length of the hours interval over which the average is taken. Men only. Different cohorts are pooled. Only persons with at least 70% of valid observations.

The key point: About 75% of the standard deviation of annual hours (data point "0") is preserved for 20 years hours averages (data point "10"). Variation in hours seems highly persistent.

1.3.3 Hours by age

Question: do hard workers work hard at all ages?

Divide persons into quintiles by average hours age 30-50. Men only. Cohorts are pooled.

Show average hours by age / quartile.

Figure 3 makes 2 points:

1. Hard workers work hard at all ages.

2. Age profiles of hours are roughly flat for all quartiles, except the lowest. No difference in age profile of hours for most.

1.3.4 Persistence

Question: Are hours differences across persons very persistent?

Compute average hours before age 40 and after age 40. Take N year interval on each side.

Result:

Correlation about 0.62. For quintile transition matrix, second largest Eigenvalue about 0.57.

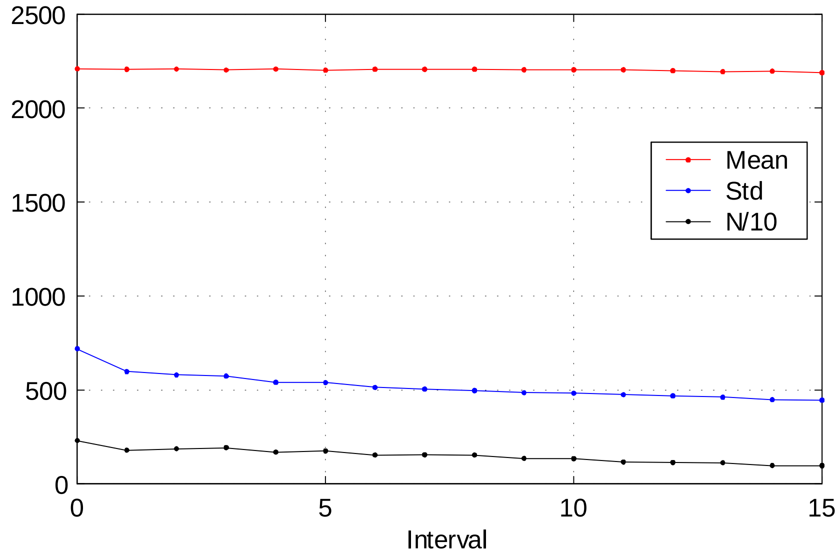

Figure 2: Average hours - men.

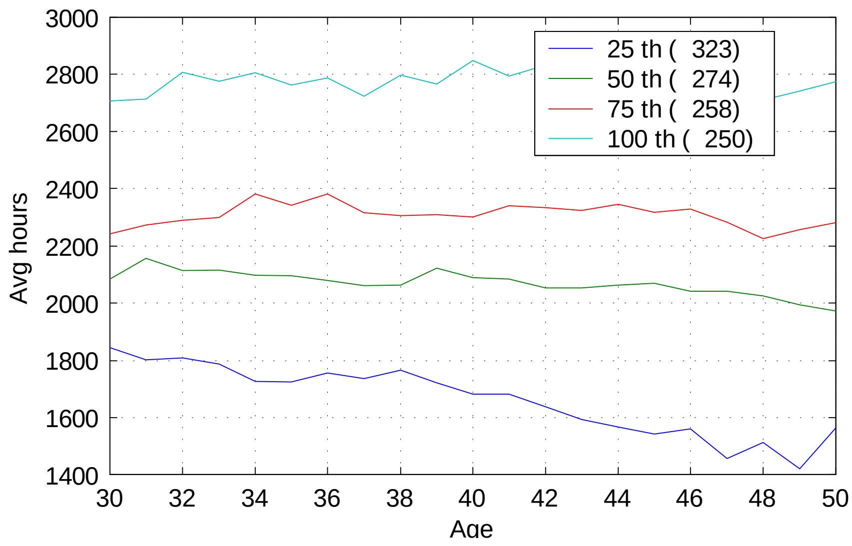

Figure 3: Hours by age / lifetime hours

This is essentially independent of N! Short averages are about as persistent as long averages. Figure 4 plots average hours age 41-50 vs age 30-39. High persistence.

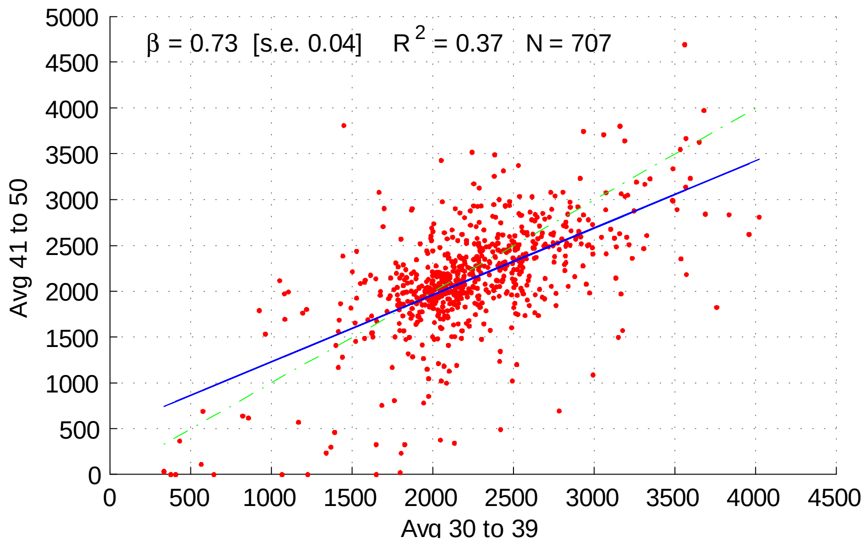

Figure 4: Persistence of 10 year avg hours

1.3.5 Regression: Average hours

Question: Which variables "explain" differences in average hours worked?

Prime age males age 30-50.

Regress average hours worked on education, fraction of time self-employed, fraction of time with spouse, average health status.

Omitted regressors that turn out not to be important: number of children in fam unit, wage, log wage.

Results (sorry about the format):

```
 Regressor beta StdDev Eff1Std Eff90/10
 Constant 2.057 0.185 0.000 0.000
 School 0.015 0.007 0.039 0.107
 Frac SE 0.449 0.054 0.126 0.292
 Frac married 0.071 0.137 0.008 0.018
 N children 0.021 0.018 0.018 0.045
 Wage -0.002 0.002 -0.016 -0.027
 Spouse hours -0.016 0.043 -0.011 -0.028
 Spouse earnings -0.013 0.019 -0.024 -0.045
Dummy: Sp earn 0 -0.258 0.167 -0.036 0.000
 Health -0.468 0.079 -0.095 -0.161

 Variable StdDev 10th pct 90th pct
 Dependent 0.436 1.800 2.740
 Constant 0.000 1.000 1.000
 School 2.553 10.000 17.000
```

```
 Frac SE 0.281 0.000 0.650
 Frac married 0.113 0.750 1.000
 N children 0.893 0.553 2.757
 Wage 10.374 7.261 25.058
 Spouse hours 0.646 0.217 1.946
 Spouse earnings 1.876 6.592 10.136
Dummy: Sp earn 0 0.139 0.000 0.000
 Health 0.203 0.000 0.343
 R2: 0.169 n: 715
```

Eff1Std is the effect of a 1 std dev change in each regressor.

Most important: health (negative sign means: those with poor health work less), self-employment.

80% of the variation remains unexplained.

1.3.6 Hours vs. Weeks

It is virtually impossible in the PSID to decompose hours variation in hours/week vs weeks/year variation.

Figures 5 and 6 plot weeks/year on main jobs (times avg hours/week for scale) against hours/year.

For women: most variation in hours is due to weeks, relatively little is due to hours/week. For men, the same is true only for those who work little. Those who work a lot max out on weeks and then vary hours/week (perhaps by adding extra jobs).

Caveat: Low weeks could be due to additional jobs that come between the "main jobs." But that seems rare, especially for women.

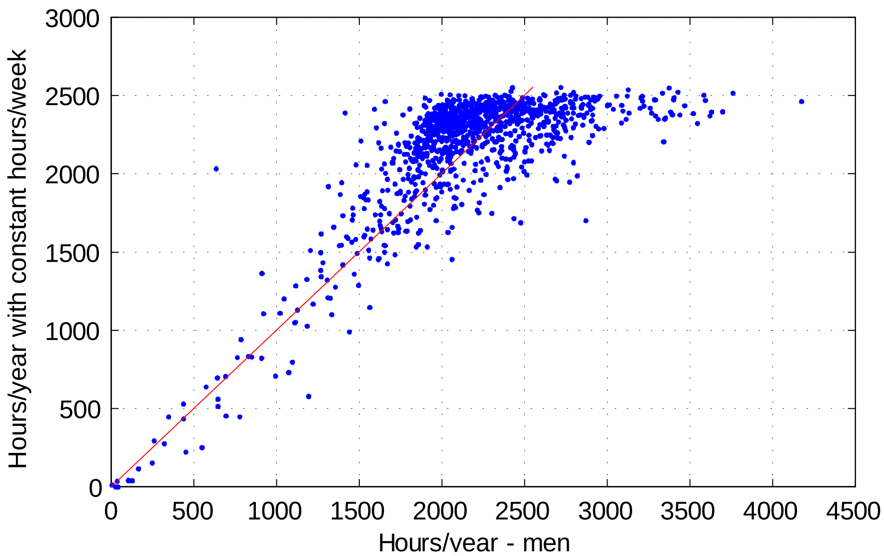

Figure 5: Hours vs weeks - men

1.3.7 Reasons for weeks variation

The PSID asks how many weeks persons missed work due to unemployment, illness, strikes, vacations, out of labor force.

The answers seem very noisy. For most persons, the sum of weeks worked and weeks missed is not close to 52. For quite a few it is more than 52.

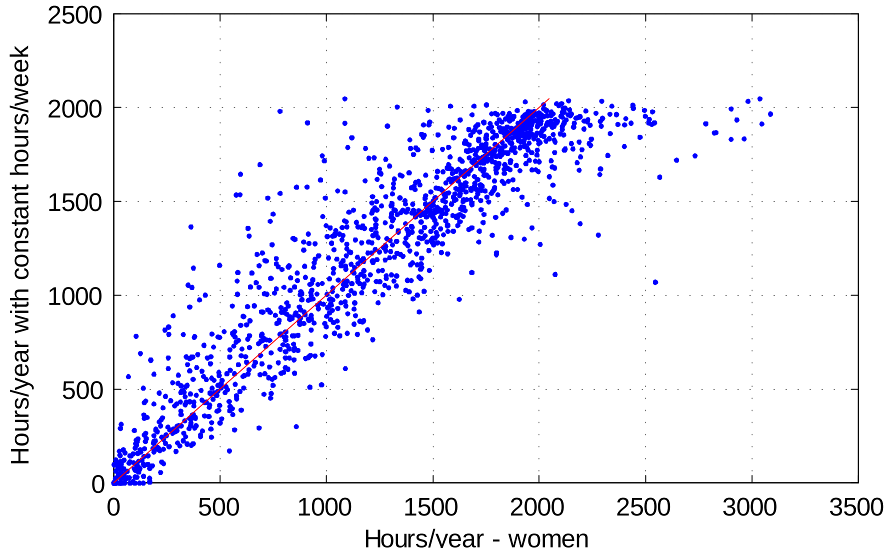

Figure 6: Hours vs. weeks - women

The incidence of unemployment etc does not differ all that much between high and low hours persons. The data are not useful for identifying why persons worked for less than the entire year.

2 Age Profiles

Age profiles are estimated as follows.

By school class and sex, regress the dependent variable (e.g. ln real wage) y on a quartic in experience and on year dummies.

$$y_{it} = \beta_0 + X_{it}\beta + TD_{it}\gamma + \varepsilon_{it} \tag{1}$$

The age profiles shown below are the $X\beta$ (plus the 1990 time dummy for scale). All are for men, age 18 to 65.

Age profiles of standard deviations are constructed as follows:

start from the residuals of (1). Run another regression of the same form:

$$\varepsilon_{it}^2 = \delta_0 + X_{it}\delta + TD_{it}\varphi + \eta_{it} \tag{2}$$

The age profile of inequality is $X_{it}\delta$ (plus the 1990 time dummy for scale).

Because these are done in logs, I restrict the sample to those working at least 500 hours per year.

2.1 Hours

Figure 7 shows the experience log hours profile for men. I do not get the usual flat portion in mean hours (why not? because I take out year effects?). The more educated work more (error in previous version of the graph: I didn't add the time dummies back in, which messed up the scale).

Figure 8 shows $\sigma(\ln(hours))$ for men by experience. Magnitudes for middle experience are similar to Storesletten et al. (2001). In contrast to their finding, the variance is U-shaped in experience instead of flat.

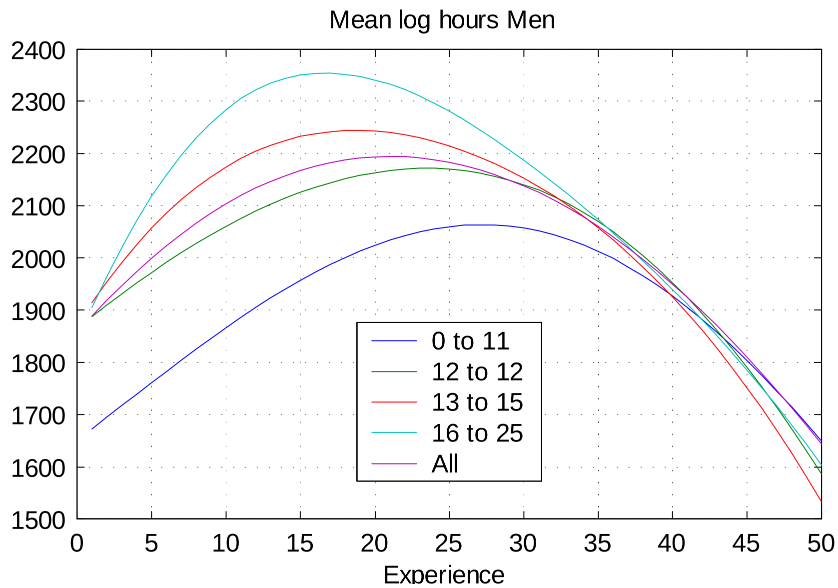

Figure 7: Experience hours profile - men.

A surprise: The std dev of log hours at middle age is only about 0.3. Given the high standard deviation of average hours around age 40 I expected more. One reason is that the regression filters out observations below 500 hours/year.

For hours, it is useful to run the regression in levels, so that persons with 0 hours can be included. The mean hours profiles are in figure 9. It matters to run the regression in levels.

The std deviations are in figure 10. The std deviations have similar levels to the raw data and a similar u-shape, suggesting that year effects are not important. Comparison with the log regression reveals that omitting persons with low hours has a big effect on the standard deviation. Even within age / education groups, the standard deviation of hours is about 800 (some of this is measurement error, but probably not a lot given that average hours are also highly dispersed).

2.2 Literature: Hours data

For comparison, results from the literature.

2.2.1 Mean Hours per person

McGrattan & Rogerson (2004). Total population. By cohort. Mean hours per person. Figures 11 to 13.

Point: Hours peak at 50. Fairly flat between 30 and 50.

Of course, men and women are very different.

2.2.2 Mean hours by education / age

Card 1994. Synthetic cohorts. Men. Point: Flat between 30 and 50, even though wage profiles look quite different. Figure 14.

2.2.3 Inequality by age

Heathcote et al. (2005 JEEA). Figure 15

Inequality measures by age, using either cohort effects or (preferred) time effects.

Measurement error will bias the covariance measures.

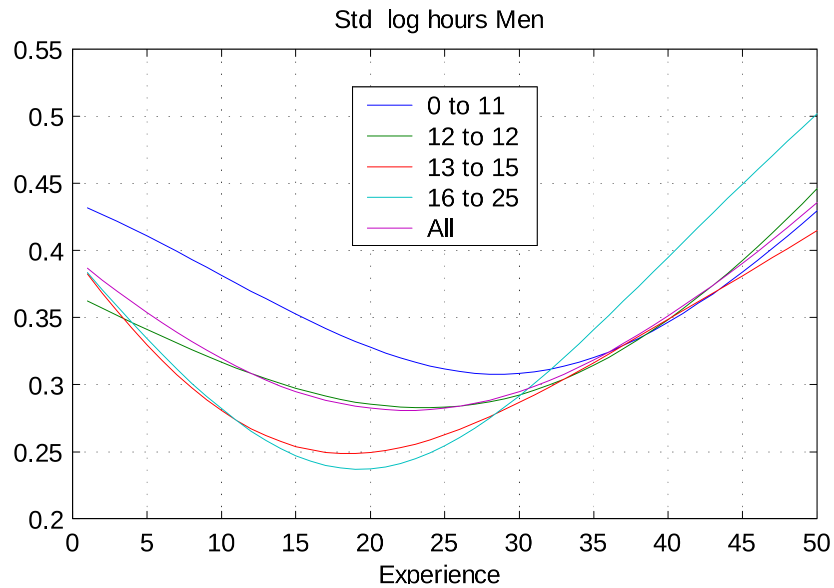

Figure 8: Std dev ln(hours) - men.

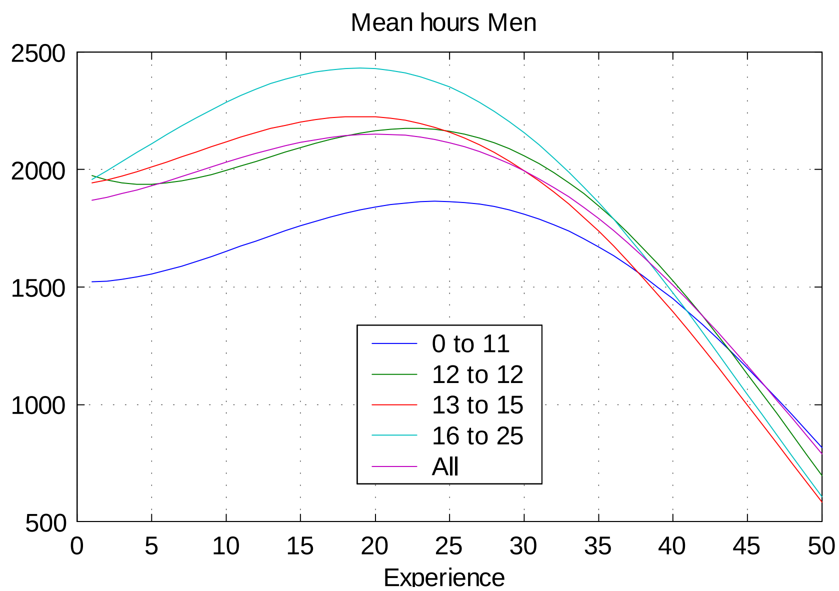

Figure 9: Experience hours profile - men.

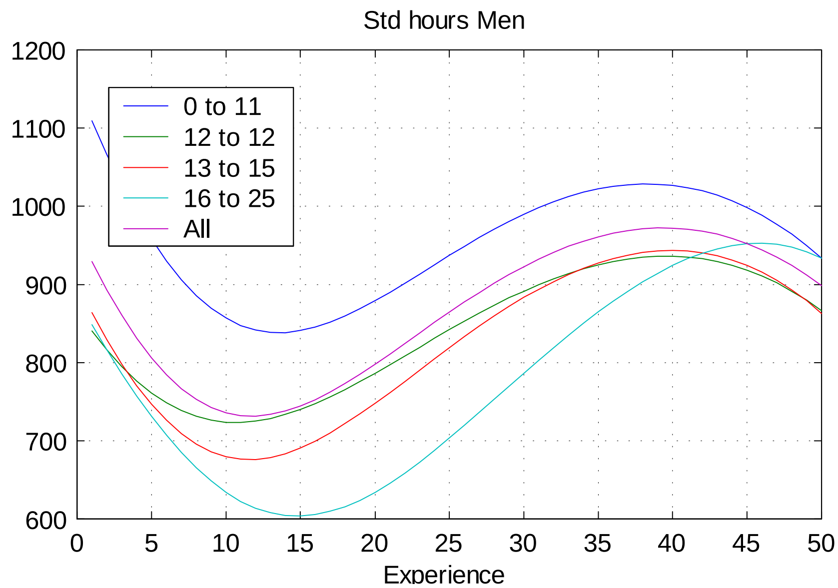

Figure 10: Experience profile of std hours - men.

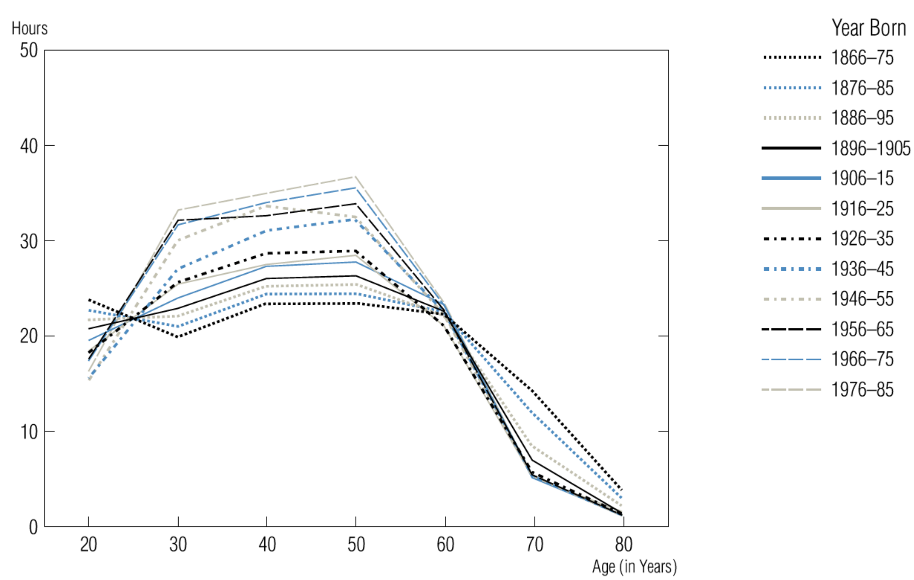

Figure 11: Mean hours. All.

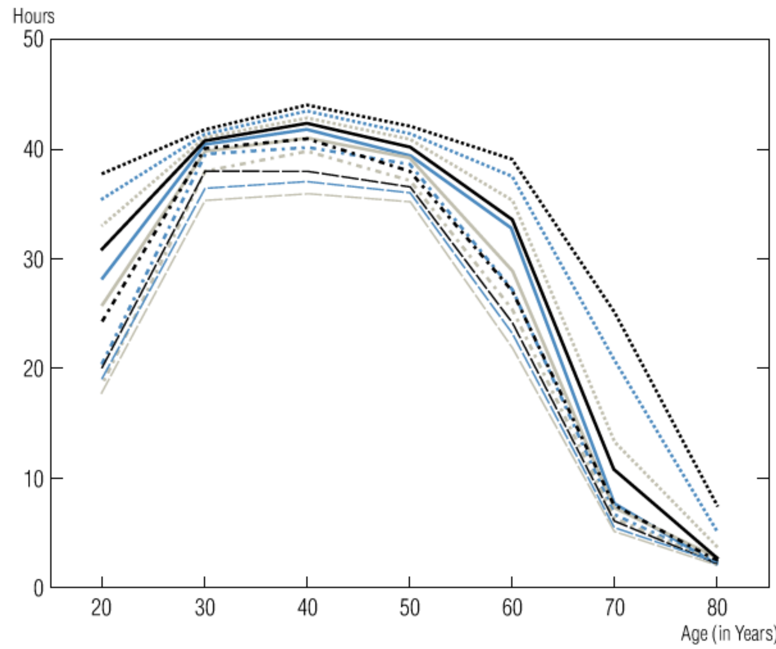

Figure 12: Mean hours. Men.

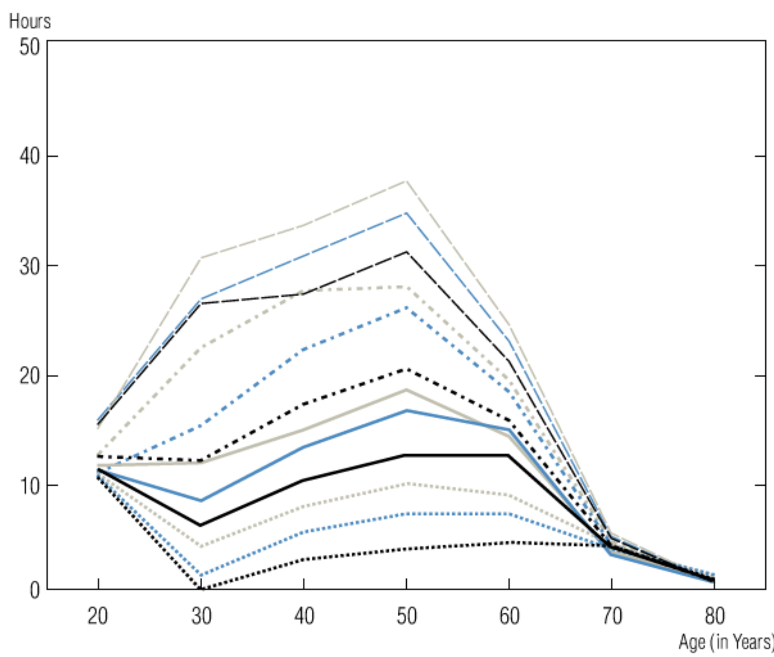

Figure 13: Mean hours: Women.

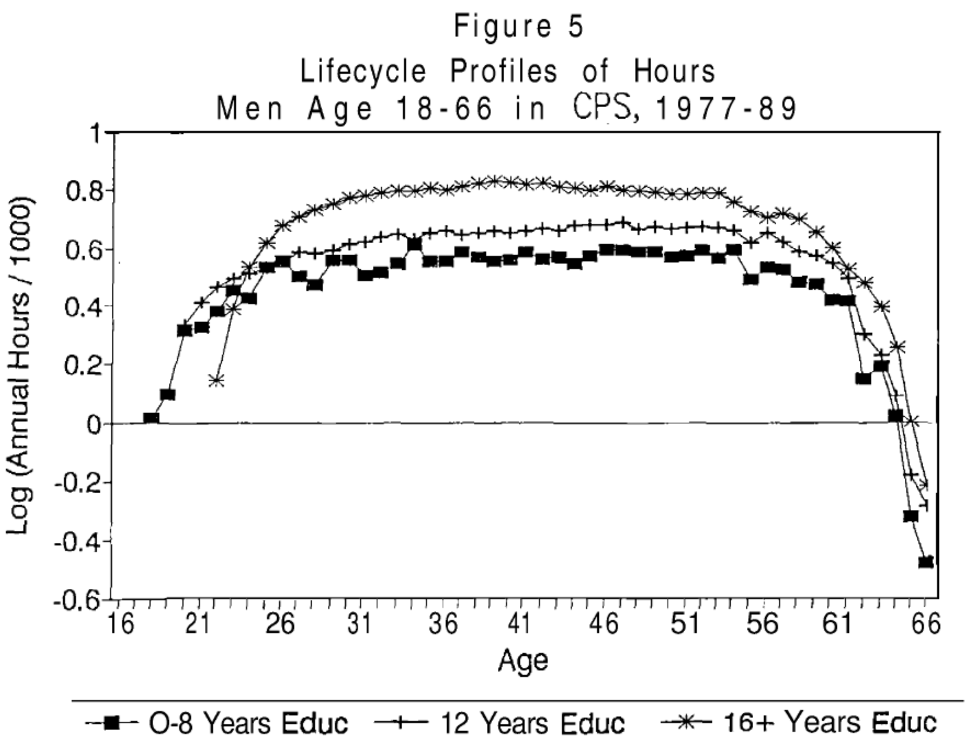

Figure 14: Card (1994).

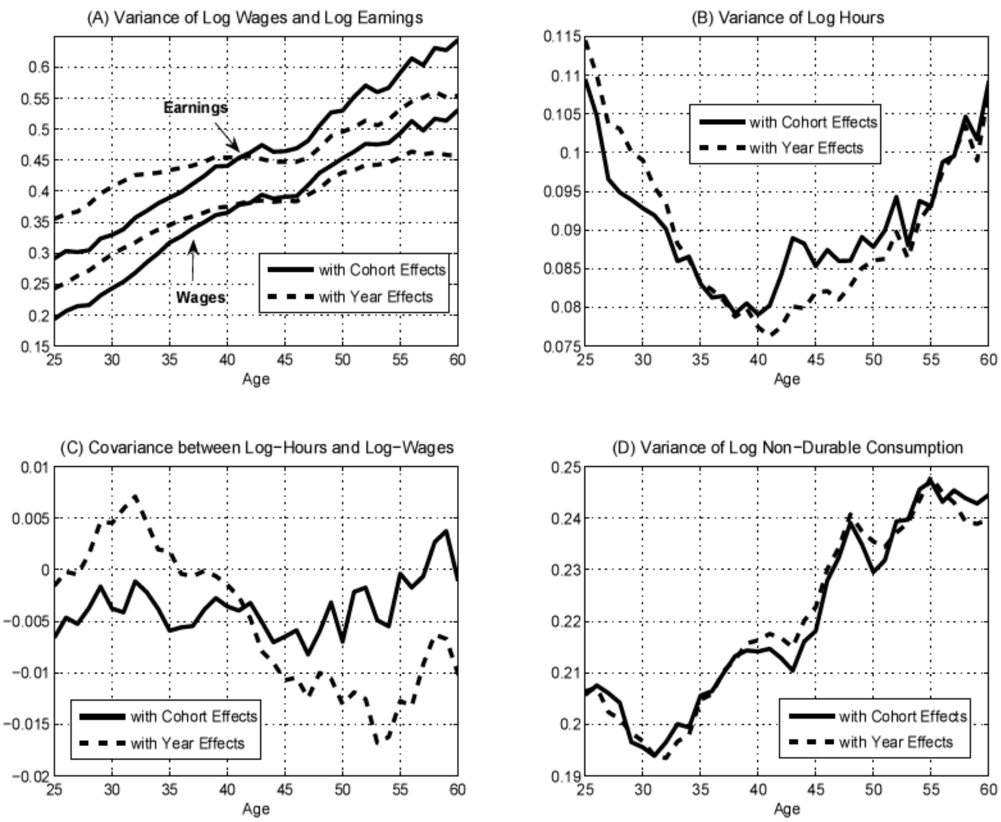

Figure 15: HSV 2005

2.3 Wages

Age log wage profiles (fig 16) look as usual.

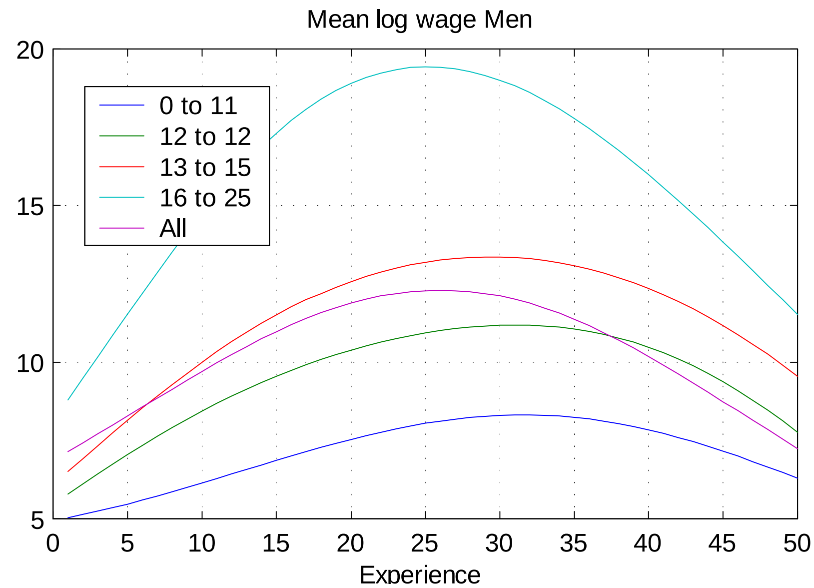

Figure 16: Experience wage profile - men.

Standard deviation of log wage in figure 17.

The time dummies from this regression are shown in figure 18.

2.4 Earnings

Age earnings profiles look as usual.

For the std deviation (fig 20), I do not get the large, linear increase in age that Storesletten et al. get.

Figure 17: Std dev of log wage. Men.

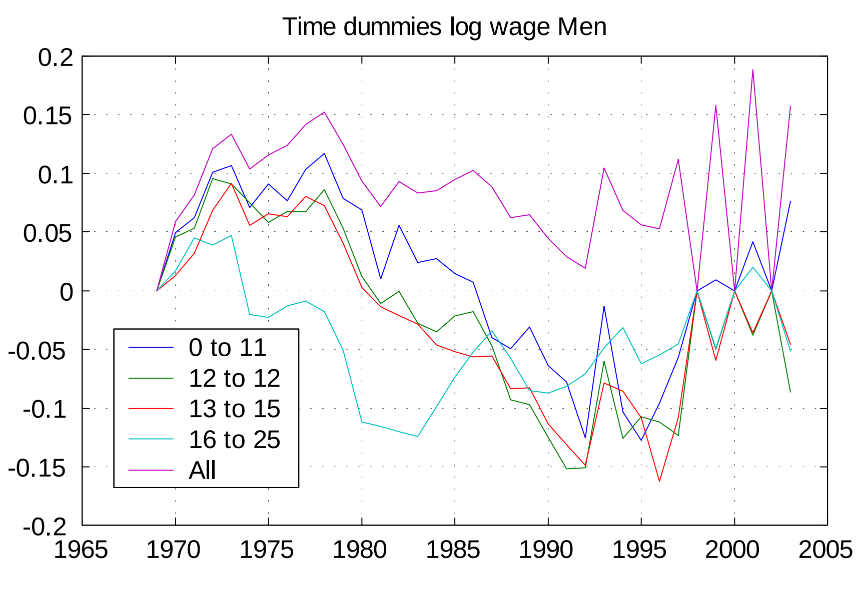

Figure 18: Year dummies. Male wages.

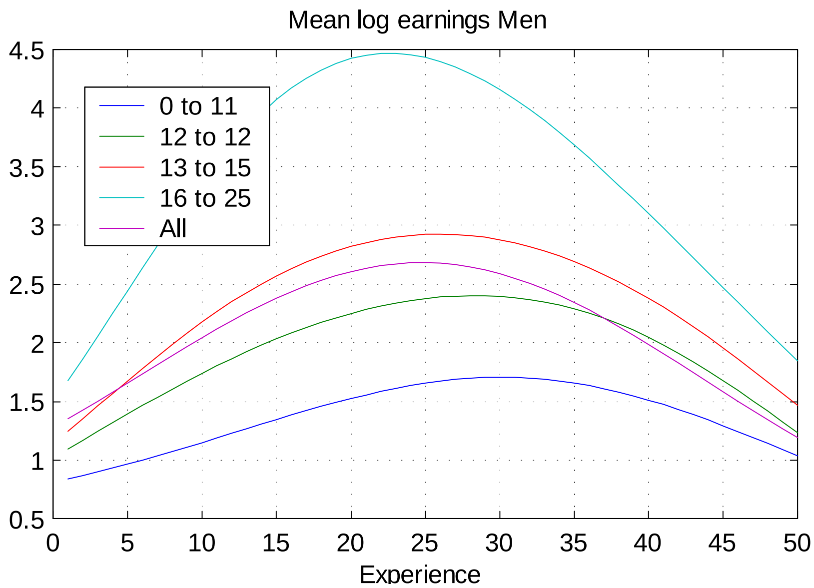

Figure 19: Log earnings profile - men.

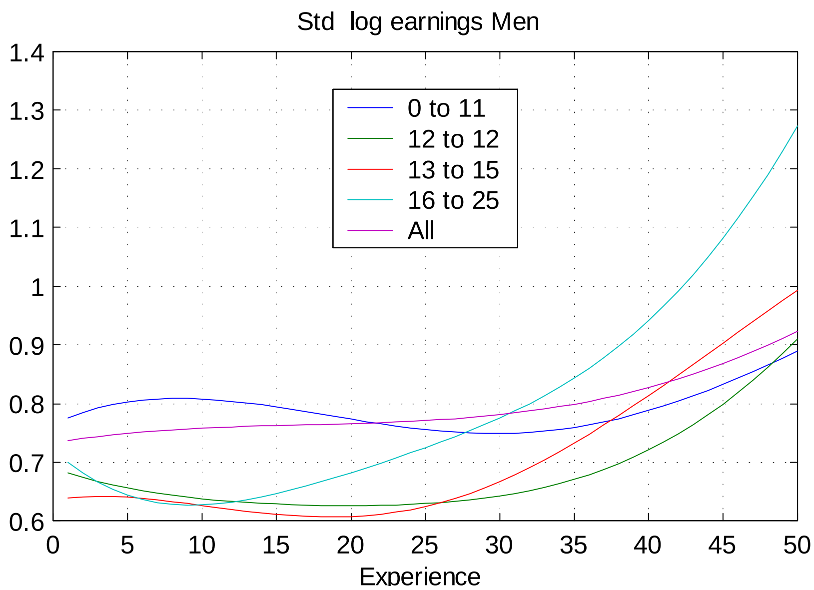

Figure 20: Std dev of log earnings - men.