ASAP Assignment 2

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1 Difference in Difference

Description: You are tasked with estimating the effects of the 1993 policy intervention on labor supply for single women by whether or not they had children. –¿ The relevant varibales in this case are: state - US-State/ provice of residence year - Year urate - US-State/province unemployment rate children - number of children per women nonwhite - nonwhite finc - annual family income earn - anual earnings (of women) age - age of women ed - Years of education work - Indicator work status (employed or not) unearn - unearn Income

Outcome variable: INDICATOR WORK STATUS Time indicator: at 1993 (beginning) create time variable Goal: estimate the effect of the 1993 policy intervention on labor supply for single women by whether or not they had children (Dummy for whether they had children or not??)

The unit of analysis are females in the US

Question: The main predictor is meant to be whether women has children; Should we use that as a dummy or numeric variable?? –¿ something like degree of treatment

1.1 Indicate which of the coefficients(s) from equation (1) yield the following outcomes

NOte possibly delete duplicates SEE SLIDE 57 ff

Important: we canot identify the monthrs; so If they become mothers at some point, we will assume that these are taken out!

$(1) y_{it} = \beta_0 + \beta_1 + \beta_2 + \beta_3 D_i T_t + \epsilon_{it}$

$E = (y_{T=1}|D = 1)$ $E = (y_{T=0}|D = 1)$ $E = (y_{T=1}|D = 0)$ $E = (y_{T=0}|D = 0)$

$[E(y_{T=1}|D = 1) - E(y_{T=0}|D = 1)] - [E(y_{T=1}|D = 0) - E(y_{T=0}|D = 0)]$

1.2 Task 2: Provide graphic as on slide 55

NOTES: This "visoual" proof is no real proove; this is just visual confirmation of what we assume; but does this really pertain to the case that the TAX credit is the real cause? What about the case of subsections of the population? and we still do not know whether this is really causal and not like the economy heating up¡ Predictor is WHETHER YOU HAVE CHILD OR NOT

1.3 Task 3: Summary Statistics for data

Table 1: Descriptive Statistics of Numeric Indepdenent and Dependent Varaible

Statistic	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Family Income	15,255.320	19,444.250	0.000	5,123.418	9,636.664	18,659.180	575,616.800
Earnings	10,432.480	18,200.760	0.000	0.000	3,332.180	14,321.220	537,880.600
Age	35.210	10.157	20	26	34	44	54
Education	8.806	2.636	0	7	10	11	11
Education Years	4.823	7.123	0.000	0.000	2.973	6.864	134.058
Unearned Income	1.193	1.382	0	0	1	2	9
Count Children	0.513	0.500	0	0	1	1	1

Notes: N = 13746

1.4 Task 4: Matrix Diff in Diff

NOte: by taking the average of the periods we have two small problems: 1) the AFTER period is longer; so should we really do that?

1.5 Task 5: Analyze the DiD effect with appropriate regression models for the three dependent variables

Table 2: Descriptive Statistics of ECIC; With Children

Statistic	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Family Income	12,750.390	15,739.050	0.000	4,652.465	8,425.197	15,218.720	410,507.600
Earnings	7,909.934	14,956.930	0.000	0.000	1,110.727	11,107.270	366,095.500
Age	32.717	8.630	20	25	32	39	54
Education	9.001	2.408	0	7	10	11	11
Education Years	4.840	5.872	0.000	0.071	3.761	7.070	102.958
Unearned Income	2.097	1.209	1	1	2	3	9
Count Children	0.466	0.499	0	0	0	1	1

Notes: N = 7819

Table 3: Descriptive Statistics of ECIC; Without Children

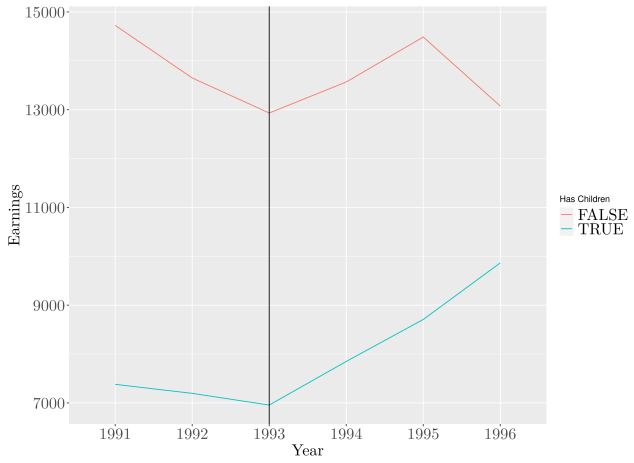
Statistic	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Family Income	18,559.860	23,041.780	0.000	5,793.092	11,912.950	24,391.010	575,616.800
Earnings	13,760.260	21,301.400	0.000	0.000	7,664.014	19,447.610	537,880.600
Age	38.498	11.046	20	28	40	49	54
Education	8.549	2.889	0	7	10	11	11
Education Years	4.800	8.496	0.000	0.000	1.248	6.528	134.058
Unearned Income	0.000	0.000	0	0	0	0	0
Count Children	0.574	0.494	0	0	1	1	1

Notes: N = 5927

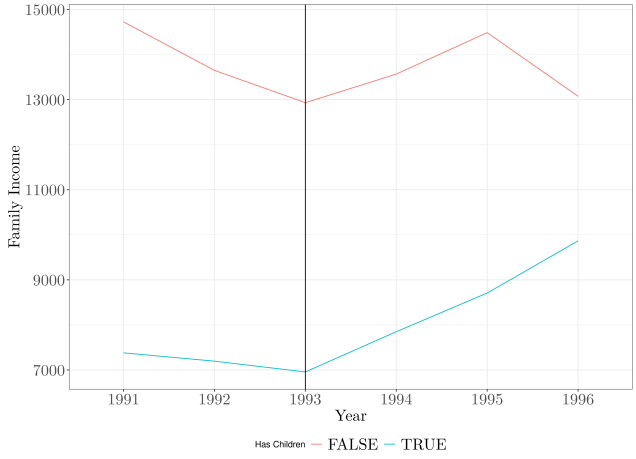
Table 4: Diff-in-Diff Matrix

		Earning		Family Income		Work Participation	
	dperiod	Childless	Has Child	Childless	Has Child	Childless	Has Child
Before	1	14,203.900	7,290.380	19,159.190	12,140.900	0.580	0.450
After	2	13,507.900	8,277.200	18,218.950	13,111.690	0.570	0.480
Difference		-696.000	986.810	-940.240	970.800	-0.010	0.030

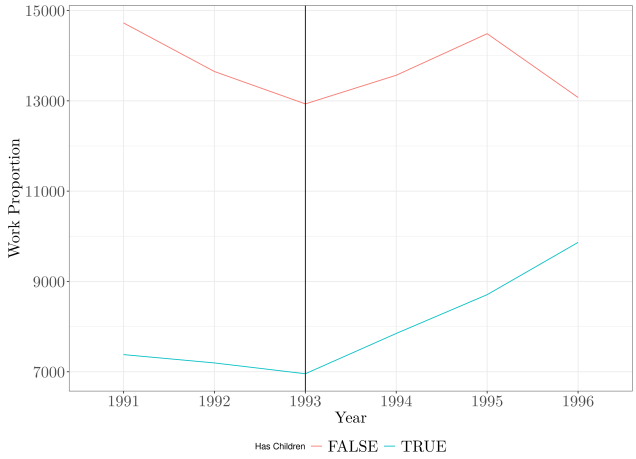
Notes: N = 5927 Childless; N = 7819 Has one or more Children



(a) Annual Earnings by Females with(out) Children



(b) Family Earnings Earnings by Females with(out) Children



(c) Work Participation by Females with(out) Children

Figure 1: Pre-Post Intervention of EICT Credit for Women with(out) Children

NOTE STANDARDIZED COEFFICIENTS ARE NOT REPORTED AS THEY ARE USELESS IN THIS CONTEXT; WE ARE NOT LOOKIGN FOR EFFECT SIZE BUT RATHER THE CASE OF

Note:standardized coefficinets will NOT be included as they are of no interpretable interest here and there is no real effect size we want to estimate in the first place.

Also: give a short theroy for why control variables were included! LOOK AT PQRM QUANTITATIVE CORUSE AT UVA; THEY CALLED IT SOMETHING SPECIAL!

IMPORTANT: EXPLAIN WHY IN CERTAIN MODELS THE CONTROL VARIABLES WORK AND WHY THEY DONT WORK IN OTHER MODELS!! Build a theory in this regard

NOTE ROBUST STANDARD ERROS MIGHT NOT EVEN BE NEEDED IN THIS CASE DUE TO THE THEORY BEHIND DIFF IN DIFF

Table 5: Non-Robust Regression Results Part 3

	Dependent variable:					
	earn		finc		work	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	14,899.900***	12,958.640***	20,099.430***	16,218.430***	0.582***	0.532***
	(828.375)	(1,550.012)	(886.522)	(1,655.347)	(0.023)	(0.043)
has_children1	−8,596.327***	−8,394.973***	−8,929.330***	−8,269.567***	−0.159***	−0.150***
	(1,093.444)	(1,096.506)	(1,170.197)	(1,171.022)	(0.030)	(0.030)
dperiod	−695.997	−536.491	−940.239*	−515.553	−0.005	−0.024*
	(485.413)	(500.046)	(519.486)	(534.028)	(0.013)	(0.014)
age		22.555		78.717***		0.002***
		(15.922)		(17.004)		(0.0004)
urate		133.948		372.861***		−0.018***
		(114.614)		(122.403)		(0.003)
ed		66.337		−125.305**		0.017***
		(59.579)		(63.628)		(0.002)
nonwhite1		−1,255.622***		−2,438.387***		−0.043***
		(326.237)		(348.408)		(0.009)
has_children1:dperiod	1,682.810***	1,722.360***	1,911.035***	2,006.060***	0.031*	0.033*
	(642.099)	(641.893)	(687.171)	(685.515)	(0.018)	(0.018)
R^2	0.026	0.027	0.022	0.028	0.012	0.027
Adjusted R^2	0.026	0.027	0.022	0.027	0.012	0.026
Residual Std. Error	17,965.670	17,956.450	19,226.750	19,176.730	0.497	0.493
F Statistic	121.691***	54.794***	105.245***	56.166***	54.906***	54.374***

Note: N = 13746. Non Robust Standard Errors applied. "White" is reference category for "non-White" categorical variable.

1.6 Task 6: Subset analysis

NOTE: IN THIS CASE WE USE THE SUBSET ANALYSIS and not use interactions due to the efficeincy; if we were to use interactions, the analysis would have a higher statistical power, but the problem is: it would be really difficult to discern

NOTE WE STILL USE DIFF IN DIFF BECAUSE WE STILL WANT TO SEE THE EFFECT OF THE POLICY INTERVATION JUST HERE SUBSECTIONED BY DIFFERENT VARIABLES

1.6.1 Women with Children compared based on high & low education levels

1.6.2 Women with and without Children compared keeping education level (low) constant

Table 6: Subsection Analysis Single Women with Children for alternating low/ high education levels

	Dependent variable:					
	earn		finc		work	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	14,899.900***	12,958.640***	20,099.430***	16,218.430***	0.582***	0.532***
	(828.375)	(1,550.012)	(886.522)	(1,655.347)	(0.023)	(0.043)
has_children1	−8,596.327***	−8,394.973***	−8,929.330***	−8,269.567***	−0.159***	−0.150***
	(1,093.444)	(1,096.506)	(1,170.197)	(1,171.022)	(0.030)	(0.030)
dperiod	−695.997	−536.491	−940.239*	−515.553	−0.005	−0.024*
	(485.413)	(500.046)	(519.486)	(534.028)	(0.013)	(0.014)
age		22.555		78.717***		0.002***
		(15.922)		(17.004)		(0.0004)
urate		133.948		372.861***		−0.018***
		(114.614)		(122.403)		(0.003)
ed		66.337		−125.305**		0.017***
		(59.579)		(63.628)		(0.002)
nonwhite1		−1,255.622***		−2,438.387***		−0.043***
		(326.237)		(348.408)		(0.009)
has_children1:dperiod	1,682.810***	1,722.360***	1,911.035***	2,006.060***	0.031*	0.033*
	(642.099)	(641.893)	(687.171)	(685.515)	(0.018)	(0.018)
Observations	13,746	13,746	13,746	13,746	13,746	13,746
R^2	0.026	0.027	0.022	0.028	0.012	0.027
Adjusted R^2	0.026	0.027	0.022	0.027	0.012	0.026
Residual Std. Error	17,965.670	17,956.450	19,226.750	19,176.730	0.497	0.493
F Statistic	121.691***	54.794***	105.245***	56.166***	54.906***	54.374***

Note: N = 7819 Single Women have Children. N = 5593 high education (years of eduction >= 9 years); N = 2226 low education (years of eduction < 9 years); Non Robust Standard Errors applied. "White" is reference category for "non-White" categorical variable.

Table 7: Subsection Analysis Single Women with/ without Children for constant (low) education levels

	Dependent variable:					
	earn		finc		work	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	11,066.700***	4,281.758	17,494.530***	8,507.214***	0.501***	0.441***
	(1,457.343)	(2,602.848)	(1,534.185)	(2,735.084)	(0.038)	(0.068)
has_children1	−2,323.038	−2,402.722	−3,739.399*	−3,267.950	−0.080	−0.087
	(2,026.514)	(2,030.169)	(2,133.367)	(2,133.311)	(0.053)	(0.053)
dperiod	783.677	1,378.102	322.393	1,127.629	−0.004	−0.007
	(858.662)	(882.127)	(903.937)	(926.943)	(0.023)	(0.023)
age		29.868		83.479***		0.001
		(29.856)		(31.373)		(0.001)
urate		651.163***		845.832***		−0.002
		(216.731)		(227.742)		(0.006)
nonwhite1		332.812		−2,403.220***		0.081***
		(664.392)		(698.146)		(0.017)
has_children1:dperiod	−413.449	−475.403	−179.637	−152.761	0.015	0.012
	(1,194.473)	(1,193.612)	(1,257.455)	(1,254.253)	(0.031)	(0.031)
Observations	4,311	4,311	4,311	4,311	4,311	4,311
R^2	0.006	0.009	0.010	0.016	0.003	0.008
Adjusted R^2	0.006	0.008	0.009	0.015	0.002	0.007
Residual Std. Error	18,962.540	18,944.100	19,962.390	19,906.540	0.498	0.497
F Statistic	9.304***	6.559***	14.690***	11.920***	4.494***	6.121***

Note: N = 4411 Single Women have Children (years of eduction < 9 years). N = 2085 has no children; N = 2226 has children; Non Robust Standard Errors applied. "White" is reference category for "non-White" categorical variable.