This file summarizes the programs in Stata, Matlab and Gauss which reproduce the results reported in the paper:

"Nested logit or random coefficients logit? A comparison of alternative discrete choice models of product differentiation" by Grigolon, Laura and Verboven, Frank

There are two main folders:

1) Monte Carlo to reproduce the Monte Carlo with the comparison of Logit, RC, NL, RCNL;

2) Cars with analysis on the JATO dataset.

1) Monte Carlo

1- RCL versus NL: Figure 1, Table 1, Appendix B: Table B1, Table B2
2- NL versus RCL: Figure 1, Appendix B: Table B3, Table B4
3- RC and NL versus RCNL: Table 2, Appendix B: Table B5-B12;
4- RCNL 2RandomCoeff: Appendix B: Table B13

2) Empirical analysis: refers to the second part of the paper, using car dataset of European automobile data

The dataset has been purchased from a supplier of automotive data, JATO Dynamics Ltd, under an arrangement that precludes the posting of the data. A full description of the dataset is provided in the paper, paragraph 3.1.

The JATO dataset is supplemented by the following data:

1- household size (data from Euromonitor)
2- fuel prices (data from Euromonitor)
3- nominal gdp (data from Euromonitor, matching the data from IFS)
4- exchange rate pound/euro (data from Euromonitor, matching the data from IFS)
5- population (data from Euromonitor);
6- lending rates (data from Euromonitor).

We provide all the code necessary to go from the raw data to the results of the paper. The files should be run according to the sequence described in this readme document. Other files added for the robustness checks: exclude height, add weight, halved outside good, alternative nesting follow the same logic.

Table input output

Folder level 1	Folder level 2	Input	Program	Ouput	Notes
LinearEst		omitted	1Est.do	omitted	Logit
			2Predictions.do		Probit predictions
			3Sumstats.do		Sum stats
Within transformation			withinTransformation.do		input for gauss estimations
Random Coefficients Estimates					
	1logitInc_NLInst.g		1logitInc_NLInst.g		test logit against RC and RCNL
	2RCLogitInst		2logitRC_LogInst.g		RC
	3RC_NLogitInst		3logitRC_NLInst.g		test RC against RCNL
	4NLogitInc		4nlogitINC.g		test NL against RC
	5RCNL		5NlogitRC.g		RCNL in the paper
	6NLogitIncRestricted		6nlogitINCRestricted.g		test Restricted NL against RC
	7RCNLRestricted		7RCNLRestrictedNoWiHe.g		RCNL without RC on width height
Model Elasticities			elastRCL.g		Elasticity RC
			elast_RCNL.g		Elasticity RCNL
			elast RCNLRestr.g		Elasticity RCNL restricted
SSNIP and Segment Elasticities	SSNIPtest		RC_SSNIP.g	SSNIPtest	
			RC_SSNIPCloseSegments.g		
			RCNL_SSNIP.g		
			RestrRCNL_SSNIP.g		
Merger Simulation			RCNL_mergersim.g		Merger simulation RCNL
			RCNLRestr_mergersim.g		Merger simulation RCNL restricted

Detailed description

1- LinearEst
    a. Input: carinst.dta (omitted)
    b. Program: 1Est.do - Estimates: logit and nested logit estimates
    c. Output: no output

    d. Input: carinst.dta (omitted)
    e. Program: 2Predictions.do - Probit with segment classifications based on continuous characteristics
    f. Output: no output

    g. Input: carinst.dta (omitted)
    h. Program: 3Sumstats.do – Summary statistics reported in the paper
    i. Output: no output

2. Within transformation
    a. Input: carinst.dta (omitted)
    b. Program: withinTransformation.do – within transformation of the data (Baltagi, 1995) for model fixed effects
    c. Output: WT.dta (omitted)
3. Random Coefficients Estimates

    Input that is common to all these estimations: wt.dat and wt.dht; income.dat and income.dht (omitted)

    a. 1LogitIncNLogitInst: estimates Logit with Income Distribution **with Nested Logit instruments –** this is used to test the Logit model against the RC and the RCNL
        i. Input:
        WeightMatLogitRC.fmt (second stage weighting matrix from RC) and
        WeightMatNestedLogitRC.fmt (second stage weighting matrix from RCNL) (omitted)
        ii. Program: 1logitInc_NLInst.g
        iii. Output:
        1) logitINC_RCtest.txt – this is to test Logit against RC
        2) logitINC_RCNLtest.txt – this is to test Logit against RCNL
        3) logitINC_RCNLRestrTest.txt – this is to test Logit against Restricted RCNL
    b. 2RCLogitInst : estimates Logit with Income Distribution + random coefficients **with Logit instruments**
        i. Input:
        ii. Program: 2logitRC_LogInst.g
        iii. Output: logitRCLogInst.txt

c. 3RC_NLogitInst: estimates Logit with Income Distribution + random coefficients **with Nested Logit instruments:** this is used to test the RC model against the RCNL
    i. Input: WeightMatNestedLogitRC.fmt (second stage weighting matrix from RCNL) (omitted)
    ii. Program: 3logitRC_NLInst.g
    iii. Output: logitRC_RCNLtest.txt – this is to test RC against RCNL and WeightMatLogitRC.fmt
d. 4NLogitInc: estimates NL with Income Distribution **with Nested Logit instruments –** this is used to test the NL against the RCNL
    i. Input: WeightMatNestedLogitRC.fmt (second stage weighting matrix from RCNL) (omitted)
    ii. Program: 4nlogitINC.g
    iii. Output: nlogitINC_RCNLtest.txt - this is to test NL against RC
e. 5RCNL: estimates RCNL
    i. Input:
    ii. Program: 5NlogitRC.g
    iii. Output: RCNL.txt and WeightMatNestedLogitRC.fmt used for model testing (omitted)
f. 6NLogitIncRestricted: estimates Nested Logit Income Restricted (one level nested logit)
    i. Input: WeightMatRCNestedLogitRestrNoWiHe.fmt (second stage weighting matrix from RCNL) (omitted)
    ii. Program: 6nlogitINCRestricted.g
    iii. Output: nlogitINCRestrictedNoWiHe.txt - this is to test Restricted NL against RC
g. 7RCNLRestricted
    i. Input:
    ii. Program: 7RCNLRestrictedNoWiHe.g
    iii. Output: RCNLRestricted.txt and WeightMatRCNestedLogitRestrNoWiHe.fmt used for model testing (omitted)

4. Model Elasticities
    a. Input: wt.dat and wt.dht; income.dat and income.dht (omitted)
    b. Program: elastRCL.g for logit and RC elasticities; elast_RCNL.g for nested logit and RCNL elasticities; elast RCNLRestr.g for Restricted RCNL elasticities
    c. Output:
    Logit_elast.txt;
    RC_elast.txt;
    NL_elast.txt;
    RCNL_elast.txt;
    RCNLRestricted_elast.txt
5. SSNIP and Segment Elasticities
    a. SSNIPtest
        i. Input: ssnipdata.dat and ssnipdata.dht; income.dat and income.dht (omitted)

ii. Program: RC_SSNIP.g; RC_SSNIPCloseSegments.g (for neighboring segments); RCNL_SSNIP.g; RestrRCNL_SSNIP.g (Restricted RCNL SSNIP test)
iii. Output:
SSNIP_Logit.txt;
SSNIP_RC.txt;
SSNIP_NL.txt;
SSNIP_RCNL.txt;
SSNIP_RCNLRestricted.txt

6. Merger simulation
    a. Input: 2006ssnipdatafrde.dat and ssnipdata.dht; income.dat and income.dht (omitted)
    b. Program:
    RC_mergersim.g
    RCNL_mergersim.g
    RCNLRestr_mergersim.g
    c. Output:
    MergerSimLogit_BMWVW.txt; MergerSimLogit_PSARenault.txt
    MergerSimRC_BMWVW.txt; MergerSimRC_PSARenault.txt
    MergerSimNL_BMWVW.txt; MergerSimNL_PSARenault.txt
    MergerSimRCNL_BMWVW.txt; MergerSimRCNL_PSARenault.txt
    MergerSimNLRestr_BMWVW.txt; MergerSimNLRestr_PSARenault.txt