Background for Part I: Nature vs. Nurture

What is the relative importance of "nature" (genes) vs. "nurture" (social and family environment) in determining economic outcomes? This part examines this question using data from a large adoption agency that placed Korean children in American families between 1964 and 1985.

At this agency, the parents must file an application, pass a criminal background check, and attend adoption classes; if all goes well, they are then deemed eligible. Children are then matched with eligible parents on a first-come, first-serve basis.

The data set contains data on the parents and their children, both adopted and non-adopted (natural), at the time of adoption and also at the end of the study when they are adults. Some households have multiple adoptees; for the purpose of this analysis, assume that the Korean adoptees in the same household are not related by blood. The analysis is restricted to adoptees who are at least 25 years of age at the end of the study.

Variables in the Adoption Data Set

Variable	Definition
Child's characteristics upon adoption	
Adopted	= 1 if adoptee, = 0 if non-adopted
Weight at adoption	Weight of child upon adoption (pounds)
Height at adoption	Height of child upon adoption (inches)
Child's characteristics at end of study (as an adult)	
Child's education	Years of education of adult child
College grad	= 1 if adult child graduates from a 4-year college, = 0 otherwise
Child's income	Income of adult child
Child's BMI	BMI of adult child. The BMI is the Body Mass Index, which is weight (in kilograms) divided by the square of height (in meters), so units are kg/m^2.
Child drinks	= 1 if adult child drinks alcohol, = 0 otherwise
Parent characteristics	
Mother's education	Years of education of mother
Father's education	Years of education of father
Log Parent's Income	natural logarithm of parent's income in dollars
Mother's BMI	BMI of mother (kg/m^2)
Father's BMI	BMI of father (kg/m^2)
Mother drinks	= 1 if mother drinks alcohol, = 0 otherwise
Father drinks	= 1 if father drinks alcohol, = 0 otherwise
Year binary variables	Binary variables indicating the year of adoption (the first year of program is the omitted or "base" year)

Table 1. Regression of adoptee outcome variables on pre-adoption parental characteristics

Dependent variable	(1) Child's Years of Education	(2) Child's Years of Education	(3) College Grad	(4) Log Child's Income	(5) Child's BMI	(6) Child Drinks
Regressors:						
Mother's Education	0.097**	0.084**	0.021*	0.016	-0.081	0.010
	(0.027)	(0.031)	(0.008)	(0.013)	(0.061)	(0.009)
Father's Education	-0.001	-0.041	-0.004	-0.004	-0.037	0.010
	(0.032)	(0.055)	(0.007)	(0.011)	(0.052)	(0.007)
Log parent's income	-0.018	-0.005	0.011	0.024	-0.412	0.015
	(0.113)	(0.032)	(0.027)	(0.040)	(0.219)	(0.028)
Mother's BMI	-0.088**	0.180	-0.017**	-0.004	0.006	-0.001
	(0.024)	(0.183)	(0.004)	(0.006)	(0.028)	(0.004)
Father's BMI	0.007	-0.008	-0.000	-0.000	-0.004	0.004
	(0.020)	(0.112)	(0.004)	(0.007)	(0.038)	(0.004)
(Mother's BMI)^2		-0.091				
		(0.118)				
(Father's BMI)^2		-0.081				
		(0.202)				
(Mother's BMI) x (Father's BMI)		0.274				
		(0.206)				
Mother Drinks	-0.039	-0.715**	-0.043	-0.007	-0.345	0.135**
	(0.205)	(0.175)	(0.046)	(0.066)	(0.392)	(0.045)
Father Drinks	0.263	0.000	0.050	0.030	0.580	0.061
	(0.212)	(0.002)	(0.048)	(0.070)	(0.396)	(0.046)
Child is Male	-0.723**	-0.004	-0.159**	-0.259**	1.927**	0.068
	(0.177)	(0.003)	(0.041)	(0.059)	(0.301)	(0.040)
Constant	16.902**	0.002	0.766**	3.758**	31.183**	0.121
	(1.063)	(0.004)	(0.264)	(0.466)	(2.350)	(0.315)
Year binary variables?	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic testing: (Mother's BMI)^2, (Father's BMI)^2, (Mother's BMI) x (Father's BMI) = 0 (*p*-value)		0.57				
		(0.634)				
Observations	897	897	897	874	878	893
Adjusted R-squared	0.03	0.03	0.01	0.06	0.04	0.04

Notes: All regressions are estimated by OLS. Clustered standard errors are given in parentheses, where the clustering occurs at the level of the family. * significant at 5%; ** significant at 1%.

Table 2. Probit regressions of outcome variables on pre-adoption parental characteristics for adoptee and non-adoptee children

	(1)	(2)	(3)	(4)
Dependent variable	**College Grad**	**Child Drinks**	**College Grad**	**Child Drinks**
Data are for:	**Adoptees**	**Adoptees**	**Non-adoptees**	**Non-adoptees**
Regressors:				
Mother's Education	0.057**	0.013	0.097**	0.032
	(0.019)	(0.021)	(0.025)	(0.025)
Father's Education	-0.010	0.022	0.105**	0.021
	(0.017)	(0.018)	(0.020)	(0.022)
Log Parent's Income	0.008	0.079	0.108	-0.067
	(0.064)	(0.066)	(0.076)	(0.077)
Mother's BMI	-0.086**	0.000	-0.108**	0.000
	(0.019)	(0.009)	(0.022)	(0.013)
Father's BMI	-0.003	0.000	-0.030*	0.010
	(0.010)	(0.010)	(0.012)	(0.015)
Mother Drinks	-0.054	0.374**	0.039	0.489**
	(0.109)	(0.106)	(0.128)	(0.131)
Father Drinks	0.042	0.211	0.134	0.611**
	(0.112)	(0.110)	(0.132)	(0.132)
Child is Male	-0.397**	0.203*	-0.063	0.355**
	(0.090)	(0.097)	(0.098)	(0.100)
Constant	0.142	-1.300*	-1.680**	-1.396*
	(0.566)	(0.570)	(0.607)	(0.669)
Year binary variables?	Yes	Yes	Yes	Yes
Observations	1088	1083	943	933

Notes: All regressions are probit. Clustered standard errors are given in parentheses, where the clustering occurs at the level of the family.
* significant at 5%; ** significant at 1%

Background for Part II: Fast-Food TV Advertising and Childhood Obesity

Childhood obesity is a health problem of significant concern. In the 1960s, approximately 4 percent of American children ages 6 to 11 were overweight; by 1999, 13 percent of American children were overweight. Measured in terms of BMI, the average BMI for children rose from 16.63 in the 1960s to 17.37 in 1999, an increase of almost 5%; this is a large increase in historical and medical terms. [The BMI is the body mass index, which is weight (in kilograms) divided by the square of height (in meters), so the units of the BMI are kg/m^2.]

A shift to a high-fat, high-calorie childhood diet – the sort of food found at fast-food restaurants – is one possible reason for the increase in childhood BMI. This section considers whether exposure to fast-food advertising on TV plays a role in this increase.

The data set is a cross-sectional data set on children aged 6-11 in the U.S. in 1997. It contains data on children's characteristics, family characteristics, TV viewing by the child, and characteristics of the child's county.

Variables in the Childhood BMI Data Set

Variable	Definition
Child characteristics	
BMI	Child's BMI (kilograms/meter^2)
TV Exposure	Number of hours per week of fast-food TV ads seen by the child
Age	Child's age (years)
Other individual variables	Child's race and sex, family income, mother's BMI, and mother employed/not employed
County characteristics	
Price of TV advertising	Average price of TV advertising in the child's county in 1997 ($/second)
Number of households with TV	Number of households in the child's county with a TV (hundreds of thousands)
Temperature	Average annual temperature in child's county (degrees Fahrenheit)
Other county variables	Number of fast-food restaurants per capita, number of full-service restaurants per capita, and price indexes for fast-food restaurant meals, full-service restaurant meals, and at-home restaurant meals

Table 3. Children's BMI and Fast-Food TV Advertising

Dependent variable	**(1)** **BMI**	**(2)** **TV exposure**	**(3)** **BMI**
Estimation method	OLS	OLS	Two Stage Least Squares[a]
Regressors:			
TV exposure	.315** (.111)	--	.336* (.150)
Age	.429** (.028)	.021* (.010)	.388** (.048)
Price of TV advertising	--	-.148** (.013)	--
Number of households with TV	--	.100[+] (.064)	--
Temperature	--	4.711 (5.50)	--
Other individual variables?	Yes	Yes	Yes
Other county variables?	Yes	Yes	Yes
F-statistic testing: coefficients on Price of TV advertising, no. households with TV, and Temperature = 0	--	41.92	--
J-statistic	--	--	.308
Number of observations	6,818	6,818	6,818

Notes: Heteroskedasticity-robust standard errors appear in parentheses under regression coefficients, and *p*-values appear in parentheses under *F*-statistics. All regressions contain the other individual variables (child's race, male/female, family income, mother's BMI, mother employed/not employed) and the other county variables (number of fast-food restaurants per capita, number of full-service restaurants per capita, price indexes for fast-food restaurant meals, full-service restaurant meals, and at-home restaurant meals).

[a]Instruments for the TSLS regression are the *Price of TV Advertising*, *Number of households with TV*, and *Temperature*.

Significant at the: **1%, *5%, [+]10% significance level.