Department of Economics   Spring 2015
University of California   Economics 113
Berkeley   Professor Olney

Problem Set #1 (10 points possible)
Due: in lecture, Thursday, February 5, no later than 11:10 a.m.

Bring your problem set to lecture and turn it in before class begins. Problem sets are late after 11:10. Late problem sets lose 5 points. No problem sets accepted after 3 p.m. Friday February 6.

Use the regression results summarized in the table below to answer the questions. **Write your answers on this sheet.** (Neat hand writing is fine.) Attach your work for #3.

In "City Size and Ethnic Discrimination: Michigan Agricultural Implements and Iron Working Industries, 1890" (*J. of Economic History* 42 (Dec. 1984): 825-845; http://www.jstor.org/stable/2121110) Joan Hannon asks whether incomes of immigrants and the children of immigrants were lower than those of native-born workers. Her data set covers Michigan in 1890 and distinguishes between large cities (Grand Rapids and Detroit) and small cities. The average annual earnings was $487.02 in large cities and $476.42 in small cities. You are not required nor expected to do so, but if you would like to download the data set and play with it in Stata yourself, it is available at http://eh.net/database/historical-labor-statistics-project-series/, mi08a and mi08b (click on data & codebook zip files at bottom of the webpage). Table 2 summarizes Hannon's findings.

TABLE 2
MICHIGAN AGRICULTURAL IMPLEMENTS AND IRON WORKING
INDUSTRIES, 1890: ESTIMATED REDUCED FORM EARNINGS EQUATIONS
(Standard Errors in Parentheses)

Independent Variable	Total Sample	Grand Rapids and Detroit	Small Cities
	Dependent Variable = Ln (Y)		
Constant	3.9795[a]	4.0243[a]	3.8135[a]
	(.1237)	(.1459)	(.2256)
N	−.5184[a]	−1.1731[a]	.4152
	(.1831)	(.2472)	(.3008)
P	1.0529[a]	1.0282[b]	.4331[c]
	(.1824)	(.2884)	(.2486)
MARRIED	.0359	.0059	.0887[b]
	(.0264)	(.0350)	(.0377)
AGEMIG	.1065[a]	.1046[a]	.1140[a]
	(.0075)	(.0090)	(.0134)
YRSUS	.1157[a]	.1146[a]	.1234[a]
	(.0077)	(.0091)	(.1403)
AGE	.1501[a]	.1920[a]	.1020[a]
	(.0096)	(.0150)	(.0133)
PAGE	−.0668[a]	−.0635[a]	−.0315[b]
	(.0115)	(.0189)	(.0150)
AGE^2	−.1300[a]	−.1264[a]	−.1421[a]
	(.0102)	(.0120)	(.0185)
$NAGE^2$	−.0523[a]	−.1152[a]	.0205
	(.0173)	(.0273)	(.0256)
$PAGE^2$	.0892[a]	.0990[a]	.0410[b]
	(.0168)	(.0292)	(.0210)
R^2	.3467	.4386	.2929
$\bar{R}^2$	.3437	.4338	.2850
NOBS	2210	1178	1032

[a] Significant at less than 1 percent level.
[b] Significant at less than 5 percent level.
[c] Significant at less than 10 percent level.

Where   each observation is a different person; NOBS is the number of observations; N (nativity) = 1 if the person is native born, 0 if foreign born; P (parents' nativity) = 1 if parents are native born, 0 if foreign born; MARRIED = 1 if married, 0 if single; AGEMIG = age at migration (=AGE-YRSUS) if foreign born, 0 if native born; YRSUS = Years in US if foreign born, 0 if native born; AGE = age if native born, 0 if foreign born; PAGE = P * AGE; AGE^2 = Age^2/100; $NAGE^2$ = N * AGE^2; $PAGE^2$ = P * AGE^2.

(2 points for each question)

1. Go through the table on the other side and use asterisks to indicate which variables are statistically significant at the 95% level and at the 99% level. In the space below, list the variables that are statistically significant in the Large Cities sample but not in the Small Cities sample, or vice versa.

2. All else constant, how different are the wages of married versus single men in large cities? In small cities? Are the results statistically significant? Do the results have practical (or economic) significance, as defined in the section exercise, week of February 2? Explain.

3. Hannon uses a number of variables to measure age. Compare two individuals: one is native born of native-born parents, the other is foreign born and migrated to the U.S. at age 18. They are alike in all other regards. Use the regression results to calculate the values for the table below. Attach your work or no points.

	Difference in Income between Native Born (of Native Parents) and Foreign Born	
Age	Large Cities	Small Cities
20		
30		

4. Native born men of native born parents earn more than native born men of foreign born parents in large cities but not in small cities. Based on Hannon's results, what factors could explain the difference in income?

5. If you were to test differences in incomes of native born and foreign born men in 1890 Michigan, what two additional variables would you want to include? What effect would you expect each of those variables to have?