**Beyond the Transaction: Banks and Mortgage Default of Low Income Homebuyers (Ergungor & Moulton)**

**STATA Code for Models**

**Appendix A, Stage 1, for Table III**

//Appendix 1: MNL Predicting Lender Type (Local, Non-Local, Non-Bank)- Previous Address

mlogit bank\_d2p\_3 creditl cl\_inc\_l frontend backend black hispanic female age ltv dpa\_gran dpa\_seco hhsize\_n mi\_fhava p\_acc2l p\_count\_2 pt\_bank\_drate pt\_nobank\_drate p\_herf pt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young yr2005 yr2006 yr2007 if clean\_address==1 & move\_dist<400 & msanay==1, cluster (new\_county)

predict phat\_nobank\_p phat\_nlocal\_p phat\_local\_p if e(sample)

**Table III: Multinomial Logistic Regression, Base Model (N=18,370) Stage 2**

//Table III: MNL Predicting Delinquency, Previous Address Only

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d2p bank\_no2p phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 bank\_d2p==0 bank\_no2p==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

//MNL Predicting Default, Previous Address Only

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d2p bank\_no2p phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 bank\_d2p==0 bank\_no2p==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

**Stage 1 New Address (Not Shown, Used in Table IV)**

//New Address MNL Predicting Lender Type (Local, Non-Local, Non-Bank)- New

//Stage 1

mlogit bank\_d2n\_3 creditl cl\_inc\_l frontend backend black hispanic female age ltv dpa\_gran dpa\_seco hhsize\_n mi\_fhava n\_acc2l n\_count\_2 nt\_bank\_drate nt\_nobank\_drate n\_herf nt\_appliedl n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young yr2005 yr2006 yr2007 if clean\_address==1 & move\_dist<400 & msanay==1, cluster (new\_county)

drop phat\_nobank\_n phat\_nlocal\_n phat\_local\_n

predict phat\_nobank\_n phat\_nlocal\_n phat\_local\_n if e(sample)

**Table IV: Loan Performance and Bank Information - Bank Branch Distance from NEW Address in Stage 1**

//Stage 2, Delinquency

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d2n bank\_no2n phat\_local\_n phat\_nlocal\_n acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 bank\_d2n==0 bank\_no2n==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

//Stage 2, Default

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d2n bank\_no2n phat\_local\_n phat\_nlocal\_n acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 bank\_d2n==0 bank\_no2n==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

**Table V: Deposit Share and Bank Size on Loan Performance**

//Panel A: Deposit Share, non-bank reference category, Stage 2

//Delinquency (Stage 2)

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 dep\_share2nlow dep\_share2navg dep\_share2nhigh dep\_share2nvhigh dep\_share2nvvhigh phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Default (Stage 2)

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 dep\_share2nlow dep\_share2navg dep\_share2nhigh dep\_share2nvhigh dep\_share2nvvhigh phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 dep\_share2nlow==0 dep\_share2navg==0 dep\_share2nhigh==0 dep\_share2nvhigh==0 dep\_share2nvvhigh==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

//Panel B, Bank Size

//Stage 1, Predict Bank Size (Not Shown in Table)

mlogit bank\_d2p\_5 creditl cl\_inc\_l frontend backend black hispanic female age ltv dpa\_gran dpa\_seco hhsize\_n mi\_fhava p\_acc2l p\_count\_2 pt\_bank\_drate pt\_nobank\_drate p\_herf pt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young yr2005 yr2006 yr2007 if clean\_address==1 & move\_dist<400 & msanay==1, cluster (new\_county)

predict phat\_2p\_nobank phat\_2p\_nlocall phat\_2p\_locall phat\_2p\_nlocals phat\_2p\_locals

//Delinquency (Stage 2)

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_no2lp bank\_d2lp bank\_no2sp bank\_d2sp phat\_2p\_nlocall phat\_2p\_locall phat\_2p\_nlocals phat\_2p\_locals acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 bank\_no2lp==0 bank\_d2lp==0 bank\_no2sp==0 bank\_d2sp==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

//Default (Stage 2)

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_no2lp bank\_d2lp bank\_no2sp bank\_d2sp phat\_2p\_nlocall phat\_2p\_locall phat\_2p\_nlocals phat\_2p\_locals acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

**Table VI: Loan Performance By Cohort Year & Credit Score Subsamples**

//Panel A, Stage 2: By Origination Cohort, No Constant (for Interactions)

//Delinquency

mlogit mlogit\_deln yr2005 yr2006 yr2007 yr2008 bank\_d2p\_y05 bank\_d2p\_y06 bank\_d2p\_y07 bank\_d2p\_y08 bank\_no2p\_y05 bank\_no2p\_y06 bank\_no2p\_y07 bank\_no2p\_y08 phat\_local\_p\_y05 phat\_local\_p\_y06 phat\_local\_p\_y07 phat\_local\_p\_y08 phat\_nlocal\_p\_y05 phat\_nlocal\_p\_y06 phat\_nlocal\_p\_y07 phat\_nlocal\_p\_y08 creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, noconstant cluster (new\_county)

//Default

mlogit mlogit\_defnn yr2005 yr2006 yr2007 yr2008 bank\_d2p\_y05 bank\_d2p\_y06 bank\_d2p\_y07 bank\_d2p\_y08 bank\_no2p\_y05 bank\_no2p\_y06 bank\_no2p\_y07 bank\_no2p\_y08 phat\_local\_p\_y05 phat\_local\_p\_y06 phat\_local\_p\_y07 phat\_local\_p\_y08 phat\_nlocal\_p\_y05 phat\_nlocal\_p\_y06 phat\_nlocal\_p\_y07 phat\_nlocal\_p\_y08 creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, noconstant cluster (new\_county)

//Panel B: Stage 2, By Credit Score Categories, No Constant (for Interactions)

//Delinquency

mlogit mlogit\_deln c\_credit620 c\_credit660 c\_credit700 c\_credit740 c\_credit741 bank\_d2p\_c620 bank\_d2p\_c660 bank\_d2p\_c700bank\_ d2p\_c740 bank\_d2p\_c741 bank\_no2p\_c620 bank\_no2p\_c660 bank\_no2p\_c700 bank\_no2p\_c740 bank\_no2p\_c741 phat\_local\_p\_c620 phat\_local\_p\_c660 phat\_local\_p\_c700 phat\_local\_p\_c740 phat\_local\_p\_c741 phat\_nlocal\_p\_c620 phat\_nlocal\_p\_c660 phat\_nlocal\_p\_c700 phat\_nlocal\_p\_c740 phat\_nlocal\_p\_c741 cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, noconstant cluster (new\_county)

//Default

mlogit mlogit\_defnn c\_credit620 c\_credit660 c\_credit700 c\_credit740 c\_credit741 bank\_d2p\_c620 bank\_d2p\_c660 bank\_d2p\_c700bank\_ d2p\_c740 bank\_d2p\_c741 bank\_no2p\_c620 bank\_no2p\_c660 bank\_no2p\_c700 bank\_no2p\_c740 bank\_no2p\_c741 phat\_local\_p\_c620 phat\_local\_p\_c660 phat\_local\_p\_c700 phat\_local\_p\_c740 phat\_local\_p\_c741 phat\_nlocal\_p\_c620 phat\_nlocal\_p\_c660 phat\_nlocal\_p\_c700 phat\_nlocal\_p\_c740 phat\_nlocal\_p\_c741 cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, noconstant cluster (new\_county)

**Appendix B: Survival Models of Loan Performance (N=18,370)**

//Appendix B: Survival Model, Delinquency

stset timedeln, failure(faildeln=1)

streg creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d2p bank\_no2p phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county) dist(loglogistic)

//Appendix B: Survival Model, Default

stset survtimen, failure(failuren=1)

streg creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d2p bank\_no2p phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county) dist(loglogistic)

**Appendix C. Multinomial Logistic Regression with Time Varying Covariates (N=701,641)**

//Stage 2, With time varying covariates

mlogit paym\_n creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava months\_expose months\_expose2 urate hpi hpi\_sd pmms bank\_d2p bank\_no2p phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (loanno)

//Predicted Probabilities

prchange, x(black==0 hispanic==0 female==1 dpa\_gran==0 dpa\_seco==0 mi\_fhava==0 yr2005==0 yr2006==1 yr2007==0 msa\_akron==0 msa\_canton==0 msa\_cinc==0 msa\_clev==0 msa\_cols==0 msa\_dayton==0 msa\_toledo==0 msa\_young==0 bank\_d2p==0 bank\_no2p==0 p\_ct\_urbd==1 n\_ct\_urbd==1)

**Appendix D: Alternate Branch Distance Specifications**

//Panel 1: Stage 2, By 5 and 10 Miles

//Stage 1, 5 Miles

mlogit bank\_d5p\_3 creditl cl\_inc\_l frontend backend black hispanic female age ltv dpa\_gran dpa\_seco hhsize\_n mi\_fhava p\_acc5l p\_count\_5 pt\_bank\_drate pt\_nobank\_drate p\_herf pt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young yr2005 yr2006 yr2007 if clean\_address==1 & move\_dist<400 & msanay==1, cluster (new\_county)

predict phat\_nobank\_p5 phat\_nlocal\_p5 phat\_local\_p5 if e(sample)

//Stage 2, Delinquency 5 Miles

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d5p bank\_no5p phat\_local\_p5 phat\_nlocal\_p5 acc5l count\_all\_5 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Stage 2, Default, 5 Miles

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d5p bank\_no5p phat\_local\_p5 phat\_nlocal\_p5 acc5l count\_all\_5 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Stage 1, 10 Miles

mlogit bank\_d10p\_3 creditl cl\_inc\_l frontend backend black hispanic female age ltv dpa\_gran dpa\_seco hhsize\_n mi\_fhava p\_acc10l p\_count\_10 pt\_bank\_drate pt\_nobank\_drate p\_herf pt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young yr2005 yr2006 yr2007 if clean\_address==1 & move\_dist<400 & msanay==1, cluster (new\_county)

predict phat\_nobank\_p10 phat\_nlocal\_p10 phat\_local\_p10 if e(sample)

//Stage 2, Delinquency, 10 Miles

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d10p bank\_no10p phat\_local\_p10 phat\_nlocal\_p10 acc10l count\_all\_10 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Stage 2, Default, 10 Miles

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose bank\_d10p bank\_no10p phat\_local\_p10 phat\_nlocal\_p10 acc10l count\_all\_10 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 yr2005 yr2006 yr2007 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//Panel 2: Stage 2, By Distance to Nearest Branch in Miles

/2 miles

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 min\_dist2 phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 min\_dist2 phat\_local\_p phat\_nlocal\_p acc2l count\_all\_2 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//5 miles

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 min\_dist5 phat\_local\_p5 phat\_nlocal\_p5 acc5l count\_all\_5 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 min\_dist5 phat\_local\_p5 phat\_nlocal\_p5 acc5l count\_all\_5 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

//10 miles

mlogit mlogit\_deln creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 min\_dist10 phat\_local\_p10 phat\_nlocal\_p10 acc10l count\_all\_10 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)

mlogit mlogit\_defnn creditl cl\_inc\_l frontend backend black hispanic female age ltv interest dpa\_gran dpa\_seco hhsize\_n mi\_fhava l\_expose yr2005 yr2006 yr2007 min\_dist10 phat\_local\_p10 phat\_nlocal\_p10 acc10l count\_all\_10 pt\_bank\_drate pt\_nobank\_drate nt\_bank\_drate nt\_nobank\_drate p\_herf pt\_appliedl n\_herf nt\_appliedl p\_ct\_densl p\_ct\_urbd p\_ct\_manf p\_ct\_val p\_ct\_ami p\_ct\_ed p\_ct\_m30 n\_ct\_densl n\_ct\_urbd n\_ct\_manf n\_ct\_val n\_ct\_ami n\_ct\_ed n\_ct\_m30 move\_distl1 msa\_akron msa\_canton msa\_cinc msa\_clev msa\_cols msa\_dayton msa\_toledo msa\_young if clean\_address==1 & move\_dist<500 & msanay==1, cluster (new\_county)