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1 set more off
2 cd "C:\Users\derya\Dropbox\Derya\Teaching\applied
3 microeconometrics\stata"
4 log using stata_treatment, replace
5 /*Treatment Effects in STATA*/
6
7 /*I-Regression Adjustment*/
8 webuse cattaneo2
9 /*Estimation of ATE */
10 teffects ra (bweight prenatall mmarried mage fbaby) (mbsmoke)
11 estimates store m1, title(Regression)
12 /*Estimation of ATT*/
13 teffects ra (bweight prenatall mmarried mage fbaby) (mbsmoke),
14 atet
15 /*Estimation of E[Y_1] and E[Y_0], and regression coefs of
16 potential outcome models*/
17 teffects ra (bweight prenatall mmarried mage fbaby) (mbsmoke),
18 pomeans aequations
19 /*Reporting the ATE as a percentage*/
20 teffects ra (bweight prenatall mmarried mage fbaby) (mbsmoke),
21 coeflegend
22 nlcom _b[ATE:r1vs0.mbsmoke] / _b[P0mean:r0.mbsmoke]
23 /*We find that smoking during pregnancy reduces birthweight by
24 about 7% on average, a statistically
25 significant amount*/
26 /*Modeling nonnegative outcomes*/
27 teffects ra (bweight prenatall mmarried mage fbaby, poisson) (
28 mbsmoke)
29 /*II-IPW*/
30 /*Estimation of ATE */
31 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
32 medu, probit)
33 estimates store m2, title(IPW)
34 /*Estimation of ATT*/
35 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
36 medu, probit), atet
37 /*Estimation of E[Y_1] and E[Y_0], and regression coefs of
38 potential outcome models*/
39 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
medu, probit), pomeans aequations
40 /*Reporting the ATE as a percentage*/
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40 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
41 medu, probit), coeflegend
42 nlcom _b[ATE:r1vs0.mbsmoke] / _b[P0mean:r0.mbsmoke]
43 /*We find that smoking during pregnancy reduces birthweight by
44 about 6.7% on average, a statistically
45 significant amount*/
46 /*Estimation of ATE */
47 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
48 medu, logit)
49 /*Estimation of ATT*/
50 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
51 medu, logit), atet
52 /*Estimation of E[Y_1] and E[Y_0], and regression coefs of
53 potential outcome models*/
54 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
55 medu, logit), pomeans aequations
56 /*Reporting the ATE as a percentage*/
57 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
58 medu, logit), coeflegend
59 nlcom _b[ATE:r1vs0.mbsmoke] / _b[P0mean:r0.mbsmoke]
60 /*We find that smoking during pregnancy reduces birthweight by
61 about 6.8% on average, a statistically
62 significant amount*/
63 /*III-teffects aipw - Augmented inverse-probability weighting
64 (DR1)*/
65 /*Estimation of ATE */
66 teffects aipw (bweight prenatal1 mmarried mage fbaby) (mbsmoke
67 mmarried c.mage##c.mage fbaby medu, probit)
68 estimates store m3, title(AIPW)
69 /*Estimation of E[Y_1] and E[Y_0], and regression coefs of
70 potential outcome models*/
71 teffects aipw (bweight prenatal1 mmarried mage fbaby) (mbsmoke
72 mmarried c.mage##c.mage fbaby medu, probit), pomeans aequations
73 /*Heteroskedastic probit treatment model*/
74 local outx prenatal1 mmarried fbaby
75 local treatx mmarried c.mage##c.mage fbaby medu
76 teffects aipw (bweight `outx') (mbsmoke `treatx', probit),
77 pomeans aequations
78 teffects aipw (bweight prenatal1 mmarried fbaby) (mbsmoke
79 mmarried c.mage##c.mage fbaby medu, hetprobit(c.mage)),
80 aequations
81
82

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75 /*Using the WNLS estimator*/
76 teffects aipw (bweight prenatall mmarried mage fbaby) (mbsmoke
77 mmarried c.mage##c.mage fbaby medu, probit), wnls
78
79 /*IV-Inverse probability weighted regression adjustment*/
80 /*Estimation of ATE */
81 teffects ipwra (bweight prenatall mmarried mage fbaby) (mbsmoke
82 mmarried c.mage##c.mage fbaby medu, probit)
estimates store m4, title(IPW-REG)
83
84 /*Estimation of E[Y_1] and E[Y_0], and regression coefs of
85 potential outcome models*/
86 teffects ipwra (bweight prenatall mmarried mage fbaby) (mbsmoke
87 mmarried c.mage##c.mage fbaby medu, probit), pomeans aequations
88
89 /*Heteroskedastic probit treatment model*/
90 teffects ipwra (bweight prenatall mmarried fbaby c.mage) (
91 mbsmoke mmarried c.mage##c.mage fbaby medu, hetprobit(c.mage##c
92 .mage)), aequations
93
94 /*Estimation of E[Y_1] and E[Y_0], and regression coefs of
95 potential outcome models*/
96 teffects ipwra (bweight prenatall mmarried mage fbaby, poisson)
97 (mbsmoke mmarried c.mage##c.mage fbaby medu, probit)
98
99 estout * using example.tex, replace cells(b(star fmt(%9.2f)
100 label(Coef.)) se(par fmt(%9.2f) label(Std. Err.))) label
101 legend varlabels(_cons Constant c.mage##c.mage "Age Squared")
102 style(tex)
103
104 /*V-Matching Methods*/
105 /*Estimating the ATE*/
106 /*Matching on covariates, nearest neighbor based on
107 Mahalanobis distance*/
teffects nnmatch (bweight mage prenatall mmarried fbaby) (
mbsmoke)
/*Matching on covariates, nearest neighbor based on Euclidean
distance*/
teffects nnmatch (bweight mage prenatall mmarried fbaby) (
mbsmoke), metric(euclidean)
/*Exact matching*/
teffects nnmatch (bweight mage) (mbsmoke), ematch(prenatall
mmarried fbaby)
/*Bias Adjustment (Abadie & Imbens)*/
teffects nnmatch (bweight mage fage) (mbsmoke), ematch(
prenatall mmarried fbaby) biasadj(mage fage)

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108 /*m-th nn matching*/
109 teffects nnmatch (bweight mage fage) (mbsmoke), nneighbor(3)
110
111
112
113 /*Propensity Score Matching*/
114 teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage
115 fbaby medu)
116 /*Specifying the caliper*/
117 //teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage
118 fbaby medu), caliper(0.03)
119 teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage
120 fbaby medu), caliper(0.13)
121 teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage
122 fbaby medu), caliper(0.13) nneighbor(3)
123
124 /*Estimation of ATT requires only matches for treated group*/
125 teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage
126 fbaby medu), atet vce(iid) caliper(0.03)
127
128 /*teffects overlap - Overlap plots*/
129 teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby
130 medu, probit)
131 teffects overlap
132
133 probit mbsmoke mmarried c.mage##c.mage fbaby medu
134 predict pshat
135
136 twoway (histogram pshat if mbsmoke==1, color(green)
137 fintensity(40)) ///
138     (histogram pshat if mbsmoke==0, ///
139      fcolor(none) lcolor(black)), legend(order(1 "Smoker" 2
140 "Non-smoker"))
141
142 /*Overlap assumption Violated*/
143 use http://www.stata-press.com/data/r13/systolic2, replace
144 twoway (scatter systolic weight if xyl==1, mcolor(red)) ///
145     (scatter systolic weight if xyl==0, mcolor(blue)), ///
146     legend(label(1 "Treated") label(2 "Untreated"))
147
148 teffects ipw (systolic) (xyl weight), pstolerance(1e-8)
149 teffects overlap

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150 probit xy1 weight
151 predict pshat2
152
153 twoway (histogram pshat2 if xy1==1, color(green) fintensity(
154 40)) ///
155      (histogram pshat2 if xy1==0, ///
156      fcolor(none) lcolor(black)), legend(order(1 "Treated" 2
157 "control"))
158
159 log close
```