```
                                                      ___  ____  ____  ____  ____(R)
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                                                    ___/   /   /___/   /   /___/
                                                      Statistics/Data Analysis
```

User: Pierre Nadeau
Project: JOM Paper - Innovation that Matters{space -13}

```
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  Statistics/Data Analysis
```

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Notes:

```
1 . use "C:\Documents and Settings\Pierre\My Documents\BIRKBECK\Academic Papers\JOM 2013\preipo80_00master

2 . global MLwiN_path C:\Program Files\MLwiN v2.26\i386\MLwiN.exe

3 . sort cometro coname
```

```
4 . xtmixed lcromount royear ronum1 ronum2 ronum3 ronum4 patcount cclaims ccreceive ccmade cgeneral corigi
>  foyear ipoyear || cometro: || coname: royear, cov (unstr)

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = -3026.5631
Iteration 1:   log likelihood = -3020.0555
Iteration 2:   log likelihood = -3019.7825
Iteration 3:   log likelihood = -3019.7813
Iteration 4:   log likelihood = -3019.7813

Computing standard errors:

Mixed-effects ML regression                     Number of obs      =      2688
```

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
cometro	**17**	**25**	**158.1**	**639**
coname	**935**	**1**	**2.9**	**11**

```
                                                Wald chi2(20)      =    5231.97
Log likelihood = -3019.7813                     Prob > chi2        =     0.0000
```

lcromount	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
royear	.1089401	.010588	10.29	0.000	.088188	.1296922
ronum1	-1.980158	.0527435	-37.54	0.000	-2.083534	-1.876783
ronum2	-1.146382	.0453393	-25.28	0.000	-1.235246	-1.057519
ronum3	-.6124882	.0416536	-14.70	0.000	-.6941278	-.5308485
ronum4	-.2867362	.0400798	-7.15	0.000	-.3652912	-.2081813
patcount	.0117129	.0113762	1.03	0.303	-.0105839	.0340098
cclaims	-.0000394	.0004367	-0.09	0.928	-.0008953	.0008165
ccreceive	.0007061	.0003086	2.29	0.022	.0001012	.001311
ccmade	.0001006	.0001302	0.77	0.440	-.0001545	.0003557
cgeneral	-.016889	.0181167	-0.93	0.351	-.0523971	.018619
coriginal	-.0130335	.0205647	-0.63	0.526	-.0533396	.0272725
c1	.1942189	.1322989	1.47	0.142	-.0650822	.45352
c2	.1818172	.1325967	1.37	0.170	-.0780676	.4417021
c3	.1575147	.1453804	1.08	0.279	-.1274256	.4424551
c4	.0430283	.1251484	0.34	0.731	-.202258	.2883146
c5	.0899077	.1466146	0.61	0.540	-.1974517	.377267
c6	-.0240999	.1203549	-0.20	0.841	-.2599911	.2117913
p	-.0426747	.0719403	-0.59	0.553	-.1836751	.0983256
foyear	.007315	.0056906	1.29	0.199	-.0038383	.0184684
ipoyear	-.0291774	.0127325	-2.29	0.022	-.0541327	-.0042221
_cons	1.75207	.1624471	10.79	0.000	1.43368	2.070461

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cometro: Identity				
sd(_cons)	**.0575716**	**.2026107**	**.0000582**	**56.99383**
coname: Unstructured				
sd(royear)	**.0963146**	**.0072704**	**.0830689**	**.1116724**
sd(_cons)	**1.559095**	**.0898004**	**1.392661**	**1.74542**
corr(royear,_cons)	**-.8521272**	**.020429**	**-.8875079**	**-.8067579**
sd(Residual)	**.4701987**	**.0101045**	**.4508056**	**.4904262**

LR test vs. linear regression: chi2(**4**) = **1340.60** Prob > chi2 = **0.0000**

Note: LR test is conservative and provided only for reference.

```
5 . runmlwin lcromount cons royear ronum1 ronum2 ronum3 ronum4 patcount cclaims ccreceive ccmade cgeneral
> 5 c6 p foyear ipoyear, level3(cometro: cons) level2(coname: cons royear) level1(cons) maxi(1000) nopau
```

MLwiN 2.26 multilevel model Number of obs = **2688**
Normal response model
Estimation algorithm: **IGLS**

Level Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
cometro	**17**	**25**	**158.1**	**639**
coname	**935**	**1**	**2.9**	**11**

Run time (seconds) = **52.86**
Number of iterations = **24**
Caution. MLwiN was unable to calculate the log likelihood, there may be a problem with your model
Log likelihood = .
Deviance = .

lcromount	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
cons	1.616436	.1783568	9.06	0.000	1.266863	1.966008
royear	.1077651	.0145015	7.43	0.000	.0793427	.1361874
ronum1	-1.744926	.1171934	-14.89	0.000	-1.97462	-1.515231
ronum2	-1.115119	.1239843	-8.99	0.000	-1.358124	-.8721141
ronum3	-.5650938	.1300139	-4.35	0.000	-.8199164	-.3102712
ronum4	-.1510544	.1479952	-1.02	0.307	-.4411196	.1390109
patcount	.0634052	.0255188	2.48	0.013	.0133892	.1134211
cclaims	-.0002207	.0009346	-0.24	0.813	-.0020524	.001611
ccreceive	-.0002393	.0007389	-0.32	0.746	-.0016876	.001209
ccmade	.0000765	.0003603	0.21	0.832	-.0006296	.0007827
cgeneral	-.0171645	.0366994	-0.47	0.640	-.089094	.0547649
coriginal	-.0672168	.0444878	-1.51	0.131	-.1544112	.0199776
c1	.0144903	.1392454	0.10	0.917	-.2584257	.2874063
c2	.1987512	.1384667	1.44	0.151	-.0726385	.4701409
c3	.2081574	.1455586	1.43	0.153	-.0771321	.4934469
c4	.0314396	.1325642	0.24	0.813	-.2283814	.2912606
c5	.1648649	.1559628	1.06	0.290	-.1408166	.4705463
c6	-.0861899	.1252201	-0.69	0.491	-.3316169	.159237
p	-.0636262	.078996	-0.81	0.421	-.2184555	.091203
foyear	.0046752	.0060248	0.78	0.438	-.0071332	.0164835
ipoyear	-.02071	.0145211	-1.43	0.154	-.0491709	.0077509

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
Level 3: cometro				
var(cons)	**.000814**	**.0051954**	**-.0093688**	**.0109967**
Level 2: coname				
var(cons)	**1.085756**	**.0504429**	**.9868901**	**1.184623**
cov(cons,royear)	**0**	**0**	**0**	**0**
var(royear)	**0**	**0**	**0**	**0**

6 .