



```

file financial.dta saved
  name: <unnamed>
  log: C:\Users\chadi\OneDrive\Plocha\MarkupsProcurement\analysis\Code_and_data\log.smcl
  log type: smcl
opened on: 16 Jun 2024, 08:46:04

1 . //cd "C:\Users\chadi\Dropbox\Code_and_data"
2 .
  end of do-file

3 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

4 .
5 . ****
6 . *Markups and Public Procurement
7 . *bakalářská práce
8 . *Institut ekonomických studií
9 . *Matěj Bajgar, D.Phil.
10 . *Marek Chadim
11 . ****
12 . clear

13 . log using log
  log file already open
  r(604);

  end of do-file

  r(604);

14 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

15 .
16 . ****
17 . *Markups and Public Procurement
18 . *bakalářská práce
19 . *Institut ekonomických studií
20 . *Matěj Bajgar, D.Phil.
21 . *Marek Chadim
22 . ****
23 . clear

24 . cap log using log

25 . //cd "C:\Users\chadi\Dropbox\Code_and_data"
26 .
27 . //cd "C:/Users/mbajgar/Dropbox/IES/Thesis supervision/Marek Chadim"
28 . // "C:/Users/ThinkPad/Dropbox/IES/Thesis supervision/Marek Chadim"
29 .
30 . ****
31 . *                               *
32 . ****
33 .
34 . * PREPARE ANALYSIS
35 .
36 . * RATIOS
37 . import delimited using "ratios1.csv", clear
  (encoding automatically selected: ISO-8859-1)
  (6 vars, 10,000 obs)

38 . save "ratios", replace
  (file ratios.dta not found)
  file ratios.dta saved

```

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```
39 . forvalues i=2/3{
    2.      import delimited using "ratios`i'.csv", clear
    3.          append using "ratios"
    4.          save "ratios.dta", replace
    5. }
(encoding automatically selected: ISO-8859-1)
(6 vars, 10,000 obs)
file ratios.dta saved
(encoding automatically selected: ISO-8859-1)
(6 vars, 10,000 obs)
file ratios.dta saved

40 .
41 . * FINANCIAL
42 . import delimited using "financial1.csv", clear
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)

43 . save "financial", replace
(file financial.dta not found)
file financial.dta saved

44 . forvalues i=2/6{
    2.      import delimited using "financial`i'.csv", clear
    3.          append using "financial"
    4.          save "financial.dta", replace
    5. }
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 7,724 obs)
file financial.dta saved

45 .
46 . merge m:m id year using "ratios.dta", nogenerate

Result                                Number of obs
_____
Not matched                           27,077
    from master                         23,474
    from using                          3,603
Matched                               34,250

47 .
48 . rename ccosts costs

49 . rename fafixedassets assets

50 . rename salsalesoutputs sales
```

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```
51 . rename wvawagesvalueadded wva
52 . rename wswagessales ws
53 . rename lplabourproductivity lp
54 . rename cmiicontributionmargin cm
55 .
56 . duplicates drop
Duplicates in terms of all variables
(8,209 observations deleted)
57 . duplicates drop id year, force
Duplicates in terms of id year
(376 observations deleted)
58 . save "analysis", replace
(file analysis.dta not found)
file analysis.dta saved
59 .
60 . ****
61 .
62 . * PREPARE SELECTIONS
63 .
64 . import delimited using "selections1.csv", clear
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
65 . save "selections", replace
(file selections.dta not found)
file selections.dta saved
66 . forvalues i=2/5{
    2.     import delimited using "selections`i'.csv", clear
    3.         append using "selections"
    4.         save "selections.dta", replace
    5. }
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
(variable v22 was str19, now str23 to accommodate using data's values)
(variable v23 was str19, now str23 to accommodate using data's values)
(variable v24 was str19, now str23 to accommodate using data's values)
(variable v25 was str19, now str23 to accommodate using data's values)
(variable v26 was str19, now str23 to accommodate using data's values)
(variable v27 was str19, now str23 to accommodate using data's values)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 773 obs)
(variable numberofemployeesclassificationc was str17, now str19 to accommodate using data's values)
(variable v7 was str17, now str19 to accommodate using data's values)
(variable v8 was str17, now str19 to accommodate using data's values)
(variable v9 was str17, now str19 to accommodate using data's values)
(variable v10 was str17, now str19 to accommodate using data's values)
(variable v11 was str17, now str19 to accommodate using data's values)
(variable v12 was str17, now str19 to accommodate using data's values)
(variable v13 was str17, now str19 to accommodate using data's values)
(variable v14 was str17, now str19 to accommodate using data's values)
file selections.dta saved
```

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```
67 .
68 . rename ididèo id
69 . rename typeofsubject subject_type
70 . rename legalform legal_form
71 . rename institutionalsectorsesa2010 inst_sector
72 . rename numberofemployees empl_num
73 . rename numberofemployeesclassificationc empl_cat
74 . drop empl_cat-v28
75 . rename v29 empl_cat
76 . rename mainnacecode nace
77 .
78 .
79 . duplicates drop
```

Duplicates in terms of all variables

(2 observations deleted)

```
80 . save "selections", replace
      file selections.dta saved
```

```
81 .
82 .
83 .
84 . ****
85 .
86 . * MERGE & CLEAN
87 .
88 . use "analysis", clear
```

```
89 . merge m:1 id using "selections", nogenerate
```

Result	Number of obs
Not matched from master	315
from using	0
Matched	52,742

```
90 .
91 . duplicates drop
```

Duplicates in terms of all variables

(0 observations are duplicates)

```
92 . duplicates drop id year, force
```

Duplicates in terms of **id year**

(0 observations are duplicates)

```
93 .
94 . *correct sales
95 . sum sales,d
```

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	0	-3.78e+07		
5%	1938000	-1485000		
10%	7174000	-609000	Obs	45,125
25%	1.80e+07	-333000	Sum of wgt.	45,125
50%	4.14e+07		Mean	1.52e+08
		Largest	Std. dev.	7.99e+08
75%	1.01e+08	2.85e+10		
90%	2.48e+08	2.96e+10	Variance	6.38e+17
95%	4.41e+08	4.18e+10	Skewness	22.25738
99%	1.78e+09	4.18e+10	Kurtosis	707.8563

```
96 . sum sales if sales<0,d
```

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	-3.78e+07	-3.78e+07		
5%	-3.78e+07	-1485000		
10%	-3.78e+07	-609000	Obs	5
25%	-1485000	-333000	Sum of wgt.	5
50%	-609000		Mean	-8065000
		Largest	Std. dev.	1.67e+07
75%	-333000	-1485000		
90%	-60000	-609000	Variance	2.77e+14
95%	-60000	-333000	Skewness	-1.496159
99%	-60000	-60000	Kurtosis	3.244793

```
97 . replace sales = . if sales<0 // if negative
(5 real changes made, 5 to missing)
```

```
98 . sum sales if sales>10000000000,d
```

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	1.01e+10	1.01e+10		
5%	1.04e+10	1.02e+10		
10%	1.06e+10	1.03e+10	Obs	65
25%	1.24e+10	1.04e+10	Sum of wgt.	65
50%	1.55e+10		Mean	1.69e+10
		Largest	Std. dev.	6.47e+09
75%	1.96e+10	2.85e+10		
90%	2.22e+10	2.96e+10	Variance	4.19e+19
95%	2.85e+10	4.18e+10	Skewness	1.912149
99%	4.18e+10	4.18e+10	Kurtosis	7.694584

```
99 .
```

```
100 .
```

```
101 .
```

```
102 . *correct ws and define as a share
```

```
103 . sum ws,d
```

WS - Wages / Sales

	Percentiles	Smallest		
1%	.55	-223.94		
5%	3.97	-80.47		
10%	5.94	-44.97	Obs	20,297
25%	10.08	-7.75	Sum of wgt.	20,297

50%	16.71	Mean	31.73582
		Largest	3218.62
75%	24.95	Variance	2185202
90%	35.46	Skewness	139.7747
95%	43.44	Kurtosis	19758.8
99%	70.08		

104 . sum ws if ws<1,d

WS - Wages / Sales

Percentiles		Smallest		
1%	-44.97	-223.94		
5%	0	-80.47		
10%	0	-44.97	Obs	247
25%	0	-7.75	Sum of wgt.	247
50%	0		Mean	-1.267287
			Std. dev.	15.39974
75%	.31	.94		
90%	.7	.95	Variance	237.1521
95%	.83	.97	Skewness	-12.96081
99%	.95	.98	Kurtosis	181.5396

105 . replace ws = ws * 100 if ws<1 & ws>0 // if 100 times too low
(84 real changes made)106 . replace ws = . if ws<0 // if negative
(5 real changes made, 5 to missing)107 . replace ws = . if ws>100 // if very high
(47 real changes made, 47 to missing)108 . replace ws = ws/100 // define as a share
(20,087 real changes made)

109 . sum ws,d

WS - Wages / Sales

Percentiles		Smallest		
1%	.0136	0		
5%	.0414	0		
10%	.0605	0	Obs	20,245
25%	.1018	0	Sum of wgt.	20,245
50%	.1679		Mean	.1936361
			Std. dev.	.1320406
75%	.2503	.9963		
90%	.3554	.9964	Variance	.0174347
95%	.435	1	Skewness	1.756318
99%	.68	1	Kurtosis	8.171108

110 .
111 . *correct wva and define as a share
112 . sum wva if wva<1,d

WVA - Wages / Value added

Percentiles		Smallest		
1%	-3438.46	-27800		
5%	-894.32	-19745.83		
10%	-455.14	-11529.76	Obs	1,689
25%	-137.93	-9784.21	Sum of wgt.	1,689
50%	-30.04		Mean	-235.3029
			Std. dev.	1079.443
75%	0	.47		
90%	0	.61	Variance	1165197
95%	0	.82	Skewness	-15.73481
99%	0	.94	Kurtosis	333.6609

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```
113 . replace wva = wva * 100 if wva<1 & wva>0 // if 100 times too low  
(14 real changes made)

114 . replace wva = . if wva<0 // if negative  
(1,166 real changes made, 1,166 to missing)

115 . replace wva = . if wva>500 // if very high  
(225 real changes made, 225 to missing)

116 . replace wva = wva/100 // define as a share  
(24,525 real changes made)

117 . sum wva,d
```

WVA - Wages / Value added

Percentiles		Smallest		
1%	0	0		
5%	.2246	0		
10%	.3495	0	Obs	25,034
25%	.5385	0	Sum of wgt.	25,034
50%	.7314		Mean	.7600729
		Largest	Std. dev.	.4473448
75%	.8889	4.9511		
90%	1.0749	4.9569	Variance	.2001174
95%	1.3695	4.9905	Skewness	3.321858
99%	2.7267	4.9943	Kurtosis	23.48202

```
118 .  
119 . *correct cm and define as a share  
120 . sum cm if cm<1,d
```

CM III - Contribution margin

Percentiles		Smallest		
1%	-21618.18	-628620		
5%	-4976	-210962.5		
10%	-1351.32	-68740	Obs	704
25%	-270.755	-30330	Sum of wgt.	704
50%	-50.415		Mean	-2142.474
		Largest	Std. dev.	25261.04
75%	-8.665	.95		
90%	-2.07	.97	Variance	6.38e+08
95%	-.45	.98	Skewness	-22.55213
99%	.87	.99	Kurtosis	545.5927

```
121 . replace cm = cm * 100 if cm<1 & cm>0 // if 100 times too low  
(29 real changes made)

122 . replace cm = . if cm<0 // if negative  
(674 real changes made, 674 to missing)

123 . replace cm = . if cm>200 // if very high  
(2 real changes made, 2 to missing)

124 . replace cm = cm/100 // define as a share  
(17,018 real changes made)

125 . sum cm,d
```

CM III - Contribution margin

Percentiles		Smallest		
1%	.054	0		
5%	.1452	.01		
10%	.213	.0103	Obs	17,019
25%	.3439	.0104	Sum of wgt.	17,019

50%	.5032	Mean	.4965787
		Largest	.2089403
75%	.645	1.4286	
90%	.7671	1.4731	Variance
95%	.8356	1.4862	Skewness
99%	.9535	1.9459	Kurtosis

126 .
 127 . *gen cs (a ratio of costs to sales)
 128 . gen cs = costs / sales
 (8,853 missing values generated)

129 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6842105	-534.5		
5%	.8397115	0		
10%	.8909847	0	Obs	44,204
25%	.9502805	0	Sum of wgt.	44,204
50%	.9900555		Mean	1.689986
		Largest	Std. dev.	109.9298
75%	1.018742	705		
90%	1.096199	1808.406	Variance	12084.56
95%	1.199697	2181.5	Skewness	204.9998
99%	1.882552	22909.38	Kurtosis	42665.25

130 . replace cs = . if cs<0 // if negative
 (1 real change made, 1 to missing)

131 . replace cs = . if cs>10 // if very high
 (64 real changes made, 64 to missing)

132 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6842105	0		
5%	.8396862	0		
10%	.8908919	0	Obs	44,139
25%	.9502167	0	Sum of wgt.	44,139
50%	.989979		Mean	1.010905
		Largest	Std. dev.	.2907762
75%	1.018515	9.285714		
90%	1.09459	9.440821	Variance	.0845508
95%	1.193869	9.551857	Skewness	14.16514
99%	1.783428	9.857142	Kurtosis	297.1109

133 .
 134 . *generate iis
 135 . //gen iis = cm-ws
 136 . gen iis = cs - ws
 (35,169 missing values generated)

137 . replace iis = . if iis<0
 (9 real changes made, 9 to missing)

138 . sum iis, d

iis

	Percentiles	Smallest		
1%	.2938306	0		
5%	.545115	.0000286		
10%	.6228905	.0000333	Obs	17,879
25%	.7245551	.0017035	Sum of wgt.	17,879
50%	.8157441		Mean	.8150599
		Largest	Std. dev.	.2771807
75%	.8916103	8.710821		
90%	.9525598	8.804132	Variance	.0768292
95%	1.003557	8.866667	Skewness	12.91253
99%	1.465997	9.285714	Kurtosis	304.0015

139 .

140 . *generate cogss

141 . gen cogss = 1-cm

(36,038 missing values generated)

142 . replace cogss = . if cogss<0 // if negative
(4 real changes made, 4 to missing)

143 . sum cogss, d

cogss

	Percentiles	Smallest		
1%	.047	0		
5%	.1648	0		
10%	.233	0	Obs	17,015
25%	.3551	0	Sum of wgt.	17,015
50%	.4969		Mean	.5036768
		Largest	Std. dev.	.2082742
75%	.6562	.9896		
90%	.787	.9897	Variance	.0433781
95%	.8548	.99	Skewness	.0275301
99%	.946	1	Kurtosis	2.449454

144 .

145 .

146 . *correct lp if 1000 times too large

147 . sum lp if lp<10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	-29000	-1.51e+08		
5%	0	-1.24e+08		
10%	0	-7.08e+07	Obs	14,127
25%	317107.1	-6.31e+07	Sum of wgt.	14,127
50%	551783.8		Mean	1.01e+07
		Largest	Std. dev.	2.08e+07
75%	6162000	9.99e+07		
90%	3.99e+07	9.99e+07	Variance	4.32e+14
95%	6.07e+07	1.00e+08	Skewness	2.281886
99%	9.00e+07	1.00e+08	Kurtosis	8.336064

148 . sum lp if lp>10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	1.01e+08	1.00e+08		
5%	1.05e+08	1.00e+08		
10%	1.13e+08	1.00e+08	Obs	1,474
25%	1.39e+08	1.00e+08	Sum of wgt.	1,474
50%	2.12e+08		Mean	5.25e+08
		Largest	Std. dev.	1.20e+09
75%	4.07e+08	1.17e+10		
90%	8.20e+08	1.21e+10	Variance	1.44e+18
95%	1.73e+09	1.35e+10	Skewness	6.340022
99%	6.09e+09	1.42e+10	Kurtosis	52.15768

149 . replace lp = lp/1000 if lp>10^8
(1,474 real changes made)

150 . sum lp,d

LP - Labour productivity

	Percentiles	Smallest		
1%	0	-1.51e+08		
5%	0	-1.24e+08		
10%	60066.67	-7.08e+07	Obs	15,601
25%	282307.7	-6.31e+07	Sum of wgt.	15,601
50%	510337.1		Mean	9187336
		Largest	Std. dev.	2.00e+07
75%	2046187	9.99e+07		
90%	3.66e+07	9.99e+07	Variance	3.99e+14
95%	5.81e+07	1.00e+08	Skewness	2.451636
99%	8.94e+07	1.00e+08	Kurtosis	9.278709

151 .

152 . *generate variables

153 . gen GO = sales

(7,937 missing values generated)

154 . gen W = ws * sales
(35,146 missing values generated)155 . gen II = iis * sales
(35,178 missing values generated)156 . gen COGS= cogss*sales
(38,211 missing values generated)157 . gen VA = GO - II
(35,178 missing values generated)158 . gen L = VA / lp if VA/lp>0
(43,231 missing values generated)159 . gen K = assets
(5,191 missing values generated)

160 .

```
161 .
162 . sum VA GO COGS II W K L
```

Variable	Obs	Mean	Std. dev.	Min	Max
VA	17,879	2.67e+07	1.08e+08	-8.33e+08	4.17e+09
	45,120	1.52e+08	7.99e+08	0	4.18e+10
	14,846	9.27e+07	3.97e+08	0	1.21e+10
	17,879	1.59e+08	7.47e+08	0	2.20e+10
	17,911	2.58e+07	1.03e+08	0	3.19e+09
K	47,866	3.46e+07	3.01e+08	-6367000	1.65e+10
L	9,826	60.6607	148.1642	.0001349	4455.452

```
163 .
164 . sort id year

165 .
166 . //entry year
167 . egen int entryYr = min(year), by(id)
      (315 missing values generated)

168 . egen int exitYr = max(year), by(id)
      (315 missing values generated)

169 .
170 . // dummies for entry and exit year
171 . gen byte entry = (year==entryYr)

172 . gen byte exit = (year==exitYr)

173 .
174 . //number of entries, exits per year
175 . tabstat entry exit , stats(sum) by(year)
```

Summary statistics: Sum
Group variable: year (Year)

year	entry	exit
1993	21	0
1994	17	0
1995	103	0
1996	66	0
1997	28	0
1998	52	0
1999	40	0
2000	38	0
2001	60	0
2002	105	0
2003	679	0
2004	340	3
2005	299	2
2006	221	2
2007	254	3
2008	226	1
2009	186	6
2010	172	1
2011	149	3
2012	134	9
2013	132	6
2014	155	13
2015	235	23
2016	165	21
2017	138	68
2018	164	109
2019	124	210
2020	100	866
2021	53	3053
2022	0	56
2023	0	1
Total	4456	4456

```

176 .
177 . *correct
178 . replace GO = . if GO<0
(0 real changes made)

179 . replace COGS = . if COGS<0
(0 real changes made)

180 . replace II = . if II<0
(0 real changes made)

181 . replace W = . if W<0
(0 real changes made)

182 . replace K = . if K<0
(50 real changes made, 50 to missing)

183 .
184 . *deflate
185 .
186 . /*
> import delimited "deflators.csv", clear
> save "deflators",replace
> */
187 .
188 . gen nace2 = floor(nace/10000)
(1 missing value generated)

189 . merge m:1 year nace2 using "deflators", nogenerate
file deflators.dta not found
r(601);

end of do-file

r(601);

190 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

191 . import delimited "deflators.csv", clear
(encoding automatically selected: ISO-8859-1)
(8 vars, 2,465 obs)

192 . save "deflators",replace
(file deflators.dta not found)
file deflators.dta saved

193 .
end of do-file

194 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

195 . merge m:1 year nace2 using "deflators", nogenerate

```

Result	Number of obs
Not matched	0
Matched	2,465

```
196 . duplicates drop id year, force
      variable id not found
      r(111);

      end of do-file

      r(111);

197 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

198 .
199 . ****
200 . *Markups and Public Procurement
201 . *bakalářská práce
202 . *Institut ekonomických studií
203 . *Matěj Bajgar, D.Phil.
204 . *Marek Chadim
205 . ****
206 . clear

207 . cap log using log

208 . //cd "C:\Users\chadi\Dropbox\Code_and_data"
209 .
210 . //cd "C:/Users/mbajgar/Dropbox/IES/Thesis supervision/Marek Chadim"
211 . // "C:/Users/ThinkPad/Dropbox/IES/Thesis supervision/Marek Chadim"
212 .
213 . ****
214 . *          DATA          *
215 . ****
216 .
217 . * PREPARE ANALYSIS
218 .
219 . * RATIOS
220 . import delimited using "ratios1.csv", clear
      (encoding automatically selected: ISO-8859-1)
      (6 vars, 10,000 obs)

221 . save "ratios", replace
      file ratios.dta saved

222 . forvalues i=2/3{
      2.      import delimited using "ratios`i'.csv", clear
      3.      append using "ratios"
      4.      save "ratios.dta", replace
      5. }
      (encoding automatically selected: ISO-8859-1)
      (6 vars, 10,000 obs)
      file ratios.dta saved
      (encoding automatically selected: ISO-8859-1)
      (6 vars, 10,000 obs)
      file ratios.dta saved

223 .
224 . * FINANCIAL
225 . import delimited using "financial1.csv", clear
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 10,000 obs)

226 . save "financial", replace
      file financial.dta saved
```

```

227 . forvalues i=2/6{
    2.      import delimited using "financial`i'.csv", clear
    3.          append using "financial"
    4.          save "financial.dta", replace
    5. }
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 10,000 obs)
file financial.dta saved
(encoding automatically selected: ISO-8859-1)
(5 vars, 7,724 obs)
file financial.dta saved

228 .
229 . merge m:m id year using "ratios.dta", nogenerate

```

Result	Number of obs
Not matched	27,077
from master	23,474
from using	3,603
Matched	34,250

```

230 .
231 . rename ccosts costs

232 . renamefafixedassets assets

233 . renamesalsalesoutputs sales

234 . rename wvawagesvalueadded wva

235 . rename ws wage sales ws

236 . rename lplabourproductivity lp

237 . rename cmiiicontributionmargin cm

238 .
239 . duplicates drop

```

Duplicates in terms of all variables

(8,209 observations deleted)

```
240 . duplicates drop id year, force
```

Duplicates in terms of **id year**

(376 observations deleted)

```
241 . save "analysis", replace  
      file analysis.dta saved  
  
242 .  
243 . ****  
244 .  
245 . * PREPARE SELECTIONS  
246 .  
247 . import delimited using "selections1.csv", clear  
      (encoding automatically selected: ISO-8859-1)  
      (30 vars, 1,000 obs)  
  
248 . save "selections", replace  
      file selections.dta saved  
  
249 . forvalues i=2/5{  
    2.      import delimited using "selections`i'.csv", clear  
    3.      append using "selections"  
    4.      save "selections.dta", replace  
    5. }  
      (encoding automatically selected: ISO-8859-1)  
      (30 vars, 1,000 obs)  
      file selections.dta saved  
      (encoding automatically selected: ISO-8859-1)  
      (30 vars, 1,000 obs)  
      file selections.dta saved  
      (encoding automatically selected: ISO-8859-1)  
      (30 vars, 1,000 obs)  
      (variable v22 was str19, now str23 to accommodate using data's values)  
      (variable v23 was str19, now str23 to accommodate using data's values)  
      (variable v24 was str19, now str23 to accommodate using data's values)  
      (variable v25 was str19, now str23 to accommodate using data's values)  
      (variable v26 was str19, now str23 to accommodate using data's values)  
      (variable v27 was str19, now str23 to accommodate using data's values)  
      file selections.dta saved  
      (encoding automatically selected: ISO-8859-1)  
      (30 vars, 773 obs)  
      (variable numberofemployeesclassificationc was str17, now str19 to accommodate using data's values)  
      (variable v7 was str17, now str19 to accommodate using data's values)  
      (variable v8 was str17, now str19 to accommodate using data's values)  
      (variable v9 was str17, now str19 to accommodate using data's values)  
      (variable v10 was str17, now str19 to accommodate using data's values)  
      (variable v11 was str17, now str19 to accommodate using data's values)  
      (variable v12 was str17, now str19 to accommodate using data's values)  
      (variable v13 was str17, now str19 to accommodate using data's values)  
      (variable v14 was str17, now str19 to accommodate using data's values)  
      file selections.dta saved  
  
250 .  
251 . rename idièo id  
  
252 . rename typeofsubject subject_type  
  
253 . rename legalform legal_form  
  
254 . rename institutionalsectorsesa2010 inst_sector  
  
255 . rename numberofemployees empl_num  
  
256 . rename numberofemployeesclassificationc empl_cat
```

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257 . drop empl_cat-v28

258 . rename v29 empl_cat

259 . rename mainnacecode nace

260 .

261 .

262 . duplicates drop

Duplicates in terms of all variables

(2 observations deleted)

263 . save "selections", replace
file **selections.dta** saved

264 .

265 .

266 .

267 . ****

268 .

269 . * MERGE & CLEAN

270 .

271 . use "analysis", clear

272 . merge m:1 id using "selections", nogenerate

Result	Number of obs
Not matched from master	315
from using	0
	315
Matched	52,742

273 .

274 . duplicates drop

Duplicates in terms of all variables

(0 observations are duplicates)

275 . duplicates drop id year, force

Duplicates in terms of **id year**

(0 observations are duplicates)

276 .

277 . *correct sales

278 . sum sales,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	0	-3.78e+07		
5%	1916000	-1485000		
10%	7157000	-609000	Obs	45,122
25%	1.80e+07	-333000	Sum of wgt.	45,122
50%	4.13e+07		Mean	1.50e+08
		Largest	Std. dev.	7.69e+08
75%	1.01e+08	2.67e+10		
90%	2.48e+08	2.92e+10	Variance	5.92e+17
95%	4.40e+08	2.96e+10	Skewness	21.66712
99%	1.74e+09	4.18e+10	Kurtosis	657.0697

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279 . sum sales if sales<0,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	-3.78e+07	-3.78e+07		
5%	-3.78e+07	-1485000		
10%	-3.78e+07	-609000	Obs	5
25%	-1485000	-333000	Sum of wgt.	5
50%	-609000		Mean	-8065000
		Largest	Std. dev.	1.67e+07
75%	-333000	-1485000		
90%	-60000	-609000	Variance	2.77e+14
95%	-60000	-333000	Skewness	-1.496159
99%	-60000	-60000	Kurtosis	3.244793

280 . replace sales = . if sales<0 // if negative
(5 real changes made, 5 to missing)

281 . sum sales if sales>10000000000,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	1.02e+10	1.02e+10		
5%	1.05e+10	1.04e+10		
10%	1.09e+10	1.04e+10	Obs	61
25%	1.23e+10	1.05e+10	Sum of wgt.	61
50%	1.49e+10		Mean	1.67e+10
		Largest	Std. dev.	6.12e+09
75%	1.99e+10	2.67e+10		
90%	2.45e+10	2.92e+10	Variance	3.74e+19
95%	2.67e+10	2.96e+10	Skewness	1.537231
99%	4.18e+10	4.18e+10	Kurtosis	6.108424

282 .

283 .

284 .

285 . *correct ws and define as a share

286 . sum ws,d

WS - Wages / Sales

	Percentiles	Smallest		
1%	.55	-223.94		
5%	3.97	-80.47		
10%	5.94	-44.97	Obs	20,297
25%	10.08	-7.75	Sum of wgt.	20,297
50%	16.71		Mean	31.73327
		Largest	Std. dev.	1478.243
75%	24.95	3218.62		
90%	35.45	12220	Variance	2185202
95%	43.43	20600	Skewness	139.7747
99%	70.08	209212.5	Kurtosis	19758.8

287 . sum ws if ws<1,d

WS - Wages / Sales

	Percentiles	Smallest		
1%	-44.97	-223.94		
5%	0	-80.47		
10%	0	-44.97	Obs	247
25%	0	-7.75	Sum of wgt.	247

50%	0	Mean	-1.267287
	Largest	Std. dev.	15.39974
75%	.31	.94	
90%	.7	.95	Variance 237.1521
95%	.83	.97	Skewness -12.96081
99%	.95	.98	Kurtosis 181.5396

288 . replace ws = ws * 100 if ws<1 & ws>0 // if 100 times too low
(84 real changes made)

289 . replace ws = . if ws<0 // if negative
(5 real changes made, 5 to missing)

290 . replace ws = . if ws>100 // if very high
(47 real changes made, 47 to missing)

291 . replace ws = ws/100 // define as a share
(20,087 real changes made)

292 . sum ws,d

WS - Wages / Sales

Percentiles		Smallest		
1%	.0136	0		
5%	.0414	0		
10%	.0605	0	Obs	20,245
25%	.1018	0	Sum of wgt.	20,245
50%	.1679		Mean	.1936106
		Largest	Std. dev.	.1320118
75%	.2503	.9963		
90%	.3554	.9964	Variance	.0174271
95%	.435	1	Skewness	1.756561
99%	.68	1	Kurtosis	8.175119

293 .

294 . *correct wva and define as a share

295 . sum wva if wva<1,d

WVA - Wages / Value added

Percentiles		Smallest		
1%	-3438.46	-27800		
5%	-894.32	-19745.83		
10%	-455.14	-11529.76	Obs	1,689
25%	-137.93	-9784.21	Sum of wgt.	1,689
50%	-30.04		Mean	-235.3029
		Largest	Std. dev.	1079.443
75%	0	.47		
90%	0	.61	Variance	1165197
95%	0	.82	Skewness	-15.73481
99%	0	.94	Kurtosis	333.6609

296 . replace wva = wva * 100 if wva<1 & wva>0 // if 100 times too low
(14 real changes made)

297 . replace wva = . if wva<0 // if negative
(1,166 real changes made, 1,166 to missing)

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298 . replace wva = . if wva>500 // if very high
(225 real changes made, 225 to missing)

299 . replace wva = wva/100 // define as a share
(24,525 real changes made)

300 . sum wva,d

WVA - Wages / Value added

Percentiles		Smallest		
1%	0	0		
5%	.2238	0		
10%	.3493	0	Obs	25,034
25%	.5385	0	Sum of wgt.	25,034
50%	.7314		Mean	.7600449
		Largest	Std. dev.	.4473606
75%	.8889	4.9511		
90%	1.0749	4.9569	Variance	.2001315
95%	1.3695	4.9905	Skewness	3.321587
99%	2.7267	4.9943	Kurtosis	23.47968

301 .
302 . *correct cm and define as a share
303 . sum cm if cm<1,d

CM III - Contribution margin

Percentiles		Smallest		
1%	-21618.18	-628620		
5%	-4976	-210962.5		
10%	-1351.32	-68740	Obs	704
25%	-270.755	-30330	Sum of wgt.	704
50%	-50.415		Mean	-2142.474
		Largest	Std. dev.	25261.04
75%	-8.665	.95		
90%	-2.07	.97	Variance	6.38e+08
95%	-.45	.98	Skewness	-22.55213
99%	.87	.99	Kurtosis	545.5927

304 . replace cm = cm * 100 if cm<1 & cm>0 // if 100 times too low
(29 real changes made)

305 . replace cm = . if cm<0 // if negative
(674 real changes made, 674 to missing)

306 . replace cm = . if cm>200 // if very high
(2 real changes made, 2 to missing)

307 . replace cm = cm/100 // define as a share
(17,018 real changes made)

308 . sum cm,d

CM III - Contribution margin

Percentiles		Smallest		
1%	.054	0		
5%	.1452	.01		
10%	.213	.0103	Obs	17,019
25%	.3439	.0104	Sum of wgt.	17,019
50%	.5032		Mean	.496609
		Largest	Std. dev.	.208964
75%	.645	1.4286		
90%	.7671	1.4731	Variance	.0436659
95%	.8356	1.4862	Skewness	.006217
99%	.9535	1.9459	Kurtosis	2.634636

309 .
 310 . *gen cs (a ratio of costs to sales)
 311 . gen cs = costs / sales
 (8,861 missing values generated)

312 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6831788	-534.5		
5%	.8395725	0		
10%	.8908919	0	Obs	44,196
25%	.9502699	0	Sum of wgt.	44,196
50%	.9900509		Mean	1.690244
		Largest	Std. dev.	109.9398
75%	1.018736	705		
90%	1.096484	1808.406	Variance	12086.75
95%	1.199697	2181.5	Skewness	204.9812
99%	1.890302	22909.38	Kurtosis	42657.51

313 . replace cs = . if cs<0 // if negative
 (1 real change made, 1 to missing)

314 . replace cs = . if cs>10 // if very high
 (64 real changes made, 64 to missing)

315 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6833273	0		
5%	.8393951	0		
10%	.8907205	0	Obs	44,131
25%	.9501935	0	Sum of wgt.	44,131
50%	.9899723		Mean	1.01104
		Largest	Std. dev.	.2936073
75%	1.018515	9.285714		
90%	1.094781	9.440821	Variance	.0862052
95%	1.193863	9.551857	Skewness	14.14203
99%	1.784441	9.857142	Kurtosis	294.3771

316 .

317 . *generate iis
 318 . //gen iis = cm-ws
 319 . gen iis = cs - ws
 (35,168 missing values generated)

320 . replace iis = . if iis<0
 (14 real changes made, 14 to missing)

321 . sum iis, d

iis

	Percentiles	Smallest		
1%	.2938306	0		
5%	.544092	.0000286		
10%	.6228566	.0000333	Obs	17,875
25%	.7244917	.0017035	Sum of wgt.	17,875
50%	.8156609		Mean	.8155616
		Largest	Std. dev.	.2834274
75%	.8915079	8.710821		
90%	.9525722	8.804132	Variance	.0803311
95%	1.003829	8.866667	Skewness	13.10324
99%	1.468548	9.285714	Kurtosis	302.8284

```

322 .
323 . *generate cogss
324 . gen cogss = 1-cm
      (36,038 missing values generated)

325 . replace cogss = . if cogss<0 // if negative
      (4 real changes made, 4 to missing)

326 . sum cogss, d

```

cogss

	Percentiles	Smallest		
1%	.047	0		
5%	.1647	0		
10%	.2329	0	Obs	17,015
25%	.355	0	Sum of wgt.	17,015
50%	.4968		Mean	.5036465
		Largest	Std. dev.	.208298
75%	.6562	.9896		
90%	.787	.9897	Variance	.043388
95%	.8548	.99	Skewness	.0274626
99%	.946	1	Kurtosis	2.449335

```

327 .
328 .
329 . *correct lp if 1000 times too large
330 . sum lp if lp<10^8,d

```

LP - Labour productivity

	Percentiles	Smallest		
1%	-29000	-1.51e+08		
5%	0	-1.24e+08		
10%	0	-7.08e+07	Obs	14,127
25%	317107.1	-6.31e+07	Sum of wgt.	14,127
50%	551783.8		Mean	1.01e+07
		Largest	Std. dev.	2.08e+07
75%	6162000	9.99e+07		
90%	3.99e+07	9.99e+07	Variance	4.32e+14
95%	6.07e+07	1.00e+08	Skewness	2.281886
99%	9.00e+07	1.00e+08	Kurtosis	8.336064

```
331 . sum lp if lp>10^8,d
```

LP - Labour productivity

	Percentiles	Smallest		
1%	1.01e+08	1.00e+08		
5%	1.06e+08	1.00e+08		
10%	1.13e+08	1.00e+08	Obs	1,474
25%	1.39e+08	1.00e+08	Sum of wgt.	1,474
50%	2.12e+08		Mean	5.25e+08
		Largest	Std. dev.	1.20e+09
75%	4.07e+08	1.17e+10		
90%	8.20e+08	1.21e+10	Variance	1.44e+18
95%	1.73e+09	1.35e+10	Skewness	6.339634
99%	6.09e+09	1.42e+10	Kurtosis	52.15493

332 . replace lp = lp/1000 if lp>10^8
 (1,474 real changes made)

333 . sum lp,d

LP - Labour productivity

	Percentiles	Smallest		
1%	0	-1.51e+08		
5%	0	-1.24e+08		
10%	60066.67	-7.08e+07	Obs	15,601
25%	282307.7	-6.31e+07	Sum of wgt.	15,601
50%	510357.1		Mean	9187361
		Largest	Std. dev.	2.00e+07
75%	2046187	9.99e+07	Variance	3.99e+14
90%	3.66e+07	9.99e+07	Skewness	2.451637
95%	5.81e+07	1.00e+08	Kurtosis	9.278716
99%	8.94e+07	1.00e+08		

334 .

335 . *generate variables

336 . gen GO = sales
 (7,940 missing values generated)

337 . gen W = ws * sales
 (35,145 missing values generated)

338 . gen II = iis * sales
 (35,182 missing values generated)

339 . gen COGS= cogss*sales
 (38,212 missing values generated)

340 . gen VA = GO - II
 (35,182 missing values generated)

341 . gen L = VA / lp if VA/lp>0
 (43,235 missing values generated)

342 . gen K = assets
 (5,191 missing values generated)

343 .

344 .

345 . sum VA GO COGS II W K L

Variable	Obs	Mean	Std. dev.	Min	Max
VA	17,875	2.63e+07	1.04e+08	-8.33e+08	4.17e+09
GO	45,117	1.50e+08	7.69e+08	0	4.18e+10
COGS	14,845	9.26e+07	4.01e+08	0	1.21e+10
II	17,875	1.57e+08	7.15e+08	0	2.20e+10
W	17,912	2.59e+07	1.04e+08	0	3.25e+09
K	47,866	3.42e+07	2.87e+08	-6367000	1.65e+10
L	9,822	59.50057	139.5354	.0001349	4455.452

346 .

347 . sort id year

```

348 .
349 . //entry year
350 . egen int entryYr = min(year), by(id)
      (315 missing values generated)

351 . egen int exitYr = max(year), by(id)
      (315 missing values generated)

352 .
353 . // dummies for entry and exit year
354 . gen byte entry = (year==entryYr)

355 . gen byte exit = (year==exitYr)

356 .
357 . //number of entries, exits per year
358 . tabstat entry exit , stats(sum) by(year)

```

Summary statistics: Sum
 Group variable: year (Year)

year	entry	exit
1993	21	0
1994	17	0
1995	103	0
1996	66	0
1997	28	0
1998	52	0
1999	40	0
2000	38	0
2001	60	0
2002	105	0
2003	679	0
2004	340	3
2005	299	2
2006	221	2
2007	254	3
2008	226	1
2009	186	6
2010	172	1
2011	149	3
2012	134	9
2013	132	6
2014	155	13
2015	235	23
2016	165	21
2017	138	68
2018	164	109
2019	124	210
2020	100	866
2021	53	3053
2022	0	56
2023	0	1
Total	4456	4456

```

359 .
360 . *correct
361 . replace GO = . if GO<0
      (0 real changes made)

```

```

362 . replace COGS = . if COGS<0
(0 real changes made)

363 . replace II = . if II<0
(0 real changes made)

364 . replace W = . if W<0
(0 real changes made)

365 . replace K = . if K<0
(50 real changes made, 50 to missing)

366 .
367 . *deflate
368 .
369 . /*
> import delimited "deflators.csv", clear
> save "deflators",replace
> */
370 .
371 . gen nace2 = floor(nace/10000)
(1 missing value generated)

372 . merge m:1 year nace2 using "deflators", nogenerate

```

Result	Number of obs
Not matched from master	2,750
from using	373
	2,377
Matched	52,684

```
373 . duplicates drop id year, force
```

Duplicates in terms of **id year**
(2,348 observations deleted)

```

374 .
375 . gen rG0 = G0/deflatorprdp,
(8,023 missing values generated)

376 . gen rVA = VA/deflatorvalp
(35,233 missing values generated)

377 . gen rII = II/deflatorintp
(35,233 missing values generated)

378 . gen rW = W/deflatorcpi
(35,196 missing values generated)

379 . gen rK = K/deflatorgfcpc
(5,326 missing values generated)

380 . gen rCOGS = COGS/deflatorintp
(38,260 missing values generated)

381 .
382 . *gen log variables

```

```
383 . gen go = ln(rGO)
(8,930 missing values generated)

384 . gen w = ln(rW)
(35,327 missing values generated)

385 . gen ii = ln(rII)
(35,234 missing values generated)

386 . gen va = ln(rVA)
(36,157 missing values generated)

387 . gen l = ln(L)
(43,264 missing values generated)

388 . gen k = ln(rK)
(7,035 missing values generated)

389 . gen cogs = ln(rCOGS)
(38,293 missing values generated)

390 .

391 . save "magnus", replace
(file magnus.dta not found)
file magnus.dta saved

392 .
393 .
394 . ****
395 .
396 . * PREPARE TENDERS
397 .
398 . /*
> insheet using "master_tender_analytics_202207251530.csv", names clear
> save "master_tender_analytics_202207251530", replace
> */
399 .
400 . use "master_tender_analytics_202207251530", clear
file master_tender_analytics_202207251530.dta not found
r(601);

end of do-file

r(601);

401 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

402 . insheet using "master_tender_analytics_202207251530.csv", names clear
(10 vars, 934,722 obs)

403 . save "master_tender_analytics_202207251530", replace
(file master_tender_analytics_202207251530.dta not found)
file master_tender_analytics_202207251530.dta saved

404 .
end of do-file

405 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

406 .
407 . ****
```

```
408 . *Markups and Public Procurement
409 . *bakalářská práce
410 . *Institut ekonomických studií
411 . *Matěj Bajgar, D.Phil.
412 . *Marek Chadim
413 . ****
414 . clear

415 . cap log using log

416 .
417 . //cd "C:\Users\chadi\Dropbox\Code_and_data"
418 .
419 . //cd "C:/Users/mbajgar/Dropbox/IES/Thesis supervision/Marek Chadim"
420 .
421 . ****
422 . * DATA *
423 . ****
424 .
425 . * PREPARE ANALYSIS
426 .
427 . * RATIOS
428 . import delimited using "ratios1.csv", clear
        (encoding automatically selected: ISO-8859-1)
        (6 vars, 10,000 obs)

429 . save "ratios", replace
      file ratios.dta saved

430 . forvalues i=2/3{
    2.      import delimited using "ratios`i'.csv", clear
    3.      append using "ratios"
    4.      save "ratios.dta", replace
    5. }
        (encoding automatically selected: ISO-8859-1)
        (6 vars, 10,000 obs)
      file ratios.dta saved
        (encoding automatically selected: ISO-8859-1)
        (6 vars, 10,000 obs)
      file ratios.dta saved

431 .
432 . * FINANCIAL
433 . import delimited using "financial1.csv", clear
        (encoding automatically selected: ISO-8859-1)
        (5 vars, 10,000 obs)

434 . save "financial", replace
      file financial.dta saved

435 . forvalues i=2/6{
    2.      import delimited using "financial`i'.csv", clear
    3.      append using "financial"
    4.      save "financial.dta", replace
    5. }
        (encoding automatically selected: ISO-8859-1)
        (5 vars, 10,000 obs)
      file financial.dta saved
        (encoding automatically selected: ISO-8859-1)
        (5 vars, 10,000 obs)
      file financial.dta saved
        (encoding automatically selected: ISO-8859-1)
        (5 vars, 10,000 obs)
      file financial.dta saved
        (encoding automatically selected: ISO-8859-1)
        (5 vars, 10,000 obs)
      file financial.dta saved
        (encoding automatically selected: ISO-8859-1)
        (5 vars, 7,724 obs)
      file financial.dta saved
```

```

436 .
437 . merge m:m id year using "ratios.dta", nogenerate
      Result          Number of obs
      Not matched      27,077
                        from master    23,474
                        from using     3,603
      Matched         34,250
      _____
438 .
439 . rename ccosts costs
440 . renamefafixedassets assets
441 . renamesalsalesoutputs sales
442 . renamewvawagesvalueadded wva
443 . renamewswagessales ws
444 . renamelplabourproductivity lp
445 . renamcmciiicontributionmargin cm
446 .
447 . duplicates drop
      Duplicates in terms of all variables
      (8,209 observations deleted)
448 . duplicates drop id year, force
      Duplicates in terms of id year
      (376 observations deleted)
449 . save "analysis", replace
      file analysis.dta saved
450 .
451 . ****
452 .
453 . * PREPARE SELECTIONS
454 .
455 . import delimited using "selections1.csv", clear
      (encoding automatically selected: ISO-8859-1)
      (30 vars, 1,000 obs)
456 . save "selections", replace
      file selections.dta saved
457 . forvalues i=2/5{
      2.      import delimited using "selections`i'.csv", clear
      3.      append using "selections"
      4.      save "selections.dta", replace
      5. }
      (encoding automatically selected: ISO-8859-1)
      (30 vars, 1,000 obs)
      file selections.dta saved
      (encoding automatically selected: ISO-8859-1)
      (30 vars, 1,000 obs)
      file selections.dta saved
      (encoding automatically selected: ISO-8859-1)
      (30 vars, 1,000 obs)
      (variable v22 was str19, now str23 to accommodate using data's values)
      (variable v23 was str19, now str23 to accommodate using data's values)
      (variable v24 was str19, now str23 to accommodate using data's values)
      (variable v25 was str19, now str23 to accommodate using data's values)
      (variable v26 was str19, now str23 to accommodate using data's values)

```

```
(variable v27 was str19, now str23 to accommodate using data's values)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 773 obs)
(variable numberofemployeesclassificationc was str17, now str19 to accommodate using data's values)
(variable v7 was str17, now str19 to accommodate using data's values)
(variable v8 was str17, now str19 to accommodate using data's values)
(variable v9 was str17, now str19 to accommodate using data's values)
(variable v10 was str17, now str19 to accommodate using data's values)
(variable v11 was str17, now str19 to accommodate using data's values)
(variable v12 was str17, now str19 to accommodate using data's values)
(variable v13 was str17, now str19 to accommodate using data's values)
(variable v14 was str17, now str19 to accommodate using data's values)
file selections.dta saved
```

```
458 .
459 . rename idièo id
460 . rename typeofsubject subject_type
461 . rename legalform legal_form
462 . rename institutionalsectorsesa2010 inst_sector
463 . rename numberofemployees empl_num
464 . rename numberofemployeesclassificationc empl_cat
465 . drop empl_cat-v28
466 . rename v29 empl_cat
467 . rename mainnacecode nace
468 .
469 .
470 . duplicates drop
```

Duplicates in terms of all variables

(2 observations deleted)

```
471 . save "selections", replace
file selections.dta saved

472 .
473 .
474 .
475 . ****
476 .
477 . * MERGE & CLEAN
478 .
479 . use "analysis", clear
```

```
480 . merge m:1 id using "selections", nogenerate
```

Result	Number of obs
Not matched	315
from master	0
from using	315
Matched	52,742

481 .
482 . duplicates drop

Duplicates in terms of all variables

(0 observations are duplicates)

483 . duplicates drop id year, force

Duplicates in terms of **id year**

(0 observations are duplicates)

484 .
485 . *correct sales
486 . sum sales,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	0	-3.78e+07		
5%	1931000	-1485000		
10%	7170500	-609000	Obs	45,130
25%	1.80e+07	-333000	Sum of wgt.	45,130
50%	4.14e+07		Mean	1.52e+08
		Largest	Std. dev.	7.84e+08
75%	1.01e+08	2.67e+10		
90%	2.48e+08	2.85e+10	Variance	6.15e+17
95%	4.40e+08	2.96e+10	Skewness	21.27856
99%	1.79e+09	4.18e+10	Kurtosis	628.1391

487 . sum sales if sales<0,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	-3.78e+07	-3.78e+07		
5%	-3.78e+07	-1485000		
10%	-3.78e+07	-609000	Obs	5
25%	-1485000	-333000	Sum of wgt.	5
50%	-609000		Mean	-8065000
		Largest	Std. dev.	1.67e+07
75%	-333000	-1485000		
90%	-60000	-609000	Variance	2.77e+14
95%	-60000	-333000	Skewness	-1.496159
99%	-60000	-60000	Kurtosis	3.244793

488 . replace sales = . if sales<0 // if negative
(5 real changes made, 5 to missing)

489 . sum sales if sales>10000000000,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	1.01e+10	1.01e+10		
5%	1.04e+10	1.02e+10		
10%	1.07e+10	1.04e+10	Obs	60
25%	1.25e+10	1.05e+10	Sum of wgt.	60
50%	1.56e+10		Mean	1.71e+10
		Largest	Std. dev.	6.04e+09
75%	2.06e+10	2.67e+10		
90%	2.54e+10	2.85e+10	Variance	3.65e+19
95%	2.76e+10	2.96e+10	Skewness	1.424486
99%	4.18e+10	4.18e+10	Kurtosis	6.008918

```

490 .
491 .
492 .
493 . *correct ws and define as a share
494 . sum ws,d

```

WS - Wages / Sales

	Percentiles	Smallest		
1%	.55	-223.94		
5%	3.97	-80.47		
10%	5.94	-44.97	Obs	20,297
25%	10.08	-7.75	Sum of wgt.	20,297
50%	16.71		Mean	31.73548
		Largest	Std. dev.	1478.243
75%	24.95	3218.62		
90%	35.46	12220	Variance	2185202
95%	43.44	20600	Skewness	139.7747
99%	70.08	209212.5	Kurtosis	19758.8

```
495 . sum ws if ws<1,d
```

WS - Wages / Sales

	Percentiles	Smallest		
1%	-44.97	-223.94		
5%	0	-80.47		
10%	0	-44.97	Obs	247
25%	0	-7.75	Sum of wgt.	247
50%	0		Mean	-1.267287
		Largest	Std. dev.	15.39974
75%	.31	.94		
90%	.7	.95	Variance	237.1521
95%	.83	.97	Skewness	-12.96081
99%	.95	.98	Kurtosis	181.5396

```
496 . replace ws = ws * 100 if ws<1 & ws>0 // if 100 times too low
(84 real changes made)
```

```
497 . replace ws = . if ws<0 // if negative
(5 real changes made, 5 to missing)
```

```
498 . replace ws = . if ws>100 // if very high
(47 real changes made, 47 to missing)
```

```
499 . replace ws = ws/100 // define as a share
(20,087 real changes made)
```

```
500 . sum ws,d
```

WS - Wages / Sales

	Percentiles	Smallest		
1%	.0136	0		
5%	.0414	0		
10%	.0605	0	Obs	20,245
25%	.1018	0	Sum of wgt.	20,245
50%	.1679		Mean	.1936327
		Largest	Std. dev.	.1320206
75%	.2503	.9963		
90%	.3554	.9964	Variance	.0174294
95%	.435	1	Skewness	1.756247
99%	.68	1	Kurtosis	8.17258

501 .
 502 . *correct wva and define as a share
 503 . sum wva if wva<1,d

WVA - Wages / Value added

	Percentiles	Smallest		
1%	-3438.46	-27800		
5%	-894.32	-19745.83		
10%	-455.14	-11529.76	Obs	1,689
25%	-137.93	-9784.21	Sum of wgt.	1,689
50%	-30.04		Mean	-235.3029
		.47	Std. dev.	1079.443
75%	0	.61	Variance	1165197
90%	0	.82	Skewness	-15.73481
95%	0	.94	Kurtosis	333.6609
99%	0			

504 . replace wva = wva * 100 if wva<1 & wva>0 // if 100 times too low
 (14 real changes made)

505 . replace wva = . if wva<0 // if negative
 (1,166 real changes made, 1,166 to missing)

506 . replace wva = . if wva>500 // if very high
 (225 real changes made, 225 to missing)

507 . replace wva = wva/100 // define as a share
 (24,525 real changes made)

508 . sum wva,d

WVA - Wages / Value added

	Percentiles	Smallest		
1%	0	0		
5%	.2247	0		
10%	.3495	0	Obs	25,034
25%	.5386	0	Sum of wgt.	25,034
50%	.7314		Mean	.7600981
		4.9511	Std. dev.	.4473208
75%	.8889	4.9511		
90%	1.0749	4.9569	Variance	.2000959
95%	1.3695	4.9905	Skewness	3.322402
99%	2.7267	4.9943	Kurtosis	23.48602

509 .
 510 . *correct cm and define as a share
 511 . sum cm if cm<1,d

CM III - Contribution margin

	Percentiles	Smallest		
1%	-21618.18	-628620		
5%	-4976	-210962.5		
10%	-1351.32	-68740	Obs	704
25%	-270.755	-30330	Sum of wgt.	704
50%	-50.415		Mean	-2142.474
		.95	Std. dev.	25261.04
75%	-8.665	.95		
90%	-2.07	.97	Variance	6.38e+08
95%	-.45	.98	Skewness	-22.55213
99%	.87	.99	Kurtosis	545.5927

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512 . replace cm = cm * 100 if cm<1 & cm>0 // if 100 times too low
(29 real changes made)

513 . replace cm = . if cm<0 // if negative
(674 real changes made, 674 to missing)

514 . replace cm = . if cm>200 // if very high
(2 real changes made, 2 to missing)

515 . replace cm = cm/100 // define as a share
(17,018 real changes made)

516 . sum cm,d

CM III - Contribution margin

	Percentiles	Smallest		
1%	.054	0		
5%	.1452	.01		
10%	.213	.0103	Obs	17,019
25%	.3439	.0104	Sum of wgt.	17,019
50%	.5032		Mean	.4965307
		Largest	Std. dev.	.2088146
75%	.645	1		
90%	.7671	1.4286	Variance	.0436035
95%	.8356	1.4862	Skewness	.0011258
99%	.9533	1.9459	Kurtosis	2.613726

517 .

518 . *gen cs (a ratio of costs to sales)

519 . gen cs = costs / sales
(8,847 missing values generated)

520 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6834377	-534.5		
5%	.8395725	0		
10%	.8908417	0	Obs	44,210
25%	.9502704	0	Sum of wgt.	44,210
50%	.9900561		Mean	1.689991
		Largest	Std. dev.	109.9223
75%	1.018754	705		
90%	1.096197	1808.406	Variance	12082.92
95%	1.199765	2181.5	Skewness	205.0137
99%	1.882552	22909.38	Kurtosis	42671.03

521 . replace cs = . if cs<0 // if negative
(1 real change made, 1 to missing)

522 . replace cs = . if cs>10 // if very high
(64 real changes made, 64 to missing)

523 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6834377	0		
5%	.8393951	0		
10%	.8907097	0	Obs	44,145
25%	.9502056	0	Sum of wgt.	44,145

50%	.9899803	Mean	1.011002
		Largest	.2930915
75%	1.018518	9.285714	
90%	1.09459	9.440821	Variance
95%	1.193869	9.551857	Skewness
99%	1.783428	9.857142	Kurtosis

524 .
 525 . *generate iis
 526 . //gen iis = cm-ws
 527 . gen iis = cs - ws
 (35,162 missing values generated)

528 . replace iis = . if iis<0
 (12 real changes made, 12 to missing)

529 . sum iis, d

iis

	Percentiles	Smallest	
1%	.2938306	0	
5%	.5453302	.0000286	
10%	.6228566	.0000333	Obs
25%	.7244864	.0017035	Sum of wgt.
50%	.8156609		Mean
			Std. dev.
75%	.8915079	8.710821	
90%	.9525722	8.804132	Variance
95%	1.003806	8.866667	Skewness
99%	1.468548	9.285714	Kurtosis

530 .
 531 . *generate cogss
 532 . gen cogss = 1-cm
 (36,038 missing values generated)

533 . replace cogss = . if cogss<0 // if negative
 (3 real changes made, 3 to missing)

534 . sum cogss, d

cogss

	Percentiles	Smallest	
1%	.047	0	
5%	.1647	0	
10%	.233	0	Obs
25%	.3551	0	Sum of wgt.
50%	.49685		Mean
			Std. dev.
75%	.65615	.9896	
90%	.787	.9897	Variance
95%	.8548	.99	Skewness
99%	.946	1	Kurtosis

535 .
 536 .
 537 . *correct lp if 1000 times too large

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538 . sum lp if lp<10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	-29000	-1.51e+08		
5%	0	-1.24e+08		
10%	0	-7.08e+07	Obs	14,127
25%	317107.1	-6.31e+07	Sum of wgt.	14,127
50%	551783.8		Mean	1.01e+07
		Largest	Std. dev.	2.08e+07
75%	6162000	9.99e+07		
90%	3.99e+07	9.99e+07	Variance	4.32e+14
95%	6.07e+07	1.00e+08	Skewness	2.281886
99%	9.00e+07	1.00e+08	Kurtosis	8.336064

539 . sum lp if lp>10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	1.01e+08	1.00e+08		
5%	1.06e+08	1.00e+08		
10%	1.13e+08	1.00e+08	Obs	1,474
25%	1.39e+08	1.00e+08	Sum of wgt.	1,474
50%	2.13e+08		Mean	5.25e+08
		Largest	Std. dev.	1.20e+09
75%	4.07e+08	1.17e+10		
90%	8.20e+08	1.21e+10	Variance	1.44e+18
95%	1.73e+09	1.35e+10	Skewness	6.339835
99%	6.09e+09	1.42e+10	Kurtosis	52.15764

540 . replace lp = lp/1000 if lp>10^8

(1,474 real changes made)

541 . sum lp,d

LP - Labour productivity

	Percentiles	Smallest		
1%	0	-1.51e+08		
5%	0	-1.24e+08		
10%	60066.67	-7.08e+07	Obs	15,601
25%	282500	-6.31e+07	Sum of wgt.	15,601
50%	510357.1		Mean	9187372
		Largest	Std. dev.	2.00e+07
75%	2046187	9.99e+07		
90%	3.66e+07	9.99e+07	Variance	3.99e+14
95%	5.81e+07	1.00e+08	Skewness	2.451637
99%	8.94e+07	1.00e+08	Kurtosis	9.27872

542 .

543 . *generate variables

544 . gen GO = sales

(7,932 missing values generated)

545 . gen W = ws * sales

(35,140 missing values generated)

```

546 . gen II = iis * sales
      (35,174 missing values generated)

547 . gen COGS= cogss*sales
      (38,206 missing values generated)

548 . gen VA = GO - II
      (35,174 missing values generated)

549 . gen L = VA / lp if VA/lp>0
      (43,230 missing values generated)

550 . gen K = assets
      (5,187 missing values generated)

551 .
552 .
553 . sum VA GO COGS II W K L

```

Variable	Obs	Mean	Std. dev.	Min	Max
VA	17,883	2.66e+07	1.08e+08	-8.33e+08	4.17e+09
GO	45,125	1.52e+08	7.84e+08	0	4.18e+10
COGS	14,851	9.26e+07	3.97e+08	0	1.21e+10
II	17,883	1.58e+08	7.33e+08	0	2.20e+10
W	17,917	2.58e+07	1.02e+08	0	3.19e+09
K	47,870	3.42e+07	2.83e+08	-6367000	1.65e+10
L	9,827	59.91019	139.3321	.0001349	3399.693

```

554 .
555 . sort id year

556 .
557 . //entry year
558 . egen int entryYr = min(year), by(id)
      (315 missing values generated)

559 . egen int exitYr = max(year), by(id)
      (315 missing values generated)

560 .
561 . // dummies for entry and exit year
562 . gen byte entry = (year==entryYr)

563 . gen byte exit = (year==exitYr)

564 .
565 . //number of entries, exits per year
566 . tabstat entry exit , stats(sum) by(year)

```

Summary statistics: Sum
Group variable: year (Year)

year	entry	exit
1993	21	0
1994	17	0
1995	103	0
1996	66	0
1997	28	0
1998	52	0
1999	40	0
2000	38	0
2001	60	0
2002	105	0
2003	679	0
2004	340	3
2005	299	2
2006	221	2
2007	254	3
2008	226	1
2009	186	6

2010	172	1
2011	149	3
2012	134	9
2013	132	6
2014	155	13
2015	235	23
2016	165	21
2017	138	68
2018	164	109
2019	124	210
2020	100	866
2021	53	3053
2022	0	56
2023	0	1
Total	4456	4456

```

567 .
568 . *correct
569 . replace GO = . if GO<0
      (0 real changes made)

570 . replace COGS = . if COGS<0
      (0 real changes made)

571 . replace II = . if II<0
      (0 real changes made)

572 . replace W = . if W<0
      (0 real changes made)

573 . replace K = . if K<0
      (50 real changes made, 50 to missing)

574 .
575 . *deflate
576 .
577 . /*
   > import delimited "deflators.csv", clear
   > save "deflators",replace
   > */
578 .
579 . gen nace2 = floor(nace/10000)
      (1 missing value generated)

580 . merge m:1 year nace2 using "deflators", nogenerate

```

Result	Number of obs
Not matched	2,750
from master	373
from using	2,377
Matched	52,684

```
581 . duplicates drop id year, force
```

Duplicates in terms of **id year**
 (2,348 observations deleted)

```
582 .
583 . gen rG0 = G0/deflatorprdp,
      (8,015 missing values generated)

584 . gen rVA = VA/deflatorvalp
      (35,225 missing values generated)

585 . gen rII = II/deflatorintp
      (35,225 missing values generated)

586 . gen rW = W/deflatorcpi
      (35,191 missing values generated)

587 . gen rK = K/deflatorgfcpc
      (5,322 missing values generated)

588 . gen rCOGS = COGS/deflatorintp
      (38,254 missing values generated)

589 .
590 . *gen log variables
591 . gen go = ln(rG0)
      (8,917 missing values generated)

592 . gen w = ln(rW)
      (35,320 missing values generated)

593 . gen ii = ln(rII)
      (35,226 missing values generated)

594 . gen va = ln(rVA)
      (36,150 missing values generated)

595 . gen l = ln(L)
      (43,259 missing values generated)

596 . gen k = ln(rK)
      (7,032 missing values generated)

597 . gen cogs = ln(rCOGS)
      (38,285 missing values generated)

598 .
599 . save "magnus", replace
      file magnus.dta saved

600 .
601 .
602 . ****
603 .
604 . * PREPARE TENDERS
605 .
606 . /*
> insheet using "master_tender_analytics_202207251530.csv", names clear
> save "master_tender_analytics_202207251530", replace
> */
607 .
608 . use "master_tender_analytics_202207251530", clear

609 .
610 .
```

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```
611 . *id  
612 . rename bidder_id id  
  
613 . drop if length(id)==2 // foreign bidders  
(4,778 observations deleted)  
  
614 . destring id, replace  
      id: all characters numeric; replaced as long
```

```
615 .  
616 .  
617 . *prep for analysis  
618 . rename bid_final_price zakazky
```

```
619 . tabulate src
```

src	Freq.	Percent	Cum.
profil	600,470	64.57	64.57
vestnik	329,474	35.43	100.00
Total	929,944	100.00	

```
620 . collapse (sum) zakazky, by(id year)
```

```
621 .  
622 .  
623 . save "tenders", replace  
      (file tenders.dta not found)  
      file tenders.dta saved  
  
624 .  
625 . *****  
626 .  
627 . *MERGE FIRM AND TENDER DATA  
628 . use "magnus", replace  
  
629 .  
630 . merge 1:1 id year using "tenders"
```

Result	Number of obs
Not matched	199,736
from master	38,716 (_merge==1)
from using	161,020 (_merge==2)
Matched	14,370 (_merge==3)

```
631 .  
632 . /*  
>     Result          # of obs.  
>     -----  
>     not matched    199,736  
>         from master 38,716 (_merge==1)  
>         from using  161,020 (_merge==2)  
>  
>     matched        14,370 (_merge==3)  
>  
>     -----  
> */
```

```

633 .
634 . drop if _merge==2
      (161,020 observations deleted)

635 .
636 .
637 . replace zakazky = 0 if zakazky==.
      (38,716 real changes made)

638 . bysort id (year): gen zakazky_l11 = zakazky[_n-1]
      (4,771 missing values generated)

639 . bysort id (year): gen zakazky_l12 = zakazky[_n-2]
      (9,145 missing values generated)

640 .
641 . egen zakazky_last3 = rowmean(zakazky zakazky_l11 zakazky_l12)

642 . gen zakazky_last3_dummy = zakazky_last3>0

643 .
644 .
645 .
646 . gen zakazky_last3_share = zakazky_last3/sales
      (8,864 missing values generated)

647 . sum zakazky_last3_share, d

```

zakazky_last3_share

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	44,222
25%	0	0	Sum of wgt.	44,222
50%	0		Mean	.2589088
		Largest	Std. dev.	32.21973
75%	.0340587	11.50745		
90%	.3062752	17.95798	Variance	1038.111
95%	.6090559	123.6422	Skewness	210.1428
99%	1.447871	6774.08	Kurtosis	44180.29

```
648 . sum zakazky_last3_share if zakazky_last3_share>1, d
```

zakazky_last3_share

	Percentiles	Smallest		
1%	1.004784	1.000674		
5%	1.030006	1.00096		
10%	1.056904	1.001428	Obs	985
25%	1.148242	1.00184	Sum of wgt.	985
50%	1.38235		Mean	8.729842
		Largest	Std. dev.	215.8196
75%	1.79897	11.50745		
90%	2.584418	17.95798	Variance	46578.1
95%	3.376394	123.6422	Skewness	31.32025
99%	8.725594	6774.08	Kurtosis	982.2987

```
649 . replace zakazky_last3_share = 1 if zakazky_last3_share>1
      (9,849 real changes made)
```

650 . sum zakazky_last3_share,d

zakazky_last3_share

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	53,086
25%	0	0	Sum of wgt.	53,086
50%	0		Mean	.2392263
		Largest	Std. dev.	.3921483
75%	.3071479	1		
90%	1	1	Variance	.1537803
95%	1	1	Skewness	1.286168
99%	1	1	Kurtosis	2.827117

651 .

652 .

653 . ****

654 .

655 . *restrict sample to years with enough data, known industry and pp engagement

656 .

657 . drop if year<2006 | year>2021

(6,492 observations deleted)

658 . keep if nace2 == 41 | nace2 == 42 | nace2 == 43

(17 observations deleted)

659 .

660 . save "data", replace
(file data.dta not found)

file data.dta saved

661 .

662 .

663 . ****

664 . ****

665 .

666 . use "data", replace

667 .

668 . * SUMMARY STATISTICS

669 . gen GO_mil = rGO/1000000
(7,191 missing values generated)670 . gen VA_mil = rVA/1000000
(29,972 missing values generated)671 . gen K_mil = rK/1000000
(4,482 missing values generated)672 . gen II_mil = rII/1000000
(29,972 missing values generated)673 . gen W_mil = rW/1000000
(29,940 missing values generated)674 . gen COGS_mil = rCOGS/1000000
(32,913 missing values generated)

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675 .

676 . tabstat GO_mil COGS_mil II_mil K_mil W_mil L if !missing(COGS_mil,K_mil,II_mil), stat(mean median sd min max count)

Stats	GO_mil	COGS_mil	II_mil	K_mil	W_mil	L
Mean	199.21	87.53	173.95	44.98	28.63	66.81
p50	57.60	26.72	47.90	6.89	9.17	19.59
SD	860.57	369.79	781.54	323.41	106.40	139.71
Min	0.01	0.00	0.00	0.00	0.00	0.00
Max	26070.78	12067.94	22398.16	15179.35	3477.34	3399.69
N	13463.00	13463.00	13463.00	13463.00	13463.00	7562.00

677 .

678 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) , stat(mean median

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	78.23	38.52	35.25
p50	35.26	18.49	3.94
SD	140.42	71.89	394.13
Min	0.00	0.00	0.00
Max	2716.69	1612.83	15179.35
N	7113.00	7113.00	7113.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	343.99	144.92	56.06
p50	93.87	39.43	11.67
SD	1310.83	542.50	218.42
Min	0.00	0.00	0.00
Max	26070.78	12067.94	4938.02
N	6371.00	6371.00	6371.00

679 .

680 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==41 , stat(m

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	89.57	40.68	48.83
p50	42.57	20.03	4.74
SD	161.65	75.11	506.69
Min	0.00	0.00	0.00
Max	2716.69	1612.83	15179.35
N	3399.00	3399.00	3399.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	251.87	102.52	42.81
p50	95.36	36.89	10.73
SD	606.40	293.81	114.92
Min	0.00	0.00	0.00
Max	6123.51	5404.74	1372.37
N	3762.00	3762.00	3762.00

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681 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==42 , stat(m)

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	96.51	42.47	20.67
p50	50.38	26.56	10.74
SD	165.76	51.64	35.57
Min	0.07	0.02	0.00
Max	1872.39	476.62	376.52
N	283.00	283.00	283.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	930.13	328.82	148.59
p50	131.12	63.86	25.54
SD	3157.85	1044.59	518.67
Min	3.22	1.12	0.00
Max	26070.78	8383.78	4938.02
N	795.00	795.00	795.00

682 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==43 , stat(m)

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	65.50	36.07	23.01
p50	28.79	16.73	3.02
SD	111.44	69.97	259.40
Min	0.01	0.00	0.00
Max	1875.44	1053.81	6730.56
N	3431.00	3431.00	3431.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	278.13	152.24	42.98
p50	79.19	38.61	9.79
SD	857.04	598.73	134.58
Min	0.02	0.01	0.00
Max	12579.94	12067.94	1739.88
N	1814.00	1814.00	1814.00

683 .

684 .

685 . tabstat zakazky_last3_dummy, by(year) stat(N sum)

Summary for variables: zakazky_last3_dummy
Group variable: year (Year)

year	N	Sum
2006	1828	326
2007	2107	436
2008	2328	525
2009	2541	614
2010	2661	643
2011	2641	616
2012	2621	686
2013	2015	669
2014	2358	879
2015	3431	1447
2016	3649	1639
2017	3763	1840
2018	3793	1918
2019	3856	1990
2020	3878	1985
2021	3107	1556
Total	46577	17769

686 . tabstat zakazky_last3_share if zakazky_last3_dummy == 1, by(year) stat(N mean)

Summary for variables: zakazky_last3_share
Group variable: year (Year)

year	N	Mean
2006	326	.1281358
2007	436	.1710595
2008	525	.1969857
2009	614	.2354041
2010	643	.2639127
2011	616	.3003815
2012	686	.3276279
2013	669	.6416897
2014	879	.5231217
2015	1447	.2124483
2016	1639	.3225317
2017	1840	.3522476
2018	1918	.3876789
2019	1990	.4214266
2020	1985	.463295
2021	1556	.5550712
Total	17769	.3760833

687 .

688 . ****ESTIMATION****

689 . *

ESTIMATION

690 . ****ESTIMATION****

691 . use "data", replace

692 . set seed 42

693 .

694 .

695 . *setting panel structure

696 . xtset id year, yearly

Panel variable: id (unbalanced)

Time variable: year, 2006 to 2021, but with gaps

Delta: 1 year

```

697 . gen proxy=cogs
(32,942 missing values generated)

698 .
699 . *-----OLS-----*
700 .
701 . reg go k cogs i.year if nace2==41, cluster(id)

```

Linear regression

Number of obs	=	7,065
F(17, 952)	=	218.44
Prob > F	=	0.0000
R-squared	=	0.8371
Root MSE	=	.52287

(Std. err. adjusted for 953 clusters in id)

go	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
k	.0784509	.0126068	6.22	0.000	.0537106	.1031912
	.8487572	.0264487	32.09	0.000	.7968527	.9006617
year						
2007	.0149579	.0269656	0.55	0.579	-.0379609	.0678767
2008	-.0284629	.0325806	-0.87	0.383	-.0924009	.0354751
2009	-.0755511	.0338471	-2.23	0.026	-.1419746	-.0091275
2010	-.1093468	.0346761	-3.15	0.002	-.1773973	-.0412964
2011	-.0718538	.0375703	-1.91	0.056	-.1455841	.0018764
2012	-.0967049	.0382123	-2.53	0.012	-.1716949	-.0217149
2013	-.155625	.0446105	-3.49	0.001	-.2431712	-.0680787
2014	-.1646261	.0418851	-3.93	0.000	-.2468239	-.0824282
2015	-.0599372	.0364234	-1.65	0.100	-.1314167	.0115423
2016	-.1007045	.0382622	-2.63	0.009	-.1757925	-.0256166
2017	-.0938207	.0366967	-2.56	0.011	-.1658364	-.0218049
2018	-.0630071	.0379148	-1.66	0.097	-.1374133	.0113991
2019	-.0615239	.0378981	-1.62	0.105	-.1358974	.0128495
2020	-.0778091	.0374532	-2.08	0.038	-.1513095	-.0043087
2021	-.1477222	.0370383	-3.99	0.000	-.2204084	-.075036
_cons	2.285996	.3596007	6.36	0.000	1.580294	2.991697

```

702 . estimates store ols41
703 . gen bwols41=_b[cogs]
704 . gen bkols41=_b[k]
705 . gen markup_OLS41=_b[cogs]/cogss
(30,986 missing values generated)
706 . sum markup_OLS41,d

```

markup_OLS41

	Percentiles	Smallest		
1%	.8972064	.8487572		
5%	.9929308	.8573306		
10%	1.079432	.8575904	Obs	15,591
25%	1.295813	.8576771	Sum of wgt.	15,591
50%	1.71224		Mean	3.2943
		Largest	Std. dev.	52.04751
75%	2.392887	848.7682	Variance	2708.943
90%	3.633378	2121.857	Skewness	74.14973
95%	5.100704	4244.347	Kurtosis	5837.533
99%	15.12936	4244.347		

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707 . replace markup_OLS41 = . if markup_OLS41<r(p1) | markup_OLS41>r(p99)
(310 real changes made, 310 to missing)

708 . tabstat markup_OLS41, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS41	2.142095	1.71224	1.517944

709 .

710 .

711 . reg go k cogs i.year if nace2==42, cluster(id)

Linear regression

	Number of obs	=	1,072
F(17, 112)	=	194.11	
Prob > F	=	0.0000	
R-squared	=	0.9323	
Root MSE	=	.3914	

(Std. err. adjusted for 113 clusters in id)

go	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
k	.0280213	.0364499	0.77	0.444	-.0441995	.1002421
	1.003313	.0462445	21.70	0.000	.9116851	1.09494
year						
2007	-.0246169	.0376651	-0.65	0.515	-.0992454	.0500116
2008	-.1129212	.0639433	-1.77	0.080	-.2396167	.0137742
2009	-.0916884	.0653339	-1.40	0.163	-.221139	.0377623
2010	-.1456701	.0655165	-2.22	0.028	-.2754826	-.0158576
2011	-.1306565	.0723589	-1.81	0.074	-.2740265	.0127134
2012	-.2076688	.0736547	-2.82	0.006	-.3536061	-.0617314
2013	-.2265704	.0716615	-3.16	0.002	-.3685585	-.0845822
2014	-.102065	.061305	-1.66	0.099	-.223533	.019403
2015	-.0949136	.0691555	-1.37	0.173	-.2319365	.0421092
2016	-.1696853	.070404	-2.41	0.018	-.3091817	-.0301889
2017	-.1740494	.0659858	-2.64	0.010	-.3047918	-.043307
2018	-.2147799	.0668896	-3.21	0.002	-.3473131	-.0822468
2019	-.1627193	.0673201	-2.42	0.017	-.2961055	-.0293331
2020	-.1498757	.0698069	-2.15	0.034	-.2881892	-.0115622
2021	-.1507103	.0813038	-1.85	0.066	-.3118034	.0103827
_cons	.3852556	.4289177	0.90	0.371	-.4645899	1.235101

712 . estimates store ols42

713 . gen bwols42=_b[cogs]

714 . gen bkols42=_b[k]

715 . gen markup_OLS42=_b[cogs]/cogss
(30,986 missing values generated)

716 . sum markup_OLS42,d

markup_OLS42

	Percentiles	Smallest
1%	1.060584	1.003313
5%	1.17374	1.013447
10%	1.275992	1.013754
25%	1.531775	1.013857
		Obs 15,591
		Sum of wgt. 15,591

50%	2.024032	Mean	3.894179
		Largest	61.52517
75%	2.828623	Std. dev.	
90%	4.295003	Variance	3785.346
95%	6.029523	Skewness	74.14973
99%	17.88436	Kurtosis	5837.533

717 . replace markup_OLS42 = . if markup_OLS42<r(p1) | markup_OLS42>r(p99)
(310 real changes made, 310 to missing)

718 . tabstat markup_OLS42, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS42	2.532163	2.024032	1.794356

719 .
720 .
721 . reg go k cogs i.year if nace2==43, cluster(id)

Linear regression

Number of obs	=	5,134
F(17, 808)	=	216.55
Prob > F	=	0.000
R-squared	=	0.8569
Root MSE	=	.49376

(Std. err. adjusted for 809 clusters in id)

go	Coefficient	Robust				
		std. err.	t	P> t	[95% conf. interval]	
k	.1037225	.0178596	5.81	0.000	.0686659	.1387792
	.7891407	.0260961	30.24	0.000	.7379166	.8403648
year						
2007	.0164353	.0322337	0.51	0.610	-.0468364	.0797071
2008	.0182249	.0301736	0.60	0.546	-.041003	.0774528
2009	-.0071756	.034439	-0.21	0.835	-.074776	.0604249
2010	-.0632273	.0325128	-1.94	0.052	-.1270468	.0005923
2011	-.051098	.034609	-1.48	0.140	-.1190322	.0168363
2012	-.063976	.0341033	-1.88	0.061	-.1309174	.0029655
2013	-.0474005	.0449659	-1.05	0.292	-.1356643	.0408634
2014	-.021466	.0360953	-0.59	0.552	-.0923175	.0493856
2015	.0171899	.0360049	0.48	0.633	-.0534842	.087864
2016	.0223757	.0413991	0.54	0.589	-.0588868	.1036382
2017	.0235417	.0410424	0.57	0.566	-.0570205	.104104
2018	.0584137	.0414579	1.41	0.159	-.0229641	.1397915
2019	.0317093	.0407241	0.78	0.436	-.0482282	.1116468
2020	.0046566	.0405145	0.11	0.909	-.0748694	.0841826
2021	-.0160494	.0432865	-0.37	0.711	-.1010166	.0689178
_cons	2.660814	.3068528	8.67	0.000	2.058491	3.263136

722 . estimates store ols43

723 . gen bwols43=_b[cogs]

724 . gen bkols43=_b[k]

725 . gen markup_OLS43=_b[cogs]/cogss
 (30,986 missing values generated)

726 . sum markup_OLS43,d

markup_OLS43

	Percentiles	Smallest		
1%	.8341868	.7891407		
5%	.9231876	.7971118		
10%	1.003613	.7973534	Obs	15,591
25%	1.204795	.797434	Sum of wgt.	15,591
50%	1.591972		Mean	3.062909
		Largest	Std. dev.	48.39171
75%	2.224812	789.1509	Variance	2341.757
90%	3.37817	1972.818	Skewness	74.14973
95%	4.742432	3946.225	Kurtosis	5837.533
99%	14.06668	3946.225		

727 . replace markup_OLS43 = . if markup_OLS43<r(p1) | markup_OLS43>r(p99)
 (310 real changes made, 310 to missing)

728 . tabstat markup_OLS43, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS43	1.991635	1.591972	1.411324

729 .

730 .

731 . estout ols41 ols42 ols43, cells(b(star fmt(3)) se(par fmt(3))) ///
 > legend label varlabels(_cons Constant) ///
 > stats(N)

	ols41 b/se	ols42 b/se	ols43 b/se
k	0.078*** (0.013)	0.028 (0.036)	0.104*** (0.018)
cogs	0.849*** (0.026)	1.003*** (0.046)	0.789*** (0.026)
Year=2006	0.000 (.)	0.000 (.)	0.000 (.)
Year=2007	0.015 (0.027)	-0.025 (0.038)	0.016 (0.032)
Year=2008	-0.028 (0.033)	-0.113 (0.064)	0.018 (0.030)
Year=2009	-0.076* (0.034)	-0.092 (0.065)	-0.007 (0.034)
Year=2010	-0.109** (0.035)	-0.146* (0.066)	-0.063 (0.033)
Year=2011	-0.072 (0.038)	-0.131 (0.072)	-0.051 (0.035)
Year=2012	-0.097* (0.038)	-0.208** (0.074)	-0.064 (0.034)
Year=2013	-0.156*** (0.045)	-0.227** (0.072)	-0.047 (0.045)
Year=2014	-0.165*** (0.042)	-0.102 (0.061)	-0.021 (0.036)
Year=2015	-0.060 (0.036)	-0.095 (0.069)	0.017 (0.036)
Year=2016	-0.101** (0.038)	-0.170* (0.070)	0.022 (0.041)
Year=2017	-0.094* (0.037)	-0.174** (0.066)	0.024 (0.041)
Year=2018	-0.063 (0.038)	-0.215** (0.067)	0.058 (0.041)
Year=2019	-0.062 (0.038)	-0.163* (0.067)	0.032 (0.041)
Year=2020	-0.078* (0.038)	-0.150* (0.067)	0.005 (0.041)

	(0.037)	(0.070)	(0.041)
Year=2021	-0.148***	-0.151	-0.016
	(0.037)	(0.081)	(0.043)
Constant	2.286***	0.385	2.661***
	(0.360)	(0.429)	(0.307)
N	7065.000	1072.000	5134.000

* p<0.05, ** p<0.01, *** p<0.001

```

732 .
733 . gen markup_OLS = markup_OLS41 if nace2==41
(38,499 missing values generated)

734 . replace markup_OLS = markup_OLS42 if nace2==42
(1,266 real changes made)

735 . replace markup_OLS = markup_OLS43 if nace2==43
(5,937 real changes made)

736 .
737 .
738 . sum markup_OLS,d

```

markup_OLS

	Percentiles	Smallest		
1%	.8784823	.8341868		
5%	.9618975	.8341868		
10%	1.043009	.8346279	Obs	15,281
25%	1.271737	.8347162	Sum of wgt.	15,281
50%	1.700002		Mean	2.118447
		Largest	Std. dev.	1.491696
75%	2.383391	14.55844		
90%	3.495705	14.83841	Variance	2.225156
95%	4.606776	14.8644	Skewness	3.607992
99%	9.04978	14.89048	Kurtosis	21.36209

```
739 . tabstat markup_OLS, statistics( median )
```

Variable	p50
markup_OLS	1.700002

```
740 . tabulate zakazky_last3_dummy, summarize(markup_OLS)
```

zakazky_las t3_dummy	Summary of markup_OLS		
	Mean	Std. dev.	Freq.
0	2.0452195	1.6569227	8,049
1	2.199947	1.2782154	7,232
Total	2.118447	1.4916955	15,281

```

741 .
742 . /* plot the graph */
743 . tw (kdensity markup_OLS if nace2 == 41, lw(medthick) lp(_.) lc(ebblue)) (kdensity markup_OLS if nace2 == 42, lw(medthick) lp(_.-) lc(forest_green)) /*
> */ (kdensity markup_OLS if nace2 == 43, lw(medthick) lp(.-..) lc(forest_green)) /*
> */ if markup_OLS > 0 & markup_OLS < 3, ytitle("Density") xtitle("mu_OLS") legend(order( 1 "Sector 41" 2 "Secto

```

```

744 .
745 .
746 . gen lmu_OLS= ln(markup_OLS)
    (31,296 missing values generated)

747 .
748 .
749 . *-----fixed effects-----*
750 .
751 . xtreg go cogs k i.year, fe cluster(id)

Fixed-effects (within) regression                               Number of obs     =  13,271
Group variable: id                                         Number of groups  =   1,875

R-squared:                                                 Obs per group:
    Within = 0.6804                                         min =          1
    Between = 0.8646                                         avg =        7.1
    Overall = 0.8522                                         max =       16

                                                F(17, 1874)      =  149.90
corr(u_i, Xb) = 0.3884                                         Prob > F        =  0.0000

(Std. err. adjusted for 1,875 clusters in id)



| go      | Coefficient | Robust<br>std. err. | t     | P> t  | [95% conf. interval]              |
|---------|-------------|---------------------|-------|-------|-----------------------------------|
| cogs    | .7426297    | .0268522            | 27.66 | 0.000 | .6899663 .795293                  |
| k       | .0415337    | .0084254            | 4.93  | 0.000 | .0250096 .0580577                 |
| year    |             |                     |       |       |                                   |
| 2007    | .0332167    | .0145009            | 2.29  | 0.022 | .004777 .0616563                  |
| 2008    | .0070573    | .0164599            | 0.43  | 0.668 | -.0252242 .0393389                |
| 2009    | -.033957    | .0179153            | -1.90 | 0.058 | -.069093 .001179                  |
| 2010    | -.0699323   | .0186549            | -3.75 | 0.000 | -.1065188 -.0333459               |
| 2011    | -.0475696   | .0199696            | -2.38 | 0.017 | -.0867345 -.0084047               |
| 2012    | -.0931067   | .0203982            | -4.56 | 0.000 | -.1331123 -.0531011               |
| 2013    | -.0751397   | .0217693            | -3.45 | 0.001 | -.1178344 -.032445                |
| 2014    | -.0662105   | .0212941            | -3.11 | 0.002 | -.1079731 -.0244479               |
| 2015    | -.0313248   | .0204448            | -1.53 | 0.126 | -.0714218 .0087721                |
| 2016    | -.0677262   | .0215276            | -3.15 | 0.002 | -.1099468 -.0255057               |
| 2017    | -.0444173   | .0213135            | -2.08 | 0.037 | -.0862181 -.0026166               |
| 2018    | -.0137063   | .0214287            | -0.64 | 0.522 | -.0557328 .0283202                |
| 2019    | -.0120676   | .0213644            | -0.56 | 0.572 | -.053968 .0298329                 |
| 2020    | -.0464053   | .0210929            | -2.20 | 0.028 | -.0877733 -.0050373               |
| 2021    | -.0710621   | .0209659            | -3.39 | 0.001 | -.1121811 -.029943                |
| _cons   | 4.57761     | .4060059            | 11.27 | 0.000 | 3.781338 5.373881                 |
| sigma_u | .50187737   |                     |       |       |                                   |
| sigma_e | .27431285   |                     |       |       |                                   |
| rho     | .76997555   |                     |       |       | (fraction of variance due to u_i) |


```

```

752 .
753 . gen bcogsolsfe_gocogs=_b[cogs]
754 . gen bkolsfe_vaw=_b[k]
755 . gen markup_OLSfe_gocogs=_b[cogs]/cogss
    (30,986 missing values generated)

```

756 . sum markup_OLSfe_gocogs,d

markup_OLSfe_gocogs

	Percentiles	Smallest		
1%	.7850208	.7426296		
5%	.868776	.750131		
10%	.944461	.7503583	Obs	15,591
25%	1.133786	.7504342	Sum of wgt.	15,591
50%	1.498143		Mean	2.882385
		Largest	Std. dev.	45.53956
75%	2.093684	742.6392		
90%	3.179065	1856.543	Variance	2073.851
95%	4.462918	3713.639	Skewness	74.14973
99%	13.2376	3713.639	Kurtosis	5837.533

757 . replace markup_OLSfe_gocogs = . if markup_OLSfe_gocogs<r(p1) | markup_OLSfe_gocogs>r(p99)
(310 real changes made, 310 to missing)

758 . tabstat markup_OLSfe_gocogs, statistics(median)

Variable	p50
markup_OLS~s	1.498143

759 . tabulate nace2, summarize(markup_OLSfe_gocogs)

nace2	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
41	1.9929171	1.3168841	8,078
42	1.7677974	.83579663	1,266
43	1.7354901	1.411128	5,937
Total	1.8742504	1.3281423	15,281

760 . tabulate year, summarize(markup_OLSfe_gocogs)

Year	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7939394	1.2557523	568
2007	1.8599973	1.3307615	655
2008	1.7965861	1.2118092	734
2009	1.8095896	1.1379811	812
2010	1.8486225	1.3804546	869
2011	1.8408683	1.336801	908
2012	1.7545039	1.2155004	939
2013	1.7283647	1.1586625	958
2014	1.7889813	1.2687012	998
2015	1.8758771	1.3794185	1,049
2016	1.864491	1.3318412	1,018
2017	1.9265109	1.4388677	1,138
2018	2.0073649	1.4247365	1,170
2019	2.034459	1.4677633	1,165
2020	1.9722942	1.3243882	1,194
2021	1.9137152	1.3377772	1,106
Total	1.8742504	1.3281423	15,281

761 .
 762 . tabulate zakazky_last3_dummy, summarize(markup_OLSfe_gocogs)

zakazky_las t3_dummy	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
0	1.8371426	1.4953964	8,049
1	1.9155503	1.1114682	7,232
Total	1.8742504	1.3281423	15,281

763 .
 764 .
 765 . tw (kdensity markup_OLSfe_gocogs if nace2 == 41, lw(medthick) lp(_.) lc(ebblue)) (kdensity markup_OLSfe_gocogs if nace2 == 43, lw(medthick) lp(..-) lc(forest_green)) /*
> */ if markup_OLSfe_gocogs > 0 & markup_OLSfe_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 2))

766 .
 767 .
 768 .
 769 . *----- prodest: LP(2003) + ACF(2015) -----*
 770 .
 771 .
 772 .
 773 . *CD, cogs
 774 . *sector
 775 . prodest go if nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(yea
.....

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 7065
 Group variable (id): id Number of groups = 953
 Time variable (t): year
 Obs per group: min = 1
 avg = 7.4
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8271655	.0004801	1722.84	0.000	.8262245 .8281065
k	.0663761	.0099106	6.70	0.000	.0469517 .0858006
year	-.0154963	.0046232	-3.35	0.001	-.0245576 -.0064349
zakazky_last3_dummy	.1612278	.0003502	460.33	0.000	.1605413 .1619142

Wald test on Constant returns to scale: Chi2 = 77.64
 p = (0.00)

776 . estimates store cf41

777 . prodest go if nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(yea
.....

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 1072
 Group variable (id): id Number of groups = 113
 Time variable (t): year
 Obs per group: min = 1
 avg = 9.5
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9845417	.0065913	149.37	0.000	.971623 .9974603
k	.0225889	.0395953	0.57	0.568	-.0550165 .1001943
year	-.0172155	.0188825	-0.91	0.362	-.0542244 .0197934
zakazky_last3_dummy	.106098	.0069603	15.24	0.000	.092456 .1197399

Wald test on Constant returns to scale: Chi2 = 20.04
p = (0.00)

778 . estimates store cf42

779 . prodest go if nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(year.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 5134
Group variable (id): id Number of groups = 809
Time variable (t): year Obs per group: min = 1
avg = 6.3
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7814747	.0053265	146.71	0.000	.771035 .7919145
k	.1017159	.0131192	7.75	0.000	.0760028 .1274291
year	.0009295	.0006018	1.54	0.122	-.0002499 .0021089
zakazky_last3_dummy	.0966915	.0045926	21.05	0.000	.0876902 .1056928

Wald test on Constant returns to scale: Chi2 = 11.81
p = (0.00)

780 . estimates store cf43

781 .
782 . estout ols41 cf41 ols42 cf42 ols43 cf43, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N) keep(cogs k)

	ols41 b/se	cf41 b/se	ols42 b/se	cf42 b/se	ols43 b/se	cf43 b/se
k	0.078*** (0.013)	0.066*** (0.010)	0.028 (0.036)	0.023 (0.040)	0.104*** (0.018)	0.102*** (0.013)
cogs	0.849*** (0.026)	0.827*** (0.000)	1.003*** (0.046)	0.985*** (0.007)	0.789*** (0.026)	0.781*** (0.005)
N	7065.000	7065.000	1072.000	1072.000	5134.000	5134.000

* p<0.05, ** p<0.01, *** p<0.001

783 .

784 . *+ market

785 . prodest go if zakazky_last3_dummy==1 & nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 3746
Group variable (id): id Number of groups = 619
Time variable (t): year Obs per group: min = 1
avg = 6.1
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.895752	.0025352	353.33	0.000	.8907832 .9007208
k	.0559827	.0096872	5.78	0.000	.0369962 .0749693
year	-.0149723	.0049352	-3.03	0.002	-.0246451 -.0052996

Wald test on Constant returns to scale: Chi2 = 813.71
p = (0.00)

786 . estimates store cf41pp1

787 . prodest go if zakazky_last3_dummy==0 & nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator		Cobb-Douglas PF			
ACF corrected					
Dependent variable: value added		Number of obs = 3319			
Group variable (id): id		Number of groups = 712			
Time variable (t): year		Obs per group:	min = 1	avg = 4.7	max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.797463	.0090685	87.94	0.000	.779689 .815237
k	.0446757	.017931	2.49	0.013	.0095316 .0798197
year	.0105513	.0032985	3.20	0.001	.0040864 .0170163

Wald test on Constant returns to scale: Chi2 = 246.07
p = (0.00)

788 . estimates store cf41pp0

789 .

790 . prodest go if zakazky_last3_dummy==1 & nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator		Cobb-Douglas PF			
ACF corrected					
Dependent variable: value added		Number of obs = 791			
Group variable (id): id		Number of groups = 103			
Time variable (t): year		Obs per group:	min = 1	avg = 7.7	max = 15

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	3.353436	1.120151	2.99	0.003	1.15798 5.548893
k	-.0373353	.0124638	-3.00	0.003	-.061764 -.0129066
year	.00101	.000331	3.05	0.002	.0003614 .0016587

Wald test on Constant returns to scale: Chi2 = 4.37
p = (0.04)

791 . estimates store cf42pp1

792 . prodest go if zakazky_last3_dummy==0 & nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 281
 Group variable (id): id Number of groups = 67
 Time variable (t): year Obs per group: min = 1
 avg = 4.2
 max = 13

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8620794	.0891265	9.67	0.000	.6873947 1.036764
k	.0676959	.0184144	3.68	0.000	.0316044 .1037875
year	-.0264736	.1171567	-0.23	0.821	-.2560965 .2031493

Wald test on Constant returns to scale: Chi2 = 4.33
 p = (0.04)

793 . estimates store cf42pp0

794 .

795 . prodest go if zakazky_last3_dummy==1 & nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 1812
 Group variable (id): id Number of groups = 378
 Time variable (t): year Obs per group: min = 1
 avg = 4.8
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8789512	.0000134	6.6e+04	0.000	.8789249 .8789775
k	.0943896	3.87e-06	2.4e+04	0.000	.094382 .0943972
year	-.0065247	3.87e-06	-1684.65	0.000	-.0065322 -.0065171

Wald test on Constant returns to scale: Chi2 = 9.2e+06
 p = (0.00)

796 . estimates store cf43pp1

797 . prodest go if zakazky_last3_dummy==0 & nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 3322
 Group variable (id): id Number of groups = 715
 Time variable (t): year Obs per group: min = 1
 avg = 4.6
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7408343	.0047388	156.33	0.000	.7315465 .7501221
k	.0766349	.0083883	9.14	0.000	.0601942 .0930757
year	.0000711	.0063908	0.01	0.991	-.0124546 .0125968

Wald test on Constant returns to scale: Chi2 = 1619.00
p = (0.00)

798 . estimates store cf43pp0

799 .
800 .

801 . estout cf41pp1 cf41pp0 cf42pp1 cf42pp0 cf43pp1 cf43pp0, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N) keep(k cogs)

	cf41pp1 b/se	cf41pp0 b/se	cf42pp1 b/se	cf42pp0 b/se	cf43pp1 b/se	cf43pp0 b/se
cogs	0.896*** (0.003)	0.797*** (0.009)	3.353** (1.120)	0.862*** (0.089)	0.879*** (0.000)	0.741*** (0.005)
k	0.056*** (0.010)	0.045* (0.018)	-0.037** (0.012)	0.068*** (0.018)	0.094*** (0.000)	0.077*** (0.008)
N	3746.000	3319.000	791.000	281.000	1812.000	3322.000

* p<0.05, ** p<0.01, *** p<0.001

802 .
803 .
804 .
805 . *Translog, cogs
806 . prodest go if nace2==41,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last.....

lp productivity estimator	translog PF
ACF corrected	
Dependent variable: value added	Number of obs = 7065
Group variable (id): id	Number of groups = 953
Time variable (t): year	Obs per group: min = 1
	avg = 7.4
	max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.0063039	.0001154	54.62	0.000	.0060777 .0065301
k	.1310403	.0000166	7891.25	0.000	.1310078 .1310729
year	-.008177	.0000932	-87.76	0.000	-.0083596 -.0079943
zakazky_last3_dummy	.1813164	.0000625	2900.23	0.000	.1811939 .1814389
var_1_1	.0348078	.0000123	2821.58	0.000	.0347836 .034832
var_1_2	-.0232834	.0001034	-225.28	0.000	-.0234859 -.0230808
var_2_2	.0104241	.0001211	86.11	0.000	.0101868 .0106613

Wald test on Constant returns to scale: Chi2 = 4.6e+07
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type predict, parameters

807 . predict, parameters

Translog elasticity estimates	prodest postestimation
Elasticity Parameter	Value
beta_cogs	0.836
beta_k	

808 . prodest go if nace2==42,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last
.....

lp productivity estimator
 ACF corrected
 Dependent variable: value added
 Group variable (id): id
 Time variable (t): year
 Number of obs = 1072
 Number of groups = 113
 Obs per group: min = 1
 avg = 9.5
 max = 16

	go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
zakazky_last3_dummy	cogs	.178933	.0001134	1577.72	0.000	.1787108 .1791553
	k	.1741571	1.28e-06	1.4e+05	0.000	.1741546 .1741596
	year	.0044825	.0000438	102.29	0.000	.0043966 .0045684
		.1365709	.0000482	2834.85	0.000	.1364765 .1366654
	var_1_1	.0560071	.0000181	3091.18	0.000	.0559716 .0560426
	var_1_2	-.0306921	.0000143	-2148.94	0.000	-.0307201 -.0306641
	var_2_2	.0104003	.000282	36.88	0.000	.0098476 .010953

Wald test on Constant returns to scale: Chi2 = 4.3e+07
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type `predict`, parameters

809 . predict, parameters

Translog elasticity estimates		prodest	postestimation
Elasticity	Parameter	Value	
	beta_cogs	1.620	
	beta_k		

810 . prodest go if nace2==43,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last
.....

lp productivity estimator
 ACF corrected
 Dependent variable: value added
 Group variable (id): id
 Time variable (t): year
 translog PF
 Number of obs = 5134
 Number of groups = 809
 Obs per group: min = 1
 avg = 6.3
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	-.3714982	.0158133	-23.49	0.000	-.4024917 -.3405047
k	.0614583	.0024203	25.39	0.000	.0567145 .0662021
year	-.0007517	.0006662	-1.13	0.259	-.0020574 .000554
zakazky_last3_dummy	.1439669	.0063895	22.53	0.000	.1314436 .1564901
var_1_1	.0799887	.0035898	22.28	0.000	.0729528 .0870246
var_1_2	-.0668621	.0030037	-22.26	0.000	-.0727492 -.060975
var_2_2	.0381058	.0015057	25.31	0.000	.0351547 .0410568

Wald test on Constant returns to scale: Chi2 = 42568.71
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type predict, parameters

811 . predict, parameters

Translog elasticity estimates		prodest postestimation
Elasticity Parameter	Value	
beta_cogs	1.325	
beta_k		

812 .
 813 . *----- prodest: Wooldridge (WRDG, 2009)-----*
 814 .
 815 .
 816 .
 817 . *Cobb-Douglas
 818 . prodest go, va method(wrdg) free(cogs) state(k) proxy(proxy) endogenous(proxy zakazky_last3_dummy) control(year za

wrdg productivity estimator	Cobb-Douglas PF
Dependent variable: value added	Number of obs = 9909
Group variable (id): id	Number of groups = 1875
Time variable (t): year	
	Obs per group: min = 1
	avg = 7.1
	max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.819705	.014067	58.27	0.000	.7921341 .8472758
k	.071039	.0051244	13.86	0.000	.0609953 .0810827
year	1.078648	.3818192	2.83	0.005	.3302965 1.827
zakazky_last3_dummy	-3.841108	.9698697	-3.96	0.000	-5.742018 -1.940199
nace2	-.0613991	.0176224	-3.48	0.000	-.0959383 -.0268599

Wald test on Constant returns to scale: Chi2 = 13.93

p = (0.00)

Hansen's J statistic for overidentification = 577.69

p = (0.00)

```
819 . gen bcogswrdg_gocogs=_b[cogs]
820 . gen bkwrdf_gocogs=_b[k]
821 . gen markup_wrdg_gocogs=_b[cogs]/cogss
(30,986 missing values generated)
822 . sum markup_wrdg_gocogs,d
```

markup_wrdg_gocogs

	Percentiles	Smallest		
1%	.8664957	.8197049		
5%	.9589436	.8279848		
10%	1.042484	.8282357	Obs	15,591
25%	1.251458	.8283195	Sum of wgt.	15,591
50%	1.653631		Mean	3.181539
		Largest	Std. dev.	50.26597
75%	2.310981	819.7155		
90%	3.509011	2049.228	Variance	2526.668
95%	4.926111	4099.066	Skewness	74.14973
99%	14.61149	4099.066	Kurtosis	5837.533

```
823 . replace markup_wrdg_gocogs= . if markup_wrdg_gocogs <r(p1) | markup_wrdg_gocogs >r(p99)
(310 real changes made, 310 to missing)
```

```
824 . tabstat markup_wrdg_gocogs, statistics( median )
```

Variable	p50
markup_wrd~s	1.653631

```
825 . tabulate year, summarize(markup_wrdg_gocogs)
```

Year	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
2006	1.9801269	1.386083	568
2007	2.0530408	1.4688772	655
2008	1.9830483	1.3375793	734
2009	1.9974015	1.2560887	812
2010	2.0404854	1.5237278	869
2011	2.0319265	1.4755436	908
2012	1.9365986	1.3416535	939
2013	1.9077465	1.2789166	958
2014	1.9746543	1.4003759	998
2015	2.0705687	1.5225842	1,049
2016	2.0580009	1.4700689	1,018
2017	2.1264577	1.5882035	1,138
2018	2.2157033	1.5726056	1,170
2019	2.2456094	1.6200981	1,165
2020	2.1769927	1.4618425	1,194
2021	2.1123339	1.4766211	1,106
Total	2.0687732	1.4659862	15,281

```
826 . tabulate nace2, summarize(markup_wrdg_gocogs)
```

nace2	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
41	2.1997559	1.4535595	8,078
42	1.9512717	.92254145	1,266
43	1.9156114	1.5575848	5,937
Total	2.0687732	1.4659862	15,281

```

827 .
828 . tw (kdensity markup_wrdg_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_wrdg_gocogs if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> */ if markup_wrdg_gocogs > 0 & markup_wrdg_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order( 1
829 .
830 .
831 . *TRANS
832 . prodest go if zakazky_last3_dummy ==1, va method(wrdg) free(cogs) state(k) proxy(proxy) endogenous(proxy zakazky_1

```

wrdg productivity estimator

Cobb-Douglas PF

Dependent variable: value added
 Group variable (id): id
 Time variable (t): year

Number of obs = **4587**
 Number of groups = **1100**
 Obs per group: min = **1**
 avg = **5.8**
 max = **16**

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.908299	.0138881	65.40	0.000	.8810788 .9355192
k	.0409207	.007185	5.70	0.000	.0268383 .055003
year	-.7821731	.3740288	-2.09	0.037	-1.515256 -.0490901
zakazky_last3_dummy	-1.693063	.7965953	-2.13	0.034	-3.254361 -.131765
nace2	.0183073	.019518	0.94	0.348	-.0199472 .0565619

Wald test on Constant returns to scale: Chi2 = 8.45
 p = (0.00)
 Hansen's J statistic for overidentification = 296.76
 p = (0.00)

833 . predict, parameters

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.908299	.0138881	65.40	0.000	.8810788 .9355192
k	.0409207	.007185	5.70	0.000	.0268383 .055003
year	-.7821731	.3740288	-2.09	0.037	-1.515256 -.0490901
zakazky_last3_dummy	-1.693063	.7965953	-2.13	0.034	-3.254361 -.131765
nace2	.0183073	.019518	0.94	0.348	-.0199472 .0565619

```

834 .
835 .
836 .
837 .
838 .
839 . *----- markupest: De Loecker and Warzynski (DLW, 2012)-----
840 . */
841 .
842 . *ACF Cobb-Douglas
843 . bys nace2: markupest markup_dlw_gocogs,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) verb
> ear zakazky_last3_dummy")
```

-> nace2 = 41

go	Coefficient
cogs	.8591688
k	.0468849
year	.0021558
zakazky_last3_dummy	.1783858

-> nace2 = 42

go	Coefficient
cogs	.9850405
k	.0230603
year	-.0167342
zakazky_last3_dummy	.1065693

-> nace2 = 43

go	Coefficient
cogs	.7951305
k	.0860997
year	.0064825
zakazky_last3_dummy	.110655

844 . sum markup_dlw_gocogs,d

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.181705	1.116993		
5%	1.255287	1.148389		
10%	1.317564	1.148597	Obs	13,271
25%	1.52234	1.151442	Sum of wgt.	13,271
50%	1.83853		Mean	1.929973
		Largest	Std. dev.	1.415207
75%	2.079052	34.23354		
90%	2.355797	41.67046	Variance	2.002811
95%	2.646	75.36937	Skewness	27.96122
99%	4.487672	75.38722	Kurtosis	1215.441

845 . replace markup_dlw_gocogs= . if markup_dlw_gocogs<r(p1) | markup_dlw_gocogs >r(p99)
(264 real changes made, 264 to missing)

846 . tabstat markup_dlw_gocogs, statistics(median)

Variable	p50
markup_dlw~s	1.83853

847 . tabulate year, summarize(markup_dlw_gocogs)

Year	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
2006	1.8102692	.43688278	496
2007	1.8129084	.44511283	565
2008	1.8162757	.43199912	653
2009	1.8544749	.4754285	730
2010	1.8478031	.44805953	786
2011	1.8457452	.45884329	742
2012	1.8417018	.43092203	702
2013	1.8455214	.47394404	365
2014	1.8567533	.44135444	536
2015	1.8645776	.45300453	1,026
2016	1.8720075	.4323244	1,001
2017	1.8707457	.43633588	1,111
2018	1.8646845	.43018145	1,126
2019	1.8605254	.4106596	1,142
2020	1.8486765	.37860431	1,129
2021	1.8221549	.38238328	897
Total	1.8495368	.43215515	13,007

848 . tabulate nace2, summarize(markup_dlw_gocogs)

nace2	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
41	2.0029492	.35609046	6,998
42	2.1464276	.31427574	1,062
43	1.5687853	.39933213	4,947
Total	1.8495368	.43215515	13,007

849 .

850 .

851 . /* plot the graph */

852 . tw (kdensity markup_dlw_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if nace2 == 43, lw(medthick) lp(_.-.) lc(forest_green)) /*
*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 2))

853 .

854 .

855 .

856 . *ACF Translog

857 . bys nace2: markupest markup_dlw_gocogst1,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) ve
>) control(year zakazky_last3_dummy) "

-> nace2 = 41

go	Coefficient
cogs	-.0266262
k	.2569983
year	-.0512489
zakazky_last3_dummy	.3538769
cogsXcogs	.0462702
cogsXk	-.0447716
kXk	.018355

-> nace2 = 42

go	Coefficient
cogs	.1651883
k	.1656985
year	-.0055103
zakazky_last3_dummy	.1263575
cogsXcogs	.0470346
cogsXk	-.0384157
kXk	.0150915

-> nace2 = 43

go	Coefficient
cogs	-.1953255
k	.0369928
year	.0040179
zakazky_last3_dummy	.0818425
cogsXcogs	.0468957
cogsXk	-.0340103
kXk	.020493

858 . sum markup_dlw_gocogst,d

markup_dlw_gocogst1

	Percentiles	Smallest		
1%	1.425655	-4.706005		
5%	1.469581	.1601742		
10%	1.518546	1.017434	Obs	13,271
25%	1.658361	1.384351	Sum of wgt.	13,271
50%	1.866558		Mean	1.962338
		Largest	Std. dev.	.6751407
75%	2.118121	15.37861		
90%	2.320602	15.4117	Variance	.455815
95%	2.615156	15.58563	Skewness	10.87569
99%	4.003807	23.91635	Kurtosis	211.7778

859 . replace markup_dlw_gocogst= . if markup_dlw_gocogst<r(p1) | markup_dlw_gocogst >r(p99)
(264 real changes made, 264 to missing)

860 . tabstat markup_dlw_gocogst, statistics(median)

Variable	p50
markup_dlw~1	1.866558

861 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst1		
	Mean	Std. dev.	Freq.
2006	1.9627318	.4322944	491
2007	1.9337518	.38963943	567
2008	1.9379094	.39719685	646
2009	1.9504147	.41636794	717
2010	1.9318661	.39553335	785
2011	1.9217751	.39953408	746
2012	1.918262	.37799665	707
2013	1.8908328	.34848048	365
2014	1.9058722	.3602607	539
2015	1.926746	.35763014	1,029
2016	1.9246837	.33286717	1,002
2017	1.9352966	.36505973	1,118
2018	1.9246578	.333672	1,130
2019	1.9171054	.31493463	1,140
2020	1.904628	.31464603	1,130
2021	1.8819607	.30309449	895
Total	1.9225055	.36025253	13,007

862 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst1		
	Mean	Std. dev.	Freq.
41	1.9823024	.23893043	7,021
42	2.5662293	.42245439	1,023
43	1.705225	.29144391	4,963
Total	1.9225055	.36025253	13,007

```

863 .
864 .
865 . /* plot the graph */
866 . tw (kdensity markup_dlw_gocogst if nace2 == 41, lw(medthick) lp(.) lc(ebblue)) (kdensity markup_dlw_gocogst if nac
>          */ (kdensity markup_dlw_gocogst if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
>          */if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order( 1
867 .
868 .
869 .
870 .
871 . //production function separately for procurement and non-procurement firms
872 .
873 .
874 . *homogenous production function
875 . *CD
876 . bys nace2: markupest markup_dlw_gocogs,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) verb
> genous(proxy zakazky_last3_dummy) " replace

```

-> nace2 = 41

go	Coefficient
cogs	.851372
k	.0431679
year	.0276636
zakazky_last3_dummy	.2036824

-> nace2 = 42

go	Coefficient
cogs	.9684159
k	.0064081
year	-.0333688
zakazky_last3_dummy	.0899446

-> nace2 = 43

go	Coefficient
cogs	.7966006
k	.0856638
year	.0074254
zakazky_last3_dummy	.1121647

```
877 . sum markup_dlw_gocogs,d
```

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.18389	1.119059		
5%	1.257608	1.150512		
10%	1.32	1.150721	Obs	13,271
25%	1.518861	1.153571	Sum of wgt.	13,271
50%	1.823777		Mean	1.918152
		33.92287	Largest	Std. dev.
75%	2.058982			1.408951
90%	2.335365	41.74751	Variance	1.985143
95%	2.629645	74.70309	Skewness	28.06846
99%	4.432719	75.50873	Kurtosis	1220.904

```

878 . replace markup_dlw_gocogs= . if markup_dlw_gocogs<r(p1) | markup_dlw_gocogs >r(p99)
(264 real changes made, 264 to missing)

879 . bysort year: egen markup_dlw_gocogs_p50 = pctile(markup_dlw_gocogs), p(50)

880 . bysort year: egen markup_dlw_gocogs_p75 = pctile(markup_dlw_gocogs), p(75)

881 . bysort year: egen markup_dlw_gocogs_p90 = pctile(markup_dlw_gocogs), p(90)

882 . tabulate year, summarize(markup_dlw_gocogs)

```

Year	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7971297	.42760325	496
2007	1.8000205	.43623525	565
2008	1.8039002	.42316035	653
2009	1.8418401	.46638193	730
2010	1.8352442	.43914951	786
2011	1.8337215	.45078733	742
2012	1.8297644	.42321076	702
2013	1.8344055	.46663541	365
2014	1.8454152	.43307624	536
2015	1.8528757	.44562294	1,026
2016	1.8630076	.4320465	1,002
2017	1.8569962	.42204682	1,110
2018	1.8536057	.42394205	1,126
2019	1.8491985	.40352389	1,142
2020	1.8378892	.3719952	1,129
2021	1.8120103	.37648862	897
Total	1.8378981	.42453615	13,007

```
883 . tabulate nace2, summarize(markup_dlw_gocogs)
```

nace2	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
41	1.9847728	.35285899	6,998
42	2.1123869	.31693531	1,063
43	1.5710946	.39794358	4,946
Total	1.8378981	.42453615	13,007

```
884 . tabulate nace2, summarize(markup_dlw_gocogs_p50)
```

nace2	Summary of markup_dlw_gocogs_p50		
	Mean	Std. dev.	Freq.
41	1.8182155	.0277475	24,193
42	1.8151732	.02860147	2,545
43	1.8193962	.02698596	19,839
Total	1.8185522	.02749094	46,577

```
885 . tabulate nace2, summarize(markup_dlw_gocogs_p75)
```

nace2	Summary of markup_dlw_gocogs_p75		
	Mean	Std. dev.	Freq.
41	2.0529585	.02214981	24,193
42	2.0543008	.02162646	2,545
43	2.0526851	.02235939	19,839
Total	2.0529154	.02221358	46,577

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886 . tabulate nace2, summarize(markup_dlw_gocogs_p90)

nace2	Summary of markup_dlw_gocogs_p90		
	Mean	Std. dev.	Freq.
41	2.31761	.03742464	24,193
42	2.3179349	.03692509	2,545
43	2.3179395	.03749702	19,839
Total	2.3177681	.03742795	46,577

887 . tabstat markup_dlw_gocogs, statistics(median)

Variable	p50
markup_dlw~s	1.823777

888 . gen lmu_1=ln(markup_dlw_gocogs)
(33,570 missing values generated)

889 .

890 . /* plot the graph */

891 . tw (kdensity markup_dlw_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> */ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 "41
43"))

892 .

893 . tw (kdensity markup_dlw_gocogs if zakazky_last3_dummy == 1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if zakazky_last3_dummy == 0, lw(medthick) lp(..) lc(forest_green)) /*
> */ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 "1
0"))

894 .

895 . *translog

896 . bys nace2: markupest markup_dlw_gocogst,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) version(11)
> y endogenous(proxy zakazky_last3_dummy) " replace

-> nace2 = 41

markup_dlw_gocogst does not exist. No replace

go	Coefficient
cogs	-.0408462
k	.2293142
year	-.0621243
zakazky_last3_dummy	.32506
cogsXcogs	.0445612
cogsXk	-.0406361
kXk	.0169462

-> nace2 = 42

go	Coefficient
cogs	.1501685
k	.1584095
year	-.0184523
zakazky_last3_dummy	.1158346
cogsXcogs	.03909
cogsXk	-.0416193
kXk	.0175005

-> nace2 = 43

go	Coefficient
cogs	-.2060168
k	.0313167
year	-.0053867
zakazky_last3_dummy	.0742065
cogsXcogs	.0410769
cogsXk	-.0354874
kXk	.0218491

897 . sum markup_dlw_gocogst,d

markup_dlw_gocogst

	Percentiles	Smallest		
1%	1.061855	-3.070832		
5%	1.093031	-2.619239		
10%	1.127371	1.045963	Obs	13,271
25%	1.248394	1.046506	Sum of wgt.	13,271
50%	1.722541		Mean	1.706702
		Largest	Std. dev.	.5885985
75%	2.01402	11.70002		
90%	2.18491	11.87897	Variance	.3464482
95%	2.291128	15.39671	Skewness	6.454529
99%	3.015493	16.30646	Kurtosis	106.6142

898 . replace markup_dlw_gocogst= . if markup_dlw_gocogst<r(p1) | markup_dlw_gocogst >r(p99)
(264 real changes made, 264 to missing)

899 . bysort year: egen markup_dlw_gocogst_p50 = pctile(markup_dlw_gocogst), p(50)

900 . bysort year: egen markup_dlw_gocogst_p75 = pctile(markup_dlw_gocogst), p(75)

901 . bysort year: egen markup_dlw_gocogst_p90 = pctile(markup_dlw_gocogst), p(90)

902 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
2006	1.7294246	.44225702	495
2007	1.712369	.4358197	568
2008	1.710021	.43297478	642
2009	1.7064459	.43461778	717
2010	1.6987992	.43639228	788
2011	1.6815326	.43121715	748
2012	1.6703501	.41637165	707
2013	1.6653759	.41903311	366
2014	1.6652485	.40552032	538
2015	1.683554	.40679054	1,027
2016	1.6795773	.40071353	1,002
2017	1.683524	.39897089	1,117
2018	1.6762229	.38584653	1,130
2019	1.6720539	.37777468	1,139
2020	1.6535686	.37075996	1,129
2021	1.6302591	.3578259	894
Total	1.6797286	.40543431	13,007

903 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
41	1.959208	.21950766	6,989
42	1.834387	.33783504	1,047
43	1.2542187	.20595237	4,971
Total	1.6797286	.40543431	13,007

904 . tabulate nace2, summarize(markup_dlw_gocogst_p50)

nace2	Summary of markup_dlw_gocogst_p50		
	Mean	Std. dev.	Freq.
41	1.7108969	.0442872	24,193
42	1.7154812	.04516806	2,545
43	1.7085983	.04346516	19,839
Total	1.7101684	.04401953	46,577

905 . tabulate nace2, summarize(markup_dlw_gocogst_p75)

nace2	Summary of markup_dlw_gocogst_p75		
	Mean	Std. dev.	Freq.
41	2.0159642	.03483851	24,193
42	2.0194241	.03449626	2,545
43	2.01452	.03466099	19,839
Total	2.0155381	.03476319	46,577

906 . tabulate nace2, summarize(markup_dlw_gocogst_p90)

nace2	Summary of markup_dlw_gocogst_p90		
	Mean	Std. dev.	Freq.
41	2.1753788	.05283953	24,193
42	2.1813937	.05321145	2,545
43	2.172902	.0521423	19,839
Total	2.1746525	.05260167	46,577

907 . tabstat markup_dlw_gocogst, statistics(median)

Variable	p50
markup_dlw~t	1.722541

908 . gen lmu_2=ln(markup_dlw_gocogst)
(33,570 missing values generated)

909 .

910 . /* plot the graph */

911 . tw (kdensity markup_dlw_gocogst if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order(1

912 .

```

913 .      tw (kdensity markup_dlw_gocogst if zakazky_last3_dummy == 1, lw(medthick) lp(_) lc(ebblue)) (kdensity mark
>      */ if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order( 1
914 .
915 .
916 .
917 . *different production function for procurement vs. private
918 . *CD
919 . bys nace2: markupest markup_dlw_gocogs_p1 if zakazky_last3_dummy==1,method(dlw) output(go) inputvar(cogs) free(cog
> ear zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) " ) replace

```

-> nace2 = 41
markup_dlw_gocogs_p1 does not exist. No replace

go	Coefficient
cogs	.9030442
k	.0632774
year	-.0076801
zakazky_last3_dummy	.0032062

-> nace2 = 42

go	Coefficient
cogs	1.071173
k	-.0150881
year	-.002797
zakazky_last3_dummy	.0068491

-> nace2 = 43

go	Coefficient
cogs	.8574746
k	.072943
year	-.0279912
zakazky_last3_dummy	-.0125471

```

920 . sum markup_dlw_gocogs_p1,d
                                markup_dlw_gocogs_p1

```

	Percentiles	Smallest		
1%	1.320455	.7522461		
5%	1.430644	.8557672		
10%	1.550925	.9283102	Obs	6,349
25%	1.913289	.9394857	Sum of wgt.	6,349
50%	2.103416		Mean	2.101411
		Largest	Std. dev.	.5563211
75%	2.274149	10.33412		
90%	2.469498	12.54146	Variance	.3094932
95%	2.698134	15.49473	Skewness	12.13684
99%	3.34549	21.49501	Kurtosis	331.3171

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921 . replace markup_dlw_gocogs_p1= . if markup_dlw_gocogs_p1<r(p1) | markup_dlw_gocogs_p1 >r(p99)
(126 real changes made, 126 to missing)

922 . tabstat markup_dlw_gocogs_p1, statistics(median)

Variable	p50
markup_dl~p1	2.103416

923 . tabulate year, summarize(markup_dlw_gocogs_p1)

Year	Summary of markup_dlw_gocogs_p1		
	Mean	Std. dev.	Freq.
2006	2.3113776	.35286929	139
2007	2.2760216	.33132649	176
2008	2.2564105	.3174436	222
2009	2.2651761	.35073575	253
2010	2.2505889	.3476341	274
2011	2.2344976	.33177939	247
2012	2.1789485	.33596448	255
2013	2.140567	.34981557	151
2014	2.0869581	.36760066	248
2015	2.0583216	.35407362	552
2016	2.0650503	.35465721	561
2017	2.0418945	.32829939	631
2018	2.0140305	.31518158	662
2019	1.9947636	.31655386	691
2020	1.9755478	.30074159	663
2021	1.9615674	.30952539	498
Total	2.0797557	.34718693	6,223

924 . tabulate nace2, summarize(markup_dlw_gocogs_p1)

nace2	Summary of markup_dlw_gocogs_p1		
	Mean	Std. dev.	Freq.
41	2.1887003	.2098846	3,702
42	2.391292	.30606075	782
43	1.7077407	.29698705	1,739
Total	2.0797557	.34718693	6,223

925 . *

926 . bys nace2: markupest markup_dlw_gocogs_p0 if zakazky_last3_dummy==0, method(dlw) output(go) inputvar(cogs) free(cogs
> ear zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) ") replace

-> nace2 = 41

markup_dlw_gocogs_p0 does not exist. No replace

go	Coefficient
cogs	.7799885
k	.0663733
year	-.0112624
zakazky_last3_dummy	-.0067292

-> nace2 = 42

go	Coefficient
cogs	.8877392
k	.0933558
year	-.0008113
zakazky_last3_dummy	.0146088

-> nace2 = 43

go	Coefficient
cogs	.7254031
k	.0993349
year	-.0001939
zakazky_last3_dummy	-.0053828

927 . sum markup_dlw_gocogs_p0,d

markup_dlw_gocogs_p0

	Percentiles	Smallest		
1%	1.057803	.7706118		
5%	1.104267	.7887268		
10%	1.149558	.938301	Obs	6,922
25%	1.294136	.9656736	Sum of wgt.	6,922
50%	1.495914		Mean	1.773904
		Largest	Std. dev.	4.264559
75%	1.757483	52.08515		
90%	2.135899	54.83283	Variance	18.18646
95%	2.599488	56.70772	Skewness	62.77034
99%	5.395509	322.3533	Kurtosis	4628.584

928 . replace markup_dlw_gocogs_p0= . if markup_dlw_gocogs_p0<r(p1) | markup_dlw_gocogs_p0 >r(p99)
(138 real changes made, 138 to missing)

929 . tabstat markup_dlw_gocogs_p0, statistics(median)

Variable	p50
markup_dl~p0	1.495914

930 . tabulate year, summarize(markup_dlw_gocogs_p0)

Year	Summary of markup_dlw_gocogs_p0		
	Mean	Std. dev.	Freq.
2006	1.5271612	.4668526	357
2007	1.497585	.42846042	398
2008	1.4945925	.42028545	449
2009	1.5545297	.51861097	491
2010	1.5540707	.47868429	526
2011	1.57436	.47388513	500
2012	1.6071229	.52329135	453
2013	1.5718932	.47909307	215
2014	1.6172475	.44676334	288
2015	1.6401047	.51613144	471
2016	1.6505659	.54533343	440
2017	1.6605159	.54083368	475
2018	1.6786738	.54656481	453
2019	1.6727682	.51756248	438
2020	1.6689702	.46736035	447
2021	1.6455791	.48413091	383
Total	1.6021278	.49808667	6,784

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931 . tabulate nace2, summarize(markup_dlw_gocogs_p0)

nace2	Summary of markup_dlw_gocogs_p0		
	Mean	Std. dev.	Freq.
41	1.7474262	.4818489	3,283
42	1.7924761	.35838454	276
43	1.4379261	.47231145	3,225
Total	1.6021278	.49808667	6,784

932 . *

933 . gen markup_dlw_gocogs_pp = markup_dlw_gocogs_p1 if zakazky_last3_dummy==1
(40,354 missing values generated)

934 . replace markup_dlw_gocogs_pp = markup_dlw_gocogs_p0 if zakazky_last3_dummy==0
(6,784 real changes made)

935 . *

936 . sum markup_dlw_gocogs_pp,d

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.081379	1.057803		
5%	1.152825	1.058185		
10%	1.234131	1.058229	Obs	13,007
25%	1.44323	1.058471	Sum of wgt.	13,007
50%	1.781089		Mean	1.830642
		Largest	Std. dev.	.493945
75%	2.149498	5.235988		
90%	2.374734	5.275128	Variance	.2439817
95%	2.586284	5.289304	Skewness	1.19324
99%	3.249168	5.395509	Kurtosis	7.350707

937 .

938 . bysort year: egen markup_dlw_gocogs_pp_p50 = pctile(markup_dlw_gocogs_pp), p(50)

939 . bysort year: egen markup_dlw_gocogs_pp_p75 = pctile(markup_dlw_gocogs_pp), p(75)

940 . bysort year: egen markup_dlw_gocogs_pp_p90 = pctile(markup_dlw_gocogs_pp), p(90)

941 . tabulate year, summarize(markup_dlw_gocogs_pp)

Year	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
2006	1.7469315	.56192676	496
2007	1.7362694	.53830624	574
2008	1.7466396	.52917737	671
2009	1.7961877	.57670118	744
2010	1.7926282	.54885208	800
2011	1.7926385	.53206181	747
2012	1.8130771	.53951647	708
2013	1.80651	.51327711	366
2014	1.8345763	.47372289	536
2015	1.8657701	.4833161	1,023
2016	1.8828594	.49331069	1,001
2017	1.8781017	.47179634	1,106
2018	1.8777825	.45530843	1,115
2019	1.8698442	.43556068	1,129
2020	1.8520882	.40553797	1,110
2021	1.8241967	.4247549	881
Total	1.8306416	.493945	13,007

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942 . tabulate nace2, summarize(markup_dlw_gocogs_pp)

nace2	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
41	1.9812983	.42539911	6,985
42	2.2350791	.41453034	1,058
43	1.5324482	.43860325	4,964
Total	1.8306416	.493945	13,007

943 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p50)

nace2	Summary of markup_dlw_gocogs_pp_p50		
	Mean	Std. dev.	Freq.
41	1.7950525	.12489425	24,193
42	1.7804318	.12653129	2,545
43	1.8003777	.12288196	19,839
Total	1.7965218	.12421602	46,577

944 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p75)

nace2	Summary of markup_dlw_gocogs_pp_p75		
	Mean	Std. dev.	Freq.
41	2.1570918	.05389558	24,193
42	2.1628375	.05354866	2,545
43	2.1548448	.05363095	19,839
Total	2.1564486	.05379585	46,577

945 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p90)

nace2	Summary of markup_dlw_gocogs_pp_p90		
	Mean	Std. dev.	Freq.
41	2.3697151	.05583289	24,193
42	2.3749619	.05484392	2,545
43	2.36781	.05595479	19,839
Total	2.3691903	.05585497	46,577

946 . *

947 . sum markup_dlw_gocogs markup_dlw_gocogs_pp

Variable	Obs	Mean	Std. dev.	Min	Max
markup_dlw~s	13,007	1.837898	.4245361	1.18389	4.432719
markup_dlw~p	13,007	1.830642	.493945	1.057803	5.395509

948 . cor markup_dlw_gocogs markup_dlw_gocogs_pp
(obs=12,861)

	markup.. markup~p
markup_dlw~s	1.0000
markup_dlw~p	0.9255

```
949 . *
950 . tabstat markup_dlw_gocogs_pp, statistics( median )
```

Variable	p50
markup_dlw~p	1.781089

```
951 . gen lmu_1_pp=ln(markup_dlw_gocogs_pp)
(33,570 missing values generated)
```

```
952 . *
```

```
953 .
```

```
954 .
```

```
955 . /* plot the graph */
```

```
956 . *sector
```

```
957 . tw (kdensity markup_dlw_gocogs_pp if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp if
>          /* (kdensity markup_dlw_gocogs_pp if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) */
>          /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order
```

```
958 .
```

```
959 . /* plot the graph */
```

```
960 . *market
```

```
961 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp if
>          /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order
```

```
962 .
```

```
963 . /* plot the graph */
```

```
964 . *sector-market
```

```
965 . tw (kdensity markup_dlw_gocogs_pp if nace2 == 41 & zakazky_last3_dummy==0, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp if
>          /* (kdensity markup_dlw_gocogs_pp if nace2 == 42& zakazky_last3_dummy==0 , lw(medthick) lp(..) lc(forest_green))
>          /* (kdensity markup_dlw_gocogs_pp if nace2 == 43 & zakazky_last3_dummy==0, lw(medthick) lp(1) lc(navy)) (purple)
>          /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order
```

```
966 .
```

```
967 .
```

```
968 .
```

```
969 .
```

```
970 . *trans
```

```
971 . bys nace2: markupest markup_dlw_gocogst_p1 if zakazky_last3_dummy==1,method(dlw) output(go) inputvar(cogs) free(cc)
> ntrol(year zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) " replace
```

-> nace2 = 41

markup_dlw_gocogst_p1 does not exist. No replace

go	Coefficient
cogs	.1996382
k	.4397659
year	-.0344301
zakazky_last3_dummy	-.0257
cogsXcogs	.0210234
cogsXk	-.0468541
kXk	.013893

-> nace2 = 42

go	Coefficient
cogs	.3900641
k	.0407999
year	-.021404
zakazky_last3_dummy	-.0111268
cogsXcogs	.0256942
cogsXk	-.050263
kXk	.0098539

-> nace2 = 43

go	Coefficient
cogs	1.100013
k	-.3848381
year	-.0063756
zakazky_last3_dummy	.0082672
cogsXcogs	.0074829
cogsXk	-.0063358
kXk	.0183128

972 . sum markup_dlw_gocogst_p1,d

markup_dlw_gocogst_p1			
Percentiles	Smallest		
1%	.2197777	-.2352232	
5%	.2844205	.0586447	
10%	.3254926	.0899962	Obs 6,349
25%	.3966896	.1001554	Sum of wgt. 6,349
50%	.5196579		Mean 1.098657
		Largest	Std. dev. .9833923
75%	2.069224	6.336428	
90%	2.550892	8.553012	Variance .9670604
95%	2.794543	13.14427	Skewness 1.732203
99%	3.536397	14.48915	Kurtosis 12.25268

973 . replace markup_dlw_gocogst_p1= . if markup_dlw_gocogst_p1<r(p1) | markup_dlw_gocogst_p1 >r(p99)
(126 real changes made, 126 to missing)

974 . tabstat markup_dlw_gocogst_p1, statistics(median)

Variable	p50
markup_~t_p1	.5196579

975 . tabulate year, summarize(markup_dlw_gocogst_p1)

Year	Summary of markup_dlw_gocogst_p1		
	Mean	Std. dev.	Freq.
2006	.88916699	.71502887	137
2007	.88274419	.72864361	171
2008	.93727825	.80363999	218
2009	.95306265	.80764654	249
2010	.90374423	.78920836	268
2011	.91656425	.80707511	243
2012	1.0345041	.91102151	252
2013	1.0585905	.94285829	148
2014	1.133895	.94752068	246
2015	1.1306766	.92361862	551
2016	1.1325714	.94293144	556
2017	1.1285887	.94472077	633
2018	1.1252701	.94052977	670
2019	1.1088259	.92275136	696
2020	1.1220803	.93217962	675
2021	1.0843928	.92013545	510
Total	1.0732549	.90669061	6,223

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976 . tabulate nace2, summarize(markup_dlw_gocogst_p1)

nace2	Summary of markup_dlw_gocogst_p1		
	Mean	Std. dev.	Freq.
41	.42854034	.11811985	3,683
42	1.0486373	.24071108	791
43	2.4420119	.34644034	1,749
Total	1.0732549	.90669061	6,223

977 . *

978 . bys nace2: markupest markup_dlw_gocogst_p0 if zakazky_last3_dummy==0, method(dlw) output(go) inputvar(cogs) free(cntrl(year zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy)) replace

-> nace2 = 41

markup_dlw_gocogst_p0 does not exist. No replace

go	Coefficient
cogs	-.0745339
k	.0128481
year	.0011482
zakazky_last3_dummy	.0038153
cogsXcogs	.0362736
cogsXk	-.0098652
kXk	.0071835

-> nace2 = 42

go	Coefficient
cogs	-1.951302
k	.4580143
year	.0130815
zakazky_last3_dummy	.0211551
cogsXcogs	.1027403
cogsXk	.0202109
kXk	-.0246431

-> nace2 = 43

go	Coefficient
cogs	-.8882371
k	.422554
year	-.0049484
zakazky_last3_dummy	-.0183659
cogsXcogs	.0696822
cogsXk	-.0671781
kXk	.0264269

979 . sum markup_dlw_gocogst_p0,d

markup_dlw_gocogst_p0

	Percentiles	Smallest
1%	.503943	-266.533
5%	.6398447	-31.14919
10%	.6888168	-27.88167
25%	.7830806	-10.88823
		Obs 6,922
		Sum of wgt. 6,922

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50%	1.803632	Mean	1.570002
		Largest	3.479991
75%	2.131757	17.93024	
90%	2.58952	18.67993	Variance 12.11034
95%	3.325122	19.72064	Skewness -66.09248
99%	4.734116	27.49868	Kurtosis 5093.775

980 . replace markup_dlw_gocogst_p0= . if markup_dlw_gocogst_p0<r(p1) | markup_dlw_gocogst_p0 >r(p99)
(138 real changes made, 138 to missing)

981 . tabstat markup_dlw_gocogst_p0, statistics(median)

Variable	p50
markup_~t_p0	1.803632

982 . tabulate year, summarize(markup_dlw_gocogst_p0)

Year	Summary of markup_dlw_gocogst_p0		
	Mean	Std. dev.	Freq.
2006	1.6406935	.90091835	382
2007	1.6255353	.87191662	416
2008	1.5938213	.84690446	448
2009	1.6093209	.89279632	486
2010	1.6119794	.88809742	519
2011	1.5981199	.87447679	496
2012	1.6288476	.90444249	452
2013	1.5548682	.83185307	214
2014	1.5895817	.83307979	286
2015	1.5807851	.81893174	469
2016	1.5529577	.82708109	434
2017	1.5611277	.82140905	472
2018	1.5283773	.80506537	452
2019	1.5561477	.8013635	435
2020	1.5085689	.78716901	445
2021	1.4354186	.73331372	378
Total	1.5751609	.84353997	6,784

983 . tabulate nace2, summarize(markup_dlw_gocogst_p0)

nace2	Summary of markup_dlw_gocogst_p0		
	Mean	Std. dev.	Freq.
41	2.185379	.3854588	3,277
42	3.6187167	.37298335	254
43	.80087638	.1501989	3,253
Total	1.5751609	.84353997	6,784

984 . *

985 . gen markup_dlw_gocogst_pp = markup_dlw_gocogst_p1 if zakazky_last3_dummy==1
(40,354 missing values generated)

986 . replace markup_dlw_gocogst_pp = markup_dlw_gocogst_p0 if zakazky_last3_dummy==0
(6,784 real changes made)

987 . *

988 . sum markup_dlw_gocogst markup_dlw_gocogst_pp

Variable	Obs	Mean	Std. dev.	Min	Max
markup_dlw~t	13,007	1.679729	.4054343	1.061855	3.015493
markup_~t_pp	13,007	1.335032	.9095307	.2197777	4.734116

989 . cor markup_dlw_gocogs_pp markup_dlw_gocogst_pp
(obs=12,822)

	mar~s_pp	mar~t_pp
markup_~s_pp	1.0000	
markup_~t_pp	-0.1064	1.0000

990 . *
991 . tabulate nace2, summarize(markup_dlw_gocogst_pp)

nace2	Summary of markup_dlw_gocogst_pp		
	Mean	Std. dev.	Freq.
41	1.2557185	.92001734	6,960
42	1.6733264	1.1375351	1,045
43	1.3747161	.81804646	5,002
Total	1.3350317	.90953074	13,007

992 . tabstat markup_dlw_gocogst_pp, statistics(median)

Variable	p50
markup_~t_pp	.9039156

993 . gen lmu_2_pp=ln(markup_dlw_gocogst_pp)
(33,570 missing values generated)

994 .
995 . /* plot the graph */
996 . tw (kdensity markup_dlw_gocogst_pp if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst_pp
> /*/ (kdensity markup_dlw_gocogst_pp if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> /*/ if markup_dlw_gocogst_pp > 0 & markup_dlw_gocogst_pp < 3, ytitle("Density") xtitle("Markup") legend(order
997 .
998 .
999 . /* plot the graph */
1000 . *market
1001 . tw (kdensity markup_dlw_gocogst_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_

> /*/ if markup_dlw_gocogst_pp > 0 & markup_dlw_gocogst_pp < 3, ytitle("Density") xtitle("Markup") legend(order
1002 .
1003 .
1004 . save "data_with_markups", replace
(file data_with_markups.dta not found)
file data_with_markups.dta saved

1005 .
1006 .
1007 .
1008 .
1009 . /*
> RESULTS
> */
1010 . use "data_with_results", replace
file data_with_results.dta not found
r(601);

end of do-file

r(601);

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```
1011 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"  
  
1012 .  
1013 . ****  
1014 . *Markups and Public Procurement  
1015 . *bakalářská práce  
1016 . *Institut ekonomických studií  
1017 . *Matěj Bajgar, D.Phil.  
1018 . *Marek Chadim  
1019 . ****  
1020 . clear  
  
1021 . cap log using log  
  
1022 .  
1023 . //cd "C:\Users\chadi\Dropbox\Code_and_data"  
1024 .  
1025 . //cd "C:/Users/mbajgar/Dropbox/IES/Thesis supervision/Marek Chadim"  
1026 .  
1027 . ****  
1028 . * DATA *  
1029 . ****  
1030 .  
1031 . * PREPARE ANALYSIS  
1032 .  
1033 . * RATIOS  
1034 . import delimited using "ratios1.csv", clear  
    (encoding automatically selected: ISO-8859-1)  
    (6 vars, 10,000 obs)  
  
1035 . save "ratios", replace  
    file ratios.dta saved  
  
1036 . forvalues i=2/3{  
    2.     import delimited using "ratios`i'.csv", clear  
    3.     append using "ratios"  
    4.     save "ratios.dta", replace  
    5. }  
    (encoding automatically selected: ISO-8859-1)  
    (6 vars, 10,000 obs)  
    file ratios.dta saved  
    (encoding automatically selected: ISO-8859-1)  
    (6 vars, 10,000 obs)  
    file ratios.dta saved  
  
1037 .  
1038 . * FINANCIAL  
1039 . import delimited using "financial1.csv", clear  
    (encoding automatically selected: ISO-8859-1)  
    (5 vars, 10,000 obs)  
  
1040 . save "financial", replace  
    file financial.dta saved  
  
1041 . forvalues i=2/6{  
    2.     import delimited using "financial`i'.csv", clear  
    3.     append using "financial"  
    4.     save "financial.dta", replace  
    5. }  
    (encoding automatically selected: ISO-8859-1)  
    (5 vars, 10,000 obs)  
    file financial.dta saved  
    (encoding automatically selected: ISO-8859-1)  
    (5 vars, 10,000 obs)  
    file financial.dta saved  
    (encoding automatically selected: ISO-8859-1)  
    (5 vars, 10,000 obs)  
    file financial.dta saved  
    (encoding automatically selected: ISO-8859-1)  
    (5 vars, 10,000 obs)  
    file financial.dta saved  
    (encoding automatically selected: ISO-8859-1)  
    (5 vars, 7,724 obs)
```

```
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```

```
file financial.dta saved
```

```
1042 .
1043 . merge m:m id year using "ratios.dta", nogenerate
```

Result	Number of obs
Not matched from master	27,077
from using	23,474
	3,603
Matched	34,250

```
1044 .
```

```
1045 . rename ccosts costs
```

```
1046 . renamefafixedassets assets
```

```
1047 . renamesalsalesoutputs sales
```

```
1048 . renamewvawagesvalueadded wva
```

```
1049 . renamewswagessales ws
```

```
1050 . renamelplabourproductivity lp
```

```
1051 . renametciiicontributionmargin cm
```

```
1052 .
```

```
1053 . duplicates drop
```

Duplicates in terms of all variables

(8,209 observations deleted)

```
1054 . duplicates drop id year, force
```

Duplicates in terms of **id year**

(376 observations deleted)

```
1055 . save "analysis", replace  
file analysis.dta saved
```

```
1056 .
```

```
1057 . ****
```

```
1058 .
```

```
1059 . * PREPARE SELECTIONS
```

```
1060 .
```

```
1061 . import delimited using "selections1.csv", clear  
(encoding automatically selected: ISO-8859-1)  
(30 vars, 1,000 obs)
```

```
1062 . save "selections", replace  
file selections.dta saved
```

```
1063 . forvalues i=2/5{  
    2.      import delimited using "selections`i'.csv", clear  
    3.          append using "selections"  
    4.          save "selections.dta", replace  
    5. }  
(encoding automatically selected: ISO-8859-1)
```

(30 vars, 1,000 obs)

```
file selections.dta saved
```

(encoding automatically selected: ISO-8859-1)

(30 vars, 1,000 obs)

```
file selections.dta saved
```

(encoding automatically selected: ISO-8859-1)

(30 vars, 1,000 obs)

(variable v22 was str19, now str23 to accommodate using data's values)

(variable v23 was str19, now str23 to accommodate using data's values)

(variable v24 was str19, now str23 to accommodate using data's values)

```
(variable v25 was str19, now str23 to accommodate using data's values)
(variable v26 was str19, now str23 to accommodate using data's values)
(variable v27 was str19, now str23 to accommodate using data's values)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 773 obs)
(variable numberofemployeesclassificationc was str17, now str19 to accommodate using data's values)
(variable v7 was str17, now str19 to accommodate using data's values)
(variable v8 was str17, now str19 to accommodate using data's values)
(variable v9 was str17, now str19 to accommodate using data's values)
(variable v10 was str17, now str19 to accommodate using data's values)
(variable v11 was str17, now str19 to accommodate using data's values)
(variable v12 was str17, now str19 to accommodate using data's values)
(variable v13 was str17, now str19 to accommodate using data's values)
(variable v14 was str17, now str19 to accommodate using data's values)
file selections.dta saved
```

```
1064 .
1065 . rename idieo id
1066 . rename typeofsubject subject_type
1067 . rename legalform legal_form
1068 . rename institutionalsectorsesa2010 inst_sector
1069 . rename numberofemployees empl_num
1070 . rename numberofemployeesclassificationc empl_cat
1071 . drop empl_cat-v28
1072 . rename v29 empl_cat
1073 . rename mainnacecode nace
1074 .
1075 .
1076 . duplicates drop
```

Duplicates in terms of all variables

(2 observations deleted)

```
1077 . save "selections", replace
      file selections.dta saved
1078 .
1079 .
1080 .
1081 . ****
1082 .
1083 . * MERGE & CLEAN
1084 .
1085 . use "analysis", clear
1086 . merge m:1 id using "selections", nogenerate
```

Result	Number of obs
Not matched from master	315
from using	0
Matched	52,742

1087 .
1088 . duplicates drop

Duplicates in terms of all variables

(0 observations are duplicates)

1089 . duplicates drop id year, force

Duplicates in terms of **id year**

(0 observations are duplicates)

1090 .

1091 . *correct sales
1092 . sum sales,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	0	-3.78e+07		
5%	1927000	-1485000		
10%	7170500	-609000	Obs	45,130
25%	1.80e+07	-333000	Sum of wgt.	45,130
50%	4.14e+07		Mean	1.52e+08
		Largest	Std. dev.	7.66e+08
75%	1.01e+08	2.62e+10		
90%	2.48e+08	2.66e+10	Variance	5.86e+17
95%	4.40e+08	2.67e+10	Skewness	19.74803
99%	1.79e+09	2.96e+10	Kurtosis	507.7456

1093 . sum sales if sales<0,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	-3.78e+07	-3.78e+07		
5%	-3.78e+07	-1485000		
10%	-3.78e+07	-609000	Obs	5
25%	-1485000	-333000	Sum of wgt.	5
50%	-609000		Mean	-8065000
		Largest	Std. dev.	1.67e+07
75%	-333000	-1485000		
90%	-60000	-609000	Variance	2.77e+14
95%	-60000	-333000	Skewness	-1.496159
99%	-60000	-60000	Kurtosis	3.244793

1094 . replace sales = . if sales<0 // if negative
(5 real changes made, 5 to missing)

1095 . sum sales if sales>10000000000,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	1.01e+10	1.01e+10		
5%	1.04e+10	1.02e+10		
10%	1.06e+10	1.03e+10	Obs	63
25%	1.26e+10	1.04e+10	Sum of wgt.	63
50%	1.53e+10		Mean	1.66e+10
		Largest	Std. dev.	5.08e+09
75%	1.99e+10	2.62e+10		
90%	2.43e+10	2.66e+10	Variance	2.58e+19
95%	2.62e+10	2.67e+10	Skewness	.6756702
99%	2.96e+10	2.96e+10	Kurtosis	2.491353

```

1096 .
1097 .
1098 .
1099 . *correct ws and define as a share
1100 . sum ws,d

```

WS - Wages / Sales

	Percentiles	Smallest		
1%	.55	-223.94		
5%	3.97	-80.47		
10%	5.94	-44.97	Obs	20,297
25%	10.08	-7.75	Sum of wgt.	20,297
50%	16.71		Mean	31.73326
		Largest	Std. dev.	1478.243
75%	24.95	3218.62		
90%	35.45	12220	Variance	2185202
95%	43.43	20600	Skewness	139.7747
99%	70.08	209212.5	Kurtosis	19758.8

```
1101 . sum ws if ws<1,d
```

WS - Wages / Sales

	Percentiles	Smallest		
1%	-44.97	-223.94		
5%	0	-80.47		
10%	0	-44.97	Obs	247
25%	0	-7.75	Sum of wgt.	247
50%	0		Mean	-1.267287
		Largest	Std. dev.	15.39974
75%	.31	.94		
90%	.7	.95	Variance	237.1521
95%	.83	.97	Skewness	-12.96081
99%	.95	.98	Kurtosis	181.5396

```
1102 . replace ws = ws * 100 if ws<1 & ws>0 // if 100 times too low
(84 real changes made)
```

```
1103 . replace ws = . if ws<0 // if negative
(5 real changes made, 5 to missing)
```

```
1104 . replace ws = . if ws>100 // if very high
(47 real changes made, 47 to missing)
```

```
1105 . replace ws = ws/100 // define as a share
(20,087 real changes made)
```

```
1106 . sum ws,d
```

WS - Wages / Sales

	Percentiles	Smallest		
1%	.0136	0		
5%	.0414	0		
10%	.0605	0	Obs	20,245
25%	.1018	0	Sum of wgt.	20,245
50%	.1679		Mean	.1936105
		Largest	Std. dev.	.1320118
75%	.2503	.9963		
90%	.3554	.9964	Variance	.0174271
95%	.435	1	Skewness	1.756564
99%	.68	1	Kurtosis	8.175128

1107 .
 1108 . *correct wva and define as a share
 1109 . sum wva if wva<1,d

WVA - Wages / Value added

	Percentiles	Smallest		
1%	-3438.46	-27800		
5%	-894.32	-19745.83		
10%	-455.14	-11529.76	Obs	1,689
25%	-137.93	-9784.21	Sum of wgt.	1,689
50%	-30.04		Mean	-235.3029
		.47	Std. dev.	1079.443
75%	0	.61	Variance	1165197
90%	0	.82	Skewness	-15.73481
95%	0	.94	Kurtosis	333.6609
99%	0			

1110 . replace wva = wva * 100 if wva<1 & wva>0 // if 100 times too low
 (14 real changes made)

1111 . replace wva = . if wva<0 // if negative
 (1,166 real changes made, 1,166 to missing)

1112 . replace wva = . if wva>500 // if very high
 (225 real changes made, 225 to missing)

1113 . replace wva = wva/100 // define as a share
 (24,525 real changes made)

1114 . sum wva,d

WVA - Wages / Value added

	Percentiles	Smallest		
1%	0	0		
5%	.2238	0		
10%	.3493	0	Obs	25,034
25%	.5385	0	Sum of wgt.	25,034
50%	.7314		Mean	.7600384
		4.9511	Std. dev.	.447359
75%	.8889	4.9569	Variance	.2001301
90%	1.0749	4.9905	Skewness	3.321662
95%	1.3695	4.9943	Kurtosis	23.4802
99%	2.7267			

1115 .
 1116 . *correct cm and define as a share
 1117 . sum cm if cm<1,d

CM III - Contribution margin

	Percentiles	Smallest		
1%	-21618.18	-628620		
5%	-4976	-210962.5		
10%	-1351.32	-68740	Obs	704
25%	-270.755	-30330	Sum of wgt.	704
50%	-50.415		Mean	-2142.474
		.95	Std. dev.	25261.04
75%	-8.665	.97	Variance	6.38e+08
90%	-2.07	.98	Skewness	-22.55213
95%	-.45	.99	Kurtosis	545.5927
99%	.87			

```

1118 . replace cm = cm * 100 if cm<1 & cm>0 // if 100 times too low
(29 real changes made)

1119 . replace cm = . if cm<0 // if negative
(674 real changes made, 674 to missing)

1120 . replace cm = . if cm>200 // if very high
(2 real changes made, 2 to missing)

1121 . replace cm = cm/100 // define as a share
(17,018 real changes made)

1122 . sum cm,d

```

CM III - Contribution margin

	Percentiles	Smallest		
1%	.054	0		
5%	.1452	.01		
10%	.213	.0103	Obs	17,019
25%	.3439	.0104	Sum of wgt.	17,019
50%	.5032		Mean	.4966111
		Largest	Std. dev.	.208963
75%	.645	1.4286		
90%	.7671	1.4731	Variance	.0436655
95%	.8356	1.4862	Skewness	.0061945
99%	.9535	1.9459	Kurtosis	2.634683

```

1123 .
1124 . *gen cs (a ratio of costs to sales)
1125 . gen cs = costs / sales
(8,846 missing values generated)

```

```
1126 . sum cs,d
```

cs

	Percentiles	Smallest		
1%	.683733	-534.5		
5%	.839583	0		
10%	.8909616	0	Obs	44,211
25%	.9502715	0	Sum of wgt.	44,211
50%	.9900566		Mean	1.689831
		Largest	Std. dev.	109.9211
75%	1.018788	705		
90%	1.096504	1808.406	Variance	12082.65
95%	1.200272	2181.5	Skewness	205.0161
99%	1.880457	22909.38	Kurtosis	42672

```
1127 . replace cs = . if cs<0 // if negative
(1 real change made, 1 to missing)
```

```
1128 . replace cs = . if cs>10 // if very high
(64 real changes made, 64 to missing)
```

```
1129 . sum cs,d
```

cs

	Percentiles	Smallest		
1%	.683733	0		
5%	.8394064	0		
10%	.8907501	0	Obs	44,146
25%	.9502059	0	Sum of wgt.	44,146

50%	.9899808	Mean	1.010857
		Largest	.29091
75%	1.018539	9.285714	
90%	1.094863	9.440821	Variance
95%	1.194018	9.551857	Skewness
99%	1.783049	9.857142	Kurtosis

```

1130 .
1131 . *generate iis
1132 . //gen iis = cm-ws
1133 . gen iis = cs - ws
(35,161 missing values generated)

1134 . replace iis = . if iis<0
(11 real changes made, 11 to missing)

1135 . sum iis, d

```

iis

	Percentiles	Smallest	
1%	.2938306	0	
5%	.5453302	.0000286	
10%	.6228992	.0000333	Obs
25%	.7245551	.0017035	Sum of wgt.
50%	.8157441		Mean
			Std. dev.
75%	.8915795	8.710821	
90%	.9525598	8.804132	Variance
95%	1.003557	8.866667	Skewness
99%	1.463554	9.285714	Kurtosis

```

1136 .
1137 . *generate cogss
1138 . gen cogss = 1-cm
(36,038 missing values generated)

1139 . replace cogss = . if cogss<0 // if negative
(4 real changes made, 4 to missing)

1140 . sum cogss, d

```

cogss

	Percentiles	Smallest	
1%	.047	0	
5%	.1647	0	
10%	.2329	0	Obs
25%	.355	0	Sum of wgt.
50%	.4968		Mean
			Std. dev.
75%	.6562	.9896	
90%	.787	.9897	Variance
95%	.8548	.99	Skewness
99%	.946	1	Kurtosis

```

1141 .
1142 .
1143 . *correct lp if 1000 times too large

```

1144 . sum lp if lp<10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	-29000	-1.51e+08		
5%	0	-1.24e+08		
10%	0	-7.08e+07	Obs	14,127
25%	317107.1	-6.31e+07	Sum of wgt.	14,127
50%	551783.8		Mean	1.01e+07
		Largest	Std. dev.	2.08e+07
75%	6162000	9.99e+07		
90%	3.99e+07	9.99e+07	Variance	4.32e+14
95%	6.07e+07	1.00e+08	Skewness	2.281886
99%	9.00e+07	1.00e+08	Kurtosis	8.336064

1145 . sum lp if lp>10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	1.01e+08	1.00e+08		
5%	1.06e+08	1.00e+08		
10%	1.13e+08	1.00e+08	Obs	1,474
25%	1.39e+08	1.00e+08	Sum of wgt.	1,474
50%	2.13e+08		Mean	5.25e+08
		Largest	Std. dev.	1.20e+09
75%	4.07e+08	1.17e+10		
90%	8.20e+08	1.21e+10	Variance	1.44e+18
95%	1.73e+09	1.35e+10	Skewness	6.339835
99%	6.09e+09	1.42e+10	Kurtosis	52.15764

1146 . replace lp = lp/1000 if lp>10^8

(1,474 real changes made)

1147 . sum lp,d

LP - Labour productivity

	Percentiles	Smallest		
1%	0	-1.51e+08		
5%	0	-1.24e+08		
10%	60066.67	-7.08e+07	Obs	15,601
25%	282500	-6.31e+07	Sum of wgt.	15,601
50%	510357.1		Mean	9187372
		Largest	Std. dev.	2.00e+07
75%	2046187	9.99e+07		
90%	3.66e+07	9.99e+07	Variance	3.99e+14
95%	5.81e+07	1.00e+08	Skewness	2.451637
99%	8.94e+07	1.00e+08	Kurtosis	9.27872

1148 .

1149 . *generate variables

1150 . gen GO = sales

(7,932 missing values generated)

1151 . gen W = ws * sales

(35,141 missing values generated)

```

1152 . gen II = iis * sales
      (35,172 missing values generated)

1153 . gen COGS= cogss*sales
      (38,207 missing values generated)

1154 . gen VA = GO - II
      (35,172 missing values generated)

1155 . gen L = VA / lp if VA/lp>0
      (43,227 missing values generated)

1156 . gen K = assets
      (5,189 missing values generated)

1157 .
1158 .
1159 . sum VA GO COGS II W K L

```

Variable	Obs	Mean	Std. dev.	Min	Max
VA	17,885	2.65e+07	1.04e+08	-8.33e+08	4.17e+09
GO	45,125	1.52e+08	7.66e+08	0	2.96e+10
COGS	14,850	9.29e+07	4.00e+08	0	1.21e+10
II	17,885	1.59e+08	7.35e+08	0	2.20e+10
W	17,916	2.59e+07	1.04e+08	0	3.25e+09
K	47,868	3.46e+07	2.97e+08	-6367000	1.65e+10
L	9,830	59.88645	137.9873	.0001349	3399.693

```

1160 .
1161 . sort id year

1162 .
1163 . //entry year
1164 . egen int entryYr = min(year), by(id)
      (315 missing values generated)

1165 . egen int exitYr = max(year), by(id)
      (315 missing values generated)

1166 .
1167 . // dummies for entry and exit year
1168 . gen byte entry = (year==entryYr)

1169 . gen byte exit = (year==exitYr)

1170 .
1171 . //number of entries, exits per year
1172 . tabstat entry exit , stats(sum) by(year)

```

Summary statistics: Sum
Group variable: year (Year)

year	entry	exit
1993	21	0
1994	17	0
1995	103	0
1996	66	0
1997	28	0
1998	52	0
1999	40	0
2000	38	0
2001	60	0
2002	105	0
2003	679	0
2004	340	3
2005	299	2
2006	221	2
2007	254	3
2008	226	1
2009	186	6

2010	172	1
2011	149	3
2012	134	9
2013	132	6
2014	155	13
2015	235	23
2016	165	21
2017	138	68
2018	164	109
2019	124	210
2020	100	866
2021	53	3053
2022	0	56
2023	0	1
Total	4456	4456

```

1173 .
1174 . *correct
1175 . replace GO = . if GO<0
(0 real changes made)

1176 . replace COGS = . if COGS<0
(0 real changes made)

1177 . replace II = . if II<0
(0 real changes made)

1178 . replace W = . if W<0
(0 real changes made)

1179 . replace K = . if K<0
(50 real changes made, 50 to missing)

1180 .
1181 . *deflate
1182 .
1183 . /*
> import delimited "deflators.csv", clear
> save "deflators",replace
> */
1184 .
1185 . gen nace2 = floor(nace/10000)
(1 missing value generated)

1186 . merge m:1 year nace2 using "deflators", nogenerate

```

Result	Number of obs
Not matched	2,750
from master	373
from using	2,377
Matched	52,684

```

1187 . duplicates drop id year, force
Duplicates in terms of id year
(2,348 observations deleted)

```

```
1188 .
1189 . gen rG0 = G0/deflatorprdp,
(8,015 missing values generated)

1190 . gen rVA = VA/deflatorvalp
(35,223 missing values generated)

1191 . gen rII = II/deflatorintp
(35,223 missing values generated)

1192 . gen rW = W/deflatorcpi
(35,192 missing values generated)

1193 . gen rK = K/deflatorgfcpc
(5,324 missing values generated)

1194 . gen rCOGS = COGS/deflatorintp
(38,255 missing values generated)

1195 .
1196 . *gen log variables
1197 . gen go = ln(rG0)
(8,918 missing values generated)

1198 . gen w = ln(rW)
(35,321 missing values generated)

1199 . gen ii = ln(rII)
(35,224 missing values generated)

1200 . gen va = ln(rVA)
(36,146 missing values generated)

1201 . gen l = ln(L)
(43,256 missing values generated)

1202 . gen k = ln(rK)
(7,032 missing values generated)

1203 . gen cogs = ln(rCOGS)
(38,286 missing values generated)

1204 .
1205 . save "magnus", replace
file magnus.dta saved

1206 .
1207 .
1208 . ****
1209 .
1210 . * PREPARE TENDERS
1211 .
1212 . /*
> insheet using "master_tender_analytics_202207251530.csv", names clear
> save "master_tender_analytics_202207251530", replace
> */
1213 .
1214 . use "master_tender_analytics_202207251530", clear

1215 .
1216 .
```

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```
1217 . *id  
1218 . rename bidder_id id  
  
1219 . drop if length(id)==2 // foreign bidders  
(4,778 observations deleted)  
  
1220 . destring id, replace  
      id: all characters numeric; replaced as long  
  
1221 .  
1222 .  
1223 . *prep for analysis  
1224 . rename bid_final_price zakazky  
  
1225 . tabulate src
```

src	Freq.	Percent	Cum.
profil	600,470	64.57	64.57
vestnik	329,474	35.43	100.00
Total	929,944	100.00	

```
1226 . collapse (sum) zakazky, by(id year)  
  
1227 .  
1228 .  
1229 . save "tenders", replace  
      file tenders.dta saved  
  
1230 .  
1231 . ****  
1232 .  
1233 . *MERGE FIRM AND TENDER DATA  
1234 . use "magnus", replace  
  
1235 .  
1236 . merge 1:1 id year using "tenders"
```

Result	Number of obs
Not matched	199,736
from master	38,716 (_merge==1)
from using	161,020 (_merge==2)
Matched	14,370 (_merge==3)

```
1237 .  
1238 . /*  
>   Result          # of obs.  
>   -----  
>   not matched    199,736  
>       from master 38,716 (_merge==1)  
>       from using  161,020 (_merge==2)  
>  
>   matched        14,370 (_merge==3)  
>  
>   -----  
> */  
1239 .
```

```

1240 . drop if _merge==2
      (161,020 observations deleted)

1241 .
1242 .
1243 . replace zakazky = 0 if zakazky==.
      (38,716 real changes made)

1244 . bysort id (year): gen zakazky_l1 = zakazky[_n-1]
      (4,771 missing values generated)

1245 . bysort id (year): gen zakazky_l2 = zakazky[_n-2]
      (9,145 missing values generated)

1246 .
1247 . egen zakazky_last3 = rowmean(zakazky zakazky_l1 zakazky_l2)

1248 . gen zakazky_last3_dummy = zakazky_last3>0

1249 .
1250 .
1251 .
1252 . gen zakazky_last3_share = zakazky_last3/sales
      (8,865 missing values generated)

1253 . sum zakazky_last3_share, d

```

zakazky_last3_share

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	44,221
25%	0	0	Sum of wgt.	44,221
50%	0		Mean	.2588464
		Largest	Std. dev.	32.22008
75%	.0340608	11.50745		
90%	.306489	17.95798	Variance	1038.134
95%	.6100587	123.6422	Skewness	210.1406
99%	1.447871	6774.08	Kurtosis	44179.36

```
1254 . sum zakazky_last3_share if zakazky_last3_share>1, d
```

zakazky_last3_share

	Percentiles	Smallest		
1%	1.004784	1.000674		
5%	1.030006	1.00096		
10%	1.057959	1.001428	Obs	985
25%	1.148766	1.00184	Sum of wgt.	985
50%	1.383522		Mean	8.725077
		Largest	Std. dev.	215.8197
75%	1.79897	11.50745		
90%	2.565298	17.95798	Variance	46578.14
95%	3.294469	123.6422	Skewness	31.32027
99%	8.725594	6774.08	Kurtosis	982.2997

```
1255 . replace zakazky_last3_share = 1 if zakazky_last3_share>1
      (9,850 real changes made)
```

1256 . sum zakazky_last3_share,d

zakazky_last3_share

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	53,086
25%	0	0	Sum of wgt.	53,086
50%	0		Mean	.2392768
		Largest	Std. dev.	.3921858
75%	.3075198	1		
90%	1	1	Variance	.1538097
95%	1	1	Skewness	1.285768
99%	1	1	Kurtosis	2.825963

1257 .

1258 .

1259 . ****

1260 .

1261 . *restrict sample to years with enough data, known industry and pp engagement

1262 .

1263 . drop if year<2006 | year>2021

(6,492 observations deleted)

1264 . keep if nace2 == 41 | nace2 == 42 | nace2 == 43

(17 observations deleted)

1265 .

1266 . save "data", replace
file **data.dta** saved

1267 .

1268 .

1269 . ****

1270 . ****

1271 .

1272 . use "data", replace

1273 .

1274 . * SUMMARY STATISTICS

1275 . gen GO_mil = rGO/1000000
(7,189 missing values generated)

1276 . gen VA_mil = rVA/1000000

(29,969 missing values generated)

1277 . gen K_mil = rK/1000000

(4,483 missing values generated)

1278 . gen II_mil = rII/1000000

(29,969 missing values generated)

1279 . gen W_mil = rW/1000000

(29,940 missing values generated)

1280 . gen COGS_mil = rCOGS/1000000

(32,913 missing values generated)

1281 .

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1282 . tabstat GO_mil COGS_mil II_mil K_mil W_mil L if !missing(COGS_mil,K_mil,II_mil), stat(mean median sd min max count)

Stats	GO_mil	COGS_mil	II_mil	K_mil	W_mil	L
Mean	200.21	88.10	175.00	46.22	28.61	66.85
p50	57.71	26.75	47.95	6.89	9.18	19.61
SD	855.62	369.39	781.15	363.63	103.58	137.23
Min	0.01	0.00	0.00	0.00	0.00	0.00
Max	26070.78	12067.94	22398.16	16438.20	3477.34	3399.69
N	13466.00	13466.00	13466.00	13466.00	13466.00	7567.00

1283 .

1284 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) , stat(mean median

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	78.61	38.79	38.11
p50	35.27	18.51	3.94
SD	141.56	73.45	459.21
Min	0.00	0.00	0.00
Max	2716.69	1612.83	16438.20
N	7112.00	7112.00	7112.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	346.77	146.87	55.48
p50	93.92	39.44	11.66
SD	1326.27	556.99	210.35
Min	0.00	0.00	0.00
Max	26070.78	12067.94	4938.02
N	6374.00	6374.00	6374.00

1285 .

1286 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==41 , stat(m

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	89.98	40.91	54.75
p50	42.59	20.03	4.73
SD	162.51	76.01	610.61
Min	0.00	0.00	0.00
Max	2716.69	1612.83	16438.20
N	3398.00	3398.00	3398.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	257.74	106.43	43.20
p50	95.53	36.90	10.74
SD	636.36	325.85	115.68
Min	0.00	0.00	0.00
Max	7912.64	6720.52	1372.37
N	3765.00	3765.00	3765.00

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1287 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==42 , stat(m)

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	96.84	42.62	20.74
p50	50.42	26.90	10.83
SD	165.96	51.68	35.61
Min	0.07	0.02	0.00
Max	1872.39	476.62	376.52
N	282.00	282.00	282.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	924.51	326.03	142.20
p50	131.12	63.86	25.36
SD	3184.20	1062.20	491.67
Min	3.22	1.12	0.00
Max	26070.78	10065.88	4938.02
N	795.00	795.00	795.00

1288 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==43 , stat(m)

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	65.85	36.38	23.06
p50	28.80	16.74	3.02
SD	113.17	72.34	259.38
Min	0.01	0.00	0.00
Max	1875.44	1114.33	6730.56
N	3432.00	3432.00	3432.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	278.36	152.28	42.97
p50	79.19	38.61	9.73
SD	857.02	598.73	134.58
Min	0.02	0.01	0.00
Max	12579.94	12067.94	1739.88
N	1814.00	1814.00	1814.00

1289 .

1290 .

1291 . tabstat zakazky_last3_dummy, by(year) stat(N sum)

Summary for variables: zakazky_last3_dummy
Group variable: year (Year)

year	N	Sum
2006	1828	326
2007	2107	436
2008	2328	525
2009	2541	614
2010	2661	643
2011	2641	616
2012	2621	686
2013	2015	669
2014	2358	879
2015	3431	1447
2016	3649	1639
2017	3763	1840
2018	3793	1918
2019	3856	1990
2020	3878	1985
2021	3107	1556
Total	46577	17769

1292 . tabstat zakazky_last3_share if zakazky_last3_dummy == 1, by(year) stat(N mean)

Summary for variables: zakazky_last3_share
Group variable: year (Year)

year	N	Mean
2006	326	.1251871
2007	436	.1708523
2008	525	.197413
2009	614	.2358957
2010	643	.2639437
2011	616	.3014209
2012	686	.3279872
2013	669	.6422127
2014	879	.5228537
2015	1447	.2120005
2016	1639	.3229048
2017	1840	.3526465
2018	1918	.3876848
2019	1990	.4213742
2020	1985	.4627929
2021	1556	.5547972
Total	17769	.3760651

1293 .

1294 . ****ESTIMATION****

1295 . *

ESTIMATION

1296 . ****

1297 . use "data", replace

1298 . set seed 42

1299 .

1300 .

1301 . *setting panel structure

1302 . xtset id year, yearly

Panel variable: id (unbalanced)

Time variable: year, 2006 to 2021, but with gaps

Delta: 1 year

```

1303 . gen proxy=cogs
      (32,942 missing values generated)

1304 .
1305 . *-----OLS-----*
1306 .
1307 . reg go k cogs i.year if nace2==41, cluster(id)

```

Linear regression

Number of obs	=	7,069
F(17, 952)	=	218.64
Prob > F	=	0.0000
R-squared	=	0.8384
Root MSE	=	.52288

(Std. err. adjusted for 953 clusters in id)

go	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
k	.0792354	.0125468	6.32	0.000	.0546128 .103858
cogs	.8484806	.0263099	32.25	0.000	.7968484 .9001127
year					
2007	.0151382	.027197	0.56	0.578	-.0382348 .0685113
2008	-.0326241	.0325545	-1.00	0.317	-.096511 .0312629
2009	-.0794523	.0337635	-2.35	0.019	-.1457118 -.0131927
2010	-.1129802	.0346429	-3.26	0.001	-.1809654 -.044995
2011	-.0736298	.0374536	-1.97	0.050	-.147131 -.0001286
2012	-.1001904	.0381552	-2.63	0.009	-.1750685 -.0253123
2013	-.1591627	.0443944	-3.59	0.000	-.246285 -.0720404
2014	-.1681413	.0417613	-4.03	0.000	-.2500962 -.0861865
2015	-.0630727	.0363871	-1.73	0.083	-.134481 .0083355
2016	-.1037436	.0382424	-2.71	0.007	-.1787926 -.0286945
2017	-.0969881	.0367367	-2.64	0.008	-.1690824 -.0248939
2018	-.0663255	.0379504	-1.75	0.081	-.1408016 .0081505
2019	-.0651183	.037945	-1.72	0.086	-.1395839 .0093473
2020	-.0798066	.0375202	-2.13	0.034	-.1534385 -.0061747
2021	-.1512712	.0370928	-4.08	0.000	-.2240644 -.0784781
_cons	2.281895	.3575151	6.38	0.000	1.580286 2.983504

```

1308 . estimates store ols41
1309 . gen bwols41=_b[cogs]
1310 . gen bkols41=_b[k]
1311 . gen markup_OLS41=_b[cogs]/cogss
      (30,987 missing values generated)
1312 . sum markup_OLS41,d

```

markup_OLS41

	Percentiles	Smallest		
1%	.8969139	.8484806		
5%	.9926072	.8570511		
10%	1.07908	.8573109	Obs	15,590
25%	1.29539	.8573975	Sum of wgt.	15,590
50%	1.711682		Mean	3.293541
		Largest	Std. dev.	52.03222
75%	2.392107	848.4915	Variance	2707.351
90%	3.63375	2121.166	Skewness	74.14734
95%	5.099041	4242.963	Kurtosis	5837.158
99%	15.12443	4242.963		

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1313 . replace markup_OLS41 = . if markup_OLS41<r(p1) | markup_OLS41>r(p99)
(310 real changes made, 310 to missing)

1314 . tabstat markup_OLS41, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS41	2.141643	1.711682	1.517638

1315 .
1316 .
1317 . reg go k cogs i.year if nace2==42, cluster(id)

Linear regression
Number of obs = 1,071
F(17, 112) = 173.16
Prob > F = 0.0000
R-squared = 0.9311
Root MSE = .39181

(Std. err. adjusted for 113 clusters in id)

go	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
k	.0287314	.036358	0.79	0.431	-.0433074	.1007702
cogs	1.003993	.0462779	21.69	0.000	.9122993	1.095687
year						
2007	-.024366	.0376774	-0.65	0.519	-.0990191	.050287
2008	-.1141879	.0652301	-1.75	0.083	-.243433	.0150572
2009	-.0858153	.0649902	-1.32	0.189	-.214585	.0429544
2010	-.1449121	.0658183	-2.20	0.030	-.2753226	-.0145017
2011	-.1323247	.0727879	-1.82	0.072	-.2765445	.0118952
2012	-.2058536	.073287	-2.81	0.006	-.3510624	-.0606447
2013	-.2266572	.0715618	-3.17	0.002	-.3684478	-.0848666
2014	-.1019735	.0613522	-1.66	0.099	-.223535	.019588
2015	-.0937582	.0689157	-1.36	0.176	-.2303058	.0427893
2016	-.1696101	.0704753	-2.41	0.018	-.3092478	-.0299723
2017	-.1732987	.0662022	-2.62	0.010	-.3044698	-.0421276
2018	-.2140621	.0668472	-3.20	0.002	-.3465114	-.0816128
2019	-.1620437	.0674334	-2.40	0.018	-.2956542	-.0284331
2020	-.1499866	.069858	-2.15	0.034	-.2884012	-.011572
2021	-.1506992	.0813604	-1.85	0.067	-.3119044	.010506
_cons	.3611644	.4377448	0.83	0.411	-.5061707	1.2285

1318 . estimates store ols42

1319 . gen bwols42=_b[cogs]

1320 . gen bkols42=_b[k]

1321 . gen markup_OLS42=_b[cogs]/cogss
(30,987 missing values generated)

1322 . sum markup_OLS42,d

markup_OLS42

	Percentiles	Smallest
1%	1.061303	1.003993
5%	1.174536	1.014134
10%	1.276857	1.014442
25%	1.532814	1.014544
		Obs 15,590
		Sum of wgt. 15,590

50%	2.025404	Mean	3.897193
		Largest	61.56886
75%	2.830541	Std. dev.	61.56886
90%	4.299757	Variance	3790.725
95%	6.033611	Skewness	74.14734
99%	17.89649	Kurtosis	5837.158

1323 . replace markup_OLS42 = . if markup_OLS42<r(p1) | markup_OLS42>r(p99)
(310 real changes made, 310 to missing)

1324 . tabstat markup_OLS42, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS42	2.534171	2.025404	1.795796

1325 .

1326 .

1327 . reg go k cogs i.year if nace2==43, cluster(id)

Linear regression

Number of obs	=	5,135
F(17, 808)	=	216.75
Prob > F	=	0.000
R-squared	=	0.8566
Root MSE	=	.49477

(Std. err. adjusted for 809 clusters in id)

go	Coefficient	Robust				
		std. err.	t	P> t	[95% conf. interval]	
k	.1035996	.0178359	5.81	0.000	.0685894	.1386098
	.7892245	.0260437	30.30	0.000	.7381033	.8403457
year						
2007	.0164369	.0322338	0.51	0.610	-.046835	.0797088
2008	.0182428	.0301739	0.60	0.546	-.0409857	.0774713
2009	-.0071405	.0344361	-0.21	0.836	-.0747354	.0604543
2010	-.0635575	.0324825	-1.96	0.051	-.1273175	.0002024
2011	-.0510698	.0346069	-1.48	0.140	-.1189999	.0168602
2012	-.0639276	.0340968	-1.87	0.061	-.1308563	.003001
2013	-.0473754	.0449651	-1.05	0.292	-.1356375	.0408868
2014	-.0214382	.0360921	-0.59	0.553	-.0922835	.0494071
2015	.0172259	.0360249	0.48	0.633	-.0534876	.0879395
2016	.0237604	.0413938	0.57	0.566	-.0574917	.1050125
2017	.0237249	.0410868	0.58	0.564	-.0569245	.1043743
2018	.058316	.0414795	1.41	0.160	-.0231043	.1397362
2019	.0321514	.0407265	0.79	0.430	-.0477908	.1120936
2020	.0097535	.040532	0.24	0.810	-.0698069	.0893138
2021	-.015998	.0432822	-0.37	0.712	-.1009567	.0689608
_cons	2.661231	.3062602	8.69	0.000	2.060072	3.262391

1328 . estimates store ols43

1329 . gen bwols43=_b[cogs]

1330 . gen bkols43=_b[k]

```
1331 . gen markup_OLS43=_b[cogs]/cogss
(30,987 missing values generated)
```

```
1332 . sum markup_OLS43,d
```

markup_OLS43

	Percentiles	Smallest		
1%	.8342754	.7892246		
5%	.9232856	.7971965		
10%	1.003719	.7974381	Obs	15,590
25%	1.204923	.7975187	Sum of wgt.	15,590
50%	1.592142		Mean	3.063527
		Largest	Std. dev.	48.3984
75%	2.225048	789.2347	Variance	2342.405
90%	3.379977	1973.028	Skewness	74.14734
95%	4.742936	3946.644	Kurtosis	5837.158
99%	14.06817	3946.644		

```
1333 . replace markup_OLS43 = . if markup_OLS43<r(p1) | markup_OLS43>r(p99)
(310 real changes made, 310 to missing)
```

```
1334 . tabstat markup_OLS43, statistics(mean median sd)
```

Variable	Mean	p50	SD
markup_OLS43	1.992075	1.592142	1.411649

```
1335 .
```

```
1336 .
```

```
1337 . estout ols41 ols42 ols43, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N)
```

	ols41 b/se	ols42 b/se	ols43 b/se
k	0.079*** (0.013)	0.029 (0.036)	0.104*** (0.018)
cogs	0.848*** (0.026)	1.004*** (0.046)	0.789*** (0.026)
Year=2006	0.000 (.)	0.000 (.)	0.000 (.)
Year=2007	0.015 (0.027)	-0.024 (0.038)	0.016 (0.032)
Year=2008	-0.033 (0.033)	-0.114 (0.065)	0.018 (0.030)
Year=2009	-0.079* (0.034)	-0.086 (0.065)	-0.007 (0.034)
Year=2010	-0.113** (0.035)	-0.145* (0.066)	-0.064 (0.032)
Year=2011	-0.074* (0.037)	-0.132 (0.073)	-0.051 (0.035)
Year=2012	-0.100** (0.038)	-0.206** (0.073)	-0.064 (0.034)
Year=2013	-0.159*** (0.044)	-0.227** (0.072)	-0.047 (0.045)
Year=2014	-0.168*** (0.042)	-0.102 (0.061)	-0.021 (0.036)
Year=2015	-0.063 (0.036)	-0.094 (0.069)	0.017 (0.036)
Year=2016	-0.104** (0.038)	-0.170* (0.070)	0.024 (0.041)
Year=2017	-0.097** (0.037)	-0.173* (0.066)	0.024 (0.041)
Year=2018	-0.066 (0.038)	-0.214** (0.067)	0.058 (0.041)
Year=2019	-0.065 (0.038)	-0.162* (0.067)	0.032 (0.041)
Year=2020	-0.080*	-0.150*	0.010

	(0.038)	(0.070)	(0.041)
Year=2021	-0.151***	-0.151	-0.016
	(0.037)	(0.081)	(0.043)
Constant	2.282***	0.361	2.661***
	(0.358)	(0.438)	(0.306)
N	7069.000	1071.000	5135.000

* p<0.05, ** p<0.01, *** p<0.001

```

1338 .
1339 . gen markup_OLS = markup_OLS41 if nace2==41
(38,499 missing values generated)

1340 . replace markup_OLS = markup_OLS42 if nace2==42
(1,265 real changes made)

1341 . replace markup_OLS = markup_OLS43 if nace2==43
(5,937 real changes made)

1342 .
1343 .
1344 . sum markup_OLS,d

```

markup_OLS

	Percentiles	Smallest	
1%	.8785757	.8342754	
5%	.9617716	.8342754	
10%	1.04312	.8347166	Obs 15,280
25%	1.27161	.8348049	Sum of wgt. 15,280
50%	1.700182		Mean 2.118492
		Largest	Std. dev. 1.491713
75%	2.384042	14.55369	
90%	3.496726	14.83357	Variance 2.225207
95%	4.613233	14.85956	Skewness 3.606726
99%	9.050741	14.88563	Kurtosis 21.3504

```
1345 . tabstat markup_OLS, statistics( median )
```

Variable	p50
markup_OLS	1.700182

```
1346 . tabulate zakazky_last3_dummy, summarize(markup_OLS)
```

zakazky_las t3_dummy	Summary of markup_OLS		
	Mean	Std. dev.	Freq.
0	2.0454662	1.6571495	8,048
1	2.1997565	1.2779869	7,232
Total	2.1184916	1.4917127	15,280

```

1347 .
1348 . /* plot the graph */
1349 . tw (kdensity markup_OLS if nace2 == 41, lw(medthick) lp(_.) lc(ebblue)) (kdensity markup_OLS if nace2 == 42, lw(medthick) lp(_.-) lc(forest_green)) /*
> */ (kdensity markup_OLS if nace2 == 43, lw(medthick) lp(.-..) lc(forest_green)) /*
> */ if markup_OLS > 0 & markup_OLS < 3, ytitle("Density") xtitle("mu_OLS") legend(order( 1 "Sector 41" 2 "Secto

```

```

1350 .
1351 .
1352 . gen lmu_OLS= ln(markup_OLS)
      (31,297 missing values generated)

1353 .
1354 .
1355 . *-----fixed effects-----*
1356 .
1357 . xtreg go cogs k i.year, fe cluster(id)

      Fixed-effects (within) regression                         Number of obs     =   13,275
      Group variable: id                                     Number of groups  =     1,875

      R-squared:                                                 Obs per group:
      Within = 0.6799                                         min =          1
      Between = 0.8650                                        avg =        7.1
      Overall = 0.8525                                       max =       16

      F(17, 1874) = 149.83
      corr(u_i, Xb) = 0.3894
      Prob > F = 0.0000

      (Std. err. adjusted for 1,875 clusters in id)



| go      | Coefficient | Robust<br>std. err.               | t     | P> t  | [95% conf. interval] |
|---------|-------------|-----------------------------------|-------|-------|----------------------|
| cogs    | .7419472    | .0268354                          | 27.65 | 0.000 | .6893169 .7945776    |
| k       | .0421847    | .0084363                          | 5.00  | 0.000 | .0256392 .0587302    |
| year    |             |                                   |       |       |                      |
| 2007    | .0326694    | .0145083                          | 2.25  | 0.024 | .0042153 .0611235    |
| 2008    | .0049389    | .0166876                          | 0.30  | 0.767 | -.0277895 .0376672   |
| 2009    | -.0344064   | .0179338                          | -1.92 | 0.055 | -.0695787 .000766    |
| 2010    | -.0712556   | .018682                           | -3.81 | 0.000 | -.1078953 -.0346159  |
| 2011    | -.0484631   | .0199762                          | -2.43 | 0.015 | -.087641 -.0092851   |
| 2012    | -.0941317   | .020373                           | -4.62 | 0.000 | -.1340878 -.0541755  |
| 2013    | -.0762544   | .0217363                          | -3.51 | 0.000 | -.1188842 -.0336245  |
| 2014    | -.0670574   | .0212982                          | -3.15 | 0.002 | -.108828 -.0252867   |
| 2015    | -.031893    | .0204338                          | -1.56 | 0.119 | -.0719684 .0081824   |
| 2016    | -.0679319   | .0215323                          | -3.15 | 0.002 | -.1101617 -.0257022  |
| 2017    | -.0448816   | .0213514                          | -2.10 | 0.036 | -.0867566 -.0030066  |
| 2018    | -.0134085   | .0213731                          | -0.63 | 0.531 | -.055326 .0285091    |
| 2019    | -.0126308   | .0213743                          | -0.59 | 0.555 | -.0545508 .0292892   |
| 2020    | -.0469469   | .0211012                          | -2.22 | 0.026 | -.0883312 -.0055626  |
| 2021    | -.0720078   | .0209802                          | -3.43 | 0.001 | -.1131549 -.0308608  |
| _cons   | 4.580565    | .4058259                          | 11.29 | 0.000 | 3.784647 5.376483    |
| sigma_u | .50172001   |                                   |       |       |                      |
| sigma_e | .27455596   |                                   |       |       |                      |
| rho     | .76955039   | (fraction of variance due to u_i) |       |       |                      |


```

```

1358 .
1359 . gen bcogsolsfe_gocogs=_b[cogs]
1360 . gen bkolsfe_vaw=_b[k]
1361 . gen markup_OLSfe_gocogs=_b[cogs]/cogss
      (30,987 missing values generated)

```

1362 . sum markup_OLSfe_gocogs,d

markup_OLSfe_gocogs

	Percentiles	Smallest		
1%	.7842994	.7419472		
5%	.8679776	.7494416		
10%	.9435931	.7496688	Obs	15,590
25%	1.132744	.7497446	Sum of wgt.	15,590
50%	1.496767		Mean	2.880011
		Largest	Std. dev.	45.49917
75%	2.09176	741.9568		
90%	3.177505	1854.837	Variance	2070.174
95%	4.458817	3710.226	Skewness	74.14734
99%	13.22544	3710.226	Kurtosis	5837.158

1363 . replace markup_OLSfe_gocogs = . if markup_OLSfe_gocogs<r(p1) | markup_OLSfe_gocogs>r(p99)
(310 real changes made, 310 to missing)

1364 . tabstat markup_OLSfe_gocogs, statistics(median)

Variable	p50
markup_OLS~s	1.496767

1365 . tabulate nace2, summarize(markup_OLSfe_gocogs)

nace2	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
41	1.9914197	1.3158919	8,078
42	1.7665534	.83524899	1,265
43	1.7338953	1.4098313	5,937
Total	1.8727431	1.3270868	15,280

1366 . tabulate year, summarize(markup_OLSfe_gocogs)

Year	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7922909	1.2545983	568
2007	1.8582881	1.3295386	655
2008	1.7949351	1.2106957	734
2009	1.8079267	1.1369354	812
2010	1.8469237	1.379186	869
2011	1.8391767	1.3355726	908
2012	1.7528916	1.2143834	939
2013	1.7267764	1.1575977	958
2014	1.7873373	1.2675354	998
2015	1.8741533	1.3781509	1,049
2016	1.8627776	1.3306173	1,018
2017	1.9247405	1.4375455	1,138
2018	2.0061368	1.4238802	1,169
2019	2.0325895	1.4664146	1,165
2020	1.9727414	1.3246715	1,194
2021	1.9119566	1.3365479	1,106
Total	1.8727431	1.3270868	15,280

1367 .
 1368 . tabulate zakazky_last3_dummy, summarize(markup_OLSfe_gocogs)

zakazky_las t3_dummy	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
0	1.835858	1.49433	8,048
1	1.91379	1.1104468	7,232
Total	1.8727431	1.3270868	15,280

1369 .
 1370 .
 1371 . tw (kdensity markup_OLSfe_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_OLSfe_gocogs if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> */ if markup_OLSfe_gocogs > 0 & markup_OLSfe_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 2))
 1372 .
 1373 .
 1374 .
 1375 . *----- prodest: LP(2003) + ACF(2015) -----*
 1376 .
 1377 .
 1378 .
 1379 . *CD, cogs
 1380 . *sector
 1381 . prodest go if nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(yea

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = **7069**
 Group variable (id): id Number of groups = **953**
 Time variable (t): year
 Obs per group: min = **1**
 avg = **7.4**
 max = **16**

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8269919	.0004801	1722.48	0.000	.8260509 .8279329
k	.067153	.0099438	6.75	0.000	.0476635 .0866424
year	-.0155673	.0046369	-3.36	0.001	-.0246554 -.0064792
zakazky_last3_dummy	.1613053	.0044734	36.06	0.000	.1525377 .170073

Wald test on Constant returns to scale: Chi2 = 12733.62
 p = (0.00)

1382 . estimates store cf41

1383 . prodest go if nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(yea

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = **1071**
 Group variable (id): id Number of groups = **113**
 Time variable (t): year
 Obs per group: min = **1**
 avg = **9.5**
 max = **16**

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9852306	.0066572	147.99	0.000	.9721828 .9982785
k	.0233503	.03259	0.72	0.474	-.0405249 .0872255
year	-.0172427	.0009956	-17.32	0.000	-.019194 -.0152913
zakazky_last3_dummy	.1052386	.0147963	7.11	0.000	.0762384 .1342389

Wald test on Constant returns to scale: Chi2 = 36.97
p = (0.00)

1384 . estimates store cf42

1385 . prodest go if nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(year.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 5135
Group variable (id): id Number of groups = 809
Time variable (t): year Obs per group: min = 1
avg = 6.3
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7813929	.0052676	148.34	0.000	.7710686 .7917172
k	.1015697	.0131108	7.75	0.000	.075873 .1272664
year	.0010128	.000602	1.68	0.092	-.0001671 .0021927
zakazky_last3_dummy	.0983237	.0046493	21.15	0.000	.0892112 .1074363

Wald test on Constant returns to scale: Chi2 = 10.11
p = (0.00)

1386 . estimates store cf43

1387 .
1388 . estout ols41 cf41 ols42 cf42 ols43 cf43, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N) keep(cogs k)

	ols41 b/se	cf41 b/se	ols42 b/se	cf42 b/se	ols43 b/se	cf43 b/se
k	0.079*** (0.013)	0.067*** (0.010)	0.029 (0.036)	0.023 (0.033)	0.104*** (0.018)	0.102*** (0.013)
cogs	0.848*** (0.026)	0.827*** (0.000)	1.004*** (0.046)	0.985*** (0.007)	0.789*** (0.026)	0.781*** (0.005)
N	7069.000	7069.000	1071.000	1071.000	5135.000	5135.000

* p<0.05, ** p<0.01, *** p<0.001

1389 .

1390 . *+ market

1391 . prodest go if zakazky_last3_dummy==1 & nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 3750
Group variable (id): id Number of groups = 619
Time variable (t): year Obs per group: min = 1
avg = 6.1
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8950482	.0025724	347.94	0.000	.8900063 .9000901
k	.0564046	.0098285	5.74	0.000	.0371412 .075668
year	-.0151858	.0050061	-3.03	0.002	-.0249975 -.0053741

Wald test on Constant returns to scale: Chi2 = 802.37
p = (0.00)

1392 . estimates store cf41pp1

1393 . prodest go if zakazky_last3_dummy==0 & nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator		Cobb-Douglas PF			
ACF corrected					
Dependent variable: value added		Number of obs = 3319			
Group variable (id): id		Number of groups = 712			
Time variable (t): year		Obs per group:	min = 1	avg = 4.7	max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7972526	.0040069	198.97	0.000	.7893992 .8051059
k	.0457916	.009345	4.90	0.000	.0274758 .0641075
year	.0106398	.0018228	5.84	0.000	.0070672 .0142124

Wald test on Constant returns to scale: Chi2 = 1158.04
p = (0.00)

1394 . estimates store cf41pp0

1395 .

1396 . prodest go if zakazky_last3_dummy==1 & nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator		Cobb-Douglas PF			
ACF corrected					
Dependent variable: value added		Number of obs = 791			
Group variable (id): id		Number of groups = 103			
Time variable (t): year		Obs per group:	min = 1	avg = 7.7	max = 15

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	3.638169	1.21437	3.00	0.003	1.258046 6.018291
k	-.0361166	.0120619	-2.99	0.003	-.0597576 -.0124757
year	.0012217	.0004147	2.95	0.003	.000409 .0020344

Wald test on Constant returns to scale: Chi2 = 4.68
p = (0.03)

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1397 . estimates store cf42pp1

1398 . prodest go if zakazky_last3_dummy==0 & nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 280
Group variable (id): id Number of groups = 67
Time variable (t): year Obs per group: min = 1
Number of obs = 280
Number of groups = 67
Time variable (t): year Obs per group: avg = 4.2
max = 13

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8605481	.7166137	1.20	0.230	-.5439888 2.265085
k	.0661202	.0531733	1.24	0.214	-.0380975 .1703379
year	-.0261149	.080571	-0.32	0.746	-.1840312 .1318013

Wald test on Constant returns to scale: Chi2 = 0.02
p = (0.89)

1399 . estimates store cf42pp0

1400 .

1401 . prodest go if zakazky_last3_dummy==1 & nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 1812
Group variable (id): id Number of groups = 378
Time variable (t): year Obs per group: min = 1
Number of obs = 1812
Number of groups = 378
Time variable (t): year Obs per group: avg = 4.8
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8784727	.0000134	6.6e+04	0.000	.8784464 .878499
k	.0940754	3.87e-06	2.4e+04	0.000	.0940678 .094083
year	-.006235	3.87e-06	-1609.86	0.000	-.0062426 -.0062274

Wald test on Constant returns to scale: Chi2 = 9.5e+06
p = (0.00)

1402 . estimates store cf43pp1

1403 . prodest go if zakazky_last3_dummy==0 & nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 3323
Group variable (id): id Number of groups = 715
Time variable (t): year Obs per group: min = 1
Number of obs = 3323
Number of groups = 715
Time variable (t): year Obs per group: avg = 4.6
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7411543	.0047367	156.47	0.000	.7318707 .750438
k	.0765698	.0083876	9.13	0.000	.0601304 .0930092
year	.0000832	.0063897	0.01	0.990	-.0124404 .0126067

Wald test on Constant returns to scale: Chi2 = 1615.42
p = (0.00)

1404 . estimates store cf43pp0

1405 .

1406 .

1407 . estout cf41pp1 cf41pp0 cf42pp1 cf42pp0 cf43pp1 cf43pp0, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N) keep(k cogs)

	cf41pp1 b/se	cf41pp0 b/se	cf42pp1 b/se	cf42pp0 b/se	cf43pp1 b/se	cf43pp0 b/se
cogs	0.895*** (0.003)	0.797*** (0.004)	3.638** (1.214)	0.861 (0.717)	0.878*** (0.000)	0.741*** (0.005)
k	0.056*** (0.010)	0.046*** (0.009)	-0.036** (0.012)	0.066 (0.053)	0.094*** (0.000)	0.077*** (0.008)
N	3750.000	3319.000	791.000	280.000	1812.000	3323.000

* p<0.05, ** p<0.01, *** p<0.001

1408 .

1409 .

1410 .

1411 . *Translog, cogs

1412 . prodest go if nace2==41,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last.....

lp productivity estimator	translog PF
ACF corrected	
Dependent variable: value added	Number of obs = 7069
Group variable (id): id	Number of groups = 953
Time variable (t): year	Obs per group: min = 1
	avg = 7.4
	max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.0412849	.0001151	358.80	0.000	.0410593 .0415104
k	.1263084	.0000169	7476.21	0.000	.1262753 .1263415
year	-.0083165	.000092	-90.42	0.000	-.0084968 -.0081362
zakazky_last3_dummy	.1822531	.0000381	4783.13	0.000	.1821785 .1823278
var_1_1	.0341042	.000012	2837.01	0.000	.0340806 .0341277
var_1_2	-.0240776	.0001031	-233.55	0.000	-.0242796 -.0238755
var_2_2	.0110656	.0001197	92.46	0.000	.010831 .0113002

Wald test on Constant returns to scale: Chi2 = 9.8e+09
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type predict, parameters

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1413 . predict, parameters

Translog elasticity estimates	prodest postestimation
Elasticity Parameter	Value
beta_cogs	0.834
beta_k	

1414 . prodest go if nace2==42,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last
.....

```

lp productivity estimator          translog PF
ACF corrected
Dependent variable: value added   Number of obs      =    1071
Group variable (id): id          Number of groups   =     113
Time variable (t): year         Obs per group: min =      1
                                         avg =    9.5
                                         max =    16

```

	go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
zakazky_last3_dummy	cogs	.1266992	.0001054	1202.44	0.000	.1264926 .1269057
	k	.1480886	2.13e-06	7.0e+04	0.000	.1480844 .1480928
	year	.0046677	.0000327	142.80	0.000	.0046036 .0047317
		.1348415	.0000388	3472.13	0.000	.1347654 .1349176
	var_1_1	.0563374	.0000168	3343.67	0.000	.0563044 .0563704
	var_1_2	-.0284209	4.43e-06	-6410.57	0.000	-.0284296 -.0284122
	var_2_2	.0099703	.0002554	39.03	0.000	.0094697 .010471

Wald test on Constant returns to scale: Chi2 = 7.3e+07
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type [predict](#), [parameters](#)

1415 . predict, parameters

Translog elasticity estimates		prodest	postestimation
Elasticity Parameter		Value	
beta_cogs		1.615	
beta_k			

```
1416 . prodest go if nace2==43,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last  
.....
```

lp productivity estimator
 ACF corrected
 Dependent variable: value added
 Group variable (id): id
 Time variable (t): year
 translog PF
 Number of obs = 5135
 Number of groups = 809
 Obs per group: min = 1
 avg = 6.3
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	-.2427252	.0657065	-3.69	0.000	-.3715076 -.1139428
k	.0411343	.0112461	3.66	0.000	.0190923 .0631763
year	-.0010578	.0005732	-1.85	0.065	-.0021812 .0000657
zakazky_last3_dummy	.1001853	.0275317	3.64	0.000	.046224 .1541465
var_1_1	.0538865	.0146528	3.68	0.000	.0251676 .0826054
var_1_2	-.0448472	.0125591	-3.57	0.000	-.0694625 -.0202318
var_2_2	.0265976	.0067242	3.96	0.000	.0134184 .0397769

Wald test on Constant returns to scale: Chi2 = 3384.83

p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type predict, parameters

1417 . predict, parameters

Translog elasticity estimates		prodest postestimation
Elasticity Parameter	Value	
beta_cogs	0.904	
beta_k		

1418 .
1419 . *----- prodest: Wooldridge (WRDG, 2009)-----*
1420 .
1421 .
1422 .
1423 . *Cobb-Douglas
1424 . prodest go, va method(wrdg) free(cogs) state(k) proxy(proxy) endogenous(proxy zakazky_last3_dummy) control(year za

wrdg productivity estimator Cobb-Douglas PF

Dependent variable: value added Number of obs = 9910
Group variable (id): id Number of groups = 1875
Time variable (t): year Obs per group: min = 1
Time variable (t): year avg = 7.1
Time variable (t): year max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8307611	.0135956	61.11	0.000	.8041143 .857408
k	.0708279	.0051386	13.78	0.000	.0607564 .0808994
year	.9458165	.4143703	2.28	0.022	.1336656 1.757967
zakazky_last3_dummy	-3.384439	.9858942	-3.43	0.001	-5.316756 -1.452121
nace2	-.0544087	.0170738	-3.19	0.001	-.0878727 -.0209447

Wald test on Constant returns to scale: Chi2 = 11.09

p = (0.00)

Hansen's J statistic for overidentification = 580.51

p = (0.00)

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```
1425 . gen bcogswrdg_gocogs=_b[cogs]
1426 . gen bkwrdf_gocogs=_b[k]
1427 . gen markup_wrdg_gocogs=_b[cogs]/cogss
(30,987 missing values generated)
1428 . sum markup_wrdg_gocogs,d
```

markup_wrdg_gocogs

	Percentiles	Smallest		
1%	.878183	.8307611		
5%	.9718778	.8391526		
10%	1.056545	.839407	Obs	15,590
25%	1.268338	.8394918	Sum of wgt.	15,590
50%	1.675935		Mean	3.224759
		Largest	Std. dev.	50.94559
75%	2.342151	830.7718	Variance	2595.453
90%	3.557864	2076.868	Skewness	74.14734
95%	4.992554	4154.354	Kurtosis	5837.158
99%	14.80857	4154.354		

```
1429 . replace markup_wrdg_gocogs= . if markup_wrdg_gocogs <r(p1) | markup_wrdg_gocogs >r(p99)
(310 real changes made, 310 to missing)
```

```
1430 . tabstat markup_wrdg_gocogs, statistics( median )
```

Variable	p50
markup_wrd~s	1.675935

```
1431 . tabulate year, summarize(markup_wrdg_gocogs)
```

Year	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
2006	2.0068348	1.4047785	568
2007	2.0807322	1.4886894	655
2008	2.0097956	1.3556205	734
2009	2.0243423	1.2730308	812
2010	2.0680074	1.5442798	869
2011	2.0593331	1.4954457	908
2012	1.9627194	1.3597497	939
2013	1.9334781	1.2961665	958
2014	2.0012883	1.4192641	998
2015	2.0984965	1.5431208	1,049
2016	2.0857591	1.4898972	1,018
2017	2.1551392	1.6096251	1,138
2018	2.246279	1.594324	1,169
2019	2.2758981	1.6419499	1,165
2020	2.208886	1.4832397	1,194
2021	2.140825	1.4965377	1,106
Total	2.0969175	1.4859441	15,280

```
1432 . tabulate nace2, summarize(markup_wrdg_gocogs)
```

nace2	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
41	2.2298001	1.4734091	8,078
42	1.9780165	.93523145	1,265
43	1.9414491	1.5785934	5,937
Total	2.0969175	1.4859441	15,280

```

1433 .
1434 . tw (kdensity markup_wrdg_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_wrdg_gocogs if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> */ if markup_wrdg_gocogs > 0 & markup_wrdg_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order( 1
1435 .
1436 .
1437 . *TRANS
1438 . prodest go if zakazky_last3_dummy ==1, va method(wrdg) free(cogs) state(k) proxy(proxy) endogenous(proxy zakazky_1

```

wrdg productivity estimator

Cobb-Douglas PF

Dependent variable: value added
 Group variable (id): id
 Time variable (t): year

Number of obs = **4589**
 Number of groups = **1100**
 Obs per group: min = **1**
 avg = **5.8**
 max = **16**

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9088982	.0138637	65.56	0.000	.8817258 .9360706
k	.0381681	.0072323	5.28	0.000	.0239932 .0523431
year	-.9175421	.3812039	-2.41	0.016	-1.664688 -.1703962
zakazky_last3_dummy	-1.598411	.817205	-1.96	0.050	-3.200103 .0032819
nace2	.0208744	.0196119	1.06	0.287	-.0175642 .059313

Wald test on Constant returns to scale: Chi2 = 7.86
 p = (0.01)
 Hansen's J statistic for overidentification = 286.59
 p = (0.00)

1439 . predict, parameters

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9088982	.0138637	65.56	0.000	.8817258 .9360706
k	.0381681	.0072323	5.28	0.000	.0239932 .0523431
year	-.9175421	.3812039	-2.41	0.016	-1.664688 -.1703962
zakazky_last3_dummy	-1.598411	.817205	-1.96	0.050	-3.200103 .0032819
nace2	.0208744	.0196119	1.06	0.287	-.0175642 .059313

```

1440 .
1441 .
1442 .
1443 .
1444 .
1445 . *----- markupest: De Loecker and Warzynski (DLW, 2012)-----
1446 . */
1447 .
1448 . *ACF Cobb-Douglas
1449 . bys nace2: markupest markup_dlw_gocogs,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) verb
> ear zakazky_last3_dummy")

```

-> nace2 = 41

go	Coefficient
cogs	.845223
k	.0357425
year	.021848
zakazky_last3_dummy	.1994751

-> nace2 = 42

go	Coefficient
cogs	.985717
k	.0237992
year	-.0167563
zakazky_last3_dummy	.105725

-> nace2 = 43

go	Coefficient
cogs	.7950427
k	.0859638
year	.0065691
zakazky_last3_dummy	.1122821

1450 . sum markup_dlw_gocogs,d

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.180557	1.113285		
5%	1.25489	1.146087		
10%	1.318102	1.146496	Obs	13,275
25%	1.513043	1.148683	Sum of wgt.	13,275
50%	1.817155		Mean	1.912738
		Largest	Std. dev.	1.387667
75%	2.051125	33.72855		
90%	2.332492	41.43678	Variance	1.925619
95%	2.632853	71.97048	Skewness	27.36396
99%	4.403317	74.05809	Kurtosis	1166.484

1451 . replace markup_dlw_gocogs= . if markup_dlw_gocogs<r(p1) | markup_dlw_gocogs >r(p99)
(264 real changes made, 264 to missing)

1452 . tabstat markup_dlw_gocogs, statistics(median)

Variable	p50
markup_dlw~s	1.817155

1453 . tabulate year, summarize(markup_dlw_gocogs)

Year	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7943967	.43237475	497
2007	1.7954112	.44052122	567
2008	1.7999927	.4271435	655
2009	1.8393144	.4725913	732
2010	1.8295172	.44120715	786
2011	1.8285379	.45350087	740
2012	1.8265304	.42778495	704
2013	1.828971	.46629559	365
2014	1.8405711	.43327883	536
2015	1.8497728	.446847	1,028
2016	1.8556272	.42542072	999
2017	1.8519922	.42112004	1,107
2018	1.8480661	.4227055	1,126
2019	1.843866	.40356884	1,141
2020	1.8336956	.37372851	1,131
2021	1.8072134	.37690866	897
Total	1.8331835	.42558123	13,011

1454 . tabulate nace2, summarize(markup_dlw_gocogs)

nace2	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
41	1.9712807	.35227568	7,001
42	2.1547065	.33701664	1,063
43	1.56866	.39648025	4,947
Total	1.8331835	.42558123	13,011

1455 .

1456 .

1457 . /* plot the graph */

1458 . tw (kdensity markup_dlw_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if nace2 == 42, /*/ (kdensity markup_dlw_gocogs if nace2 == 43, lw(medthick) lp(.-.) lc(forest_green)) /*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 2 3) rows(1))

1459 .

1460 .

1461 .

1462 . *ACF Translog

1463 . bys nace2: markupest markup_dlw_gocogst1,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) ve
>) control(year zakazky_last3_dummy) "

-> nace2 = 41

go	Coefficient
cogs	.0217889
k	.1131611
year	-.0249348
zakazky_last3_dummy	.1683835
cogsXcogs	.0249651
cogsXk	-.0211843
kXk	.0101621

-> nace2 = 42

go	Coefficient
cogs	.1128501
k	.1396267
year	-.0053571
zakazky_last3_dummy	.124603
cogsXcogs	.0473393
cogsXk	-.036146
kXk	.0149023

-> nace2 = 43

go	Coefficient
cogs	-.1872825
k	.0363463
year	.0040939
zakazky_last3_dummy	.0839193
cogsXcogs	.0466239
cogsXk	-.0339573
kXk	.0204853

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1464 . sum markup_dlw_gocogst,d

markup_dlw_gocogst1

	Percentiles	Smallest		
1%	1.01191	.2508286		
5%	1.067986	.9760317		
10%	1.111503	.9772293	Obs	13,275
25%	1.249196	.9803874	Sum of wgt.	13,275
50%	1.443761		Mean	1.577186
		Largest	Std. dev.	.6988679
75%	1.670532	15.25136		
90%	2.18751	15.505	Variance	.4884163
95%	2.525699	15.63158	Skewness	9.559557
99%	3.885673	23.93651	Kurtosis	182.5036

1465 . replace markup_dlw_gocogst= . if markup_dlw_gocogst<r(p1) | markup_dlw_gocogst >r(p99)
(264 real changes made, 264 to missing)

1466 . tabstat markup_dlw_gocogst, statistics(median)

Variable	p50
markup_dlw~1	1.443761

1467 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst1		
	Mean	Std. dev.	Freq.
2006	1.5344515	.48754162	525
2007	1.5232898	.45352311	597
2008	1.5220888	.4431854	675
2009	1.5371889	.46314674	745
2010	1.5313112	.44424562	798
2011	1.5325257	.45185773	749
2012	1.5310051	.43558208	707
2013	1.4921904	.38439193	364
2014	1.5157814	.4168779	538
2015	1.5358062	.42829809	1,030
2016	1.5444651	.41010071	997
2017	1.5560982	.44338924	1,105
2018	1.553462	.43175954	1,112
2019	1.5476061	.41260025	1,114
2020	1.5474136	.40589426	1,097
2021	1.5469788	.41478255	858
Total	1.5383927	.43220754	13,011

1468 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst1		
	Mean	Std. dev.	Freq.
41	1.2780433	.19819581	6,920
42	2.5355072	.39849387	1,003
43	1.6959225	.28281334	5,088
Total	1.5383927	.43220754	13,011

```

1469 .
1470 .
1471 . /* plot the graph */
1472 . tw (kdensity markup_dlw_gocogst if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst if nac
>          */ (kdensity markup_dlw_gocogst if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
>          */if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order( 1 "
1473 .
1474 .
1475 .
1476 .
1477 . //production function separately for procurement and non-procurement firms
1478 .
1479 .
1480 . *homogenous production function
1481 . *CD
1482 . bys nace2: markupest markup_dlw_gocogs,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) verb
> genous(proxy zakazky_last3_dummy) " replace

```

-> nace2 = 41

go	Coefficient
cogs	.8514738
k	.0373239
year	.0307751
zakazky_last3_dummy	.2067806

-> nace2 = 42

go	Coefficient
cogs	.9690848
k	.007167
year	-.0333885
zakazky_last3_dummy	.0890928

-> nace2 = 43

go	Coefficient
cogs	.7965188
k	.0855175
year	.0075087
zakazky_last3_dummy	.104476

```
1483 . sum markup_dlw_gocogs,d
```

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.182749	1.115352		
5%	1.25722	1.148215		
10%	1.320549	1.148625	Obs	13,275
25%	1.519815	1.150815	Sum of wgt.	13,275
50%	1.82352		Mean	1.919017
			Largest	Std. dev.
75%	2.059263	33.97799		1.393259
90%	2.340262	41.51372	Variance	1.941172
95%	2.641208	72.50273	Skewness	27.39228
99%	4.404799	74.19559	Kurtosis	1168.301

```

1484 . replace markup_dlw_gocogs= . if markup_dlw_gocogs<r(p1) | markup_dlw_gocogs >r(p99)
(264 real changes made, 264 to missing)

1485 . bysort year: egen markup_dlw_gocogs_p50 = pctile(markup_dlw_gocogs), p(50)

1486 . bysort year: egen markup_dlw_gocogs_p75 = pctile(markup_dlw_gocogs), p(75)

1487 . bysort year: egen markup_dlw_gocogs_p90 = pctile(markup_dlw_gocogs), p(90)

1488 . tabulate year, summarize(markup_dlw_gocogs)

```

Year	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7990563	.43018538	497
2007	1.8005999	.43987383	567
2008	1.8054923	.42672006	655
2009	1.8445777	.47210465	732
2010	1.8349493	.44190686	786
2011	1.8339658	.45339985	740
2012	1.8317029	.42760265	704
2013	1.8359366	.46810506	365
2014	1.8471991	.43434659	536
2015	1.8560127	.44847743	1,028
2016	1.8617957	.42690522	999
2017	1.8583948	.42309266	1,107
2018	1.8545517	.4246452	1,126
2019	1.8503149	.40562295	1,141
2020	1.8399955	.37523127	1,131
2021	1.8134991	.37773417	897
Total	1.8391649	.4264774	13,011

```
1489 . tabulate nace2, summarize(markup_dlw_gocogs)
```

nace2	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
41	1.9858592	.35488092	7,001
42	2.1183497	.33133009	1,063
43	1.5715725	.39721637	4,947
Total	1.8391649	.4264774	13,011

```
1490 . tabulate nace2, summarize(markup_dlw_gocogs_p50)
```

nace2	Summary of markup_dlw_gocogs_p50		
	Mean	Std. dev.	Freq.
41	1.8180117	.02781934	24,193
42	1.8149555	.02876071	2,545
43	1.8192312	.02700233	19,839
Total	1.8183641	.02754513	46,577

```
1491 . tabulate nace2, summarize(markup_dlw_gocogs_p75)
```

nace2	Summary of markup_dlw_gocogs_p75		
	Mean	Std. dev.	Freq.
41	2.0536446	.02176877	24,193
42	2.0549789	.02119373	2,545
43	2.0533643	.0219925	19,839
Total	2.0535981	.02183594	46,577

1492 . tabulate nace2, summarize(markup_dlw_gocogs_p90)

nace2	Summary of markup_dlw_gocogs_p90		
	Mean	Std. dev.	Freq.
41	2.3235483	.03607639	24,193
42	2.32393	.03594913	2,545
43	2.3238402	.03598422	19,839
Total	2.3236935	.03602976	46,577

1493 . tabstat markup_dlw_gocogs, statistics(median)

Variable	p50
markup_dlw~s	1.82352

1494 . gen lmu_1=ln(markup_dlw_gocogs)
(33,566 missing values generated)

1495 .

1496 . /* plot the graph */

1497 . tw (kdensity markup_dlw_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 "41
43"))

1498 .

1499 . tw (kdensity markup_dlw_gocogs if zakazky_last3_dummy == 1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if zakazky_last3_dummy == 0, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 "1
0"))

1500 .

1501 . *translog

1502 . bys nace2: markupest markup_dlw_gocogst,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) version(11)
> y endogenous(proxy zakazky_last3_dummy) " replace

-> nace2 = 41

markup_dlw_gocogst does not exist. No replace

go	Coefficient
cogs	.0779781
k	.3932288
year	-.1061091
zakazky_last3_dummy	.5405305
cogsXcogs	.0564136
cogsXk	-.0736995
kXk	.030299

-> nace2 = 42

go	Coefficient
cogs	.0978872
k	.1323444
year	-.0182996
zakazky_last3_dummy	.1140863
cogsXcogs	.0394203
cogsXk	-.0393196
kXk	.0171459

-> nace2 = 43

go	Coefficient
cogs	-.1979747
k	.0306725
year	-.005313
zakazky_last3_dummy	.0762819
cogsXcogs	.0408057
cogsXk	-.0354327
kXk	.0218409

1503 . sum markup_dlw_gocogst,d

markup_dlw_gocogst

	Percentiles	Smallest	
1%	1.060408	-20.42914	
5%	1.092431	-2.933136	
10%	1.127083	-1.961485	Obs 13,275
25%	1.249435	.5465799	Sum of wgt. 13,275
50%	1.735722		Mean 1.704101
		Largest	Std. dev. .6171457
75%	2.016283	11.55199	
90%	2.146624	13.74499	Variance .3808688
95%	2.250396	13.99313	Skewness 2.093038
99%	3.066556	16.36975	Kurtosis 210.8501

1504 . replace markup_dlw_gocogst= . if markup_dlw_gocogst<r(p1) | markup_dlw_gocogst >r(p99)
(264 real changes made, 264 to missing)

1505 . bysort year: egen markup_dlw_gocogst_p50 = pctile(markup_dlw_gocogst), p(50)

1506 . bysort year: egen markup_dlw_gocogst_p75 = pctile(markup_dlw_gocogst), p(75)

1507 . bysort year: egen markup_dlw_gocogst_p90 = pctile(markup_dlw_gocogst), p(90)

1508 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
2006	1.7506682	.45311521	496
2007	1.7187991	.43164373	565
2008	1.7179977	.43993019	645
2009	1.7090304	.43321361	718
2010	1.6918719	.42544264	788
2011	1.6743082	.42648674	748
2012	1.6646585	.40945142	710
2013	1.6633953	.4115916	366
2014	1.6626978	.39657775	538
2015	1.6839045	.40441569	1,028
2016	1.6777262	.39804866	1,002
2017	1.6781969	.39169021	1,113
2018	1.6710976	.37912793	1,129
2019	1.6671336	.37355139	1,138
2020	1.6492425	.36432888	1,131
2021	1.6319036	.35761936	896
Total	1.6783321	.40182589	13,011

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1509 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
41	1.9557158	.20349841	6,985
42	1.8399577	.36267797	1,051
43	1.2547355	.2082626	4,975
Total	1.6783321	.40182589	13,011

1510 . tabulate nace2, summarize(markup_dlw_gocogst_p50)

nace2	Summary of markup_dlw_gocogst_p50		
	Mean	Std. dev.	Freq.
41	1.7284333	.04896424	24,193
42	1.7341399	.05009398	2,545
43	1.7259292	.04781906	19,839
Total	1.7276785	.04858168	46,577

1511 . tabulate nace2, summarize(markup_dlw_gocogst_p75)

nace2	Summary of markup_dlw_gocogst_p75		
	Mean	Std. dev.	Freq.
41	2.0389743	.04877692	24,193
42	2.0444945	.04957572	2,545
43	2.0366744	.04787626	19,839
Total	2.0382963	.0484743	46,577

1512 . tabulate nace2, summarize(markup_dlw_gocogst_p90)

nace2	Summary of markup_dlw_gocogst_p90		
	Mean	Std. dev.	Freq.
41	2.1178269	.06418567	24,193
42	2.1253008	.06528037	2,545
43	2.1146578	.06289345	19,839
Total	2.1168854	.06374845	46,577

1513 . tabstat markup_dlw_gocogst, statistics(median)

Variable	p50
markup_dlw~t	1.735722

1514 . gen lmu_2=ln(markup_dlw_gocogst)
(33,566 missing values generated)

1515 .

1516 . /* plot the graph */

1517 . tw (kdensity markup_dlw_gocogst if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order(1

1518 .

```

1519 .      tw (kdensity markup_dlw_gocogst if zakazky_last3_dummy == 1, lw(medthick) lp(_) lc(ebblue)) (kdensity mark
>      */ if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order( 1
1520 .
1521 .
1522 .
1523 . *different production function for procurement vs. private
1524 . *CD
1525 . bys nace2: markupest markup_dlw_gocogs_p1 if zakazky_last3_dummy==1,method(dlw) output(go) inputvar(cogs) free(cog
> ear zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) " ) replace

```

-> nace2 = 41
markup_dlw_gocogs_p1 does not exist. No replace

go	Coefficient
cogs	.9023404
k	.0636993
year	-.0078936
zakazky_last3_dummy	.0032062

-> nace2 = 42

go	Coefficient
cogs	1.071907
k	-.0137989
year	-.0027594
zakazky_last3_dummy	.0068491

-> nace2 = 43

go	Coefficient
cogs	.8569961
k	.0726288
year	-.0277016
zakazky_last3_dummy	-.0125471

```

1526 . sum markup_dlw_gocogs_p1,d
                                markup_dlw_gocogs_p1

```

	Percentiles	Smallest		
1%	1.322467	.7575727		
5%	1.433655	.859522		
10%	1.551328	.931228	Obs	6,353
25%	1.911368	.9427407	Sum of wgt.	6,353
50%	2.103229		Mean	2.10207
		Largest	Std. dev.	.5593147
75%	2.273831	10.18246		
90%	2.473482	12.6312	Variance	.312833
95%	2.696549	15.53717	Skewness	12.40931
99%	3.341264	21.92852	Kurtosis	345.9058

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1527 . replace markup_dlw_gocogs_p1 = . if markup_dlw_gocogs_p1<r(p1) | markup_dlw_gocogs_p1 >r(p99)
(126 real changes made, 126 to missing)

1528 . tabstat markup_dlw_gocogs_p1, statistics(median)

Variable	p50
markup_dl~p1	2.103229

1529 . tabulate year, summarize(markup_dlw_gocogs_p1)

Year	Summary of markup_dlw_gocogs_p1		
	Mean	Std. dev.	Freq.
2006	2.3138207	.35509112	140
2007	2.2731922	.3257248	176
2008	2.2617232	.32247416	223
2009	2.2677387	.35952433	255
2010	2.2505913	.34884133	273
2011	2.2330677	.33122643	245
2012	2.1844018	.34375172	256
2013	2.1430626	.35344022	151
2014	2.0881585	.36872611	248
2015	2.0639081	.36043051	555
2016	2.0651724	.35507686	560
2017	2.0407998	.32629586	629
2018	2.0136504	.31538282	663
2019	1.9933343	.31408113	690
2020	1.9743229	.30022464	665
2021	1.9613242	.30754463	498
Total	2.0803892	.34840656	6,227

1530 . tabulate nace2, summarize(markup_dlw_gocogs_p1)

nace2	Summary of markup_dlw_gocogs_p1		
	Mean	Std. dev.	Freq.
41	2.1887844	.21234157	3,706
42	2.3938335	.30923919	781
43	1.7088304	.29721635	1,740
Total	2.0803892	.34840656	6,227

1531 . *

1532 . bys nace2: markupest markup_dlw_gocogs_p0 if zakazky_last3_dummy==0, method(dlw) output(go) inputvar(cogs) free(cogs
> ear zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) ") replace

-> nace2 = 41

markup_dlw_gocogs_p0 does not exist. No replace

go	Coefficient
cogs	.7797781
k	.0674893
year	-.011174
zakazky_last3_dummy	-.0067292

-> nace2 = 42

go	Coefficient
cogs	.8862305
k	.0917725
year	-.0004526
zakazky_last3_dummy	.0146013

-> nace2 = 43

go	Coefficient
cogs	.741127
k	.0703267
year	-.0061755
zakazky_last3_dummy	.0095761

1533 . sum markup_dlw_gocogs_p0,d

markup_dlw_gocogs_p0

	Percentiles	Smallest		
1%	1.07878	.7480224		
5%	1.127606	.8075604		
10%	1.174391	.9222568	Obs	6,922
25%	1.320053	.9547775	Sum of wgt.	6,922
50%	1.505437		Mean	1.789785
		Largest	Std. dev.	4.262088
75%	1.759779	52.33506		
90%	2.152374	53.45884	Variance	18.1654
95%	2.637143	57.03217	Skewness	62.57466
99%	5.342595	321.8281	Kurtosis	4608.142

1534 . replace markup_dlw_gocogs_p0= . if markup_dlw_gocogs_p0<r(p1) | markup_dlw_gocogs_p0 >r(p99)
(138 real changes made, 138 to missing)

1535 . tabstat markup_dlw_gocogs_p0, statistics(median)

Variable	p50
markup_dl~p0	1.505437

1536 . tabulate year, summarize(markup_dlw_gocogs_p0)

Year	Summary of markup_dlw_gocogs_p0		
	Mean	Std. dev.	Freq.
2006	1.5318611	.45550465	359
2007	1.5099	.42819299	398
2008	1.5053652	.41735901	450
2009	1.5694994	.51728524	491
2010	1.574795	.5038058	528
2011	1.5888766	.47357841	500
2012	1.6110672	.48681269	452
2013	1.5867606	.46626676	214
2014	1.6328811	.44138485	287
2015	1.6570978	.51977585	470
2016	1.6677526	.56173379	440
2017	1.677456	.53830419	475
2018	1.6921754	.54892924	452
2019	1.6914569	.52256485	438
2020	1.6893721	.47313523	447
2021	1.6650451	.48561713	383
Total	1.6169332	.49856874	6,784

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1537 . tabulate nace2, summarize(markup_dlw_gocogs_p0)

nace2	Summary of markup_dlw_gocogs_p0		
	Mean	Std. dev.	Freq.
41	1.7489353	.48583836	3,280
42	1.8023887	.4090688	276
43	1.4669478	.47458014	3,228
Total	1.6169332	.49856874	6,784

1538 . *

1539 . gen markup_dlw_gocogs_pp = markup_dlw_gocogs_p1 if zakazky_last3_dummy==1
(40,350 missing values generated)

1540 . replace markup_dlw_gocogs_pp = markup_dlw_gocogs_p0 if zakazky_last3_dummy==0
(6,784 real changes made)

1541 . *

1542 . sum markup_dlw_gocogs_pp,d

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.104295	1.07878		
5%	1.177886	1.078858		
10%	1.260981	1.079004	Obs	13,011
25%	1.451912	1.079723	Sum of wgt.	13,011
50%	1.785856		Mean	1.838741
		Largest	Std. dev.	.4912137
75%	2.151701	5.276104		
90%	2.378634	5.278455	Variance	.2412909
95%	2.590038	5.29425	Skewness	1.25911
99%	3.266553	5.342595	Kurtosis	7.602447

1543 .

1544 . bysort year: egen markup_dlw_gocogs_pp_p50 = pctile(markup_dlw_gocogs_pp), p(50)

1545 . bysort year: egen markup_dlw_gocogs_pp_p75 = pctile(markup_dlw_gocogs_pp), p(75)

1546 . bysort year: egen markup_dlw_gocogs_pp_p90 = pctile(markup_dlw_gocogs_pp), p(90)

1547 . tabulate year, summarize(markup_dlw_gocogs_pp)

Year	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
2006	1.7512485	.55499399	499
2007	1.7439408	.53246419	574
2008	1.7559861	.52694925	673
2009	1.8081737	.57436707	746
2010	1.8051226	.55795233	801
2011	1.8007246	.52736765	745
2012	1.8183746	.51940594	708
2013	1.816902	.50394926	365
2014	1.8439256	.46783546	535
2015	1.8773706	.48492397	1,025
2016	1.8903077	.4981645	1,000
2017	1.8844698	.46640765	1,104
2018	1.8833305	.45390746	1,115
2019	1.8761159	.4334271	1,128
2020	1.8597788	.40406903	1,112
2021	1.8325219	.42116893	881
Total	1.8387409	.4912137	13,011

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1548 . tabulate nace2, summarize(markup_dlw_gocogs_pp)

nace2	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
41	1.9822706	.42768544	6,986
42	2.2393976	.42634044	1,057
43	1.5516652	.43654558	4,968
Total	1.8387409	.4912137	13,011

1549 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p50)

nace2	Summary of markup_dlw_gocogs_pp_p50		
	Mean	Std. dev.	Freq.
41	1.7952022	.12712782	24,193
42	1.7802818	.12886693	2,545
43	1.8006499	.12504575	19,839
Total	1.7967073	.12642791	46,577

1550 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p75)

nace2	Summary of markup_dlw_gocogs_pp_p75		
	Mean	Std. dev.	Freq.
41	2.1596526	.0549211	24,193
42	2.165539	.05459991	2,545
43	2.1573631	.05462231	19,839
Total	2.158999	.05480908	46,577

1551 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p90)

nace2	Summary of markup_dlw_gocogs_pp_p90		
	Mean	Std. dev.	Freq.
41	2.3728927	.05539307	24,193
42	2.3781927	.05434194	2,545
43	2.3709424	.05552673	19,839
Total	2.3723516	.05541784	46,577

1552 . *

1553 . sum markup_dlw_gocogs markup_dlw_gocogs_pp

Variable	Obs	Mean	Std. dev.	Min	Max
markup_dlw~s	13,011	1.839165	.4264774	1.182749	4.404799
markup_dlw~p	13,011	1.838741	.4912137	1.07878	5.342595

1554 . cor markup_dlw_gocogs markup_dlw_gocogs_pp
(obs=12,863)

	markup.. markup~p
markup_dlw~s	1.0000
markup_dlw~p	0.9297

```
1555 . *
1556 . tabstat markup_dlw_gocogs_pp, statistics( median )
```

Variable	p50
markup_dlw~p	1.785856

```
1557 . gen lmu_1_pp=ln(markup_dlw_gocogs_pp)
(33,566 missing values generated)
```

```
1558 . *
1559 .
1560 .
1561 . /* plot the graph */
1562 . *sector
1563 . tw (kdensity markup_dlw_gocogs_pp if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp if
>          /* (kdensity markup_dlw_gocogs_pp if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) */
>          /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order */

1564 .
1565 . /* plot the graph */
1566 . *market
1567 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp
>          /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order */

1568 .
1569 . /* plot the graph */
1570 . *sector-market
1571 . tw (kdensity markup_dlw_gocogs_pp if nace2 == 41 & zakazky_last3_dummy==0, lw(medthick) lp(_) lc(ebblue)) (kdensity
> ) /*
>          /* (kdensity markup_dlw_gocogs_pp if nace2 == 42& zakazky_last3_dummy==0 , lw(medthick) lp(..) lc(forest_
> lp(..) lc(sand)) /*
>          /* (kdensity markup_dlw_gocogs_pp if nace2 == 43 & zakazky_last3_dummy==0, lw(medthick) lp(l) lc(navy)) (k
> (purple)) /*
>          /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order

1572 .
1573 .
1574 .
1575 .
1576 . *trans
1577 . bys nace2: markupest markup_dlw_gocogst_p1 if zakazky_last3_dummy==1,method(dlw) output(go) inputvar(cogs) free(cc
> ntrol(year zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) ") replace
```

-> nace2 = 41
markup_dlw_gocogst_p1 does not exist. No replace

go	Coefficient
cogs	.2702636
k	.4204877
year	-.0295788
zakazky_last3_dummy	-.0183939
cogsXcogs	.0226351
cogsXk	-.0683833
kXk	-.0014297

-> nace2 = 42

go	Coefficient
cogs	.3640069
k	.0073801
year	-.0211879
zakazky_last3_dummy	-.0111056
cogsXcogs	.0251471
cogsXk	-.0478355
kXk	.0093674

-> nace2 = 43

go	Coefficient
cogs	1.099706
k	-.3874312
year	-.0060859
zakazky_last3_dummy	.0082675
cogsXcogs	.0074235
cogsXk	-.006226
kXk	.0183237

1578 . sum markup_dlw_gocogst_p1,d

markup_dlw_gocogst_p1			
Percentiles	Smallest		
1%	-.6274119	-4.714916	
5%	-.4082341	-4.476352	
10%	-.316798	-2.954171	Obs 6,353
25%	-.153659	-2.454935	Sum of wgt. 6,353
50%	.075187	Mean	.7732254
	Largest	Std. dev.	1.227523
75%	2.07038	6.378875	
90%	2.553216	8.454982	Variance 1.506812
95%	2.79379	12.97527	Skewness 1.115542
99%	3.546854	14.28126	Kurtosis 6.388439

1579 . replace markup_dlw_gocogst_p1= . if markup_dlw_gocogst_p1<r(p1) | markup_dlw_gocogst_p1 >r(p99)
(126 real changes made, 126 to missing)

1580 . tabstat markup_dlw_gocogst_p1, statistics(median)

Variable	p50
markup_~t_p1	.075187

1581 . tabulate year, summarize(markup_dlw_gocogst_p1)

Year	Summary of markup_dlw_gocogst_p1		
	Mean	Std. dev.	Freq.
2006	.5087993	.9875361	139
2007	.48138865	.96771023	172
2008	.54646928	1.0464627	220
2009	.58408084	1.0536902	250
2010	.52238661	1.0408241	265
2011	.54032968	1.0596712	240
2012	.67795435	1.1502504	251
2013	.69980981	1.1976882	148
2014	.80359078	1.2054378	247
2015	.82919476	1.1673662	551
2016	.82020506	1.1831833	557
2017	.83181857	1.1856753	630
2018	.83049333	1.1783828	670
2019	.80979787	1.1602877	698
2020	.82993045	1.1701168	680
2021	.79557992	1.1530461	509
Total	.75298873	1.1500584	6,227

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1582 . tabulate nace2, summarize(markup_dlw_gocogst_p1)

nace2	Summary of markup_dlw_gocogst_p1		
	Mean	Std. dev.	Freq.
41	-.11074725	.21086798	3,687
42	1.0398006	.23568081	791
43	2.4440845	.34613378	1,749
Total	.75298873	1.1500584	6,227

1583 . *

1584 . bys nace2: markupest markup_dlw_gocogst_p0 if zakazky_last3_dummy==0,method(dlw) output(go) inputvar(cogs) free(cntrl(year zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) ") replace

-> nace2 = 41

markup_dlw_gocogst_p0 does not exist. No replace

go	Coefficient
cogs	-.0454533
k	.0120455
year	.0011187
zakazky_last3_dummy	.0038285
cogsXcogs	.0358829
cogsXk	-.0109746
kXk	.0077786

-> nace2 = 42

go	Coefficient
cogs	-2.839632
k	.3983194
year	.0152115
zakazky_last3_dummy	.021138
cogsXcogs	.118279
cogsXk	.041224
kXk	-.0339714

-> nace2 = 43

go	Coefficient
cogs	-.8745079
k	.4233499
year	-.0049567
zakazky_last3_dummy	-.0183823
cogsXcogs	.0692502
cogsXk	-.0671551
kXk	.0264162

1585 . sum markup_dlw_gocogst_p0,d

markup_dlw_gocogst_p0

	Percentiles	Smallest	
1%	.5091999	-257.7664	
5%	.6409601	-30.28034	
10%	.689011	-27.08029	Obs
25%	.7822545	-10.77721	Sum of wgt.
			6,922
			6,922

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50%	1.810611	Mean	1.569768
		Largest	3.380884
75%	2.124617	18.30584	
90%	2.581087	18.78602	Variance 11.43037
95%	3.291866	19.72059	Skewness -65.21172
99%	4.782474	28.01893	Kurtosis 5006.094

1586 . replace markup_dlw_gocogst_p0= . if markup_dlw_gocogst_p0<r(p1) | markup_dlw_gocogst_p0 >r(p99)
(138 real changes made, 138 to missing)

1587 . tabstat markup_dlw_gocogst_p0, statistics(median)

Variable	p50
markup_~t_p0	1.810611

1588 . tabulate year, summarize(markup_dlw_gocogst_p0)

Year	Summary of markup_dlw_gocogst_p0		
	Mean	Std. dev.	Freq.
2006	1.6366878	.89075254	381
2007	1.620154	.86533714	416
2008	1.5888242	.84275084	448
2009	1.6088468	.89715603	486
2010	1.6093805	.88809887	520
2011	1.5948415	.8725863	496
2012	1.6167259	.89382133	452
2013	1.5658763	.84953641	215
2014	1.5998468	.85401893	287
2015	1.5725339	.80542831	468
2016	1.550476	.82771025	434
2017	1.5619968	.82590843	472
2018	1.5205024	.79585711	451
2019	1.5573883	.80575286	435
2020	1.5106697	.79192445	445
2021	1.4352995	.73348913	378
Total	1.5727993	.84248032	6,784

1589 . tabulate nace2, summarize(markup_dlw_gocogst_p0)

nace2	Summary of markup_dlw_gocogst_p0		
	Mean	Std. dev.	Freq.
41	2.1845745	.39163523	3,277
42	3.5809644	.45659549	253
43	.80056411	.14889102	3,254
Total	1.5727993	.84248032	6,784

1590 . *

1591 . gen markup_dlw_gocogst_pp = markup_dlw_gocogst_p1 if zakazky_last3_dummy==1
(40,350 missing values generated)

1592 . replace markup_dlw_gocogst_pp = markup_dlw_gocogst_p0 if zakazky_last3_dummy==0
(6,784 real changes made)

1593 . *

1594 . sum markup_dlw_gocogst markup_dlw_gocogst_pp

Variable	Obs	Mean	Std. dev.	Min	Max
markup_dlw~t	13,011	1.678332	.4018259	1.060408	3.066556
markup_~t_pp	13,011	1.180442	1.082004	-.6274119	4.782474

```
1595 . cor markup_dlw_gocogs_pp markup_dlw_gocogst_pp
(obs=12,841)
```

	mar~s_pp	mar~t_pp
markup_~s_pp	1.0000	
markup_~t_pp	-0.2123	1.0000

```
1596 .
1597 . tabulate nace2, summarize(markup_dlw_gocogst_pp)
```

nace2	Summary of markup_dlw_gocogst_pp		
	Mean	Std. dev.	Freq.
41	.96934601	1.1867812	6,964
42	1.655619	1.1310361	1,044
43	1.3751228	.81889524	5,003
Total	1.180442	1.0820044	13,011

```
1598 . tabstat markup_dlw_gocogst_pp, statistics( median )
```

Variable	p50
markup_~t_pp	.8997694

```
1599 . gen lmu_2_pp=ln(markup_dlw_gocogst_pp)
(36,314 missing values generated)
```

```
1600 .
1601 . /* plot the graph */
1602 . tw (kdensity markup_dlw_gocogst_pp if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst_pp
>      /*(kdensity markup_dlw_gocogst_pp if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) */ 
>      /*if markup_dlw_gocogst_pp > 0 & markup_dlw_gocogst_pp < 3, ytitle("Density") xtitle("Markup") legend(order(1 2))*/
1603 .
1604 .
1605 . /* plot the graph */
1606 . *market
1607 . tw (kdensity markup_dlw_gocogst_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_
>      /*if markup_dlw_gocogst_pp > 0 & markup_dlw_gocogst_pp < 3, ytitle("Density") xtitle("Markup") legend(order(1 2))*/
1608 .
1609 .
1610 . save "data_with_markups", replace
  file data_with_markups.dta saved
```

1611 .

1612 .

1613 .

1614 .

1615 . /*
 > RESULTS
 > */
1616 . use "data_with_results", replace
 file data_with_results.dta not found
r(601);

end of do-file

r(601);

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```
1617 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"  
1618 .  
1619 .  
1620 . /*  
> RESULTS  
> */  
1621 . set seed 42  
1622 .  
1623 . bys year: summarize(markup_dlw_gocogs_pp) if zakazky_last3_dummy == 1
```

-> year = 2006

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	140	2.313821	.3550911	1.435081	3.283425

-> year = 2007

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	176	2.273192	.3257248	1.359454	3.300327

-> year = 2008

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	223	2.261723	.3224742	1.353183	3.316538

-> year = 2009

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	255	2.267739	.3595243	1.36574	3.327277

-> year = 2010

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	273	2.250591	.3488413	1.366598	3.294509

-> year = 2011

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	245	2.233068	.3312264	1.331762	3.293272

-> year = 2012

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	256	2.184402	.3437517	1.325287	3.247741

-> year = 2013

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	151	2.143063	.3534402	1.40694	3.147393

-> year = 2014

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Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	248	2.088158	.3687261	1.367083	3.077452

-> year = 2015

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	555	2.063908	.3604305	1.360058	3.341264

-> year = 2016

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	560	2.065172	.3550769	1.333938	3.250795

-> year = 2017

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	629	2.0408	.3262959	1.325737	3.310406

-> year = 2018

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	663	2.01365	.3153828	1.322467	3.267327

-> year = 2019

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	690	1.993334	.3140811	1.32277	3.204698

-> year = 2020

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	665	1.974323	.3002246	1.329115	3.148737

-> year = 2021

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	498	1.961324	.3075446	1.324929	3.298069

1624 .

1625 . bys nace2: summarize(markup_OLS) ,d

-> nace2 = 41

markup_OLS				
	Percentiles	Smallest		
1%	.9264911	.8975781		
5%	1.043513	.897768		
10%	1.152983	.8986238	Obs	8,078
25%	1.412251	.8988141	Sum of wgt.	8,078

50%	1.849952	Mean	2.27736
		Largest	1.504836
75%	2.573493	14.55369	
90%	3.757663	14.83357	Variance 2.264531
95%	4.876325	14.85956	Skewness 3.428112
99%	9.055284	14.88563	Kurtosis 20.11384

-> nace2 = 42

markup_OLS

	Percentiles	Smallest	
1%	1.169746	1.067056	
5%	1.374015	1.074249	
10%	1.488279	1.082939	Obs 1,265
25%	1.699954	1.085398	Sum of wgt. 1,265
50%	2.104807	Mean	2.390476
		Largest	Std. dev. 1.130248
75%	2.706911	10.53508	
90%	3.471622	10.6581	Variance 1.27746
95%	4.245213	11.00869	Skewness 3.226748
99%	7.025844	11.43501	Kurtosis 19.31388

-> nace2 = 43

markup_OLS

	Percentiles	Smallest	
1%	.853308	.8342754	
5%	.9117659	.8342754	
10%	.9612967	.8347166	Obs 5,937
25%	1.094625	.8348049	Sum of wgt. 5,937
50%	1.409078	Mean	1.84438
		Largest	Std. dev. 1.499667
75%	1.92353	13.84605	
90%	2.981581	13.87037	Variance 2.249
95%	4.275322	13.94389	Skewness 4.180311
99%	9.263204	14.06817	Kurtosis 25.25658

1626 . bys nace2: summarize(markup_dlw_gocogs) ,d

-> nace2 = 41

markup_dlw_gocogs

	Percentiles	Smallest	
1%	1.464719	1.364797	
5%	1.547099	1.395822	
10%	1.612276	1.405713	Obs 7,001
25%	1.758555	1.406451	Sum of wgt. 7,001
50%	1.940064	Mean	1.985859
		Largest	Std. dev. .3548809
75%	2.126383	4.22753	
90%	2.366688	4.25083	Variance .1259405
95%	2.58323	4.256375	Skewness 1.920589
99%	3.364463	4.329249	Kurtosis 9.828223

-> nace2 = 42

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.66839	1.589341		
5%	1.793678	1.610092		
10%	1.825193	1.616779	Obs	1,063
25%	1.894266	1.619464	Sum of wgt.	1,063
50%	2.02781		Mean	2.11835
		Largest	Std. dev.	.3313301
75%	2.228877	3.581398		
90%	2.60448	3.898546	Variance	.1097796
95%	2.828468	4.032193	Skewness	1.740093
99%	3.091056	4.329019	Kurtosis	7.387439

-> nace2 = 43

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.189915	1.182749		
5%	1.21929	1.182835		
10%	1.252414	1.182943	Obs	4,947
25%	1.32279	1.183087	Sum of wgt.	4,947
50%	1.450876		Mean	1.571572
		Largest	Std. dev.	.3972164
75%	1.677332	4.284173		
90%	2.019725	4.321457	Variance	.1577808
95%	2.297912	4.363529	Skewness	2.7005
99%	3.28672	4.404799	Kurtosis	13.51011

1627 . bys nace2: summarize(markup_dlw_gocogs_pp) ,d

-> nace2 = 41

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.339257	1.110535		
5%	1.391007	1.159081		
10%	1.443557	1.211165	Obs	6,986
25%	1.627774	1.213994	Sum of wgt.	6,986
50%	2.020396		Mean	1.982271
		Largest	Std. dev.	.4276854
75%	2.212235	5.207942		
90%	2.39421	5.225997	Variance	.1829148
95%	2.579792	5.276104	Skewness	1.526466
99%	3.267327	5.278455	Kurtosis	11.0132

-> nace2 = 42

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.497424	1.424094		
5%	1.570841	1.464805		
10%	1.644154	1.482643	Obs	1,057
25%	2.0434	1.4835	Sum of wgt.	1,057
50%	2.223792		Mean	2.239398
		Largest	Std. dev.	.4263404
75%	2.444389	3.327277		
90%	2.808053	3.415402	Variance	.1817662
95%	3.023413	4.665208	Skewness	.8081648
99%	3.293272	5.342595	Kurtosis	6.193991

-> nace2 = 43

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.089196	1.07878		
5%	1.123574	1.078858		
10%	1.155355	1.079004	Obs	4,968
25%	1.251928	1.079723	Sum of wgt.	4,968
50%	1.44799		Mean	1.551665
		Largest	Std. dev.	.4365456
75%	1.716016	5.050561		
90%	2.024214	5.061068	Variance	.190572
95%	2.328255	5.24134	Skewness	2.673373
99%	3.207598	5.29425	Kurtosis	15.40065

1628 .

1629 .

1630 . bys zakazky_last3_dummy: summarize(markup_OLS) ,d

-> zakazky_last3_dummy = 0

markup_OLS

	Percentiles	Smallest		
1%	.8654727	.8342754		
5%	.9346572	.8342754		
10%	.9958692	.8347166	Obs	8,048
25%	1.171128	.8348049	Sum of wgt.	8,048
50%	1.53599		Mean	2.045466
		Largest	Std. dev.	1.657149
75%	2.169093	13.97826		
90%	3.445412	14.06817	Variance	2.746144
95%	5.029522	14.85956	Skewness	3.628969
99%	10.13111	14.88563	Kurtosis	19.56608

-> zakazky_last3_dummy = 1

markup_OLS

	Percentiles	Smallest		
1%	.9114627	.8348932		
5%	1.029647	.8360429		
10%	1.147129	.839422	Obs	7,232
25%	1.442247	.8404052	Sum of wgt.	7,232
50%	1.872517		Mean	2.199756
		Largest	Std. dev.	1.277987
75%	2.542843	14.35669		
90%	3.541422	14.42995	Variance	1.633251
95%	4.41154	14.55369	Skewness	3.444963
99%	7.130632	14.83357	Kurtosis	23.26412

1631 . bys zakazky_last3_dummy: summarize(markup_dlw_gocogs) ,d

-> zakazky_last3_dummy = 0

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.193151	1.182749		
5%	1.231012	1.182835		
10%	1.275174	1.182943	Obs	6,671
25%	1.435026	1.183087	Sum of wgt.	6,671

50%	1.65958	Mean	1.730962
		Largest	.4430384
75%	1.886284	4.267927	
90%	2.215665	4.284173	Variance .1962831
95%	2.547803	4.321457	Skewness 2.021686
99%	3.545707	4.363529	Kurtosis 9.374324

-> zakazky_last3_dummy = 1

markup_dlw_gocogs

	Percentiles	Smallest	
1%	1.289341	1.185052	
5%	1.340957	1.216735	
10%	1.421109	1.257757	Obs 6,340
25%	1.756865	1.258285	Sum of wgt. 6,340
50%	1.962474	Mean	1.953017
		Largest	.3761304
75%	2.137273	4.21174	
90%	2.365041	4.329019	Variance .141474
95%	2.550246	4.329249	Skewness .7703595
99%	3.060167	4.404799	Kurtosis 5.800928

1632 . bys zakazky_last3_dummy: summarize(markup_dlw_gocogs_pp) ,d

-> zakazky_last3_dummy = 0

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.092575	1.07878	
5%	1.135555	1.078858	
10%	1.181355	1.079004	Obs 6,784
25%	1.325549	1.079723	Sum of wgt. 6,784
50%	1.505437	Mean	1.616933
		Largest	.4985687
75%	1.75213	5.276104	
90%	2.11609	5.278455	Variance .2485708
95%	2.480042	5.29425	Skewness 2.927106
99%	3.684555	5.342595	Kurtosis 16.13004

-> zakazky_last3_dummy = 1

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.353591	1.322467	
5%	1.450829	1.32277	
10%	1.568501	1.322926	Obs 6,227
25%	1.919296	1.323143	Sum of wgt. 6,227
50%	2.103229	Mean	2.080389
		Largest	.3484066
75%	2.270773	3.322357	
90%	2.454554	3.327277	Variance .1213871
95%	2.62529	3.334852	Skewness .156971
99%	3.073158	3.341264	Kurtosis 3.725916

```

1633 .
end of do-file

1634 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1635 .
1636 .
1637 . /* plot the graph */
1638 . *market
1639 . tw (kdensity markup_OLS if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_OLS if zakazky_
>           /* if markup_OLS > 0 & markup_OLS < 3, ytitle("Density") xtitle("mu_OLS") legend(order( 1 "Procurement act

1640 .
1641 . /* plot the graph */
1642 . *market
1643 . tw (kdensity markup_dlw_gocogs if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs
>           /* if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("mu") legend(order( 1 "Procurement act

1644 .
1645 . /* plot the graph */
1646 . *market
1647 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp
>           /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("mu_pp") legend(order( 1 "Procurement act

1648 .
1649 .
1650 . /* plot the graph */
1651 . *whole industry
1652 . tw (kdensity lmu_OLS , lw(medthick) lp(_) lc(ebblue)) /*
>           /* (kdensity lmu_1, lw(medthick) lp(-) lc(maroon))//*
>           /* (kdensity lmu_1_pp , lw(medthick) lp(..) lc(forest_green)) /*
>           /* if (lmu_OLS > 0 & lmu_OLS< 1.1)&(lmu_1 > 0 & lmu_1 < 1.1)&(lmu_1_pp > 0 & lmu_1_pp < 1.1), ytitle("Dens

1653 .
1654 . summarize(markup_OLS) if markup_OLS>3,d

```

markup_OLS

	Percentiles	Smallest		
1%	3.010931	3.000285		
5%	3.059792	3.000285		
10%	3.12673	3.000285	Obs	2,232
25%	3.372339	3.000285	Sum of wgt.	2,232
50%	3.969187		Mean	4.819257
		Largest	Std. dev.	2.242388
75%	5.257498	14.55369		
90%	7.692244	14.83357	Variance	5.028303
95%	9.970395	14.85956	Skewness	2.120702
99%	13.44661	14.88563	Kurtosis	7.509818

```
1655 . summarize(markup_dlw_gocogs) if markup_OLS>3,d
```

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.250147	1.185052		
5%	1.398161	1.188314		
10%	1.534237	1.195666	Obs	1,994
25%	1.799399	1.197421	Sum of wgt.	1,994
50%	2.018635		Mean	2.111689
		Largest	Std. dev.	.5257548
75%	2.328203	4.25083		
90%	2.769993	4.252204	Variance	.2764181
95%	3.124033	4.267927	Skewness	1.285916
99%	3.970458	4.329249	Kurtosis	5.501085

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1656 . summarize(markup_dlw_gocogs_pp) if markup_OLS>3,d

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.163584	1.079964		
5%	1.343944	1.083796		
10%	1.439458	1.086903	Obs	1,997
25%	1.735824	1.087588	Sum of wgt.	1,997
50%	2.101048		Mean	2.140983
		Largest	Std. dev.	.6025619
75%	2.363682	5.24134	Variance	.3630809
90%	2.856596	5.276104	Skewness	1.529813
95%	3.220753	5.29425	Kurtosis	7.724557
99%	4.401159	5.342595		

1657 .

1658 . correlate markup_dlw_gocogs zakazky_last3_dummy
(obs=13,011)

	markup.. zakaz~my	
markup_dlw~s	1.0000	
zakazky_la~y	0.2603	1.0000

1659 . correlate markup_dlw_gocogs_pp zakazky_last3_dummy
(obs=13,011)

	mar~s_pp zakaz~my	
markup_~s_pp	1.0000	
zakazky_la~y	0.4713	1.0000

1660 .

1661 . correlate markup_dlw_gocogs zakazky_last3_share
(obs=13,011)

	markup.. zakazk~e	
markup_dlw~s	1.0000	
zakazky_la~e	0.2046	1.0000

1662 . correlate markup_dlw_gocogs_pp zakazky_last3_share
(obs=13,011)

	mar~s_pp zakazk~e	
markup_~s_pp	1.0000	
zakazky_la~e	0.3054	1.0000

1663 .

1664 . tabulate zakazky_last3_dummy if nace2==41, summarize(markup_dlw_gocogs_pp)

zakazky_las t3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.7489353	.48583836	3,280
1	2.1887844	.21234157	3,706
Total	1.9822706	.42768544	6,986

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1665 . tabulate zakazky_last3_dummy if nace2==42, summarize(markup_dlw_gocogs_pp)

zakazky_last3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.8023887	.4090688	276
1	2.3938335	.30923919	781
Total	2.2393976	.42634044	1,057

1666 . tabulate zakazky_last3_dummy if nace2==43, summarize(markup_dlw_gocogs_pp)

zakazky_last3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.4669478	.47458014	3,228
1	1.7088304	.29721635	1,740
Total	1.5516652	.43654558	4,968

1667 .

1668 .

1669 .

1670 . graph twoway (tsline average_markup1) (tsline average_markup0), ///> legend(label(1 1) label(2 0))
variable average_markup1 not found
r(111);

end of do-file

r(111);

1671 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1672 .

1673 . table year, contents(mean markup_dlw_gocogs_pp) by(zakazky_last3_dummy)
option contents() not allowed since Stata 17; see help table for updated syntax
r(198);

end of do-file

r(198);

1674 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1675 .

1676 . //pooled OLS
1677 . eststo clear

1678 . foreach j in OLS 1 1_pp {
2.
1679 . *dummy
1680 . eststo: xi: qui reg lmu_`j' zakazky_last3_dummy cogs k i.year*i.nace2, cluster(id)
3.
1681 . *share
1682 . eststo: xi: qui reg lmu_`j' zakazky_last3_share cogs k i.year*i.nace2, cluster(id)
4.
1683 .
1684 . }
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_## (coded as above)
(est1 stored)
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_## (coded as above)
(est2 stored)
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_## (coded as above)
(est3 stored)
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)

```
i.year*i.nace2    _IyearXnac_#_#      (coded as above)
(est4 stored)
i.year          _Iyear_2006-2021  (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43   (naturally coded; _Inace2_41 omitted)
i.year*i.nace2    _IyearXnac_#_#      (coded as above)
(est5 stored)
i.year          _Iyear_2006-2021  (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43   (naturally coded; _Inace2_41 omitted)
i.year*i.nace2    _IyearXnac_#_#      (coded as above)
(est6 stored)
```

```
1685 . noi esttab , ///
>           cells(b(star fmt(%9.3f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N" )) starlevels(* 0.1
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_dummy zakazky_last3_share )
```

	(1)	(2)	(3)	(4)	(5)	(6)
	lmu_OLS	lmu_OLS	lmu_1	lmu_1	lmu_1_pp	lmu_1_pp
zakazky_last3_dummy	0.132***		0.132***		0.275***	
	0.019		0.005		0.005	
	0.10,0.17		0.12,0.14		0.26,0.29	
zakazky_last3_share		0.312***		0.151***		0.265***
		0.036		0.010		0.012
		0.24,0.38		0.13,0.17		0.24,0.29
N	13046	13046	13011	13011	13011	13011

1686 .

1687 . //fixed effects

1688 . eststo clear

```
1689 . foreach j in OLS 1 1_pp {
2.
1690 .           *dummy
1691 .           eststo: xi: qui xtreg lmu_`j' zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
3.
1692 .
1693 .
1694 . }
i.year          _Iyear_2006-2021  (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43   (naturally coded; _Inace2_41 omitted)
i.year*i.nace2    _IyearXnac_#_#      (coded as above)
(est1 stored)
i.year          _Iyear_2006-2021  (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43   (naturally coded; _Inace2_41 omitted)
i.year*i.nace2    _IyearXnac_#_#      (coded as above)
(est2 stored)
i.year          _Iyear_2006-2021  (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43   (naturally coded; _Inace2_41 omitted)
i.year*i.nace2    _IyearXnac_#_#      (coded as above)
(est3 stored)
```

```
1695 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N rho, fmt(%9.0g) labels("N" "rho")) starle
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_share )
```

	(1)	(2)	(3)
	lmu_OLS	lmu_1	lmu_1_pp
zakazky_last3_share	0.01	0.03***	0.03**
	0.030	0.009	0.013
	-0.05,0.07	0.02,0.05	0.00,0.05
N	13046	13011	13011
rho	.7871633	.8707432	.8062307

```

1696 .
1697 .
end of do-file

1698 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1699 .
1700 . *intensity revisited
1701 .
1702 . gen share2 = zakazky_last3_share^2

1703 . xi: reg lmu_1_pp zakazky_last3_dummy cogs k i.year*i.nace2 , cluster(id)
    i.year           _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
    i.nace2          _Inace2_41-43       (naturally coded; _Inace2_41 omitted)
    i.year*i.nace2  _IyeaXnac_#_#     (coded as above)

```

Linear regression

Number of obs	=	13,011
F(50, 1864)	=	196.07
Prob > F	=	0.0000
R-squared	=	0.7230
Root MSE	=	.13432

(Std. err. adjusted for 1,865 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2750915	.0052011	52.89	0.000	.264891 .2852921
cogs	-.1346578	.005699	-23.63	0.000	-.1458349 -.1234806
k	.0659338	.0029939	22.02	0.000	.060062 .0718057
_Iyear_2007	-.0063955	.00675	-0.95	0.344	-.0196338 .0068428
_Iyear_2008	-.0088115	.0086082	-1.02	0.306	-.0256942 .0080712
_Iyear_2009	-.0124103	.008665	-1.43	0.152	-.0294044 .0045838
_Iyear_2010	-.0235071	.0081971	-2.87	0.004	-.0395835 .0074307
_Iyear_2011	-.0306391	.0088391	-3.47	0.001	-.0479746 -.0133036
_Iyear_2012	-.0345637	.0094814	-3.65	0.000	-.053159 .0159684
_Iyear_2013	-.047921	.0110357	-4.34	0.000	-.0695646 .0262774
_Iyear_2014	-.0522347	.0101861	-5.13	0.000	-.0722122 .0322573
_Iyear_2015	-.0484105	.0094026	-5.15	0.000	-.0668513 .0299697
_Iyear_2016	-.0501053	.0100214	-5.00	0.000	-.0697597 .0304509
_Iyear_2017	-.061389	.0095552	-6.42	0.000	-.080129 .0426489
_Iyear_2018	-.072429	.0092954	-7.79	0.000	-.0906596 .0541984
_Iyear_2019	-.0748866	.0095926	-7.81	0.000	-.0937 .0560733
_Iyear_2020	-.0908935	.0093266	-9.75	0.000	-.1091851 .0726019
_Iyear_2021	-.0951816	.0105563	-9.02	0.000	-.115885 .0744783
_Inace2_42	.1428477	.0324881	4.40	0.000	.0791308 .2065647
_Inace2_43	-.2856934	.0149743	-19.08	0.000	-.3150615 -.2563253
_IyeaXnac_2007_42	-.04918	.025709	-1.91	0.056	-.0996015 .0012416
_IyeaXnac_2007_43	.0053703	.0119531	0.45	0.653	-.0180726 .0288132
_IyeaXnac_2008_42	-.0127588	.0224064	-0.57	0.569	-.056703 .0311854
_IyeaXnac_2008_43	.0148116	.015212	0.97	0.330	-.0150228 .044646
_IyeaXnac_2009_42	-.003196	.0269435	-0.12	0.906	-.0560386 .0496466
_IyeaXnac_2009_43	.0191125	.0153704	1.24	0.214	-.0110324 .0492575
_IyeaXnac_2010_42	-.042975	.0267268	-1.61	0.108	-.0953927 .0094426
_IyeaXnac_2010_43	.0415662	.0153662	2.71	0.007	.0114294 .071703
_IyeaXnac_2011_42	-.0207616	.0276456	-0.75	0.453	-.0749811 .0334579
_IyeaXnac_2011_43	.0602326	.0158802	3.79	0.000	.0290877 .0913774
_IyeaXnac_2012_42	-.0423979	.0303948	-1.39	0.163	-.1020093 .0172136
_IyeaXnac_2012_43	.0698938	.0161713	4.32	0.000	.0381781 .1016096
_IyeaXnac_2013_42	-.0248942	.0564626	-0.44	0.659	-.1356306 .0858423
_IyeaXnac_2013_43	.0879671	.0192633	4.57	0.000	.0501872 .1257469
_IyeaXnac_2014_42	-.0664138	.0383138	-1.73	0.083	-.1415563 .0087287
_IyeaXnac_2014_43	.0924992	.0175314	5.28	0.000	.0581159 .1268825
_IyeaXnac_2015_42	-.0713252	.0293015	-2.43	0.015	-.1287925 .0138579
_IyeaXnac_2015_43	.0894775	.0162407	5.51	0.000	.0576256 .1213293
_IyeaXnac_2016_42	-.0920478	.0282331	-3.26	0.001	-.1474197 .0366676
_IyeaXnac_2016_43	.0945535	.0167056	5.66	0.000	.0617898 .1273172
_IyeaXnac_2017_42	-.0961135	.0275936	-3.48	0.001	-.1502311 -.0419959
_IyeaXnac_2017_43	.1033313	.0164147	6.30	0.000	.0711383 .1355244
_IyeaXnac_2018_42	-.0955543	.0267386	-3.57	0.000	-.1479951 .0431136
_IyeaXnac_2018_43	.1164095	.0166602	6.99	0.000	.083735 .1490841
_IyeaXnac_2019_42	-.0900939	.0297408	-3.03	0.002	-.1484226 .0317652
_IyeaXnac_2019_43	.1031793	.0164594	6.27	0.000	.0708985 .1354602

<code>_IyeaXnac_2020_42</code>	<code>-.087356</code>	<code>.0315506</code>	<code>-2.77</code>	<code>0.006</code>	<code>-.1492342</code>	<code>-.0254777</code>
<code>_IyeaXnac_2020_43</code>	<code>.127686</code>	<code>.0163376</code>	<code>7.82</code>	<code>0.000</code>	<code>.0956441</code>	<code>.1597279</code>
<code>_IyeaXnac_2021_42</code>	<code>-.0796109</code>	<code>.0341768</code>	<code>-2.33</code>	<code>0.020</code>	<code>-.1466397</code>	<code>-.0125822</code>
<code>_IyeaXnac_2021_43</code>	<code>.1439998</code>	<code>.0173062</code>	<code>8.32</code>	<code>0.000</code>	<code>.1100581</code>	<code>.1779414</code>
<code>_cons</code>	<code>1.844142</code>	<code>.0763064</code>	<code>24.17</code>	<code>0.000</code>	<code>1.694487</code>	<code>1.993797</code>

```

1704 .
1705 .
1706 . //fixed effects
1707 . eststo clear

1708 . foreach j in 1 1_pp {
2.
1709 .
1710 .      eststo: xi: qui xtreg lmu_`j' zakazky_last3_share share2 cogs k i.year*i.nace2 , cluster(id) fe i(id)
3.          nlcom -_b[zakazky_last3_share]/(_b[share2]*2)
4.          gen sharestar_`j' = -_b[zakazky_last3_share]/(_b[share2]*2)
5.          nlcom sharestar_`j'*_b[zakazky_last3_share]+sharestar_`j'^2*_b[share2]
6. }

i.year      _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2     _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#    (coded as above)
(est1 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

```

lmu_1	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	<code>.5395468</code>	<code>.0154116</code>	<code>35.01</code>	<code>0.000</code>	<code>.5093407</code> <code>.5697529</code>

`_nl_1: sharestar_1*_b[zakazky_last3_share]+sharestar_1^2*_b[share2]`

lmu_1	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	<code>.0782502</code>	<code>.0068493</code>	<code>11.42</code>	<code>0.000</code>	<code>.0648258</code> <code>.0916746</code>

i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
(est2 stored)

`_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)`

lmu_1_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	<code>.5065316</code>	<code>.0113032</code>	<code>44.81</code>	<code>0.000</code>	<code>.4843778</code> <code>.5286854</code>

`_nl_1: sharestar_1_pp*_b[zakazky_last3_share]+sharestar_1_pp^2*_b[share2]`

lmu_1_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	<code>.1359993</code>	<code>.0104276</code>	<code>13.04</code>	<code>0.000</code>	<code>.1155616</code> <code>.1564369</code>

```

1711 .
1712 . noi esttab , ///
>     cells(b(star fmt(%9.3f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.1)
>     label plain collabels(none) depvars numbers replace keep(zakazky_last3_share share2)

          (1)           (2)
          lmu_1         lmu_1_pp
zakazky_last3_share  0.290***   0.537***  

                      0.022      0.034  

                      0.25,0.33  0.47,0.60
share2              -0.269***  -0.530***  

                      0.020      0.030  

                      -0.31,-0.23 -0.59,-0.47
N                  13011      13011

1713 .
1714 .
1715 . xi: xtreg lmu_1 c.zakazky_last3_share##c.zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
i.year             _Iyear_2006-2021  (naturally coded; _Iyear_2006 omitted)
i.nace2            _Inace2_41-43    (naturally coded; _Inace2_41 omitted)
i.year*i.nace2    _IyeaXnac_#_#  (coded as above)
note: _Inace2_42 omitted because of collinearity.
note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression                         Number of obs     = 13,011
Group variable: id                                     Number of groups  = 1,859

R-squared:
Within = 0.4496                                         Obs per group:
Between = 0.1856                                         min = 1
Overall = 0.1370                                         avg = 7.0
                                                       max = 16

F(49, 1858) = 26.65
corr(u_i, Xb) = -0.3731
Prob > F = 0.0000

(Std. err. adjusted for 1,859 clusters in id)



|                                             | Robust      |           |        |       |                      |           |  |
|---------------------------------------------|-------------|-----------|--------|-------|----------------------|-----------|--|
|                                             | Coefficient | std. err. | t      | P> t  | [95% conf. interval] |           |  |
| lmu_1                                       |             |           |        |       |                      |           |  |
| zakazky_last3_share                         | .290059     | .022171   | 13.08  | 0.000 | .2465762             | .3335418  |  |
| c.zakazky_last3_share#c.zakazky_last3_share | -.2687987   | .0202139  | -13.30 | 0.000 | -.3084431            | -.2291544 |  |
| cogs                                        | -.1579313   | .0061406  | -25.72 | 0.000 | -.1699745            | -.1458881 |  |
| k                                           | .0516432    | .0031534  | 16.38  | 0.000 | .0454586             | .0578277  |  |
| _Iyear_2007                                 | .0034653    | .0055699  | 0.62   | 0.534 | -.0074586            | .0143892  |  |
| _Iyear_2008                                 | .0061723    | .0068846  | 0.90   | 0.370 | -.0073301            | .0196748  |  |
| _Iyear_2009                                 | -.0048934   | .0069958  | -0.70  | 0.484 | -.0186138            | .0088271  |  |
| _Iyear_2010                                 | -.0129378   | .0068625  | -1.89  | 0.060 | -.0263968            | .0005212  |  |
| _Iyear_2011                                 | -.0212473   | .0071484  | -2.97  | 0.003 | -.035267             | -.0072276 |  |
| _Iyear_2012                                 | -.024136    | .0075968  | -3.18  | 0.002 | -.0390352            | -.0092369 |  |
| _Iyear_2013                                 | -.0206669   | .0082043  | -2.52  | 0.012 | -.0367576            | -.0045763 |  |
| _Iyear_2014                                 | -.0257557   | .0079268  | -3.25  | 0.001 | -.0413021            | -.0102092 |  |
| _Iyear_2015                                 | -.0193893   | .0075205  | -2.58  | 0.010 | -.0341389            | -.0046398 |  |
| _Iyear_2016                                 | -.0216659   | .0077579  | -2.79  | 0.005 | -.036881             | -.0064508 |  |
| _Iyear_2017                                 | -.0215337   | .0076903  | -2.80  | 0.005 | -.0366162            | -.0064511 |  |
| _Iyear_2018                                 | -.0265398   | .0076427  | -3.47  | 0.001 | -.0415289            | -.0115507 |  |
| _Iyear_2019                                 | -.0248089   | .0078074  | -3.18  | 0.002 | -.0401211            | -.0094968 |  |
| _Iyear_2020                                 | -.0395893   | .0078512  | -5.04  | 0.000 | -.0549874            | -.0241911 |  |
| _Iyear_2021                                 | -.0403516   | .0082211  | -4.91  | 0.000 | -.0564751            | -.024228  |  |
| _Inace2_42                                  | 0           | (omitted) |        |       |                      |           |  |
| _Inace2_43                                  | 0           | (omitted) |        |       |                      |           |  |
| _IyeaXnac_2007_42                           | -.0099966   | .0181516  | -0.55  | 0.582 | -.0455963            | .0256031  |  |
| _IyeaXnac_2007_43                           | -.0020671   | .0108423  | -0.19  | 0.849 | -.0233316            | .0191973  |  |
| _IyeaXnac_2008_42                           | .0094776    | .0202822  | 0.47   | 0.640 | -.0303007            | .049256   |  |
| _IyeaXnac_2008_43                           | -.0023491   | .0112626  | -0.21  | 0.835 | -.0244378            | .0197396  |  |
| _IyeaXnac_2009_42                           | .0099603    | .0222414  | 0.45   | 0.654 | -.0336605            | .0535811  |  |
| _IyeaXnac_2009_43                           | .0156299    | .0121327  | 1.29   | 0.198 | -.0081653            | .0394251  |  |
| _IyeaXnac_2010_42                           | -.018435    | .0214061  | -0.86  | 0.389 | -.0604175            | .0235475  |  |
| _IyeaXnac_2010_43                           | .0261857    | .0123644  | 2.12   | 0.034 | .0019361             | .0504353  |  |
| _IyeaXnac_2011_42                           | -.00174     | .0233162  | -0.07  | 0.941 | -.0474688            | .0439888  |  |
| _IyeaXnac_2011_43                           | .0389246    | .0127698  | 3.05   | 0.002 | .0138798             | .0639693  |  |


```

	_IyeaXnac_2012_42	- .0205196	.0242513	-0.85	0.398	-.0680822	.0270431
	_IyeaXnac_2012_43	.0463163	.0131256	3.53	0.000	.0205739	.0720588
	_IyeaXnac_2013_42	-.0324931	.0357498	-0.91	0.364	-.1026071	.0376209
	_IyeaXnac_2013_43	.0547734	.0149832	3.66	0.000	.0253878	.084159
	_IyeaXnac_2014_42	-.0347313	.0251609	-1.38	0.168	-.0840778	.0146153
	_IyeaXnac_2014_43	.0623515	.0136368	4.57	0.000	.0356064	.0890966
	_IyeaXnac_2015_42	-.0396619	.0223775	-1.77	0.076	-.0835496	.0042257
	_IyeaXnac_2015_43	.0636559	.0128055	4.97	0.000	.0385413	.0887706
	_IyeaXnac_2016_42	-.0558063	.0218977	-2.55	0.011	-.098753	.0128596
	_IyeaXnac_2016_43	.0702753	.0133273	5.27	0.000	.0441371	.0964134
	_IyeaXnac_2017_42	-.0638547	.0213882	-2.99	0.003	-.1058021	.0219073
	_IyeaXnac_2017_43	.0750038	.0131246	5.71	0.000	.0492632	.1007443
	_IyeaXnac_2018_42	-.0644476	.0211084	-3.05	0.002	-.1058462	.0230489
	_IyeaXnac_2018_43	.0854552	.0134855	6.34	0.000	.0590068	.1119036
	_IyeaXnac_2019_42	-.0848408	.0225779	-3.76	0.000	-.1291215	.0405601
	_IyeaXnac_2019_43	.0824758	.0135889	6.07	0.000	.0558247	.1091268
	_IyeaXnac_2020_42	-.0755951	.0233526	-3.24	0.001	-.1213952	.029795
	_IyeaXnac_2020_43	.0943291	.0135008	6.99	0.000	.0678508	.1208074
	_IyeaXnac_2021_42	-.0599998	.0241081	-2.49	0.013	-.1072816	.0127179
	_IyeaXnac_2021_43	.1051544	.0140306	7.49	0.000	.077637	.1326718
	_cons	2.474053	.0919583	26.90	0.000	2.293701	2.654406
	sigma_u	.1991516					
	sigma_e	.07650519					
	rho	.87140237			(fraction of variance due to u_i)		

1716 . margins, dydx(zakazky_last3_share) at(zakazky_last3_share=(0(0.1)1))

Average marginal effects
Model VCE: Robust

Number of obs = 13,011

Expression: Linear prediction, predict()
dy/dx wrt: zakazky_last3_share
1._at: zakazky_last3~e = 0
2._at: zakazky_last3~e = .1
3._at: zakazky_last3~e = .2
4._at: zakazky_last3~e = .3
5._at: zakazky_last3~e = .4
6._at: zakazky_last3~e = .5
7._at: zakazky_last3~e = .6
8._at: zakazky_last3~e = .7
9._at: zakazky_last3~e = .8
10._at: zakazky_last3~e = .9
11._at: zakazky_last3~e = 1

		Delta-method				
		dy/dx	std. err.	z	P> z	[95% conf. interval]
zakazky_last3_share						
	_at					
	1	.290059	.022171	13.08	0.000	.2466045
	2	.2362992	.0184752	12.79	0.000	.2000885
	3	.1825395	.0149599	12.20	0.000	.1532186
	4	.1287798	.0117878	10.92	0.000	.1056761
	5	.07502	.0093164	8.05	0.000	.0567603
	6	.0212603	.0082052	2.59	0.010	.0051784
	7	-.0324995	.0089746	-3.62	0.000	-.0500893
	8	-.0862592	.011245	-7.67	0.000	-.108299
	9	-.140019	.0143194	-9.78	0.000	-.1680844
	10	-.1937787	.0177856	-10.90	0.000	-.2286378
	11	-.2475385	.0214545	-11.54	0.000	-.2895886

1717 . marginsplot

Variables that uniquely identify margins: zakazky_last3_share

1718 .
 1719 . xi: xtreg lmu_1_pp c.zakazky_last3_share##c.zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _Iyeaxnac_#_# (coded as above)
 note: _Inace2_42 omitted because of collinearity.
 note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression Number of obs = 13,011
 Group variable: id Number of groups = 1,865

R-squared:

Within = 0.3360	Obs per group:
Between = 0.1479	min = 1
Overall = 0.0937	avg = 7.0
	max = 16

corr(u_i, Xb) = -0.3445	F(49, 1864) = 21.85
	Prob > F = 0.0000

(Std. err. adjusted for 1,865 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_share	.5369824	.0341596	15.72	0.000	.4699872 .6039776
c.zakazky_last3_share#c.zakazky_last3_share	-.5300582	.030034	-17.65	0.000	-.5889619 -.4711544
cogs	-.1491408	.0083169	-17.93	0.000	-.1654523 -.1328293
k	.0477239	.0037338	12.78	0.000	.0404011 .0550467
_Iyear_2007	.0118273	.0093711	1.26	0.207	-.0065516 .0302063
_Iyear_2008	.0210702	.0108376	1.94	0.052	-.0001849 .0423253
_Iyear_2009	.018426	.0116452	1.58	0.114	-.004413 .0412651
_Iyear_2010	.0071636	.0115404	0.62	0.535	-.01547 .0297971
_Iyear_2011	.0018983	.0119794	0.16	0.874	-.0215961 .0253928
_Iyear_2012	.0056095	.0129758	0.43	0.666	-.0198391 .0310581
_Iyear_2013	.0148207	.0135459	1.09	0.274	-.011746 .0413874
_Iyear_2014	.0153275	.0131576	1.16	0.244	-.0104776 .0411326
_Iyear_2015	.0299498	.0129245	2.32	0.021	.0046018 .0552978
_Iyear_2016	.0316106	.0133846	2.36	0.018	.0053601 .057861
_Iyear_2017	.0316469	.0131866	2.40	0.016	.0057848 .057509
_Iyear_2018	.0290503	.0129581	2.24	0.025	.0036364 .0544642
_Iyear_2019	.0337796	.0129914	2.60	0.009	.0083004 .0592588
_Iyear_2020	.0206359	.0128929	1.60	0.110	-.0046501 .045922
_Iyear_2021	.0196902	.0135166	1.46	0.145	-.006819 .0461994
_Inace2_42	0 (omitted)				
_Inace2_43	0 (omitted)				
_Iyeaxnac_2007_42	-.0189189	.0238228	-0.79	0.427	-.0656411 .0278032
_Iyeaxnac_2007_43	-.0085523	.0140539	-0.61	0.543	-.0361153 .0190187
_Iyeaxnac_2008_42	.017311	.0266742	0.65	0.516	-.0350033 .0696254
_Iyeaxnac_2008_43	-.0020793	.0163726	-0.13	0.899	-.03419 .0300313
_Iyeaxnac_2009_42	.0048965	.030362	0.16	0.872	-.0546507 .0644436
_Iyeaxnac_2009_43	.0079512	.0184089	0.43	0.666	-.028153 .0440554
_Iyeaxnac_2010_42	-.0254233	.030862	-0.82	0.410	-.0859511 .0351044
_Iyeaxnac_2010_43	.0255265	.0180322	1.42	0.157	-.0098389 .0608919
_Iyeaxnac_2011_42	-.0091885	.0325347	-0.28	0.778	-.0729967 .0546197
_Iyeaxnac_2011_43	.042967	.0184479	2.33	0.020	.0067863 .0791477
_Iyeaxnac_2012_42	-.0534449	.0327141	-1.63	0.102	-.1176049 .0107151
_Iyeaxnac_2012_43	.0536448	.0192503	2.79	0.005	.0158903 .0913993
_Iyeaxnac_2013_42	-.0356171	.0464826	-0.77	0.444	-.1267806 .0555464
_Iyeaxnac_2013_43	.0787553	.0216975	3.63	0.000	.0362013 .1213093
_Iyeaxnac_2014_42	-.0463511	.0359807	-1.29	0.198	-.1169177 .0242156
_Iyeaxnac_2014_43	.0943339	.0203115	4.64	0.000	.0544981 .1341696
_Iyeaxnac_2015_42	-.0397987	.0316395	-1.26	0.209	-.1018513 .0222538
_Iyeaxnac_2015_43	.0936336	.0195428	4.79	0.000	.0553056 .1319616
_Iyeaxnac_2016_42	-.0489712	.0327041	-1.50	0.134	-.1131118 .0151693
_Iyeaxnac_2016_43	.0953357	.0200277	4.76	0.000	.0560566 .1346147
_Iyeaxnac_2017_42	-.0557652	.0320911	-1.74	0.082	-.1187034 .0071731
_Iyeaxnac_2017_43	.0960698	.0204025	4.71	0.000	.0560555 .136084

	_IyeaXnac_2018_42	-.0403888	.0317285	-1.27	0.203	-.102616	.0218383
	_IyeaXnac_2018_43	.0995474	.0202305	4.92	0.000	.0598706	.1392243
	_IyeaXnac_2019_42	-.0693312	.0319615	-2.17	0.030	-.1320153	-.006647
	_IyeaXnac_2019_43	.09188	.0202821	4.53	0.000	.0521019	.1316581
	_IyeaXnac_2020_42	-.0677218	.0320222	-2.11	0.035	-.1305249	-.0049186
	_IyeaXnac_2020_43	.0995167	.0203007	4.90	0.000	.0597022	.1393312
	_IyeaXnac_2021_42	-.0516582	.0322285	-1.60	0.109	-.1148659	.0115494
	_IyeaXnac_2021_43	.0998297	.0209566	4.76	0.000	.0587288	.1409306
	_cons	2.319053	.1279453	18.13	0.000	2.068122	2.569984
	sigma_u	.22485603					
	sigma_e	.11074461					
	rho	.80478398	(fraction of variance due to u_i)				

1720 . margins, dydx(zakazky_last3_share) at(zakazky_last3_share=(0(0.1)1))

Average marginal effects
Model VCE: Robust

Number of obs = 13,011

Expression: Linear prediction, predict()
dy/dx wrt: zakazky_last3_share
1._at: zakazky_last3_~e = 0
2._at: zakazky_last3_~e = .1
3._at: zakazky_last3_~e = .2
4._at: zakazky_last3_~e = .3
5._at: zakazky_last3_~e = .4
6._at: zakazky_last3_~e = .5
7._at: zakazky_last3_~e = .6
8._at: zakazky_last3_~e = .7
9._at: zakazky_last3_~e = .8
10._at: zakazky_last3_~e = .9
11._at: zakazky_last3_~e = 1

		Delta-method				
		dy/dx	std. err.	z	P> z	[95% conf. interval]
zakazky_last3_share						
	_at					
	1	.5369824	.0341596	15.72	0.000	.4700308
	2	.4309708	.0286038	15.07	0.000	.3749084
	3	.3249592	.0232731	13.96	0.000	.2793447
	4	.2189475	.0183646	11.92	0.000	.1829535
	5	.1129359	.0143194	7.89	0.000	.0848703
	6	.0069243	.0120414	0.58	0.565	-.0166765
	7	-.0990874	.0125343	-7.91	0.000	-.1236541
	8	-.205099	.0155365	-13.20	0.000	-.23555
	9	-.3111106	.0199455	-15.60	0.000	-.3502031
	10	-.4171222	.0250285	-16.67	0.000	-.4661771
	11	-.5231339	.0304498	-17.18	0.000	-.5828144

1721 . marginsplot

Variables that uniquely identify margins: zakazky_last3_share

1722 .
1723 .
1724 . save "data_with_results", replace
(file data_with_results.dta not found)
file data_with_results.dta saved

```

1725 .
1726 . *extra
1727 .
1728 . * by sector
1729 . *OLS
1730 . reg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id)

```

Linear regression

	Number of obs	=	7,001
F(18, 945)	=	77.70	
Prob > F	=	0.0000	
R-squared	=	0.7253	
Root MSE	=	.08506	

(Std. err. adjusted for 946 clusters in id)

lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.160192	.0056449	28.38	0.000	.1491141 .17127
	-.1312543	.0070044	-18.74	0.000	-.1450002 -.1175083
	.0691415	.0040208	17.20	0.000	.0612507 .0770322
year					
2007	-.01029	.0048405	-2.13	0.034	-.0197895 -.0007906
2008	-.0128555	.0069101	-1.86	0.063	-.0264164 .0007053
2009	-.023377	.006885	-3.40	0.001	-.0368886 -.0098655
2010	-.0332192	.006752	-4.92	0.000	-.0464698 -.0199687
2011	-.0410419	.007278	-5.64	0.000	-.0553249 -.0267589
2012	-.0492631	.0073626	-6.69	0.000	-.063712 -.0348142
2013	-.0535452	.0096005	-5.58	0.000	-.0723858 -.0347045
2014	-.0619257	.0089089	-6.95	0.000	-.0794093 -.0444422
2015	-.0634114	.0076953	-8.24	0.000	-.0785132 -.0483096
2016	-.0661283	.0086405	-7.65	0.000	-.0830851 -.0491714
2017	-.0750152	.0079834	-9.40	0.000	-.0906824 -.059348
2018	-.0846393	.0078697	-10.76	0.000	-.1000834 -.0691952
2019	-.0853291	.008548	-9.98	0.000	-.1021043 -.0685539
2020	-.1004844	.0080805	-12.44	0.000	-.1163421 -.0846267
2021	-.1091948	.0083683	-13.05	0.000	-.1256175 -.0927721
_cons	1.815297	.0703769	25.79	0.000	1.677184 1.95341

```

1731 . reg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id)

```

Linear regression

	Number of obs	=	1,063
F(18, 112)	=	8.13	
Prob > F	=	0.0000	
R-squared	=	0.3564	
Root MSE	=	.11529	

(Std. err. adjusted for 113 clusters in id)

lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.1064717	.0178315	5.97	0.000	.0711408 .1418026
	.0410766	.0181478	2.26	0.026	.005119 .0770342
	-.0022816	.0137069	-0.17	0.868	-.02944 .0248768
year					
2007	-.0208603	.0123841	-1.68	0.095	-.0453978 .0036771
2008	-.0345237	.0102524	-3.37	0.001	-.0548375 -.0142099
2009	-.0218819	.0156086	-1.40	0.164	-.0528083 .0090445
2010	-.0502974	.012159	-4.14	0.000	-.0743888 -.026206
2011	-.0328743	.0148189	-2.22	0.029	-.0622361 -.0035125
2012	-.0544448	.0114934	-4.74	0.000	-.0772174 -.0316722
2013	-.0559864	.0199263	-2.81	0.006	-.0954678 -.016505
2014	-.0381684	.0241688	-1.58	0.117	-.0860559 .0097191
2015	-.0861014	.016576	-5.19	0.000	-.1189448 -.0532581
2016	-.087129	.016817	-5.18	0.000	-.1204498 -.0538083
2017	-.0991701	.018731	-5.29	0.000	-.1362832 -.062057
2018	-.1205082	.0181626	-6.63	0.000	-.156495 -.0845213
2019	-.1252554	.0178653	-7.01	0.000	-.1606531 -.0898577

2020	-.1308219	.0195289	-6.70	0.000	-.169516	-.0921278
2021	-.1366979	.0230439	-5.93	0.000	-.1823564	-.0910394
_cons	.0389255	.1842618	0.21	0.833	-.3261656	.4040165

1732 . reg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id)

Linear regression

Number of obs	=	4,947
F(18, 799)	=	51.31
Prob > F	=	0.0000
R-squared	=	0.6393
Root MSE	=	.12528

(Std. err. adjusted for 800 clusters in id)

lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.0934532	.0072681	12.86	0.000	.0791864 .1077201
cogs	-.1738774	.0088926	-19.55	0.000	-.191333 -.1564217
k	.0780802	.0047525	16.43	0.000	.0687513 .0874092
year					
2007	.0074516	.0105216	0.71	0.479	-.0132017 .0281049
2008	.0038796	.0104616	0.37	0.711	-.0166559 .0244151
2009	-.0000987	.0106355	-0.01	0.993	-.0209755 .0207781
2010	.0043294	.0108483	0.40	0.690	-.0169652 .0256239
2011	.0134252	.011678	1.15	0.251	-.0094981 .0363484
2012	.0158682	.0120918	1.31	0.190	-.0078672 .0396037
2013	.0163347	.0147796	1.11	0.269	-.0126766 .045346
2014	.0126765	.012887	0.98	0.326	-.01262 .0379729
2015	.0201266	.0117278	1.72	0.087	-.0028944 .0431475
2016	.0223418	.0133169	1.68	0.094	-.0037984 .0484821
2017	.0246652	.0122196	2.02	0.044	.0006789 .0486515
2018	.0289127	.0125155	2.31	0.021	.0043455 .0534799
2019	.0250299	.0126107	1.98	0.048	.0002759 .0497839
2020	.026911	.0121356	2.22	0.027	.0030896 .0507323
2021	.0361355	.0125055	2.89	0.004	.0115879 .0606831
_cons	2.134443	.1116135	19.12	0.000	1.915352 2.353533

1733 .

1734 . reg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id)

Linear regression

Number of obs	=	6,986
F(18, 949)	=	167.55
Prob > F	=	0.0000
R-squared	=	0.7233
Root MSE	=	.10795

(Std. err. adjusted for 950 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2979143	.0064027	46.53	0.000	.2853493 .3104793
cogs	-.1293433	.007453	-17.35	0.000	-.1439696 -.114717
k	.0655396	.0043041	15.23	0.000	.057093 .0739862
year					
2007	-.0070435	.0065478	-1.08	0.282	-.0198934 .0058064
2008	-.0096317	.0086275	-1.12	0.265	-.0265629 .0072996
2009	-.0124798	.0087568	-1.43	0.154	-.0296648 .0047051
2010	-.0237217	.0083666	-2.84	0.005	-.0401409 .0073025
2011	-.0301768	.0091139	-3.31	0.001	-.0480625 -.0122911
2012	-.0344697	.0097861	-3.52	0.000	-.0536747 -.0152648
2013	-.0491458	.0115888	-4.24	0.000	-.0718883 -.0264032
2014	-.0534531	.0108736	-4.92	0.000	-.0747921 -.032114
2015	-.0513944	.0098324	-5.23	0.000	-.0706902 -.0320986
2016	-.0538786	.0105902	-5.09	0.000	-.0746614 -.0330957
2017	-.0652516	.0101241	-6.45	0.000	-.0851199 -.0453834

2018	-.0773396	.0098657	-7.84	0.000	-.0967008	-.0579784
2019	-.0799684	.0101918	-7.85	0.000	-.0999696	-.0599672
2020	-.0957597	.0099718	-9.60	0.000	-.115329	-.0761904
2021	-.100125	.0111507	-8.98	0.000	-.1220079	-.0782421
_cons	1.749295	.0846036	20.68	0.000	1.583263	1.915326

1735 . reg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id)

Linear regression

Number of obs	=	1,057
F(18, 112)	=	27.03
Prob > F	=	0.0000
R-squared	=	0.6167
Root MSE	=	.11728

(Std. err. adjusted for 113 clusters in id)

lmu_1_pp	Coefficient	Robust				
		std. err.	t	P> t	[95% conf. interval]	
zakazky_last3_dummy	.2860927	.0183274	15.61	0.000	.2497794 .3224061	
	.0299631	.0207755	1.44	0.152	-.0112009 .0711271	
	.0110317	.0149362	0.74	0.462	-.0185624 .0406259	
year						
	2007	-.0243623	.0129083	-1.89	0.062	-.0499385 .0012138
	2008	-.0274741	.0109869	-2.50	0.014	-.0492432 -.0057049
	2009	-.0230015	.017519	-1.31	0.192	-.0577132 .0117101
	2010	-.0363313	.0194179	-1.87	0.064	-.0748053 .0021428
	2011	-.0349469	.0184166	-1.90	0.060	-.0714371 .0015433
	2012	-.0589213	.0158578	-3.72	0.000	-.0903415 -.0275012
	2013	-.0099671	.0460511	-0.22	0.829	-.1012114 .0812772
	2014	-.0478726	.0225414	-2.12	0.036	-.0925355 -.0032097
	2015	-.081563	.0177782	-4.59	0.000	-.1167882 -.0463377
	2016	-.0931284	.01939	-4.80	0.000	-.1315472 -.0547095
	2017	-.1036782	.0182191	-5.69	0.000	-.139777 -.0675794
	2018	-.1178044	.0183785	-6.41	0.000	-.154219 -.0813897
	2019	-.1232936	.0188496	-6.54	0.000	-.1606416 -.0859456
	2020	-.1389553	.0191243	-7.27	0.000	-.1768476 -.101063
	2021	-.1475266	.0189821	-7.77	0.000	-.1851373 -.1099159
_cons	-.0704025	.1772189	-0.40	0.692	-.4215391	.2807341

1736 . reg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id)

Linear regression

Number of obs	=	4,968
F(18, 801)	=	109.10
Prob > F	=	0.0000
R-squared	=	0.6488
Root MSE	=	.13949

(Std. err. adjusted for 802 clusters in id)

lmu_1_pp	Coefficient	Robust				
		std. err.	t	P> t	[95% conf. interval]	
zakazky_last3_dummy	.2357425	.0089808	26.25	0.000	.2181139 .2533712	
	-.17245	.0085138	-20.26	0.000	-.189162 -.1557379	
	.073809	.0043678	16.90	0.000	.0652353 .0823827	
year						
	2007	.0037049	.0099793	0.37	0.711	-.0158837 .0232935
	2008	.0127304	.0119102	1.07	0.285	-.0106485 .0361092
	2009	.0074253	.0122689	0.61	0.545	-.0166578 .0315083
	2010	.0178211	.012662	1.41	0.160	-.0070335 .0426757
	2011	.0251917	.0129198	1.95	0.052	-.000169 .0505525
	2012	.0333745	.0130485	2.56	0.011	.0077612 .0589879
	2013	.04094	.0159459	2.57	0.010	.0096393 .0722407
	2014	.0399936	.0146171	2.74	0.006	.0113013 .0686859
	2015	.0473578	.0139186	3.40	0.001	.0200365 .0746791
	2016	.0491893	.0147549	3.33	0.001	.0202263 .0781522

2017	.0435294	.0145511	2.99	0.003	.0149667	.0720921
2018	.0466039	.0148523	3.14	0.002	.0174498	.075758
2019	.0343997	.0145076	2.37	0.018	.0059224	.062877
2020	.0379928	.0146898	2.59	0.010	.0091577	.0668279
2021	.0469325	.0147992	3.17	0.002	.0178827	.0759822
_cons	2.091637	.1138344	18.37	0.000	1.868188	2.315086

1737 .
 1738 . *FE
 1739 . xtreg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 7,001
 Group variable: id Number of groups = 946
 R-squared: Obs per group:
 Within = 0.7264 min = 1
 Between = 0.6721 avg = 7.4
 Overall = 0.6530 max = 16
 F(18, 945) = 277.34
 corr(u_i, Xb) = -0.2501 Prob > F = 0.0000

(Std. err. adjusted for 946 clusters in id)

lmu_1	Coefficient	Robust			
		std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.1788866	.0028286	63.24	0.000	.1733356 .1844376
cogs	-.1560414	.0057169	-27.29	0.000	-.1672606 -.1448221
k	.0544559	.0036557	14.90	0.000	.0472816 .0616302
year					
2007	-.0036445	.0045411	-0.80	0.422	-.0125564 .0052674
2008	-.0045289	.0056333	-0.80	0.422	-.0155841 .0065263
2009	-.0177144	.0051668	-3.43	0.001	-.0278541 -.0075747
2010	-.0249046	.0048153	-5.17	0.000	-.0343546 -.0154546
2011	-.0330408	.0050699	-6.52	0.000	-.0429903 -.0230913
2012	-.0401546	.0052095	-7.71	0.000	-.0503781 -.0299311
2013	-.0493852	.0053558	-9.22	0.000	-.0598958 -.0388745
2014	-.0580851	.0054107	-10.74	0.000	-.0687034 -.0474667
2015	-.0613401	.0052276	-11.73	0.000	-.0715993 -.051081
2016	-.069156	.0052727	-13.12	0.000	-.0795035 -.0588084
2017	-.074326	.0053293	-13.95	0.000	-.0847845 -.0638674
2018	-.081946	.0053683	-15.26	0.000	-.0924811 -.0714108
2019	-.0852923	.0056538	-15.09	0.000	-.0963877 -.0741969
2020	-.0995238	.0054873	-18.14	0.000	-.1102925 -.0887551
2021	-.1032783	.006062	-17.04	0.000	-.1151747 -.0913818
_cons	2.46171	.0880793	27.95	0.000	2.288857 2.634564
sigma_u	.08993016				
sigma_e	.0505753				
rho	.75971907	(fraction of variance due to u_i)			

1740 . xtreg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 1,063
 Group variable: id Number of groups = 113
 R-squared: Obs per group:
 Within = 0.3168 min = 1
 Between = 0.0004 avg = 9.4
 Overall = 0.0211 max = 16
 F(18, 112) = 12.86
 corr(u_i, Xb) = -0.2677 Prob > F = 0.0000

(Std. err. adjusted for 113 clusters in id)

lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.1084696	.01057	10.26	0.000	.0875265 .1294127
cogs_k	-.0212076	.0257747	-0.82	0.412	-.0722768 .0298616
	-.0071027	.0102035	-0.70	0.488	-.0273195 .0131141
year					
2007	-.0043184	.0103851	-0.42	0.678	-.0248952 .0162583
2008	-.0055781	.009207	-0.61	0.546	-.0238207 .0126644
2009	.0035933	.0135896	0.26	0.792	-.0233327 .0305193
2010	-.0227354	.0100078	-2.27	0.025	-.0425646 -.0029062
2011	-.0157691	.0129563	-1.22	0.226	-.0414403 .0099022
2012	-.0326492	.010875	-3.00	0.003	-.0541965 -.0111018
2013	-.0485905	.0175108	-2.77	0.006	-.0832859 -.0138952
2014	-.0430005	.0168194	-2.56	0.012	-.0763259 -.0096751
2015	-.063292	.013832	-4.58	0.000	-.0906982 -.0358857
2016	-.0752602	.0134032	-5.62	0.000	-.1018169 -.0487036
2017	-.0878254	.0138978	-6.32	0.000	-.1153621 -.0602887
2018	-.1030404	.0147431	-6.99	0.000	-.132252 -.0738289
2019	-.1138744	.0150931	-7.54	0.000	-.1437795 -.0839693
2020	-.1217457	.0161333	-7.55	0.000	-.1537117 -.0897797
2021	-.1156011	.0153062	-7.55	0.000	-.1459283 -.0852739
_cons	1.215615	.4059105	2.99	0.003	.4113552 2.019875
sigma_u	.135466				
sigma_e	.06430931				
rho	.81608314	(fraction of variance due to u_i)			

1741 . xtreg lmu_1 zakazky_last3_dummy cogs_k i.year if nace2==43 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 4,947
 Group variable: id Number of groups = 800

R-squared: Obs per group:
 Within = 0.5811 min = 1
 Between = 0.6446 avg = 6.2
 Overall = 0.5666 max = 16

F(18, 799) = 45.53
 corr(u_i, Xb) = -0.3274 Prob > F = 0.0000

(Std. err. adjusted for 800 clusters in id)

lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.0924622	.0066514	13.90	0.000	.0794058 .1055185
cogs_k	-.1993771	.0109777	-18.16	0.000	-.2209255 -.1778286
	.0541157	.0055443	9.76	0.000	.0432326 .0649987
year					
2007	.0018173	.0087638	0.21	0.836	-.0153855 .0190201
2008	.0049484	.008532	0.58	0.562	-.0117994 .0216963
2009	.0062854	.0094337	0.67	0.505	-.0122324 .0248032
2010	.0106541	.0099985	1.07	0.287	-.0089723 .0302806
2011	.0113405	.0099666	1.14	0.256	-.0082233 .0309043
2012	.0141573	.0103013	1.37	0.170	-.0060635 .0343781
2013	.0169538	.0116648	1.45	0.147	-.0059435 .0398512
2014	.0127864	.0106828	1.20	0.232	-.0081833 .0337561
2015	.0193227	.0100556	1.92	0.055	-.0004157 .0390611
2016	.0218762	.0113552	1.93	0.054	-.0004133 .0441657
2017	.0267373	.0106632	2.51	0.012	.005806 .0476686
2018	.0323946	.010925	2.97	0.003	.0109494 .0538398
2019	.0322312	.0114401	2.82	0.005	.0097751 .0546873
2020	.0278701	.0109857	2.54	0.011	.0063058 .0494344
2021	.041838	.0114351	3.66	0.000	.0193916 .0642845
_cons	2.933155	.1454098	20.17	0.000	2.647725 3.218586

sigma_u	.12619212	
sigma_e	.07535428	
rho	.73715033	(fraction of variance due to u_i)

1742 .
 1743 . xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = **6,986**
 Group variable: id Number of groups = **950**

R-squared: Obs per group:
 Within = **0.7448** min = **1**
 Between = **0.6376** avg = **7.4**
 Overall = **0.6549** max = **16**

F(18, 949) = **268.63**
 corr(u_i, Xb) = **-0.1907** Prob > F = **0.0000**

(Std. err. adjusted for 950 clusters in id)

lmu_1_pp	Coefficient	Robust				
		std. err.	t	P> t	[95% conf. interval]	
zakazky_last3_dummy	.3203165	.0053438	59.94	0.000	.3098295	.3308036
cogs	-.1555834	.0072013	-21.60	0.000	-.1697157	-.1414511
k	.0465829	.0043327	10.75	0.000	.0380801	.0550857
year						
2007	.0005136	.0061573	0.08	0.934	-.0115699	.012597
2008	.0039735	.0069339	0.57	0.567	-.009634	.0175811
2009	-.0020601	.007032	-0.29	0.770	-.0158601	.0117399
2010	-.0111606	.0066324	-1.68	0.093	-.0241763	.0018552
2011	-.0176421	.0071424	-2.47	0.014	-.0316588	-.0036254
2012	-.02225	.007312	-3.04	0.002	-.0365995	-.0079004
2013	-.0360656	.0075856	-4.75	0.000	-.0509522	-.0211791
2014	-.0426061	.0073904	-5.77	0.000	-.0571096	-.0281026
2015	-.043438	.0074408	-5.84	0.000	-.0580403	-.0288356
2016	-.0530192	.0074828	-7.09	0.000	-.0677039	-.0383346
2017	-.0625099	.0075057	-8.33	0.000	-.0772396	-.0477803
2018	-.0696134	.0074882	-9.30	0.000	-.0843088	-.0549181
2019	-.0741207	.0078195	-9.48	0.000	-.0894663	-.0587751
2020	-.0867876	.0076609	-11.33	0.000	-.1018219	-.0717534
2021	-.0906946	.0088585	-10.24	0.000	-.1080791	-.0733101
_cons	2.481282	.1119974	22.15	0.000	2.26149	2.701073
sigma_u	.11340972					
sigma_e	.06611182					
rho	.74636511	(fraction of variance due to u_i)				

1744 . xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = **1,057**
 Group variable: id Number of groups = **113**

R-squared: Obs per group:
 Within = **0.5876** min = **1**
 Between = **0.0677** avg = **9.4**
 Overall = **0.1566** max = **16**

F(18, 112) = **32.88**
 corr(u_i, Xb) = **-0.2678** Prob > F = **0.0000**

(Std. err. adjusted for 113 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2903363	.0156627	18.54	0.000	.2593027 .3213698
cogs	-.0610549	.0352735	-1.73	0.086	-.1309448 .0088349
k	.0001844	.012146	0.02	0.988	-.0238814 .0242502
year					
2007	-.0077058	.0127499	-0.60	0.547	-.0329681 .0175565
2008	.0059409	.0127973	0.46	0.643	-.0194152 .0312971
2009	.0060312	.0155456	0.39	0.699	-.0247703 .0368328
2010	-.0131839	.0177249	-0.74	0.459	-.0483035 .0219358
2011	-.0124719	.0170212	-0.73	0.465	-.0461972 .0212534
2012	-.036175	.0162411	-2.23	0.028	-.0683546 -.0039954
2013	-.0188391	.0291943	-0.65	0.520	-.0766839 .0390058
2014	-.0494686	.0186147	-2.66	0.009	-.0863514 -.0125859
2015	-.0580997	.0164704	-3.53	0.001	-.0907336 -.0254658
2016	-.0765319	.0157514	-4.86	0.000	-.1077413 -.0453226
2017	-.0908666	.0152724	-5.95	0.000	-.1211269 -.0606063
2018	-.0964349	.0161838	-5.96	0.000	-.1285009 -.0643689
2019	-.1091093	.0184369	-5.92	0.000	-.1456396 -.0725791
2020	-.1211587	.0194619	-6.23	0.000	-.15972 -.0825974
2021	-.115377	.0175337	-6.58	0.000	-.1501178 -.0806363
_cons	1.717126	.5232962	3.28	0.001	.680282 2.753971
sigma_u	.16388943				
sigma_e	.0737256				
rho	.83169443	(fraction of variance due to u_i)			

1745 . xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 4,968
 Group variable: id Number of groups = 802

R-squared: Obs per group:
 Within = 0.6679 min = 1
 Between = 0.6534 avg = 6.2
 Overall = 0.6077 max = 16

F(18, 801) = 86.82
 corr(u_i, Xb) = -0.1319 Prob > F = 0.0000

(Std. err. adjusted for 802 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2438967	.0093404	26.11	0.000	.2255621 .2622314
cogs	-.1854533	.0198972	-9.32	0.000	-.22451 -.1463965
k	.0521307	.0059873	8.71	0.000	.040378 .0638834
year					
2007	.0046561	.0076668	0.61	0.544	-.0103932 .0197055
2008	.0193128	.0090373	2.14	0.033	.0015733 .0370524
2009	.0191049	.0101205	1.89	0.059	-.0007609 .0389707
2010	.0261735	.0102382	2.56	0.011	.0060766 .0462704
2011	.0322039	.0103821	3.10	0.002	.0118246 .0525831
2012	.0401091	.0106408	3.77	0.000	.019222 .0609962
2013	.0458034	.0122952	3.73	0.000	.0216688 .069938
2014	.0445931	.0115394	3.86	0.000	.021942 .0672442
2015	.0479313	.0113386	4.23	0.000	.0256745 .0701882
2016	.0448308	.0123835	3.62	0.000	.0205229 .0691388
2017	.038353	.0130209	2.95	0.003	.0127939 .0639121
2018	.0358451	.0128043	2.80	0.005	.0107111 .0609791
2019	.0304455	.0131383	2.32	0.021	.0046558 .0562351
2020	.023631	.0134418	1.76	0.079	-.0027542 .0500163
2021	.0294208	.0141806	2.07	0.038	.0015853 .0572563
_cons	2.643589	.2774258	9.53	0.000	2.099022 3.188157

sigma_u sigma_e rho	.13256551 .08474545 .70988999 (fraction of variance due to u_i)
---------------------------	--

```

1746 .
end of do-file

1747 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1748 .
1749 . //Robustness
1750 .           * with estimated productivity included
1751 . use "data_with_markups", clear

1752 . prodest go, va free(cogs) proxy(proxy) state(k) acf endogenous(zakazky_last3_dummy) control(year nace2 zakazky_las
.....
```

lp productivity estimator Cobb-Douglas PF
ACF corrected

Dependent variable: value added	Number of obs = 13275
Group variable (id): id	Number of groups = 1875
Time variable (t): year	Obs per group: min = 1 avg = 7.1 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.816875	.0040321	202.59	0.000	.8089722 .8247779
k	.0753388	.002193	34.35	0.000	.0710405 .0796371
year	-.0127015	.0157251	-0.81	0.419	-.0435221 .018119
nace2	-.0807473	.0050613	-15.95	0.000	-.0906674 -.0708273
zakazky_last3_dummy	.1338246	.0061073	21.91	0.000	.1218546 .1457946

Wald test on Constant returns to scale: Chi2 = 137.96
p = (0.00)

```
1753 . predict omega, omega
```

```
1754 . tabulate year, summarize(omega)
```

Year	Summary of omega		
	Mean	Std. dev.	Freq.
2006	31.574533	.13619428	531
2007	31.589338	.18694792	605
2008	31.592115	.1631254	685
2009	31.595856	.17012174	757
2010	31.600673	.16613609	812
2011	31.60902	.15762922	761
2012	31.618493	.16768866	720
2013	31.618434	.15548227	369
2014	31.621949	.13208926	542
2015	31.637537	.13695428	1,039
2016	31.646988	.13855328	1,012
2017	31.655985	.14634045	1,123
2018	31.664497	.13730243	1,136
2019	31.672575	.13934319	1,147
2020	31.672161	.11923037	1,135
2021	31.683924	.13106132	901
Total	31.635734	.15119213	13,275

1755 .
 1756 .
 1757 .
 1758 . xi: xtreg lmu_1_pp omega zakazky_last3_dummy cogs k i.year*i.nace2, cluster(id) fe i(id)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 note: _Inace2_42 omitted because of collinearity.
 note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression Number of obs = 13,011
 Group variable: id Number of groups = 1,865

R-squared:
 Within = 0.8460 Obs per group:
 Between = 0.5554 min = 1
 Overall = 0.5440 avg = 7.0
 max = 16

F(49, 1864) = 220.17
 corr(u_i, Xb) = -0.0256 Prob > F = 0.0000

(Std. err. adjusted for 1,865 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
omega	.8974006	.0426566	21.04	0.000	.8137409 .9810602
zakazky_last3_dummy	.2751105	.0042263	65.09	0.000	.2668217 .2833992
cogs	-.1582197	.0066708	-23.72	0.000	-.1713026 -.1451368
k	.0628453	.0023321	26.95	0.000	.0582715 .0674191
_Iyear_2007	-.0097659	.0038356	-2.55	0.011	-.0172884 -.0022433
_Iyear_2008	-.0173029	.004413	-3.92	0.000	-.0259577 -.008648
_Iyear_2009	-.0266353	.0045992	-5.79	0.000	-.0356555 -.0176152
_Iyear_2010	-.0396799	.004748	-8.31	0.000	-.0490445 -.0303153
_Iyear_2011	-.0542172	.0051068	-10.62	0.000	-.0642328 -.0442016
_Iyear_2012	-.0661125	.0055308	-11.95	0.000	-.0769597 -.0552652
_Iyear_2013	-.0783582	.0059317	-13.21	0.000	-.0899917 -.0667247
_Iyear_2014	-.0904863	.0059295	-15.26	0.000	-.1021154 -.0788572
_Iyear_2015	-.1028536	.006083	-16.91	0.000	-.1147838 -.0909234
_Iyear_2016	-.1189222	.0063677	-18.68	0.000	-.1314107 -.1064338
_Iyear_2017	-.1369741	.0061976	-22.10	0.000	-.149129 -.1248192
_Iyear_2018	-.1519801	.0064304	-23.63	0.000	-.1645917 -.1393685
_Iyear_2019	-.1649047	.0071915	-22.93	0.000	-.1790089 -.1508005
_Iyear_2020	-.1795568	.0074593	-24.07	0.000	-.1941863 -.1649273
_Iyear_2021	-.1948741	.007689	-25.34	0.000	-.209954 -.1797941
_Inace2_42	0	(omitted)			
_Inace2_43	0	(omitted)			
_IyeaXnac_2007_42	-.0064289	.0179948	-0.36	0.721	-.0417209 .0288632
_IyeaXnac_2007_43	.0105598	.0056593	1.87	0.062	-.0005395 .0216591
_IyeaXnac_2008_42	.0073987	.0182045	0.41	0.684	-.0283047 .0431021
_IyeaXnac_2008_43	.0198994	.0066308	3.00	0.003	.0068948 .0329041
_IyeaXnac_2009_42	-.0057219	.0204902	-0.28	0.780	-.0459081 .0344643
_IyeaXnac_2009_43	.0315839	.0071798	4.40	0.000	.0175026 .0456652
_IyeaXnac_2010_42	-.0283305	.020729	-1.37	0.172	-.0689851 .0123241
_IyeaXnac_2010_43	.0416593	.0066778	6.24	0.000	.0285626 .054756
_IyeaXnac_2011_42	-.0183184	.0217122	-0.84	0.399	-.0609013 .0242644
_IyeaXnac_2011_43	.0582358	.0071534	8.14	0.000	.0442064 .0722653
_IyeaXnac_2012_42	-.037494	.0214071	-1.75	0.080	-.0794783 .0044903
_IyeaXnac_2012_43	.0714659	.0075211	9.50	0.000	.0567153 .0862166
_IyeaXnac_2013_42	-.0540594	.0323152	-1.67	0.095	-.1174371 .0093183
_IyeaXnac_2013_43	.0734611	.0087753	8.37	0.000	.0562506 .0906715
_IyeaXnac_2014_42	-.0552958	.0235018	-2.35	0.019	-.1013883 -.0092033
_IyeaXnac_2014_43	.0744226	.0082524	9.02	0.000	.0582377 .0906075
_IyeaXnac_2015_42	-.0451173	.0223506	-2.02	0.044	-.0889521 -.0012824
_IyeaXnac_2015_43	.0773481	.0079421	9.74	0.000	.0617718 .0929245
_IyeaXnac_2016_42	-.0580781	.0212818	-2.73	0.006	-.0998167 -.0163394
_IyeaXnac_2016_43	.0832541	.0083349	9.99	0.000	.0669073 .0996009
_IyeaXnac_2017_42	-.0619697	.0214686	-2.89	0.004	-.1040747 -.0198647
_IyeaXnac_2017_43	.0835125	.0093709	8.91	0.000	.0651339 .1018912
_IyeaXnac_2018_42	-.0618319	.0215684	-2.87	0.004	-.1041328 -.0195311
_IyeaXnac_2018_43	.0857076	.008721	9.83	0.000	.0686038 .1028115
_IyeaXnac_2019_42	-.0705309	.022812	-3.09	0.002	-.1152706 -.0257912
_IyeaXnac_2019_43	.0869147	.0088362	9.84	0.000	.0695848 .1042445

_IyeaXnac_2020_42	-.075243	.0244816	-3.07	0.002	-.1232571	-.0272288
_IyeaXnac_2020_43	.093924	.0093321	10.06	0.000	.0756215	.1122265
_IyeaXnac_2021_42	-.0663499	.023909	-2.78	0.006	-.1132411	-.0194586
_IyeaXnac_2021_43	.1020228	.0098751	10.33	0.000	.0826553	.1213903
_cons	-26.12665	1.378324	-18.96	0.000	-28.82987	-23.42343
sigma_u	.15672816					
sigma_e	.05333695					
rho	.89620646 (fraction of variance due to u_i)					

```

1759 .           //pooled OLS
1760 . eststo clear

1761 . foreach j in OLS 1 1_pp {
2.
1762 .         *dummy
1763 .         eststo: xi: qui reg lmu_`j' omega zakazky_last3_dummy cogs k i.year*i.nace2, cluster(id)
3.
1764 .           *share
1765 .         eststo: xi: qui reg lmu_`j' omega zakazky_last3_share cogs k i.year*i.nace2, cluster(id)
4.
1766 .
1767 . }
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est1 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est2 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est3 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est4 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est5 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est6 stored)

1768 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.10)
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_dummy zakazky_last3_share omega )

```

	(1)	(2)	(3)	(4)	(5)	(6)
omega	lmu_OLS 0.61***	lmu_OLS 0.59***	lmu_1 0.92***	lmu_1 0.91***	lmu_1_pp 0.90***	lmu_1_pp 0.88***
zakazky_last3_dummy	0.44,0.79	0.42,0.77	0.84,1.00	0.82,1.00	0.81,1.00	0.76,0.99
zakazky_last3_share	0.13***		0.13***		0.28***	
N	13046	13046	13011	13011	13011	13011

```

1769 .
1770 . //fixed effects
1771 . eststo clear

1772 . foreach j in OLS 1 1_pp {
    2.
1773 .         *dummy
1774 .         eststo: xi: qui xtreg lmu_`j' omega zakazky_last3_dummy cogs k i.year*i.nace2, cluster(id) fe i(id)
    3.
1775 .         *share
1776 .         eststo: xi: qui xtreg lmu_`j' omega zakazky_last3_share cogs k i.year*i.nace2, cluster(id) fe i(id)
    4.
1777 .
1778 . }
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est1 stored)
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est2 stored)
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est3 stored)
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est4 stored)
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est5 stored)
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est6 stored)

1779 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.10)
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_dummy zakazky_last3_share omega )

```

	(1)	(2)	(3)	(4)	(5)	(6)
omega	lmu_OLS 0.26*** 0.080 0.10,0.42	lmu_OLS 0.27*** 0.079 0.12,0.43	lmu_1 0.98*** 0.032 0.91,1.04	lmu_1 1.03*** 0.036 0.96,1.10	lmu_1_pp 0.90*** 0.043 0.81,0.98	lmu_1_pp 1.01*** 0.051 0.91,1.11
zakazky_last3_dummy	 0.04*** 0.011 0.02,0.06	 0.13*** 0.003 0.12,0.13	 	 	 	
zakazky_last3_share	 	0.01 0.031 -0.05,0.07	 	0.03*** 0.007 0.02,0.04	 	0.03** 0.012 0.00,0.05
N	13046	13046	13011	13011	13011	13011

```

1780 .
1781 .
1782 . * with estimated productivity only
1783 .
1784 .

```

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```

1785 .                                //pooled OLS
1786 . eststo clear

1787 . foreach j in 1 1_pp {
2.
1788 .           *dummy
1789 .           eststo: xi: qui reg lmu_`j' omega cogs k i.year*i.nace2, cluster(id)
3.
1790 . }
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est1 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est2 stored)

1791 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.10)
>           label plain collabels(none) depvars numbers replace keep( omega )

(1)                      (2)
omega        lmu_1          lmu_1_pp
               0.92***       0.89***  

               0.048          0.059
               0.82,1.01      0.78,1.01
N             13011          13011

1792 .
1793 .           save "productivity_result", replace
(file productivity_result.dta not found)
file productivity_result.dta saved

1794 .
1795 .
1796 .
1797 .
1798 . *cost share, Wooldridge, translog
1799 . use "data_with_results", clear

1800 . *cost
1801 . gen costshare = COGS/(COGS+K)
(33,107 missing values generated)

1802 . sum costshare if zakazky.last3_dummy==0 d

```

costshare				
	Percentiles	Smallest		
1%	.0375599	0		
5%	.3046406	0		
10%	.4608577	0	Obs	7,098
25%	.6636912	0	Sum of wgt.	7,098
50%	.8325978		Mean	.767157
		Largest	Std. dev.	.2181265
75%	.9333661	1		
90%	.9762788	1	Variance	.0475792
95%	.9916916	1	Skewness	-1.377446
99%	1	1	Kurtosis	4.623002

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1803 . gen markup_costshare=costshare/cogss
(33,120 missing values generated)

1804 . sum markup_costshare,d

markup_costshare

	Percentiles	Smallest		
1%	.3348903	.0001338		
5%	.7384378	.0011248		
10%	.9107419	.0012692	Obs	13,457
25%	1.147524	.0021513	Sum of wgt.	13,457
50%	1.518657		Mean	2.37451
		Largest	Std. dev.	43.22934
75%	2.102226	106.2243		
90%	3.105824	110.2675	Variance	1868.776
95%	4.171881	227.272	Skewness	114.8916
99%	9.692117	5000.661	Kurtosis	13282.76

1805 . replace markup_costshare= . if markup_costshare<r(p1) | markup_costshare >r(p99)
(268 real changes made, 268 to missing)

1806 . sum markup_costshare,d

markup_costshare

	Percentiles	Smallest		
1%	.5058914	.3348903		
5%	.7779586	.3372608		
10%	.924886	.3378139	Obs	13,189
25%	1.153497	.33836	Sum of wgt.	13,189
50%	1.518657		Mean	1.812392
		Largest	Std. dev.	1.10116
75%	2.085683	9.627537		
90%	3.012164	9.631864	Variance	1.212552
95%	3.878976	9.656729	Skewness	2.646132
99%	6.537252	9.692117	Kurtosis	13.04001

1807 . /*
1808 . tabulate year, summarize(markup_costshare)

Year	Summary of markup_costshare		
	Mean	Std. dev.	Freq.
2006	1.8638171	1.0426356	531
2007	1.8871652	1.1099936	609
2008	1.8286705	1.0026309	688
2009	1.7953813	.98174516	761
2010	1.7598315	1.1027555	817
2011	1.7706703	1.0393547	766
2012	1.6887195	1.0043345	729
2013	1.6042674	.85468544	368
2014	1.6513616	.99802737	537
2015	1.795861	1.0683414	1,021
2016	1.752013	1.1028269	997
2017	1.8257843	1.1771216	1,105
2018	1.90955	1.1824167	1,116
2019	1.9284128	1.2348561	1,129
2020	1.8589869	1.08856	1,119
2021	1.8433558	1.2032514	896
Total	1.8123919	1.1011595	13,189

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1809 . tabulate nace2, summarize(markup_costshare)

nace2	Summary of markup_costshare		
	Mean	Std. dev.	Freq.
41	1.9266825	1.1390653	6,987
42	1.7137964	.89939063	1,062
43	1.6774035	1.0690792	5,140
Total	1.8123919	1.1011595	13,189

1810 . tabulate zakazky_last3_dummy, summarize(markup_costshare)

zakazky_la t3_dummy	Summary of markup_costshare		
	Mean	Std. dev.	Freq.
0	1.7583407	1.1763868	6,843
1	1.8706762	1.0106637	6,346
Total	1.8123919	1.1011595	13,189

1811 . gen lmu_cs = ln(markup_costshare)
(33,388 missing values generated)

1812 .

1813 . *Wooldridge

1814 . tabulate year, summarize(markup_wrdg_gocogs)

Year	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
2006	2.0068348	1.4047785	568
2007	2.0807322	1.4886894	655
2008	2.0097956	1.3556205	734
2009	2.0243423	1.2730308	812
2010	2.0680074	1.5442798	869
2011	2.0593331	1.4954457	908
2012	1.9627194	1.3597497	939
2013	1.9334781	1.2961665	958
2014	2.0012883	1.4192641	998
2015	2.0984965	1.5431208	1,049
2016	2.0857591	1.4898972	1,018
2017	2.1551392	1.6096251	1,138
2018	2.246279	1.594324	1,169
2019	2.2758981	1.6419499	1,165
2020	2.208886	1.4832397	1,194
2021	2.140825	1.4965377	1,106
Total	2.0969175	1.4859441	15,280

1815 . tabulate nace2, summarize(markup_wrdg_gocogs)

nace2	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
41	2.2298001	1.4734091	8,078
42	1.9780165	.93523145	1,265
43	1.9414491	1.5785934	5,937
Total	2.0969175	1.4859441	15,280

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1816 . tabulate zakazky_last3_dummy, summarize(markup_wrdg_gocogs)

zakazky_last3_dummy	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
0	2.0556171	1.6732069	8,048
1	2.1428779	1.2433715	7,232
Total	2.0969175	1.4859441	15,280

1817 . gen lmu_wrdg = ln(markup_wrdg_gocogs)
(31,297 missing values generated)

1818 .
1819 . *trans
1820 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
2006	1.7506682	.45311521	496
2007	1.7187991	.43164373	565
2008	1.7179977	.43993019	645
2009	1.7090304	.43321361	718
2010	1.6918719	.42544264	788
2011	1.6743082	.42648674	748
2012	1.6646585	.40945142	710
2013	1.6633953	.4115916	366
2014	1.6626978	.39657775	538
2015	1.6839045	.40441569	1,028
2016	1.6777262	.39804866	1,002
2017	1.6781969	.39169021	1,113
2018	1.6710976	.37912793	1,129
2019	1.6671336	.37355139	1,138
2020	1.6492425	.36432888	1,131
2021	1.6319036	.35761936	896
Total	1.6783321	.40182589	13,011

1821 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
41	1.9557158	.20349841	6,985
42	1.8399577	.36267797	1,051
43	1.2547355	.2082626	4,975
Total	1.6783321	.40182589	13,011

1822 . tabulate zakazky_last3_dummy, summarize(markup_dlw_gocogst)

zakazky_last3_dummy	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
0	1.5265239	.35425375	6,694
1	1.8392003	.38639002	6,317
Total	1.6783321	.40182589	13,011

1823 .

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1824 . tabulate year, summarize(markup_dlw_gocogst_pp)

Year	Summary of markup_dlw_gocogst_pp		
	Mean	Std. dev.	Freq.
2006	1.3351946	1.0439734	520
2007	1.2870457	1.0349043	588
2008	1.2455337	1.0372405	668
2009	1.2607606	1.0691635	736
2010	1.2424335	1.0730658	785
2011	1.250979	1.0595361	736
2012	1.2815457	1.089516	703
2013	1.2127693	1.0912277	363
2014	1.2315411	1.104501	534
2015	1.1705909	1.0822228	1,019
2016	1.140021	1.1032989	991
2017	1.1445628	1.1070788	1,102
2018	1.1080973	1.094763	1,121
2019	1.0968251	1.1000697	1,133
2020	1.0992006	1.0889148	1,125
2021	1.0682	1.0447072	887
Total	1.180442	1.0820044	13,011

1825 . tabulate nace2, summarize(markup_dlw_gocogst_pp)

nace2	Summary of markup_dlw_gocogst_pp		
	Mean	Std. dev.	Freq.
41	.96934601	1.1867812	6,964
42	1.655619	1.1310361	1,044
43	1.3751228	.81889524	5,003
Total	1.180442	1.0820044	13,011

1826 . tabulate zakazky_last3_dummy, summarize(markup_dlw_gocogst_pp)

zakazky_la t3_dummy	Summary of markup_dlw_gocogst_pp		
	Mean	Std. dev.	Freq.
0	1.5727993	.84248032	6,784
1	.75298873	1.1500584	6,227
Total		1.180442	1.0820044
13,011			

1827 .

1828 .

1829 . //pooled OLS

1830 . eststo clear

1831 . foreach j in cs wrdg 2_pp{
 2.
 1832 . *dummy
1833 . eststo: xi: qui reg lmu_`j' zakazky_last3_dummy cogs k i.year*i.nace2, cluster(id)
 3.
 1834 . *share
1835 . eststo: xi: qui reg lmu_`j' zakazky_last3_share cogs k i.year*i.nace2, cluster(id)
 4.
1836 .
1837 . }
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 (est1 stored)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 (est2 stored)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 (est3 stored)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)

```

i.nace2      _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#    (coded as above)
(est4 stored)
i.year       _Iyear_2006-2021   (naturally coded; _Iyear_2006 omitted)
i.nace2      _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#    (coded as above)
(est5 stored)
i.year       _Iyear_2006-2021   (naturally coded; _Iyear_2006 omitted)
i.nace2      _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#    (coded as above)
(est6 stored)

1838 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.10)
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_dummy zakazky_last3_share)



|                     | (1)                                     | (2)                           | (3)                                       | (4)                           | (5)                                          | (6)                              |
|---------------------|-----------------------------------------|-------------------------------|-------------------------------------------|-------------------------------|----------------------------------------------|----------------------------------|
| zakazky_last3_dummy | lmu_cs<br>0.15***<br>0.018<br>0.12,0.19 | lmu_cs                        | lmu_wrdg<br>0.13***<br>0.019<br>0.10,0.17 | lmu_wrdg                      | lmu_2_pp<br>-0.75***<br>0.076<br>-0.89,-0.60 | lmu_2_pp                         |
| zakazky_last3_share |                                         | 0.34***<br>0.036<br>0.27,0.41 |                                           | 0.31***<br>0.036<br>0.24,0.38 |                                              | -1.21***<br>0.161<br>-1.53,-0.90 |
| N                   | 13043                                   | 13043                         | 13046                                     | 13046                         | 10263                                        | 10263                            |


```

1839 .
1840 . //fixed effects
1841 . eststo clear

1842 . foreach j in cs wrdg 2 {
2.
1843 . *dummy
1844 . eststo: xi: qui xtreg lmu_`j' zakazky_last3_dummy cogs k i.year*i.nace2 , cluster(id) fe i(id)
3.
1845 . *share
1846 . eststo: xi: qui xtreg lmu_`j' zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
4.
1847 .
1848 . }
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
~~(est1 stored)~~
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
~~(est2 stored)~~
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
~~(est3 stored)~~
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
~~(est4 stored)~~
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
~~(est5 stored)~~
i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
~~(est6 stored)~~

```

1849 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N rho, fmt(%9.0g) labels("N" "rho")) starlevel(0)
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_dummy zakazky_last3_share)



|                     | (1)              | (2)               | (3)              | (4)               | (5)              | (6)              |
|---------------------|------------------|-------------------|------------------|-------------------|------------------|------------------|
|                     | lmu_cs           | lmu_cs            | lmu_wrdg         | lmu_wrdg          | lmu_2            | lmu_2            |
| zakazky_last3_dummy | <b>0.04***</b>   |                   | <b>0.04***</b>   |                   | <b>0.14***</b>   |                  |
|                     | 0.012            |                   | 0.011            |                   | 0.003            |                  |
|                     | <b>0.02,0.07</b> |                   | <b>0.02,0.07</b> |                   | <b>0.14,0.15</b> |                  |
| zakazky_last3_share |                  | 0.03              |                  | 0.01              |                  | 0.03***          |
|                     |                  | 0.033             |                  | 0.030             |                  | 0.008            |
|                     |                  | <b>-0.04,0.09</b> |                  | <b>-0.05,0.07</b> |                  | <b>0.02,0.05</b> |
| N                   | 13043            | 13043             | 13046            | 13046             | 13011            | 13011            |
| rho                 | .7461611         | .74707            | .7767986         | .7779312          | .9518586         | .938947          |

  

1850 .
1851 . *intensity revisited
1852 .
1853 .
1854 . //pooled OLS
1855 . eststo clear

1856 . foreach j in cs wrdg 2 2_pp {
    2.      eststo: xi: qui reg lmu_`j' zakazky_last3_share share2 cogs k i.year*i.nace2, cluster(id)
    3.      nlcom -_b[zakazky_last3_share]/(_b[share2]*2)
    4. }
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est1 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)



| lmu_cs         | Coefficient      | Std. err.                              | z           | P> z         | [95% conf. interval]           |
|----------------|------------------|----------------------------------------|-------------|--------------|--------------------------------|
| _nl_1          | <b>.7981865</b>  | <b>.0840763</b>                        | <b>9.49</b> | <b>0.000</b> | <b>.6334001</b> <b>.962973</b> |
| i.year         | _Iyear_2006-2021 | (naturally coded; _Iyear_2006 omitted) |             |              |                                |
| i.nace2        | _Inace2_41-43    | (naturally coded; _Inace2_41 omitted)  |             |              |                                |
| i.year*i.nace2 | _IyeaXnac_#_#    | (coded as above)                       |             |              |                                |

(est2 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)



| lmu_wrdg       | Coefficient      | Std. err.                              | z           | P> z         | [95% conf. interval]            |
|----------------|------------------|----------------------------------------|-------------|--------------|---------------------------------|
| _nl_1          | <b>.836232</b>   | <b>.1061712</b>                        | <b>7.88</b> | <b>0.000</b> | <b>.6281402</b> <b>1.044324</b> |
| i.year         | _Iyear_2006-2021 | (naturally coded; _Iyear_2006 omitted) |             |              |                                 |
| i.nace2        | _Inace2_41-43    | (naturally coded; _Inace2_41 omitted)  |             |              |                                 |
| i.year*i.nace2 | _IyeaXnac_#_#    | (coded as above)                       |             |              |                                 |

(est3 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)



| lmu_2          | Coefficient      | Std. err.                              | z            | P> z         | [95% conf. interval]            |
|----------------|------------------|----------------------------------------|--------------|--------------|---------------------------------|
| _nl_1          | <b>.6198997</b>  | <b>.0146737</b>                        | <b>42.25</b> | <b>0.000</b> | <b>.5911398</b> <b>.6486596</b> |
| i.year         | _Iyear_2006-2021 | (naturally coded; _Iyear_2006 omitted) |              |              |                                 |
| i.nace2        | _Inace2_41-43    | (naturally coded; _Inace2_41 omitted)  |              |              |                                 |
| i.year*i.nace2 | _IyeaXnac_#_#    | (coded as above)                       |              |              |                                 |

(est4 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

```

lmu_2_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.6001182	.029622	20.26	0.000	.5420601 .6581763

```

1857 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.10)
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_share share2)

(1)          (2)          (3)          (4)
zakazky_last3_share    lmu_cs      lmu_wrdg     lmu_2      lmu_2_pp
                      0.73***     0.64***     0.48***    -3.90*** 
                      0.103       0.101       0.023       0.446
                      0.53,0.93   0.44,0.84   0.44,0.53   -4.77,-3.02
share2              -0.46***    -0.38***    -0.39***    3.25*** 
                      0.103       0.100       0.023       0.449
                      -0.66,-0.25  -0.58,-0.18  -0.44,-0.34  2.36,4.13
N                  13043       13046       13011       10263

1858 .
1859 . //fixed effects
1860 . eststo clear

1861 . foreach j in cs wrdg 2 2_pp {
2.         eststo: xi: qui xtreg lmu_`j' zakazky_last3_share share2 cogs k i.year*i.nace2 , cluster(id) fe i(id)
3.         nlcom -_b[zakazky_last3_share]/(_b[share2]*2)
4.         gen sharestar_`j' = -_b[zakazky_last3_share]/(_b[share2]*2)
5.         nlcom sharestar_`j'*_b[zakazky_last3_share]+sharestar_`j'^2*_b[share2]
6.     }
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#    (coded as above)
(est1 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)


```

lmu_cs	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.552526	.092543	5.97	0.000	.3711451 .733907

_nl_1: sharestar_cs*_b[zakazky_last3_share]+sharestar_cs^2*_b[share2]

lmu_cs	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.0550542	.0239563	2.30	0.022	.0081008 .1020077

i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_# (coded as above)
(est2 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

lmu_wrdg	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.5087117	.0843691	6.03	0.000	.3433513 .6740721

_nl_1: sharestar_wrdg*_b[zakazky_last3_share]+sharestar_wrdg^2*_b[share2]

lmu_wrdg	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.0463149	.0213591	2.17	0.030	.0044518 .088178

i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 (est3 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

lmu_2	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.5434522	.0134703	40.34	0.000	.517051 .5698535

_nl_1: sharestar_2*_b[zakazky_last3_share]+sharestar_2^2*b[share2]

lmu_2	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.0782308	.0067278	11.63	0.000	.0650446 .091417

i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 (est4 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

lmu_2_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.6096541	.0270834	22.51	0.000	.5565717 .6627365

_nl_1: sharestar_2_pp*b[zakazky_last3_share]+sharestar_2_pp^2*b[share2]

lmu_2_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	-.7550606	.1105481	-6.83	0.000	-.971731 -.5383902

1862 .

1863 . noi esttab , ///
 > cells(b(star fmt(%9.3f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.1
 > label plain collabels(none) depvars numbers replace keep(zakazky_last3_share share2)

	(1)	(2)	(3)	(4)
zakazky_last3_share	lmu_cs 0.199*** 0.072 0.06,0.34	lmu_wrdg 0.182*** 0.067 0.05,0.31	lmu_2 0.288*** 0.022 0.25,0.33	lmu_2_pp -2.477*** 0.365 -3.19,-1.76
share2	-0.180*** 0.065 -0.31,-0.05	-0.179*** 0.060 -0.30,-0.06	-0.265*** 0.019 -0.30,-0.23	2.031*** 0.327 1.39,2.67
N	13043	13046	13011	10263

```

1864 .          */
1865 .
1866 . save "alternative_result", replace
  (file alternative_result.dta not found)
  file alternative_result.dta saved

1867 .
1868 .
1869 .
1870 . //A
1871 .
1872 . /* plot the graph */
1873 . *sector-market
1874 . tw (kdensity lmu_1_pp if zakazky_last3_dummy==0 , lw(medthick) lp(1) lc(forest_green)) (kdensity lmu_1 if zakazky_
>           /* (kdensity lmu_1 if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(maroon)) (kdensity lmu_1_pp if zakazky_
>           /* , ytitle("Density") xtitle("Logged markup") legend(order( 1 "lmu_pp0" 2 "lmu_0" 3 "lmu_1" 4 "lmu_pp1"))

1875 .
1876 .
1877 .
1878 . tw (kdensity lmu_1 , lw(medthick) lp(_) lc(ebblue)) (kdensity lmu_1_pp , lw(medthick) lp(-) lc(maroon)) /*
>           /* , ytitle("Density") xtitle("Logged markup") legend(order( 1 "lmu_1" 2 "lmu_1_pp") cols(4))

1879 .
1880 .
1881 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==0 , lw(medthick) lp(_) lc(forest_green)) (kdensity markup_
>           /* (kdensity markup_dlw_gocogs if zakazky_last3_dummy==1, lw(medthick) lp(1) lc(maroon))(kdensity markup_
>           /*/if(markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3)&(markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3)
> ) cols(4))

1882 .
1883 . summarize(markup_dlw_gocogs_pp) if zakazky_last3_dummy==1 & markup_dlw_gocogs_pp>3,d

    markup_dlw_gocogs_pp
    -----
    Percentiles      Smallest
    1%   3.002581   3.002581
    5%   3.008286   3.007161
    10%  3.021461   3.007769   Obs          90
    25%  3.057268   3.008015   Sum of wgt.   90

    50%   3.166152   Mean        3.164804
          Largest      Std. dev.   .1082926
    75%   3.267327   3.322357
    90%   3.305266   3.327277   Variance     .0117273
    95%   3.320496   3.334852   Skewness     -.0218416
    99%   3.341264   3.341264   Kurtosis     1.550302

1884 . summarize(markup_dlw_gocogs_pp) if zakazky_last3_dummy ==0& markup_dlw_gocogs_pp>3,d

    markup_dlw_gocogs_pp
    -----
    Percentiles      Smallest
    1%   3.002102   3.001135
    5%   3.017628   3.002102
    10%  3.044033   3.00677   Obs          173
    25%  3.13752    3.007467  Sum of wgt.   173

    50%   3.549503   Mean        3.741761
          Largest      Std. dev.   .7022242
    75%   4.178893   5.276104
    90%   5.016493   5.278455   Variance     .4931188
    95%   5.141528   5.29425   Skewness     .8539622
    99%   5.29425    5.342595  Kurtosis     2.476425

```

1885 .
 1886 . summarize(markup_dlw_gocogs) if zakazky_last3_dummy==1 & markup_dlw_gocogs>3,d

markup_dlw_gocogs

	Percentiles	Smallest		
1%	3.002292	3.002292		
5%	3.015664	3.002681		
10%	3.032203	3.004309	Obs	83
25%	3.063195	3.006744	Sum of wgt.	83
50%	3.212574		Mean	3.362031
		Largest	Std. dev.	.3632364
75%	3.603179	4.21174	Variance	.1319407
90%	3.883524	4.329019	Skewness	1.154612
95%	4.19831	4.329249	Kurtosis	3.497054
99%	4.404799	4.404799		

1887 . summarize(markup_dlw_gocogs) if zakazky_last3_dummy ==0 & markup_dlw_gocogs>3,d

markup_dlw_gocogs

	Percentiles	Smallest		
1%	3.004789	3.003059		
5%	3.038962	3.004789		
10%	3.083962	3.009073	Obs	157
25%	3.181745	3.021231	Sum of wgt.	157
50%	3.421567		Mean	3.518135
		Largest	Std. dev.	.3800903
75%	3.812912	4.267927	Variance	.1444686
90%	4.129266	4.284173	Skewness	.5150399
95%	4.22753	4.321457	Kurtosis	2.059973
99%	4.321457	4.363529		

1888 .
 1889 .
 1890 .
 1891 .
 1892 . *diagnostics
 1893 .
 1894 . use "data_with_markups", clear

1895 .
 1896 .
 1897 . *OLS
 1898 .
 1899 . xi: reg lmu_1 c.zakazky_last3_share##c.zakazky_last3_share cogs k i.year*i.nace2
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)

Source	SS	df	MS	Number of obs	=	13,011
Model	417.286071	51	8.18207982	F(51, 12959)	=	520.57
Residual	203.684012	12,959	.015717572	Prob > F	=	0.0000
				R-squared	=	0.6720
				Adj R-squared	=	0.6707
Total	620.970083	13,010	.047730214	Root MSE	=	.12537

	lmu_1	Coefficient	Std. err.	t	P> t	[95% conf. interval]
	zakazky_last3_share	.4433267	.0148181	29.92	0.000	.4142812 .4723723
c.zakazky_last3_share#c.zakazky_last3_share		-.3438767	.0164781	-20.87	0.000	-.3761761 -.3115773
	cogs	-.1287769	.0011862	-108.56	0.000	-.1311021 -.1264518
	k	.0703311	.0008065	87.20	0.000	.0687502 .071912
	_Iyear_2007	-.010592	.010271	-1.03	0.302	-.0307246 .0095407
	_Iyear_2008	-.0153414	.0099898	-1.54	0.125	-.0349229 .0042402
	_Iyear_2009	-.0260802	.0098067	-2.66	0.008	-.0453028 -.0068577
	_Iyear_2010	-.039046	.0096851	-4.03	0.000	-.0580303 -.0200618
	_Iyear_2011	-.0469215	.0098347	-4.77	0.000	-.0661989 -.027644

	_Iyear_2012	-.0529351	.0099619	-5.31	0.000	-.0724618	-.0334085
	_Iyear_2013	-.0510881	.0116472	-4.39	0.000	-.0739183	-.0282578
	_Iyear_2014	-.0600394	.010552	-5.69	0.000	-.080723	-.0393559
	_Iyear_2015	-.0523791	.0092487	-5.66	0.000	-.0705079	-.0342502
	_Iyear_2016	-.0507283	.0093282	-5.44	0.000	-.069013	-.0324436
	_Iyear_2017	-.0589285	.0091643	-6.43	0.000	-.0768918	-.0409651
	_Iyear_2018	-.0679863	.0091484	-7.43	0.000	-.0859184	-.0500541
	_Iyear_2019	-.0688019	.0091311	-7.53	0.000	-.0867002	-.0509036
	_Iyear_2020	-.0861954	.0091922	-9.38	0.000	-.1042134	-.0681774
	_Iyear_2021	-.0950797	.0095723	-9.93	0.000	-.1138427	-.0763166
	_Inace2_42	.1306727	.0186512	7.01	0.000	.0941137	.1672318
	_Inace2_43	.3082596	.0123442	-24.97	0.000	-.3324561	-.2840632
	_IyeaXnac_2007_42	-.041199	.0259318	-1.59	0.112	-.0920291	.009631
	_IyeaXnac_2007_43	.0165245	.0168536	0.98	0.327	-.0165109	.04956
	_IyeaXnac_2008_42	-.0240965	.0255523	-0.94	0.346	-.0741828	.0259899
	_IyeaXnac_2008_43	.01771	.0162258	1.09	0.275	-.014095	.0495149
	_IyeaXnac_2009_42	-.014991	.0246773	-0.61	0.544	-.0633622	.0333801
	_IyeaXnac_2009_43	.0308327	.0158598	1.94	0.052	-.0002547	.0619202
	_IyeaXnac_2010_42	-.0586644	.0243202	-2.41	0.016	-.1063355	-.0109933
	_IyeaXnac_2010_43	.0459999	.0156406	2.94	0.003	.0153419	.0766578
	_IyeaXnac_2011_42	-.0272364	.0249465	-1.09	0.275	-.0761351	.0216623
	_IyeaXnac_2011_43	.0694061	.0157656	4.40	0.000	.0385032	.100309
	_IyeaXnac_2012_42	-.0369514	.0249257	-1.48	0.138	-.0858095	.0119068
	_IyeaXnac_2012_43	.0772038	.0159356	4.84	0.000	.0459676	.1084399
	_IyeaXnac_2013_42	-.0419709	.0337739	-1.24	0.214	-.1081727	.0242308
	_IyeaXnac_2013_43	.0814361	.0184629	4.41	0.000	.045246	.1176261
	_IyeaXnac_2014_42	-.0759141	.0289534	-2.62	0.009	-.132667	-.0191612
	_IyeaXnac_2014_43	.0974259	.0167829	5.81	0.000	.0645289	.1303228
	_IyeaXnac_2015_42	-.0927293	.0238324	-3.89	0.000	-.1394444	-.0460143
	_IyeaXnac_2015_43	.0945018	.0148686	6.36	0.000	.0653572	.1236464
	_IyeaXnac_2016_42	-.1154594	.0239533	-4.82	0.000	-.1624113	-.0685074
	_IyeaXnac_2016_43	.0954932	.0149221	6.40	0.000	.0662436	.1247427
	_IyeaXnac_2017_42	-.1145846	.0237421	-4.83	0.000	-.1611227	-.0680465
	_IyeaXnac_2017_43	.1068646	.0146763	7.28	0.000	.0780968	.1356323
	_IyeaXnac_2018_42	-.1267091	.0238346	-5.32	0.000	-.1734284	-.0799899
	_IyeaXnac_2018_43	.1217183	.0146297	8.32	0.000	.0930418	.1503947
	_IyeaXnac_2019_42	-.1296487	.0236356	-5.49	0.000	-.1759779	-.0833195
	_IyeaXnac_2019_43	.1163067	.014622	7.95	0.000	.0876455	.1449679
	_IyeaXnac_2020_42	-.118374	.0237972	-4.97	0.000	-.16502	-.0717281
	_IyeaXnac_2020_43	.1388278	.0146172	9.50	0.000	.1101759	.1674796
	_IyeaXnac_2021_42	-.0900009	.0254603	-3.53	0.000	-.1399068	-.040095
	_IyeaXnac_2021_43	.1551956	.0151165	10.27	0.000	.1255651	.1848261
	_cons	1.795961	.0177894	100.96	0.000	1.761092	1.830831

```
1900 . predict resid, resid
(33,566 missing values generated)
```

```
1901 . hist resid
(bin=41, start=-.39724979, width=.04694677)
```

```
1902 . kdensity resid, normal
```

```
1903 . pnorm resid
```

```
1904 . qnorm resid
```

```
1905 .
```

```
1906 . xi: reg lmu_1_pp zakazky_last3_dummy cogs k i.year*i.nace2
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
```

Source	SS	df	MS	Number of obs	=	13,011
				F(50, 12960)	=	676.61
Model	610.400828	50	12.2080166	Prob > F	=	0.0000
Residual	233.837518	12,960	.018043018	R-squared	=	0.7230
				Adj R-squared	=	0.7220
Total	844.238346	13,010	.064891495	Root MSE	=	.13432

lmu_1_pp	Coefficient	Std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2750915	.002682	102.57	0.000	.2698345 .2803486
cogs	-.1346578	.0012736	-105.73	0.000	-.1371541 -.1321614
k	.0659338	.0008662	76.12	0.000	.064236 .0676317
_Iyear_2007	-.0063955	.0109933	-0.58	0.561	-.0279439 .0151529
_Iyear_2008	-.0088115	.0106943	-0.82	0.410	-.0297738 .0121508
_Iyear_2009	-.0124103	.0104854	-1.18	0.237	-.0329632 .0081426
_Iyear_2010	-.0235071	.0103531	-2.27	0.023	-.0438006 -.0032135
_Iyear_2011	-.0306391	.0105133	-2.91	0.004	-.0512467 -.0100316
_Iyear_2012	-.0345637	.0106371	-3.25	0.001	-.055414 -.0137134
_Iyear_2013	-.047921	.0125139	-3.83	0.000	-.0724501 -.0233919
_Iyear_2014	-.0522347	.0113075	-4.62	0.000	-.0743991 -.0300704
_Iyear_2015	-.0484105	.0098977	-4.89	0.000	-.0678115 -.0290094
_Iyear_2016	-.0501053	.009979	-5.02	0.000	-.0696656 -.030545
_Iyear_2017	-.061389	.0098003	-6.26	0.000	-.0805991 -.0421789
_Iyear_2018	-.072429	.0097842	-7.40	0.000	-.0916075 -.0532505
_Iyear_2019	-.0748866	.0097516	-7.68	0.000	-.0940013 -.055772
_Iyear_2020	-.0908935	.0098089	-9.27	0.000	-.1101205 -.0716666
_Iyear_2021	-.0951816	.0102131	-9.32	0.000	-.1152007 -.0751625
_Inace2_42	.1428477	.0199772	7.15	0.000	.1036895 .1820059
_Inace2_43	-.2856934	.0131967	-21.65	0.000	-.3115609 -.2598259
_IyeaXnac_2007_42	-.04918	.0278792	-1.76	0.078	-.1038273 .0054673
_IyeaXnac_2007_43	.0053703	.017926	0.30	0.765	-.0297673 .0405079
_IyeaXnac_2008_42	-.0127588	.0273727	-0.47	0.641	-.0664133 .0408957
_IyeaXnac_2008_43	.0148116	.0171935	0.86	0.389	-.0188902 .0485133
_IyeaXnac_2009_42	-.003196	.0264923	-0.12	0.904	-.0551248 .0487328
_IyeaXnac_2009_43	.0191125	.0168601	1.13	0.257	-.0139358 .0521608
_IyeaXnac_2010_42	-.042975	.0259873	-1.65	0.098	-.093914 .0079639
_IyeaXnac_2010_43	.0415662	.0166385	2.50	0.012	.0089523 .07418
_IyeaXnac_2011_42	-.0207616	.0267929	-0.77	0.438	-.0732796 .0317564
_IyeaXnac_2011_43	.0602326	.0168258	3.58	0.000	.0272516 .0932136
_IyeaXnac_2012_42	-.0423979	.0267635	-1.58	0.113	-.0948584 .0100626
_IyeaXnac_2012_43	.0698938	.01702	4.11	0.000	.0365322 .1032555
_IyeaXnac_2013_42	-.0248942	.0357026	-0.70	0.486	-.0948765 .0450882
_IyeaXnac_2013_43	.0879671	.0197462	4.45	0.000	.0492616 .1266725
_IyeaXnac_2014_42	-.0664138	.031023	-2.14	0.032	-.1272235 -.0056042
_IyeaXnac_2014_43	.0924992	.0179465	5.15	0.000	.0573214 .1276769
_IyeaXnac_2015_42	-.0713252	.0255222	-2.79	0.005	-.1213525 -.021298
_IyeaXnac_2015_43	.0894775	.0159	5.63	0.000	.058311 .1206439
_IyeaXnac_2016_42	-.0920478	.0257121	-3.58	0.000	-.1424473 -.0416483
_IyeaXnac_2016_43	.0945535	.0159398	5.93	0.000	.0633091 .1257979
_IyeaXnac_2017_42	-.0961135	.0254793	-3.77	0.000	-.1460568 -.0461703
_IyeaXnac_2017_43	.1033313	.0156931	6.58	0.000	.0725706 .1340921
_IyeaXnac_2018_42	-.0955543	.0255264	-3.74	0.000	-.1455898 -.0455189
_IyeaXnac_2018_43	.1164095	.0156657	7.43	0.000	.0857024 .1471167
_IyeaXnac_2019_42	-.0900939	.0253053	-3.56	0.000	-.1396959 -.0404918
_IyeaXnac_2019_43	.1031793	.0156618	6.59	0.000	.0724799 .1338788
_IyeaXnac_2020_42	-.087356	.0255328	-3.42	0.001	-.1374041 -.0373079
_IyeaXnac_2020_43	.127686	.015665	8.15	0.000	.0969803 .1583917
_IyeaXnac_2021_42	-.0796109	.0273614	-2.91	0.004	-.1332434 -.0259785
_IyeaXnac_2021_43	.1439998	.0162171	8.88	0.000	.1122118 .1757877
_cons	1.844142	.0191461	96.32	0.000	1.806613 1.881671

```

1907 . predict resid_pp, resid
(33,566 missing values generated)

1908 . hist resid
(bin=41, start=-.39724979, width=.04694677)

```

```

1909 . kdensity resid_pp, normal
1910 . pnorm resid_pp
1911 . qnorm resid_pp
1912 .
1913 . *FE
1914 . xtset id year

Panel variable: id (unbalanced)
Time variable: year, 2006 to 2021, but with gaps
Delta: 1 year

1915 . xi: xtreg lmu_1 zakazky_last3_dummy cogs k i.year*i.nace2 , fe
      i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
      i.nace2         _Inace2_41-43     (naturally coded; _Inace2_41 omitted)
      i.year*i.nace2 _IyeaXnac_#_#    (coded as above)
note: _Inace2_42 omitted because of collinearity.
note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression           Number of obs     =   13,011
Group variable: id                         Number of groups  =      1,859

R-squared:
Within = 0.5930                           Obs per group:
Between = 0.2754                          min =           1
Overall = 0.2311                          avg =          7.0
                                              max =        16

F(48, 11104) = 337.00
corr(u_i, Xb) = -0.2765
Prob > F = 0.0000

```

lmu_1	Coefficient	Std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.1424266	.0021189	67.22	0.000	.1382731 .14658
cogs	-.1629615	.0015718	-103.68	0.000	-.1660425 -.1598805
k	.050619	.0008643	58.56	0.000	.0489247 .0523132
_Iyear_2007	-.0001061	.005458	-0.02	0.984	-.0108047 .0105925
_Iyear_2008	.001266	.0053376	0.24	0.813	-.0091966 .0117285
_Iyear_2009	-.0113444	.0052618	-2.16	0.031	-.0216585 -.0010302
_Iyear_2010	-.0179947	.0052181	-3.45	0.001	-.0282231 -.0077663
_Iyear_2011	-.0263641	.0053191	-4.96	0.000	-.0367905 -.0159377
_Iyear_2012	-.0328942	.0053967	-6.10	0.000	-.0434727 -.0223158
_Iyear_2013	-.0396084	.0063814	-6.21	0.000	-.0521172 -.0270996
_Iyear_2014	-.0466971	.0057895	-8.07	0.000	-.0588456 -.0353487
_Iyear_2015	-.047372	.0050744	-9.34	0.000	-.0573188 -.0374252
_Iyear_2016	-.0541603	.0051553	-10.51	0.000	-.0642655 -.0440551
_Iyear_2017	-.0574883	.0050824	-11.31	0.000	-.0674508 -.0475259
_Iyear_2018	-.063291	.0050908	-12.43	0.000	-.0732698 -.0533121
_Iyear_2019	-.0651984	.005102	-12.78	0.000	-.0751991 -.0551976
_Iyear_2020	-.0796691	.005152	-15.46	0.000	-.089768 -.0695702
_Iyear_2021	-.0816686	.0054423	-15.01	0.000	-.0923365 -.0710007
_Inace2_42	0	(omitted)			
_Inace2_43	0	(omitted)			
_IyeaXnac_2007_42	-.0061148	.0137214	-0.45	0.656	-.0330111 .0207816
_IyeaXnac_2007_43	-.0010802	.0090191	-0.12	0.905	-.0187594 .0165989
_IyeaXnac_2008_42	.0068862	.0135763	0.51	0.612	-.0197257 .0334982
_IyeaXnac_2008_43	-.0015364	.0087272	-0.18	0.860	-.0186433 .0155705
_IyeaXnac_2009_42	.011031	.0131605	0.84	0.402	-.014766 .0368279
_IyeaXnac_2009_43	.0172103	.008543	2.01	0.044	.0004645 .0339561
_IyeaXnac_2010_42	-.0124156	.0129913	-0.96	0.339	-.0378809 .0130497
_IyeaXnac_2010_43	.0268283	.0084577	3.17	0.002	.0102498 .0434069
_IyeaXnac_2011_42	.0015967	.0133576	0.12	0.905	-.0245866 .0277801
_IyeaXnac_2011_43	.0373968	.008575	4.36	0.000	.0205883 .0542053
_IyeaXnac_2012_42	-.0074732	.0133569	-0.56	0.576	-.0336551 .0187088
_IyeaXnac_2012_43	.0447769	.008687	5.15	0.000	.0277488 .0618051
_IyeaXnac_2013_42	-.0187403	.0183029	-1.02	0.306	-.0546172 .0171366
_IyeaXnac_2013_43	.0469675	.0101519	4.63	0.000	.0270679 .0668671
_IyeaXnac_2014_42	-.0250199	.0156748	-1.60	0.110	-.0557454 .0057055
_IyeaXnac_2014_43	.0472106	.0092361	5.11	0.000	.0291062 .0653151
_IyeaXnac_2015_42	-.0327659	.0128292	-2.55	0.011	-.0579134 -.0076185
_IyeaXnac_2015_43	.0478059	.008139	5.87	0.000	.031852 .0637598

_IyeaXnac_2016_42	- .0537985	.0129457	-4.16	0.000	- .0791744	- .0284227
_IyeaXnac_2016_43	.0558318	.0082272	6.79	0.000	.039705	.0719587
_IyeaXnac_2017_42	- .0591129	.0128999	-4.58	0.000	- .0843989	- .0338268
_IyeaXnac_2017_43	.0597884	.0081466	7.34	0.000	.0438197	.0757571
_IyeaXnac_2018_42	- .0650308	.0129006	-5.04	0.000	- .0903182	- .0397434
_IyeaXnac_2018_43	.0667334	.0081296	8.21	0.000	.0507979	.0826689
_IyeaXnac_2019_42	- .0760756	.0128032	-5.94	0.000	- .1011722	- .050979
_IyeaXnac_2019_43	.0654737	.0081477	8.04	0.000	.0495027	.0814446
_IyeaXnac_2020_42	- .0660925	.0129385	-5.11	0.000	- .0914542	- .0407308
_IyeaXnac_2020_43	.0769415	.0081831	9.40	0.000	.0609012	.0929818
_IyeaXnac_2021_42	- .0539063	.0139171	-3.87	0.000	- .0811863	- .0266263
_IyeaXnac_2021_43	.0912697	.0086041	10.61	0.000	.0744041	.1081352
cons	2.551147	.0252962	100.85	0.000	2.501562	2.600732
sigma_u	.18259808					
sigma_e	.06578582					
rho	.88511299	(fraction of variance due to u_i)				

F test that all u_i=0: F(1858, 11104) = 18.09 Prob > F = 0.0000

1916 . estimates store fe

```
1917 . xi: xtreg lmu_1 zakazky_last3_dummy cogs k i.year*i.nace2 , re
    i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
    i.nace2         _Inace2_41-43       (naturally coded; _Inace2_41 omitted)
    i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
```

Random-effects GLS regression		Number of obs = 13,011
Group variable: id		Number of groups = 1,859
R-squared:		
Within = 0.5909	Obs per group:	min = 1
Between = 0.6857		avg = 7.0
Overall = 0.6596		max = 16
Wald chi2(50) = 20247.12		
Prob > chi2 = 0.0000		
corr(u_i, X) = 0 (assumed)		

lmu_1	Coefficient	Std. err.	z	P> z	[95% conf. interval]
zakazky_last3_dummy	.1421186	.0020476	69.41	0.000	.1381054
cogs	-.1582223	.0013741	-115.15	0.000	-.1609154
k	.054975	.0008034	68.43	0.000	.0534003
_Iyear_2007	-.001368	.0055203	-0.25	0.804	-.0121876
_Iyear_2008	-.0008781	.0053951	-0.16	0.871	-.0114523
_Iyear_2009	-.0138236	.0053157	-2.60	0.009	-.0242422
_Iyear_2010	-.0208712	.0052672	-3.96	0.000	-.0311948
_Iyear_2011	-.0292838	.005369	-5.45	0.000	-.0398068
_Iyear_2012	-.0356007	.0054475	-6.54	0.000	-.0462776
_Iyear_2013	-.0419857	.0064404	-6.52	0.000	-.0546088
_Iyear_2014	-.0492631	.0058384	-8.44	0.000	-.060706
_Iyear_2015	-.0502395	.005111	-9.83	0.000	-.0602569
_Iyear_2016	-.0569512	.0051877	-10.98	0.000	-.0671188
_Iyear_2017	-.0612469	.005111	-11.98	0.000	-.0712643
_Iyear_2018	-.0679237	.0051152	-13.28	0.000	-.0779492
_Iyear_2019	-.069978	.0051202	-13.67	0.000	-.0800133
_Iyear_2020	-.0847229	.0051667	-16.40	0.000	-.0948496
_Iyear_2021	-.0886091	.0054362	-16.30	0.000	-.0992638
_Inace2_42	.1100818	.0147744	7.45	0.000	.0811244
_Inace2_43	-.2589617	.0086611	-29.90	0.000	-.2759372
_IyeaXnac_2007_42	-.0064658	.0138878	-0.47	0.642	-.0336853
_IyeaXnac_2007_43	.0007588	.0091087	0.08	0.934	-.0170938
_IyeaXnac_2008_42	.0061735	.0137337	0.45	0.653	-.020744
_IyeaXnac_2008_43	.0002485	.0088106	0.03	0.977	-.0170199
_IyeaXnac_2009_42	.0106991	.0133092	0.80	0.421	-.0153865
_IyeaXnac_2009_43	.0187613	.0086239	2.18	0.030	.0018587
_IyeaXnac_2010_42	-.0135741	.0131361	-1.03	0.301	-.0393203
_IyeaXnac_2010_43	.0282847	.0085338	3.31	0.001	.0115587
_IyeaXnac_2011_42	.0010581	.0135062	0.08	0.938	-.0254136
_IyeaXnac_2011_43	.0394676	.0086492	4.56	0.000	.0225154
_IyeaXnac_2012_42	-.0080943	.0135047	-0.60	0.549	-.0345631
_IyeaXnac_2012_43	.0467726	.0087621	5.34	0.000	.0295992
					.0639459

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_IyeaXnac_2013_42	-.0198108	.0185009	-1.07	0.284	-.056072	.0164504
_IyeaXnac_2013_43	.0481067	.0102375	4.70	0.000	.0280415	.068172
_IyeaXnac_2014_42	-.0263741	.0158423	-1.66	0.096	-.0574244	.0046763
_IyeaXnac_2014_43	.0491511	.0093087	5.28	0.000	.0309063	.0673959
_IyeaXnac_2015_42	-.0354752	.0129615	-2.74	0.006	-.0608792	-.0100711
_IyeaXnac_2015_43	.0500066	.0082023	6.10	0.000	.0339303	.0660828
_IyeaXnac_2016_42	-.0565497	.013075	-4.33	0.000	-.0821763	-.030923
_IyeaXnac_2016_43	.0577971	.0082866	6.97	0.000	.0415556	.0740385
_IyeaXnac_2017_42	-.0608497	.0130188	-4.67	0.000	-.086366	-.0353334
_IyeaXnac_2017_43	.0620793	.0081946	7.58	0.000	.0460181	.0781404
_IyeaXnac_2018_42	-.0673623	.0130241	-5.17	0.000	-.0928891	-.0418356
_IyeaXnac_2018_43	.0697654	.0081776	8.53	0.000	.0537375	.0857933
_IyeaXnac_2019_42	-.0758718	.0129285	-5.87	0.000	-.1012112	-.0505323
_IyeaXnac_2019_43	.0673316	.0081919	8.22	0.000	.0512758	.0833874
_IyeaXnac_2020_42	-.0662234	.0130558	-5.07	0.000	-.0918123	-.0406344
_IyeaXnac_2020_43	.0804687	.0082186	9.79	0.000	.0643604	.0965769
_IyeaXnac_2021_42	-.0515013	.0140409	-3.67	0.000	-.0790211	-.0239816
_IyeaXnac_2021_43	.0964825	.0086023	11.22	0.000	.0796223	.1133427
cons	2.487772	.0214749	115.85	0.000	2.445682	2.529862
sigma_u	.10432627					
sigma_e	.06578582					
rho	.71549782	(fraction of variance due to u_i)				

1918 . xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

lmu_1[id,t] = Xb + u[id] + e[id,t]

Estimated results:

	Var	SD = sqrt(Var)
lmu_1	.0477302	.2184725
e	.0043278	.0657858
u	.010884	.1043263

Test: Var(u) = 0

chibar2(01) = 18675.80
Prob > chibar2 = 0.0000

1919 . estimates store re

1920 .

1921 . *reject re

1922 . hausman fe re

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe	(B) re		
zakazky_la~y	.1424266	.1421186	.0003079	.000545
cogs	-.1629615	-.1582223	-.0047392	.0007632
k	.050619	.054975	-.004356	.0003187
_Iyear_2007	-.0001061	-.001368	.0012619	.
_Iyear_2008	.001266	-.0008781	.0021441	.
_Iyear_2009	-.0113444	-.0138236	.0024792	.
_Iyear_2010	-.0179947	-.0208712	.0028765	.
_Iyear_2011	-.0263641	-.0292838	.0029197	.
_Iyear_2012	-.0328942	-.0356007	.0027065	.
_Iyear_2013	-.0396084	-.0419857	.0023773	.
_Iyear_2014	-.0466971	-.0492631	.0025659	.
_Iyear_2015	-.047372	-.0502395	.0028675	.
_Iyear_2016	-.0541603	-.0569512	.0027909	.
_Iyear_2017	-.0574883	-.0612469	.0037586	.
_Iyear_2018	-.063291	-.0679237	.0046328	.
_Iyear_2019	-.0651984	-.069978	.0047796	.
_Iyear_2020	-.0796691	-.0847229	.0050539	.
_Iyear_2021	-.0816686	-.0886091	.0069404	.0002574
_IyeaX~07_42	-.0061148	-.0064658	.000351	.
_IyeaX~07_43	-.0010802	.0007588	-.001839	.
_IyeaX~08_42	.0068862	.0061735	.0007127	.

_IyeaX~08_43	- .0015364	.0002485	- .0017849	.
_IyeaX~09_42	.011031	.0106991	.0003318	.
_IyeaX~09_43	.0172103	.0187613	-.001551	.
_IyeaX~10_42	-.0124156	-.0135741	.0011585	.
_IyeaX~10_43	.0268283	.0282847	-.0014563	.
_IyeaX~11_42	.0015967	.0010581	.0005386	.
_IyeaX~11_43	.0373968	.0394676	-.0020708	.
_IyeaXn~2_42	-.0074732	-.0080943	.0006211	.
_IyeaXn~2_43	.0447769	.0467726	-.0019956	.
_IyeaXn~3_42	-.0187403	-.0198108	.0010705	.
_IyeaXn~3_43	.0469675	.0481067	-.0011393	.
_IyeaXn~4_42	-.0250199	-.0263741	.0013541	.
_IyeaXn~4_43	.0472106	.0491511	-.0019405	.
_IyeaXn~5_42	-.0327659	-.0354752	.0027092	.
_IyeaXn~5_43	.0478059	.0500066	-.0022006	.
_IyeaXn~6_42	-.0537985	-.0565497	.0027511	.
_IyeaXn~6_43	.0558318	.0577971	-.0019652	.
_IyeaX~17_42	-.0591129	-.0608497	.0017368	.
_IyeaX~17_43	.0597884	.0620793	-.0022909	.
_IyeaX~18_42	-.0650308	-.0673623	.0023316	.
_IyeaX~18_43	.0667334	.0697654	-.003032	.
_IyeaX~19_42	-.0760756	-.0758718	-.0002038	.
_IyeaX~19_43	.0654737	.0673316	-.0018579	.
_IyeaX~20_42	-.0660925	-.0662234	.0001308	.
_IyeaX~20_43	.0769415	.0804687	-.0035272	.
_IyeaX~21_42	-.0539063	-.0515013	-.002405	.
_IyeaX~21_43	.0912697	.0964825	-.0052128	.000175

b = Consistent under H0 and Ha; obtained from xtreg.

B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

$$\text{chi2(48)} = (\mathbf{b}-\mathbf{B})'[(\mathbf{V}_\mathbf{b}-\mathbf{V}_\mathbf{B})^{-1}](\mathbf{b}-\mathbf{B}) \\ = 302.61$$

Prob > chi2 = 0.0000

(\mathbf{V}_\mathbf{b}-\mathbf{V}_\mathbf{B} \text{ is not positive definite})

1923 .

1924 . xi: xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year*i.nace2 , fe
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 note: _Inace2_42 omitted because of collinearity.
 note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression Number of obs = 13,011
 Group variable: id Number of groups = 1,865

R-squared:

	Obs per group:
Within = 0.6854	min = 1
Between = 0.3545	avg = 7.0
Overall = 0.3528	max = 16

	F(48, 11098) = 503.80
corr(u_i, Xb) = -0.1549	Prob > F = 0.0000

lmu_1_pp	Coefficient	Std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2905267	.0024619	118.01	0.000	.2857009 .2953525
cogs	-.1596561	.0017327	-92.14	0.000	-.1630525 -.1562597
k	.0456625	.0010043	45.47	0.000	.0436939 .047631
_Iyear_2007	.0028903	.0063179	0.46	0.647	-.0094939 .0152744
_Iyear_2008	.0078027	.0061845	1.26	0.207	-.0043199 .0199254
_Iyear_2009	.0018064	.0060871	0.30	0.767	-.0101253 .0137381
_Iyear_2010	-.0068948	.0060409	-1.14	0.254	-.018736 .0049464
_Iyear_2011	-.0135724	.0061549	-2.21	0.027	-.0256372 -.0015076
_Iyear_2012	-.0175242	.0062427	-2.81	0.005	-.029761 -.0052874
_Iyear_2013	-.0289716	.0074193	-3.90	0.000	-.0435148 -.0144284
_Iyear_2014	-.0342422	.0067205	-5.10	0.000	-.0474156 -.0210688
_Iyear_2015	-.0333061	.0058791	-5.67	0.000	-.0448301 -.0217821
_Iyear_2016	-.04216	.0059724	-7.06	0.000	-.053867 -.030453

_Iyear_2017	- .0501237	.0058864	-8.52	0.000	- .0616621	- .0385852
_Iyear_2018	- .0561418	.0058987	-9.52	0.000	- .0677042	- .0445794
_Iyear_2019	- .0597157	.0059108	-10.10	0.000	- .071302	- .0481294
_Iyear_2020	- .0726142	.0059725	-12.16	0.000	- .0843213	- .0609071
_Iyear_2021	- .0755448	.0063027	-11.99	0.000	- .0878993	- .0631903
_Inace2_42	0	(omitted)				
_Inace2_43	0	(omitted)				
-IyeaXnac_2007_42	- .0108343	.0159604	-0.68	0.497	- .0421195	.0204509
-IyeaXnac_2007_43	- .0017998	.0103767	-0.17	0.862	- .0221399	.0185403
-IyeaXnac_2008_42	.0108753	.01573	0.69	0.489	- .0199583	.0417089
-IyeaXnac_2008_43	.0070029	.0100095	0.70	0.484	- .0126174	.0266232
-IyeaXnac_2009_42	.0058005	.015294	0.38	0.704	- .0241785	.0357794
-IyeaXnac_2009_43	.0164683	.0098327	1.67	0.094	- .0028056	.0357422
-IyeaXnac_2010_42	- .0146633	.0150209	-0.98	0.329	- .044107	.0147804
-IyeaXnac_2010_43	.0315973	.009736	3.25	0.001	.012513	.0506815
-IyeaXnac_2011_42	- .0025199	.0155273	-0.16	0.871	- .0329561	.0279164
-IyeaXnac_2011_43	.0446713	.0099021	4.51	0.000	.0252614	.0640813
-IyeaXnac_2012_42	- .0253121	.0155189	-1.63	0.103	- .055732	.0051078
-IyeaXnac_2012_43	.0553718	.0100379	5.52	0.000	.0356957	.0750478
-IyeaXnac_2013_42	- .0122896	.0209502	-0.59	0.557	- .0533556	.0287764
-IyeaXnac_2013_43	.0656187	.0117421	5.59	0.000	.0426022	.0886353
-IyeaXnac_2014_42	- .0300615	.0181684	-1.65	0.098	- .0656747	.0055518
-IyeaXnac_2014_43	.06679	.0106915	6.25	0.000	.0458326	.0877473
-IyeaXnac_2015_42	- .0289678	.0148639	-1.95	0.051	- .0581038	.0001681
-IyeaXnac_2015_43	.0641087	.0094228	6.80	0.000	.0456383	.0825791
-IyeaXnac_2016_42	- .046856	.0150269	-3.12	0.002	- .0763115	- .0174005
-IyeaXnac_2016_43	.0690023	.009516	7.25	0.000	.0503493	.0876553
-IyeaXnac_2017_42	- .0513555	.0149698	-3.43	0.001	- .080699	- .022012
-IyeaXnac_2017_43	.0683304	.0094344	7.24	0.000	.0498373	.0868234
-IyeaXnac_2018_42	- .0466291	.0149561	-3.12	0.002	- .0759457	- .0173125
-IyeaXnac_2018_43	.0683273	.0094303	7.25	0.000	.0498424	.0868123
-IyeaXnac_2019_42	- .0580892	.0148423	-3.91	0.000	- .0871827	- .0289956
-IyeaXnac_2019_43	.0649214	.009457	6.86	0.000	.046384	.0834589
-IyeaXnac_2020_42	- .0557225	.0150174	-3.71	0.000	- .0851592	- .0262857
-IyeaXnac_2020_43	.0718318	.0095114	7.55	0.000	.0531877	.0904758
-IyeaXnac_2021_42	- .0458283	.016173	-2.83	0.005	- .0775302	- .0141264
-IyeaXnac_2021_43	.0796848	.0100207	7.95	0.000	.0600424	.0993273
_cons	2.481343	.028043	88.48	0.000	2.426373	2.536312
sigma_u	.18950987					
sigma_e	.07622162					
rho	.86075704	(fraction of variance due to u_i)				

F test that all u_i=0: F(1864, 11098) = 16.69 Prob > F = 0.0000

1925 . estimates store fe_pp

```
1926 . xi: xtreg lmu_1 zakazky_last3_dummy cogs k i.year*i.nace2 , re
    i.year           _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
    i.nace2          _Inace2_41-43       (naturally coded; _Inace2_41 omitted)
    i.year*i.nace2  _IyeaXnac_#_#      (coded as above)
```

Random-effects GLS regression Number of obs = 13,011
 Group variable: id Number of groups = 1,859

R-squared: Obs per group:
 Within = 0.5909 min = 1
 Between = 0.6857 avg = 7.0
 Overall = 0.6596 max = 16

corr(u_i, X) = 0 (assumed) Wald chi2(50) = 20247.12
 Prob > chi2 = 0.0000

lmu_1	Coefficient	Std. err.	z	P> z	[95% conf. interval]
zakazky_last3_dummy	.1421186	.0020476	69.41	0.000	.1381054 .1461319
cogs	-.1582223	.0013741	-115.15	0.000	-.1609154 -.1555292
k	.054975	.0008034	68.43	0.000	.0534003 .0565497
_Iyear_2007	-.001368	.0055203	-0.25	0.804	-.0121876 .0094517
_Iyear_2008	-.0008781	.0053951	-0.16	0.871	-.0114523 .0096961
_Iyear_2009	-.0138236	.0053157	-2.60	0.009	-.0242422 -.003405
_Iyear_2010	-.0208712	.0052672	-3.96	0.000	-.0311948 -.0105476
_Iyear_2011	-.0292838	.005369	-5.45	0.000	-.0398068 -.0187608
_Iyear_2012	-.0356007	.0054475	-6.54	0.000	-.0462776 -.0249239
_Iyear_2013	-.0419857	.0064404	-6.52	0.000	-.0546088 -.0293627
_Iyear_2014	-.0492631	.0058384	-8.44	0.000	-.060706 -.0378201
_Iyear_2015	-.0502395	.005111	-9.83	0.000	-.0602569 -.0402221
_Iyear_2016	-.0569512	.0051877	-10.98	0.000	-.0671188 -.0467835
_Iyear_2017	-.0612469	.005111	-11.98	0.000	-.0712643 -.0512295
_Iyear_2018	-.0679237	.0051152	-13.28	0.000	-.0779492 -.0578982
_Iyear_2019	-.069978	.0051202	-13.67	0.000	-.0800133 -.0599427
_Iyear_2020	-.0847229	.0051667	-16.40	0.000	-.0948496 -.0745963
_Iyear_2021	-.0886091	.0054362	-16.30	0.000	-.0992638 -.0779543
_Inace2_42	.1100818	.0147744	7.45	0.000	.0811244 .1390391
_Inace2_43	-.2589617	.0086611	-29.90	0.000	-.2759372 -.2419862
_IyeaXnac_2007_42	-.0064658	.0138878	-0.47	0.642	-.0336853 .0207538
_IyeaXnac_2007_43	.0007588	.0091087	0.08	0.934	-.0170938 .0186114
_IyeaXnac_2008_42	.0061735	.0137337	0.45	0.653	-.020744 .033091
_IyeaXnac_2008_43	.0002485	.0088106	0.03	0.977	-.0170199 .017517
_IyeaXnac_2009_42	.0106991	.0133092	0.80	0.421	-.0153865 .0367847
_IyeaXnac_2009_43	.0187613	.0086239	2.18	0.030	.0018587 .0356639
_IyeaXnac_2010_42	-.0135741	.0131361	-1.03	0.301	-.0393203 .0121721
_IyeaXnac_2010_43	.0282847	.0085338	3.31	0.001	.0115587 .0450106
_IyeaXnac_2011_42	.0010581	.0135062	0.08	0.938	-.0254136 .0275297
_IyeaXnac_2011_43	.0394676	.0086492	4.56	0.000	.0225154 .0564198
_IyeaXnac_2012_42	-.0080943	.0135047	-0.60	0.549	-.0345631 .0183745
_IyeaXnac_2012_43	.0467726	.0087621	5.34	0.000	.0295992 .0639459
_IyeaXnac_2013_42	-.0198108	.0185009	-1.07	0.284	-.056072 .0164504
_IyeaXnac_2013_43	.0481067	.0102375	4.70	0.000	.0280415 .068172
_IyeaXnac_2014_42	-.0263741	.0158423	-1.66	0.096	-.0574244 .0046763
_IyeaXnac_2014_43	.0491511	.0093087	5.28	0.000	.0309063 .0673959
_IyeaXnac_2015_42	-.0354752	.0129615	-2.74	0.006	-.0608792 -.0100711
_IyeaXnac_2015_43	.0500066	.0082023	6.10	0.000	.0339303 .0660828
_IyeaXnac_2016_42	-.0565497	.013075	-4.33	0.000	-.0821763 -.030923
_IyeaXnac_2016_43	.0577971	.0082866	6.97	0.000	.0415556 .0740385
_IyeaXnac_2017_42	-.0608497	.0130188	-4.67	0.000	-.086366 -.0353334
_IyeaXnac_2017_43	.0620793	.0081946	7.58	0.000	.0460181 .0781404
_IyeaXnac_2018_42	-.0673623	.0130241	-5.17	0.000	-.0928891 -.0418356
_IyeaXnac_2018_43	.0697654	.0081776	8.53	0.000	.0537375 .0857933
_IyeaXnac_2019_42	-.0758718	.0129285	-5.87	0.000	-.1012112 -.0505323
_IyeaXnac_2019_43	.0673316	.0081919	8.22	0.000	.0512758 .0833874
_IyeaXnac_2020_42	-.0662234	.0130558	-5.07	0.000	-.0918123 -.0406344
_IyeaXnac_2020_43	.0804687	.0082186	9.79	0.000	.0643604 .0965769
_IyeaXnac_2021_42	-.0515013	.0140409	-3.67	0.000	-.0790211 -.0239816
_IyeaXnac_2021_43	.0964825	.0086023	11.22	0.000	.0796223 .1133427
_cons	2.487772	.0214749	115.85	0.000	2.445682 2.529862
sigma_u	.10432627				
sigma_e	.06578582				
rho	.71549782	(fraction of variance due to u_i)			

1927 . xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

lmu_1[id,t] = Xb + u[id] + e[id,t]

Estimated results:

	Var	SD = sqrt(Var)
lmu_1	.0477302	.2184725
e	.0043278	.0657858
u	.010884	.1043263

```
Test: Var(u) = 0
      chibar2(01) = 18675.80
      Prob > chibar2 = 0.0000
```

1928 . estimates store re_pp

1929 .

1930 . *reject re

1931 . hausman fe_pp re_pp

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
	(b) fe_pp	(B) re_pp		
zakazky_la~y	.2905267	.1421186	.148408	.0013669
cogs	-.1596561	-.1582223	-.0014338	.0010556
k	.0456625	.054975	-.0093125	.0006025
_Iyear_2007	.0028903	-.001368	.0042582	.0030727
_Iyear_2008	.0078027	-.0008781	.0086808	.0030234
_Iyear_2009	.0018064	-.0138236	.01563	.0029657
_Iyear_2010	-.0068948	-.0208712	.0139764	.0029578
_Iyear_2011	-.0135724	-.0292838	.0157114	.0030096
_Iyear_2012	-.0175242	-.0356007	.0180765	.003049
_Iyear_2013	-.0289716	-.0419857	.0130141	.0036834
_Iyear_2014	-.0342422	-.0492631	.0150209	.0033285
_Iyear_2015	-.0333061	-.0502395	.0169334	.0029053
_Iyear_2016	-.04216	-.0569512	.0147912	.0029593
_Iyear_2017	-.0501237	-.0612469	.0111233	.0029202
_Iyear_2018	-.0561418	-.0679237	.0117819	.0029376
_Iyear_2019	-.0597157	-.069978	.0102623	.0029533
_Iyear_2020	-.0726142	-.0847229	.0121088	.0029959
_Iyear_2021	-.0755448	-.0886091	.0130642	.0031894
_Iyeax~07_42	-.0108343	-.0064658	-.0043685	.0078653
_Iyeax~07_43	-.0017998	.0007588	-.0025586	.0049707
_Iyeax~08_42	.0108753	.0061735	.0047018	.0076694
_Iyeax~08_43	.0070029	.0002485	.0067544	.00475
_Iyeax~09_42	.0058005	.0106991	-.0048987	.0075347
_Iyeax~09_43	.0164683	.0187613	-.002293	.0047234
_Iyeax~10_42	-.0146633	-.0135741	-.0010892	.0072851
_Iyeax~10_43	.0315973	.0282847	.0033126	.0046866
_Iyeax~11_42	-.0025199	.0010581	-.0035779	.0076603
_Iyeax~11_43	.0446713	.0394676	.0052038	.0048211
_Iyeaxn~2_42	-.0253121	-.0080943	-.0172178	.0076459
_Iyeaxn~2_43	.0553718	.0467726	.0085992	.0048975
_Iyeaxn~3_42	-.0122896	-.0198108	.0075212	.0098298
_Iyeaxn~3_43	.0656187	.0481067	.017512	.0057506
_Iyeaxn~4_42	-.0300615	-.0263741	-.0036874	.0088944
_Iyeaxn~4_43	.06679	.0491511	.0176389	.0052589
_Iyeaxn~5_42	-.0289678	-.0354752	.0065074	.0072757
_Iyeaxn~5_43	.0641087	.0500066	.0141021	.004638
_Iyeaxn~6_42	-.046856	-.0565497	.0096937	.0074062
_Iyeaxn~6_43	.0690023	.0577971	.0112053	.0046782
_Iyeax~17_42	-.0513555	-.0608497	.0094942	.0073897
_Iyeax~17_43	.0683304	.0620793	.0062511	.004675
_Iyeax~18_42	-.0466291	-.0673623	.0207333	.0073524
_Iyeax~18_43	.0683273	.0697654	-.0014381	.0046964
_Iyeax~19_42	-.0580892	-.0758718	.0177826	.0072902
_Iyeax~19_43	.0649214	.0673316	-.0024102	.0047253
_Iyeax~20_42	-.0557225	-.0662234	.0105009	.0074208
_Iyeax~20_43	.0718318	.0804687	-.0086369	.0047876
_Iyeax~21_42	-.0458283	-.0515013	.0056731	.008026
_Iyeax~21_43	.0796848	.0964825	-.0167977	.0051396

b = Consistent under H0 and Ha; obtained from xtreg.

B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

```
chi2(48) = (b-B)'[(V_b-V_B)^(-1)](b-B)
           = 16787.93
Prob > chi2 = 0.0000
```

```

1932 .
1933 .
    end of do-file

1934 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1935 .
1936 . /*
> RESULTS
> */
1937 . use "data_with_results", replace
1938 . set seed 42
1939 .
1940 . bys year: summarize(markup_dlw_gocogs_pp) if zakazky_last3_dummy == 1

```

-> year = 2006

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	140	2.313821	.3550911	1.435081	3.283425

-> year = 2007

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	176	2.273192	.3257248	1.359454	3.300327

-> year = 2008

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	223	2.261723	.3224742	1.353183	3.316538

-> year = 2009

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	255	2.267739	.3595243	1.36574	3.327277

-> year = 2010

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	273	2.250591	.3488413	1.366598	3.294509

-> year = 2011

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	245	2.233068	.3312264	1.331762	3.293272

-> year = 2012

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	256	2.184402	.3437517	1.325287	3.247741

-> year = 2013

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	151	2.143063	.3534402	1.40694	3.147393

-> year = 2014

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	248	2.088158	.3687261	1.367083	3.077452

-> year = 2015

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	555	2.063908	.3604305	1.360058	3.341264

-> year = 2016

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	560	2.065172	.3550769	1.333938	3.250795

-> year = 2017

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	629	2.0408	.3262959	1.325737	3.310406

-> year = 2018

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	663	2.01365	.3153828	1.322467	3.267327

-> year = 2019

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	690	1.993334	.3140811	1.32277	3.204698

-> year = 2020

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	665	1.974323	.3002246	1.329115	3.148737

-> year = 2021

Variable	Obs	Mean	Std. dev.	Min	Max
markup~s_pp	498	1.961324	.3075446	1.324929	3.298069

1941 .

1942 . bys nace2: summarize(markup_OLS) ,d

-> nace2 = 41

markup_OLS

	Percentiles	Smallest		
1%	.9264911	.8975781		
5%	1.043513	.897768		
10%	1.152983	.8986238	Obs	8,078
25%	1.412251	.8988141	Sum of wgt.	8,078

50%	1.849952	Mean	2.27736
		Largest	1.504836
75%	2.573493	14.55369	
90%	3.757663	14.83357	Variance 2.264531
95%	4.876325	14.85956	Skewness 3.428112
99%	9.055284	14.88563	Kurtosis 20.11384

-> nace2 = 42

markup_OLS

	Percentiles	Smallest	
1%	1.169746	1.067056	
5%	1.374015	1.074249	
10%	1.488279	1.082939	Obs 1,265
25%	1.699954	1.085398	Sum of wgt. 1,265
50%	2.104807	Mean	2.390476
		Largest	Std. dev. 1.130248
75%	2.706911	10.53508	
90%	3.471622	10.6581	Variance 1.27746
95%	4.245213	11.00869	Skewness 3.226748
99%	7.025844	11.43501	Kurtosis 19.31388

-> nace2 = 43

markup_OLS

	Percentiles	Smallest	
1%	.853308	.8342754	
5%	.9117659	.8342754	
10%	.9612967	.8347166	Obs 5,937
25%	1.094625	.8348049	Sum of wgt. 5,937
50%	1.409078	Mean	1.84438
		Largest	Std. dev. 1.499667
75%	1.92353	13.84605	
90%	2.981581	13.87037	Variance 2.249
95%	4.275322	13.94389	Skewness 4.180311
99%	9.263204	14.06817	Kurtosis 25.25658

1943 . bys nace2: summarize(markup_dlw_gocogs) ,d

-> nace2 = 41

markup_dlw_gocogs

	Percentiles	Smallest	
1%	1.464719	1.364797	
5%	1.547099	1.395822	
10%	1.612276	1.405713	Obs 7,001
25%	1.758555	1.406451	Sum of wgt. 7,001
50%	1.940064	Mean	1.985859
		Largest	Std. dev. .3548809
75%	2.126383	4.22753	
90%	2.366688	4.25083	Variance .1259405
95%	2.58323	4.256375	Skewness 1.920589
99%	3.364463	4.329249	Kurtosis 9.828223

-> nace2 = 42

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.66839	1.589341		
5%	1.793678	1.610092		
10%	1.825193	1.616779	Obs	1,063
25%	1.894266	1.619464	Sum of wgt.	1,063
50%	2.02781		Mean	2.11835
		Largest	Std. dev.	.3313301
75%	2.228877	3.581398		
90%	2.60448	3.898546	Variance	.1097796
95%	2.828468	4.032193	Skewness	1.740093
99%	3.091056	4.329019	Kurtosis	7.387439

-> nace2 = 43

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.189915	1.182749		
5%	1.21929	1.182835		
10%	1.252414	1.182943	Obs	4,947
25%	1.32279	1.183087	Sum of wgt.	4,947
50%	1.450876		Mean	1.571572
		Largest	Std. dev.	.3972164
75%	1.677332	4.284173		
90%	2.019725	4.321457	Variance	.1577808
95%	2.297912	4.363529	Skewness	2.7005
99%	3.28672	4.404799	Kurtosis	13.51011

1944 . bys nace2: summarize(markup_dlw_gocogs_pp) ,d

-> nace2 = 41

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.339257	1.110535		
5%	1.391007	1.159081		
10%	1.443557	1.211165	Obs	6,986
25%	1.627774	1.213994	Sum of wgt.	6,986
50%	2.020396		Mean	1.982271
		Largest	Std. dev.	.4276854
75%	2.212235	5.207942		
90%	2.39421	5.225997	Variance	.1829148
95%	2.579792	5.276104	Skewness	1.526466
99%	3.267327	5.278455	Kurtosis	11.0132

-> nace2 = 42

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.497424	1.424094		
5%	1.570841	1.464805		
10%	1.644154	1.482643	Obs	1,057
25%	2.0434	1.4835	Sum of wgt.	1,057
50%	2.223792		Mean	2.239398
		Largest	Std. dev.	.4263404
75%	2.444389	3.327277		
90%	2.808053	3.415402	Variance	.1817662
95%	3.023413	4.665208	Skewness	.8081648
99%	3.293272	5.342595	Kurtosis	6.193991

```
-> nace2 = 43
```

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.089196	1.07878		
5%	1.123574	1.078858		
10%	1.155355	1.079004	Obs	4,968
25%	1.251928	1.079723	Sum of wgt.	4,968
50%	1.44799		Mean	1.551665
		Largest	Std. dev.	.4365456
75%	1.716016	5.050561		
90%	2.024214	5.061068	Variance	.190572
95%	2.328255	5.24134	Skewness	2.673373
99%	3.207598	5.29425	Kurtosis	15.40065

1945 .

1946 .

1947 . bys zakazky_last3_dummy: summarize(markup_OLS) ,d

-> zakazky_last3_dummy = 0

markup_OLS

	Percentiles	Smallest		
1%	.8654727	.8342754		
5%	.9346572	.8342754		
10%	.9958692	.8347166	Obs	8,048
25%	1.171128	.8348049	Sum of wgt.	8,048
50%	1.53599		Mean	2.045466
		Largest	Std. dev.	1.657149
75%	2.169093	13.97826		
90%	3.445412	14.06817	Variance	2.746144
95%	5.029522	14.85956	Skewness	3.628969
99%	10.13111	14.88563	Kurtosis	19.56608

-> zakazky_last3_dummy = 1

markup_OLS

	Percentiles	Smallest		
1%	.9114627	.8348932		
5%	1.029647	.8360429		
10%	1.147129	.839422	Obs	7,232
25%	1.442247	.8404052	Sum of wgt.	7,232
50%	1.872517		Mean	2.199756
		Largest	Std. dev.	1.277987
75%	2.542843	14.35669		
90%	3.541422	14.42995	Variance	1.633251
95%	4.41154	14.55369	Skewness	3.444963
99%	7.130632	14.83357	Kurtosis	23.26412

1948 . bys zakazky_last3_dummy: summarize(markup_dlw_gocogs) ,d

-> zakazky_last3_dummy = 0

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.193151	1.182749		
5%	1.231012	1.182835		
10%	1.275174	1.182943	Obs	6,671
25%	1.435026	1.183087	Sum of wgt.	6,671

50%	1.65958	Mean	1.730962
		Largest	.4430384
75%	1.886284	4.267927	
90%	2.215665	4.284173	Variance .1962831
95%	2.547803	4.321457	Skewness 2.021686
99%	3.545707	4.363529	Kurtosis 9.374324

-> zakazky_last3_dummy = 1

markup_dlw_gocogs

	Percentiles	Smallest	
1%	1.289341	1.185052	
5%	1.340957	1.216735	
10%	1.421109	1.257757	Obs 6,340
25%	1.756865	1.258285	Sum of wgt. 6,340
50%	1.962474	Mean	1.953017
		Largest	.3761304
75%	2.137273	4.21174	
90%	2.365041	4.329019	Variance .141474
95%	2.550246	4.329249	Skewness .7703595
99%	3.060167	4.404799	Kurtosis 5.800928

1949 . bys zakazky_last3_dummy: summarize(markup_dlw_gocogs_pp) ,d

-> zakazky_last3_dummy = 0

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.092575	1.07878	
5%	1.135555	1.078858	
10%	1.181355	1.079004	Obs 6,784
25%	1.325549	1.079723	Sum of wgt. 6,784
50%	1.505437	Mean	1.616933
		Largest	.4985687
75%	1.75213	5.276104	
90%	2.11609	5.278455	Variance .2485708
95%	2.480042	5.29425	Skewness 2.927106
99%	3.684555	5.342595	Kurtosis 16.13004

-> zakazky_last3_dummy = 1

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.353591	1.322467	
5%	1.450829	1.32277	
10%	1.568501	1.322926	Obs 6,227
25%	1.919296	1.323143	Sum of wgt. 6,227
50%	2.103229	Mean	2.080389
		Largest	.3484066
75%	2.270773	3.322357	
90%	2.454554	3.327277	Variance .1213871
95%	2.62529	3.334852	Skewness .156971
99%	3.073158	3.341264	Kurtosis 3.725916

```

1950 .
1951 .
1952 . /* plot the graph */
1953 . *market
1954 . tw (kdensity markup_OLS if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_OLS if zakazky_
>           /* if markup_OLS > 0 & markup_OLS < 3, ytitle("Density") xtitle("mu_OLS") legend(order( 1 "Procurement act
1955 .
1956 . /* plot the graph */
1957 . *market
1958 . tw (kdensity markup_dlw_gocogs if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs
>           /* if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("mu") legend(order( 1 "Proc
1959 .
1960 . /* plot the graph */
1961 . *market
1962 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp
>           /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("mu_pp") legend(order(
1963 .
1964 .
1965 . /* plot the graph */
1966 . *whole industry
1967 . tw (kdensity lmu_OLS , lw(medthick) lp(_) lc(ebblue)) /*
>           /* (kdensity lmu_1, lw(medthick) lp(-) lc(maroon))//*
>           /* (kdensity lmu_1_pp , lw(medthick) lp(..) lc(forest_green)) /*
>           /* if (lmu_OLS > 0 & lmu_OLS< 1.1)&(lmu_1 > 0 & lmu_1 < 1.1)&(lmu_1_pp > 0 & lmu_1_pp < 1.1), ytitle("Den
1968 .
1969 . summarize(markup_OLS) if markup_OLS>3,d

```

markup_OLS

	Percentiles	Smallest		
1%	3.010931	3.000285		
5%	3.059792	3.000285		
10%	3.12673	3.000285	Obs	2,232
25%	3.372339	3.000285	Sum of wgt.	2,232
50%	3.969187		Mean	4.819257
		Largest	Std. dev.	2.242388
75%	5.257498	14.55369		
90%	7.692244	14.83357	Variance	5.028303
95%	9.970395	14.85956	Skewness	2.120702
99%	13.44661	14.88563	Kurtosis	7.509818

```
1970 . summarize(markup_dlw_gocogs) if markup_OLS>3,d
```

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.250147	1.185052		
5%	1.398161	1.188314		
10%	1.534237	1.195666	Obs	1,994
25%	1.799399	1.197421	Sum of wgt.	1,994
50%	2.018635		Mean	2.111689
		Largest	Std. dev.	.5257548
75%	2.328203	4.25083		
90%	2.769993	4.252204	Variance	.2764181
95%	3.124033	4.267927	Skewness	1.285916
99%	3.970458	4.329249	Kurtosis	5.501085

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1971 . summarize(markup_dlw_gocogs_pp) if markup_OLS>3,d

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.163584	1.079964		
5%	1.343944	1.083796		
10%	1.439458	1.086903	Obs	1,997
25%	1.735824	1.087588	Sum of wgt.	1,997
50%	2.101048		Mean	2.140983
		Largest	Std. dev.	.6025619
75%	2.363682	5.24134	Variance	.3630809
90%	2.856596	5.276104	Skewness	1.529813
95%	3.220753	5.29425	Kurtosis	7.724557
99%	4.401159	5.342595		

1972 .

1973 . correlate markup_dlw_gocogs zakazky_last3_dummy
(obs=13,011)

	markup.. zakaz~my	
markup_dlw~s	1.0000	
zakazky_la~y	0.2603	1.0000

1974 . correlate markup_dlw_gocogs_pp zakazky_last3_dummy
(obs=13,011)

	mar~s_pp zakaz~my	
markup~s_pp	1.0000	
zakazky_la~y	0.4713	1.0000

1975 .

1976 . correlate markup_dlw_gocogs zakazky_last3_share
(obs=13,011)

	markup.. zakazk~e	
markup_dlw~s	1.0000	
zakazky_la~e	0.2046	1.0000

1977 . correlate markup_dlw_gocogs_pp zakazky_last3_share
(obs=13,011)

	mar~s_pp zakazk~e	
markup~s_pp	1.0000	
zakazky_la~e	0.3054	1.0000

1978 .

1979 . tabulate zakazky_last3_dummy if nace2==41, summarize(markup_dlw_gocogs_pp)

zakazky_las t3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.7489353	.48583836	3,280
1	2.1887844	.21234157	3,706
Total	1.9822706	.42768544	6,986

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1980 . tabulate zakazky_last3_dummy if nace2==42, summarize(markup_dlw_gocogs_pp)

zakazky_last3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.8023887	.4090688	276
1	2.3938335	.30923919	781
Total	2.2393976	.42634044	1,057

1981 . tabulate zakazky_last3_dummy if nace2==43, summarize(markup_dlw_gocogs_pp)

zakazky_last3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.4669478	.47458014	3,228
1	1.7088304	.29721635	1,740
Total	1.5516652	.43654558	4,968

1982 .
end of do-file

1983 . do "C:\Users\chadi\AppData\Local\Temp\STD2a98_000000.tmp"

1984 .
1985 . *****
1986 . *Markups and Public Procurement
1987 . *bakalářská práce
1988 . *Institut ekonomických studií
1989 . *Matěj Bajgar, D.Phil.
1990 . *Marek Chadim
1991 . *****
1992 . clear

1993 . cap log using log

1994 .
1995 . //cd "C:\Users\chadi\Dropbox\Code_and_data"
1996 .
1997 . //cd "C:/Users/mbajgar/Dropbox/IES/Thesis supervision/Marek Chadim"
1998 .
1999 . *****
2000 . * DATA *
2001 . *****
2002 .
2003 . * PREPARE ANALYSIS
2004 .
2005 . * RATIOS

2006 . import delimited using "ratios1.csv", clear
(encoding automatically selected: ISO-8859-1)
(6 vars, 10,000 obs)

2007 . save "ratios", replace
file ratios.dta saved

2008 . forvalues i=2/3{
2. import delimited using "ratios`i'.csv", clear
3. append using "ratios"
4. save "ratios.dta", replace
5. }
(encoding automatically selected: ISO-8859-1)
(6 vars, 10,000 obs)
file ratios.dta saved
(encoding automatically selected: ISO-8859-1)
(6 vars, 10,000 obs)
file ratios.dta saved

```

2009 .
2010 . * FINANCIAL
2011 . import delimited using "financial1.csv", clear
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 10,000 obs)

2012 . save "financial", replace
      file financial.dta saved

2013 . forvalues i=2/6{
      2.      import delimited using "financial`i'.csv", clear
      3.      append using "financial"
      4.      save "financial.dta", replace
      5. }
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 10,000 obs)
      file financial.dta saved
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 10,000 obs)
      file financial.dta saved
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 10,000 obs)
      file financial.dta saved
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 10,000 obs)
      file financial.dta saved
      (encoding automatically selected: ISO-8859-1)
      (5 vars, 7,724 obs)
      file financial.dta saved

2014 .
2015 . merge m:m id year using "ratios.dta", nogenerate

```

Result	Number of obs
Not matched	27,077
from master	23,474
from using	3,603
Matched	34,250

```

2016 .
2017 . rename ccosts costs

2018 . rename fafixedassets assets

2019 . rename salsalesoutputs sales

2020 . rename wvawagesvalueadded wva

2021 . rename wswagessales ws

2022 . rename lplabourproductivity lp

2023 . rename cmiicontributionmargin cm

2024 .
2025 . duplicates drop

```

Duplicates in terms of all variables

(8,209 observations deleted)

```
2026 . duplicates drop id year, force
Duplicates in terms of id year
(376 observations deleted)

2027 . save "analysis", replace
file analysis.dta saved

2028 .
2029 . ****
2030 .
2031 . * PREPARE SELECTIONS
2032 .
2033 . import delimited using "selections1.csv", clear
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)

2034 . save "selections", replace
file selections.dta saved

2035 . forvalues i=2/5{
    2.      import delimited using "selections`i'.csv", clear
    3.          append using "selections"
    4.          save "selections.dta", replace
    5. }
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
(file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 1,000 obs)
(variable v22 was str19, now str23 to accommodate using data's values)
(variable v23 was str19, now str23 to accommodate using data's values)
(variable v24 was str19, now str23 to accommodate using data's values)
(variable v25 was str19, now str23 to accommodate using data's values)
(variable v26 was str19, now str23 to accommodate using data's values)
(variable v27 was str19, now str23 to accommodate using data's values)
file selections.dta saved
(encoding automatically selected: ISO-8859-1)
(30 vars, 773 obs)
(variable numberofemployeesclassificationc was str17, now str19 to accommodate using data's values)
(variable v7 was str17, now str19 to accommodate using data's values)
(variable v8 was str17, now str19 to accommodate using data's values)
(variable v9 was str17, now str19 to accommodate using data's values)
(variable v10 was str17, now str19 to accommodate using data's values)
(variable v11 was str17, now str19 to accommodate using data's values)
(variable v12 was str17, now str19 to accommodate using data's values)
(variable v13 was str17, now str19 to accommodate using data's values)
(variable v14 was str17, now str19 to accommodate using data's values)
file selections.dta saved

2036 .
2037 . rename idièo id

2038 . rename typeofsubject subject_type

2039 . rename legalform legal_form
```

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```
2040 . rename institutionalsectorsesa2010 inst_sector  
2041 . rename numberofemployees empl_num  
2042 . rename numberofemployeesclassificationc empl_cat  
2043 . drop empl_cat-v28  
2044 . rename v29 empl_cat  
2045 . rename mainnacecode nace  
2046 .  
2047 .  
2048 . duplicates drop
```

Duplicates in terms of all variables

(2 observations deleted)

```
2049 . save "selections", replace  
file selections.dta saved
```

```
2050 .  
2051 .  
2052 .  
2053 . *****  
2054 .  
2055 . * MERGE & CLEAN  
2056 .  
2057 . use "analysis", clear
```

```
2058 . merge m:1 id using "selections", nogenerate
```

Result	Number of obs
Not matched from master	315
from using	0
Matched	52,742

```
2059 .  
2060 . duplicates drop
```

Duplicates in terms of all variables

(0 observations are duplicates)

```
2061 . duplicates drop id year, force
```

Duplicates in terms of **id year**

(0 observations are duplicates)

```
2062 .  
2063 . *correct sales  
2064 . sum sales,d
```

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	0	-3.78e+07		
5%	1930000	-1485000		
10%	7171000	-609000	Obs	45,128
25%	1.80e+07	-333000	Sum of wgt.	45,128

50%	4.13e+07	Mean	1.51e+08
		Largest	7.66e+08
75%	1.01e+08	2.67e+10	
90%	2.48e+08	2.85e+10	Variance
95%	4.40e+08	2.92e+10	Skewness
99%	1.80e+09	2.96e+10	Kurtosis

2065 . sum sales if sales<0,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	-3.78e+07	-3.78e+07		
5%	-3.78e+07	-1485000		
10%	-3.78e+07	-609000	Obs	5
25%	-1485000	-333000	Sum of wgt.	5
50%	-609000		Mean	-8065000
			Largest	1.67e+07
75%	-333000	-1485000		
90%	-60000	-609000	Variance	2.77e+14
95%	-60000	-333000	Skewness	-1.496159
99%	-60000	-60000	Kurtosis	3.244793

2066 . replace sales = . if sales<0 // if negative
(5 real changes made, 5 to missing)

2067 . sum sales if sales>10000000000,d

Sal - Sales, Outputs

	Percentiles	Smallest		
1%	1.02e+10	1.02e+10		
5%	1.04e+10	1.03e+10		
10%	1.05e+10	1.04e+10	Obs	60
25%	1.23e+10	1.04e+10	Sum of wgt.	60
50%	1.55e+10		Mean	1.67e+10
			Largest	5.58e+09
75%	2.05e+10	2.67e+10		
90%	2.62e+10	2.85e+10	Variance	3.11e+19
95%	2.76e+10	2.92e+10	Skewness	.743612
99%	2.96e+10	2.96e+10	Kurtosis	2.474591

2068 .

2069 .

2070 .

2071 . *correct ws and define as a share

2072 . sum ws,d

WS - Wages / Sales

	Percentiles	Smallest		
1%	.55	-223.94		
5%	3.97	-80.47		
10%	5.94	-44.97	Obs	20,297
25%	10.08	-7.75	Sum of wgt.	20,297
50%	16.71		Mean	31.73295
			Largest	1478.243
75%	24.95	3218.62		
90%	35.45	12220	Variance	2185202
95%	43.43	20600	Skewness	139.7747
99%	70.08	209212.5	Kurtosis	19758.8

2073 . sum ws if ws<1,d

WS - Wages / Sales

	Percentiles	Smallest		
1%	-44.97	-223.94		
5%	0	-80.47		
10%	0	-44.97	Obs	247
25%	0	-7.75	Sum of wgt.	247
50%	0		Mean	-1.267287
		Largest	Std. dev.	15.39974
75%	.31	.94	Variance	237.1521
90%	.7	.95	Skewness	-12.96081
95%	.83	.97	Kurtosis	181.5396
99%	.95	.98		

2074 . replace ws = ws * 100 if ws<1 & ws>0 // if 100 times too low
(84 real changes made)2075 . replace ws = . if ws<0 // if negative
(5 real changes made, 5 to missing)2076 . replace ws = . if ws>100 // if very high
(47 real changes made, 47 to missing)2077 . replace ws = ws/100 // define as a share
(20,087 real changes made)

2078 . sum ws,d

WS - Wages / Sales

	Percentiles	Smallest		
1%	.0136	0		
5%	.0414	0		
10%	.0605	0	Obs	20,245
25%	.1018	0	Sum of wgt.	20,245
50%	.1678		Mean	.1936074
		Largest	Std. dev.	.1320121
75%	.2503	.9963	Variance	.0174272
90%	.3554	.9964	Skewness	1.756562
95%	.435	1	Kurtosis	8.175005
99%	.68	1		

2079 .

2080 . *correct wva and define as a share

2081 . sum wva if wva<1,d

WVA - Wages / Value added

	Percentiles	Smallest		
1%	-3438.46	-27800		
5%	-894.32	-19745.83		
10%	-455.14	-11529.76	Obs	1,689
25%	-137.93	-9784.21	Sum of wgt.	1,689
50%	-30.04		Mean	-235.3029
		Largest	Std. dev.	1079.443
75%	0	.47	Variance	1165197
90%	0	.61	Skewness	-15.73481
95%	0	.82	Kurtosis	333.6609
99%	0	.94		

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2082 . replace wva = wva * 100 if wva<1 & wva>0 // if 100 times too low
(14 real changes made)

2083 . replace wva = . if wva<0 // if negative
(1,166 real changes made, 1,166 to missing)

2084 . replace wva = . if wva>500 // if very high
(225 real changes made, 225 to missing)

2085 . replace wva = wva/100 // define as a share
(24,525 real changes made)

2086 . sum wva,d

WVA - Wages / Value added

Percentiles		Smallest		
1%	0	0		
5%	.2238	0		
10%	.3493	0	Obs	25,034
25%	.5385	0	Sum of wgt.	25,034
50%	.7314		Mean	.7600425
		Largest	Std. dev.	.4473597
75%	.8889	4.9511		
90%	1.0749	4.9569	Variance	.2001307
95%	1.3695	4.9905	Skewness	3.321607
99%	2.7267	4.9943	Kurtosis	23.47996

2087 .
2088 . *correct cm and define as a share
2089 . sum cm if cm<1,d

CM III - Contribution margin

Percentiles		Smallest		
1%	-21618.18	-628620		
5%	-4976	-210962.5		
10%	-1351.32	-68740	Obs	704
25%	-270.755	-30330	Sum of wgt.	704
50%	-50.415		Mean	-2142.474
		Largest	Std. dev.	25261.04
75%	-8.665	.95		
90%	-2.07	.97	Variance	6.38e+08
95%	-.45	.98	Skewness	-22.55213
99%	.87	.99	Kurtosis	545.5927

2090 . replace cm = cm * 100 if cm<1 & cm>0 // if 100 times too low
(29 real changes made)

2091 . replace cm = . if cm<0 // if negative
(674 real changes made, 674 to missing)

2092 . replace cm = . if cm>200 // if very high
(2 real changes made, 2 to missing)

2093 . replace cm = cm/100 // define as a share
(17,018 real changes made)

2094 . sum cm,d

CM III - Contribution margin

Percentiles		Smallest		
1%	.054	0		
5%	.1452	.01		
10%	.213	.0103	Obs	17,019
25%	.3439	.0104	Sum of wgt.	17,019

50%	.5032	Mean	.4966064
		Largest	.2089466
75%	.645	1.4286	
90%	.7671	1.4731	Variance
95%	.8356	1.4862	Skewness
99%	.9535	1.9459	Kurtosis

2095 .
 2096 . *gen cs (a ratio of costs to sales)
 2097 . gen cs = costs / sales
 (8,850 missing values generated)

2098 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6835413	-534.5		
5%	.8396033	0		
10%	.8909296	0	Obs	44,207
25%	.9502596	0	Sum of wgt.	44,207
50%	.9900554		Mean	1.689745
		Largest	Std. dev.	109.9261
75%	1.018736	705		
90%	1.096071	1808.406	Variance	12083.74
95%	1.199331	2181.5	Skewness	205.0068
99%	1.878788	22909.38	Kurtosis	42668.15

2099 . replace cs = . if cs<0 // if negative
 (1 real change made, 1 to missing)

2100 . replace cs = . if cs>10 // if very high
 (64 real changes made, 64 to missing)

2101 . sum cs,d

cs

	Percentiles	Smallest		
1%	.6835413	0		
5%	.8395725	0		
10%	.8907359	0	Obs	44,142
25%	.9501742	0	Sum of wgt.	44,142
50%	.989976		Mean	1.01071
		Largest	Std. dev.	.2901771
75%	1.018502	9.285714		
90%	1.094353	9.440821	Variance	.0842027
95%	1.193501	9.551857	Skewness	14.1602
99%	1.782038	9.857142	Kurtosis	297.9043

2102 .
 2103 . *generate iis
 2104 . //gen iis = cm-ws
 2105 . gen iis = cs - ws
 (35,164 missing values generated)

2106 . replace iis = . if iis<0
 (13 real changes made, 13 to missing)

2107 . sum iis, d

iis

	Percentiles	Smallest		
1%	.2938306	0		
5%	.5452226	.0000286		
10%	.6228735	.0000333	Obs	17,880
25%	.72453	.0017035	Sum of wgt.	17,880
50%	.8156551		Mean	.8147783
		Largest	Std. dev.	.2749147
75%	.8914999	8.710821		
90%	.952507	8.804132	Variance	.0755781
95%	1.003513	8.866667	Skewness	12.93014
99%	1.463554	9.285714	Kurtosis	308.4135

2108 .

2109 . *generate cogss

2110 . gen cogss = 1-cm

(36,038 missing values generated)

2111 . replace cogss = . if cogss<0 // if negative
(4 real changes made, 4 to missing)

2112 . sum cogss, d

cogss

	Percentiles	Smallest		
1%	.047	0		
5%	.1648	0		
10%	.2329	0	Obs	17,015
25%	.355	0	Sum of wgt.	17,015
50%	.4968		Mean	.5036491
		Largest	Std. dev.	.2082805
75%	.6561	.9896		
90%	.787	.9897	Variance	.0433808
95%	.8548	.99	Skewness	.0277443
99%	.946	1	Kurtosis	2.449335

2113 .

2114 .

2115 . *correct lp if 1000 times too large

2116 . sum lp if lp<10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	-29000	-1.51e+08		
5%	0	-1.24e+08		
10%	0	-7.08e+07	Obs	14,126
25%	317107.1	-6.31e+07	Sum of wgt.	14,126
50%	551771.2		Mean	1.01e+07
		Largest	Std. dev.	2.08e+07
75%	6152700	9.99e+07		
90%	3.99e+07	9.99e+07	Variance	4.32e+14
95%	6.07e+07	1.00e+08	Skewness	2.281961
99%	8.99e+07	1.00e+08	Kurtosis	8.338561

2117 . sum lp if lp>10^8,d

LP - Labour productivity

	Percentiles	Smallest		
1%	1.01e+08	1.00e+08		
5%	1.05e+08	1.00e+08		
10%	1.13e+08	1.00e+08	Obs	1,475
25%	1.39e+08	1.00e+08	Sum of wgt.	1,475
50%	2.12e+08		Mean	5.25e+08
		Largest	Std. dev.	1.20e+09
75%	4.07e+08	1.17e+10	Variance	1.44e+18
90%	8.20e+08	1.21e+10	Skewness	6.341654
95%	1.73e+09	1.35e+10	Kurtosis	52.18746
99%	6.09e+09	1.42e+10		

2118 . replace lp = lp/1000 if lp>10^8
(1,475 real changes made)

2119 . sum lp,d

LP - Labour productivity

	Percentiles	Smallest		
1%	0	-1.51e+08		
5%	0	-1.24e+08		
10%	60066.67	-7.08e+07	Obs	15,601
25%	282272.7	-6.31e+07	Sum of wgt.	15,601
50%	510337.1		Mean	9181351
		Largest	Std. dev.	2.00e+07
75%	2033865	9.99e+07	Variance	3.99e+14
90%	3.66e+07	9.99e+07	Skewness	2.451837
95%	5.81e+07	1.00e+08	Kurtosis	9.282098
99%	8.93e+07	1.00e+08		

2120 .

2121 . *generate variables

2122 . gen GO = sales

(7,934 missing values generated)

2123 . gen W = ws * sales
(35,143 missing values generated)2124 . gen II = iis * sales
(35,177 missing values generated)2125 . gen COGS= cogss*sales
(38,210 missing values generated)2126 . gen VA = GO - II
(35,177 missing values generated)2127 . gen L = VA / lp if VA/lp>0
(43,230 missing values generated)2128 . gen K = assets
(5,191 missing values generated)

2129 .

2130 .
 2131 . sum VA GO COGS II W K L

Variable	Obs	Mean	Std. dev.	Min	Max
VA	17,880	2.66e+07	1.05e+08	-8.33e+08	4.17e+09
	45,123	1.51e+08	7.66e+08	0	2.96e+10
	14,847	9.25e+07	3.97e+08	0	1.21e+10
	17,880	1.59e+08	7.35e+08	0	2.20e+10
	17,914	2.59e+07	1.03e+08	0	3.25e+09
K	47,866	3.43e+07	2.91e+08	-6367000	1.65e+10
L	9,827	60.05141	143.0745	.0001349	4455.452

2132 .
 2133 . sort id year

 2134 .
 2135 . //entry year
 2136 . egen int entryYr = min(year), by(id)
 (315 missing values generated)

 2137 . egen int exitYr = max(year), by(id)
 (315 missing values generated)

 2138 .
 2139 . // dummies for entry and exit year
 2140 . gen byte entry = (year==entryYr)

 2141 . gen byte exit = (year==exitYr)

 2142 .
 2143 . //number of entries, exits per year
 2144 . tabstat entry exit , stats(sum) by(year)

Summary statistics: Sum
 Group variable: year (Year)

year	entry	exit
1993	21	0
1994	17	0
1995	103	0
1996	66	0
1997	28	0
1998	52	0
1999	40	0
2000	38	0
2001	60	0
2002	105	0
2003	679	0
2004	340	3
2005	299	2
2006	221	2
2007	254	3
2008	226	1
2009	186	6
2010	172	1
2011	149	3
2012	134	9
2013	132	6
2014	155	13
2015	235	23
2016	165	21
2017	138	68
2018	164	109
2019	124	210
2020	100	866
2021	53	3053
2022	0	56
2023	0	1
Total	4456	4456

```

2145 .
2146 . *correct
2147 . replace GO = . if GO<0
(0 real changes made)

2148 . replace COGS = . if COGS<0
(0 real changes made)

2149 . replace II = . if II<0
(0 real changes made)

2150 . replace W = . if W<0
(0 real changes made)

2151 . replace K = . if K<0
(50 real changes made, 50 to missing)

2152 .
2153 . *deflate
2154 .
2155 . /*
> import delimited "deflators.csv", clear
> save "deflators",replace
> */
2156 .
2157 . gen nace2 = floor(nace/10000)
(1 missing value generated)

2158 . merge m:1 year nace2 using "deflators", nogenerate

```

Result	Number of obs
Not matched	2,750
from master	373
from using	2,377
Matched	52,684

```

2159 . duplicates drop id year, force
Duplicates in terms of id year
(2,348 observations deleted)

2160 .
2161 . gen rGO = GO/deflatorprdp,
(8,017 missing values generated)

2162 . gen rVA = VA/deflatorvalp
(35,228 missing values generated)

2163 . gen rII = II/deflatorintp
(35,228 missing values generated)

2164 . gen rW = W/deflatorcpi
(35,194 missing values generated)

2165 . gen rK = K/deflatorgfcpc
(5,326 missing values generated)

```

```

2166 . gen rCOGS = COGS/deflatorintp
      (38,258 missing values generated)

2167 .
2168 . *gen log variables
2169 . gen go = ln(rGO)
      (8,920 missing values generated)

2170 . gen w = ln(rW)
      (35,324 missing values generated)

2171 . gen ii = ln(rII)
      (35,229 missing values generated)

2172 . gen va = ln(rVA)
      (36,149 missing values generated)

2173 . gen l = ln(L)
      (43,259 missing values generated)

2174 . gen k = ln(rK)
      (7,036 missing values generated)

2175 . gen cogs = ln(rCOGS)
      (38,290 missing values generated)

2176 .
2177 . save "magnus", replace
      file magnus.dta saved

2178 .
2179 .
2180 . ****
2181 .
2182 . * PREPARE TENDERS
2183 .
2184 . /*
   > insheet using "master_tender_analytics_202207251530.csv", names clear
   > save "master_tender_analytics_202207251530", replace
   > */
2185 .
2186 . use "master_tender_analytics_202207251530", clear

2187 .
2188 .
2189 . *id
2190 . rename bidder_id id

2191 . drop if length(id)==2 // foreign bidders
      (4,778 observations deleted)

2192 . destring id, replace
      id: all characters numeric; replaced as long

2193 .
2194 .
2195 . *prep for analysis
2196 . rename bid_final_price zakazky

2197 . tabulate src

```

src	Freq.	Percent	Cum.
profil	600,470	64.57	64.57
vestnik	329,474	35.43	100.00
Total	929,944	100.00	

```

2198 . collapse (sum) zakazky, by(id year)

2199 .
2200 .
2201 . save "tenders", replace
      file tenders.dta saved

2202 .
2203 . ****
2204 .
2205 . *MERGE FIRM AND TENDER DATA
2206 . use "magnus", replace

2207 .
2208 . merge 1:1 id year using "tenders"

      Result          Number of obs
      -----
Not matched           199,736
      from master       38,716  (_merge==1)
      from using        161,020 (_merge==2)

Matched              14,370  (_merge==3)
      -----

```

```

2209 .
2210 . /*
>   Result          # of obs.
>   -----
>   not matched     199,736
>       from master  38,716  (_merge==1)
>       from using   161,020 (_merge==2)
>
>   matched         14,370  (_merge==3)
>
>   -----
> */
2211 .
2212 . drop if _merge==2
      (161,020 observations deleted)

2213 .
2214 .
2215 . replace zakazky = 0 if zakazky==.
      (38,716 real changes made)

2216 . bysort id (year): gen zakazky_l1 = zakazky[_n-1]
      (4,771 missing values generated)

2217 . bysort id (year): gen zakazky_l2 = zakazky[_n-2]
      (9,145 missing values generated)

2218 .
2219 . egen zakazky_last3 = rowmean(zakazky zakazky_l1 zakazky_l2)

2220 . gen zakazky_last3_dummy = zakazky_last3>0

2221 .
2222 .
2223 .
2224 . gen zakazky_last3_share = zakazky_last3/sales
      (8,867 missing values generated)

```

2225 . sum zakazky_last3_share, d

zakazky_last3_share

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	44,219
25%	0	0	Sum of wgt.	44,219
50%	0		Mean	.2588343
		Largest	Std. dev.	32.22081
75%	.0340721	11.50745		
90%	.3062294	17.95798	Variance	1038.181
95%	.6100587	123.6422	Skewness	210.1359
99%	1.447512	6774.08	Kurtosis	44177.36

2226 . sum zakazky_last3_share if zakazky_last3_share>1, d

zakazky_last3_share

	Percentiles	Smallest		
1%	1.004784	1.000674		
5%	1.030006	1.00096		
10%	1.056904	1.001428	Obs	987
25%	1.148242	1.00184	Sum of wgt.	987
50%	1.38235		Mean	8.709403
		Largest	Std. dev.	215.601
75%	1.792968	11.50745		
90%	2.566854	17.95798	Variance	46483.78
95%	3.294469	123.6422	Skewness	31.35215
99%	8.725594	6774.08	Kurtosis	984.2982

2227 . replace zakazky_last3_share = 1 if zakazky_last3_share>1
(9,854 real changes made)

2228 . sum zakazky_last3_share,d

zakazky_last3_share

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	53,086
25%	0	0	Sum of wgt.	53,086
50%	0		Mean	.239295
		Largest	Std. dev.	.3922171
75%	.307357	1		
90%	1	1	Variance	.1538342
95%	1	1	Skewness	1.285739
99%	1	1	Kurtosis	2.825712

2229 .

2230 .

2231 . ****

2232 .

2233 . *restrict sample to years with enough data, known industry and pp engagement

2234 .

2235 . drop if year<2006 | year>2021

(6,492 observations deleted)

2236 . keep if nace2 == 41 | nace2 == 42 | nace2 == 43
 (17 observations deleted)

2237 .
 2238 . save "data", replace
 file **data.dta** saved

2239 .
 2240 .
 2241 . ****
 2242 . ****

2243 .
 2244 . use "data", replace

2245 .
 2246 . * SUMMARY STATISTICS
 2247 . gen GO_mil = rGO/1000000
 (7,192 missing values generated)

2248 . gen VA_mil = rVA/1000000
 (29,975 missing values generated)

2249 . gen K_mil = rK/1000000
 (4,485 missing values generated)

2250 . gen II_mil = rII/1000000
 (29,975 missing values generated)

2251 . gen W_mil = rW/1000000
 (29,943 missing values generated)

2252 . gen COGS_mil = rCOGS/1000000
 (32,917 missing values generated)

2253 .

2254 . tabstat GO_mil COGS_mil II_mil K_mil W_mil L if !missing(COGS_mil,K_mil,II_mil), stat(mean median sd min max count)

Stats	GO_mil	COGS_mil	II_mil	K_mil	W_mil	L
Mean	199.35	87.34	174.20	45.35	28.49	67.08
p50	57.61	26.69	47.91	6.89	9.17	19.60
SD	854.94	363.50	779.97	348.48	102.66	145.25
Min	0.01	0.00	0.00	0.00	0.00	0.00
Max	26070.78	12067.94	22398.16	16438.20	3477.34	4455.45
N	13459.00	13459.00	13459.00	13459.00	13459.00	7561.00

2255 .

2256 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) , stat(mean median

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	78.36	38.62	36.77
p50	35.25	18.49	3.94
SD	141.02	72.58	438.47
Min	0.00	0.00	0.00
Max	2716.69	1612.83	16438.20
N	7108.00	7108.00	7108.00

-> zakazky_last3_dummy = 1

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Stats	GO_mil	COGS_mil	K_mil
Mean	346.50	146.14	55.12
p50	93.92	39.44	11.65
SD	1319.24	550.76	205.40
Min	0.00	0.00	0.00
Max	26070.78	12067.94	4938.02
N	6374.00	6374.00	6374.00

2257 .

2258 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==41 , stat(m)

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	89.92	40.97	52.03
p50	42.57	20.03	4.72
SD	162.79	76.45	577.79
Min	0.00	0.00	0.00
Max	2716.69	1612.83	16438.20
N	3397.00	3397.00	3397.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	252.59	102.99	42.65
p50	95.37	36.89	10.73
SD	611.23	297.71	114.40
Min	0.00	0.00	0.00
Max	6123.51	5404.74	1372.37
N	3763.00	3763.00	3763.00

2259 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==42 , stat(m)

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	96.84	42.62	20.74
p50	50.42	26.90	10.83
SD	165.96	51.68	35.61
Min	0.07	0.02	0.00
Max	1872.39	476.62	376.52
N	282.00	282.00	282.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	945.18	336.04	141.68
p50	131.70	64.14	25.36
SD	3175.57	1071.56	475.51
Min	3.22	1.12	0.00
Max	26070.78	10065.88	4938.02
N	797.00	797.00	797.00

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2260 . bys zakazky_last3_dummy : tabstat GO_mil COGS_mil K_mil if !missing(GO_mil, COGS_mil,K_mil) & nace2==43 , stat(m

-> zakazky_last3_dummy = 0

Stats	GO_mil	COGS_mil	K_mil
Mean	65.38	35.97	22.97
p50	28.74	16.72	3.02
SD	111.30	69.98	259.46
Min	0.01	0.00	0.00
Max	1875.44	1114.33	6730.56
N	3429.00	3429.00	3429.00

-> zakazky_last3_dummy = 1

Stats	GO_mil	COGS_mil	K_mil
Mean	278.25	152.23	42.96
p50	79.19	38.61	9.73
SD	857.03	598.73	134.58
Min	0.02	0.01	0.00
Max	12579.94	12067.94	1739.88
N	1814.00	1814.00	1814.00

2261 .

2262 .

2263 . tabstat zakazky_last3_dummy, by(year) stat(N sum)

Summary for variables: zakazky_last3_dummy

Group variable: year (Year)

year	N	Sum
2006	1828	326
2007	2107	436
2008	2328	525
2009	2541	614
2010	2661	643
2011	2641	616
2012	2621	686
2013	2015	669
2014	2358	879
2015	3431	1447
2016	3649	1639
2017	3763	1840
2018	3793	1918
2019	3856	1990
2020	3878	1985
2021	3107	1556
Total	46577	17769

2264 . tabstat zakazky_last3_share if zakazky_last3_dummy == 1, by(year) stat(N mean)

Summary for variables: zakazky_last3_share

Group variable: year (Year)

year	N	Mean
2006	326	.1252092
2007	436	.1675681
2008	525	.1987663
2009	614	.2361202
2010	643	.2640137
2011	616	.299955
2012	686	.3280902
2013	669	.6397752
2014	879	.5228537
2015	1447	.2120005
2016	1639	.3229847
2017	1840	.3528298
2018	1918	.3877045
2019	1990	.4215994
2020	1985	.462796
2021	1556	.5547972
Total	17769	.3759507

```

2265 .
2266 . ****ESTIMATION*****
2267 . *                                *
2268 . ****
2269 . use "data", replace

2270 . set seed 42

2271 .
2272 .
2273 . *setting panel structure
2274 . xtset id year, yearly

Panel variable: id (unbalanced)
Time variable: year, 2006 to 2021, but with gaps
Delta: 1 year

2275 . gen proxy=cogs
        (32,947 missing values generated)

2276 .
2277 . *-----OLS-----*
2278 .
2279 . reg go k cogs i.year if nace2==41, cluster(id)

Linear regression                               Number of obs     =    7,064
                                                F(17, 952)      =   216.83
                                                Prob > F       =   0.0000
                                                R-squared       =   0.8373
                                                Root MSE        =   .52257

                                                (Std. err. adjusted for 953 clusters in id)



| go   | Coefficient | Robust std. err. | t     | P> t  | [95% conf. interval] |
|------|-------------|------------------|-------|-------|----------------------|
| k    | .078921     | .0126327         | 6.25  | 0.000 | .0541299 .1037121    |
| cogs | .8480262    | .0264364         | 32.08 | 0.000 | .7961458 .8999066    |
| year |             |                  |       |       |                      |
| 2007 | .0115777    | .026912          | 0.43  | 0.667 | -.041236 .0643914    |
| 2008 | -.032049    | .032509          | -0.99 | 0.324 | -.0958465 .0317486   |
| 2009 | -.0791401   | .0337755         | -2.34 | 0.019 | -.1454231 -.0128571  |
| 2010 | -.113006    | .0346562         | -3.26 | 0.001 | -.1810174 -.0449946  |
| 2011 | -.0755212   | .0374848         | -2.01 | 0.044 | -.1490836 -.0019588  |
| 2012 | -.1003806   | .0381353         | -2.63 | 0.009 | -.1752195 -.0255417  |
| 2013 | -.1574373   | .0444543         | -3.54 | 0.000 | -.2446771 -.0701975  |
| 2014 | -.1683098   | .0417834         | -4.03 | 0.000 | -.2503079 -.0863116  |
| 2015 | -.0632136   | .0363927         | -1.74 | 0.083 | -.1346327 .0082056   |
| 2016 | -.100611    | .0382467         | -2.63 | 0.009 | -.1756685 -.0255535  |
| 2017 | -.1000384   | .0365654         | -2.74 | 0.006 | -.1717964 -.0282804  |


```

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2018	-.066268	.0379539	-1.75	0.081	-.140751	.008215
2019	-.0648476	.0379434	-1.71	0.088	-.13931	.0096148
2020	-.0800163	.0375382	-2.13	0.033	-.1536834	-.0063492
2021	-.1513274	.0371087	-4.08	0.000	-.2241516	-.0785032
_cons	2.294749	.3590092	6.39	0.000	1.590209	2.99929

2280 . estimates store ols41

2281 . gen bwols41=_b[cogs]

2282 . gen bkols41=_b[k]

2283 . gen markup_OLS41=_b[cogs]/cogss
(30,987 missing values generated)

2284 . sum markup_OLS41,d

markup_OLS41

	Percentiles	Smallest		
1%	.8964336	.8480262		
5%	.9920756	.8565921		
10%	1.078502	.8568518	Obs	15,590
25%	1.294697	.8569384	Sum of wgt.	15,590
50%	1.710765		Mean	3.291366
		Largest	Std. dev.	52.00432
75%	2.390826	848.0371		
90%	3.631804	2120.03	Variance	2704.449
95%	5.096311	4240.691	Skewness	74.1475
99%	15.11633	4240.691	Kurtosis	5837.174

2285 . replace markup_OLS41 = . if markup_OLS41<r(p1) | markup_OLS41>r(p99)
(310 real changes made, 310 to missing)

2286 . tabstat markup_OLS41, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS41	2.140076	1.710765	1.515429

2287 .

2288 .

2289 . reg go k cogs i.year if nace2==42, cluster(id)

Linear regression		Number of obs = 1,072			
		F(17, 112) = 183.48			
		Prob > F = 0.0000			
		R-squared = 0.9318			
		Root MSE = .39168			

(Std. err. adjusted for 113 clusters in id)

go	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
k	.028833	.0363951	0.79	0.430	-.0432792
cogs	1.003825	.0460954	21.78	0.000	.9124928
year					
2007	-.0277169	.0379702	-0.73	0.467	-.10295
2008	-.114197	.0652158	-1.75	0.083	-.2434137
2009	-.0858335	.0649773	-1.32	0.189	-.2145777
2010	-.1449484	.0658089	-2.20	0.030	-.2753402
2011	-.1300241	.0727397	-1.79	0.077	-.2741486
2012	-.2058784	.073279	-2.81	0.006	-.3510713
2013	-.2254892	.0736829	-3.06	0.003	-.3714825
2014	-.1020582	.0613565	-1.66	0.099	-.2236283
2015	-.093817	.0689153	-1.36	0.176	-.2303638
2016	-.168741	.0705299	-2.39	0.018	-.3084869

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2017	-.1740874	.0660265	-2.64	0.010	-.3049105	-.0432643
2018	-.214133	.066857	-3.20	0.002	-.3466015	-.0816645
2019	-.1629615	.0674002	-2.42	0.017	-.2965064	-.0294167
2020	-.1500459	.0698686	-2.15	0.034	-.2884817	-.0116102
2021	-.1507378	.0813618	-1.85	0.067	-.3119459	.0104702
_cons	.362502	.4328992	0.84	0.404	-.4952322	1.220236

2290 . estimates store ols42

2291 . gen bwols42=_b[cogs]

2292 . gen bkols42=_b[k]

2293 . gen markup_OLS42=_b[cogs]/cogss
(30,987 missing values generated)

2294 . sum markup_OLS42,d

markup_OLS42

Percentiles		Smallest	
1%	1.061126	1.003825	
5%	1.174339	1.013965	
10%	1.276644	1.014272	Obs
25%	1.532557	1.014374	Sum of wgt.
50%	2.025065		Mean
			Std. dev.
75%	2.830067	1003.838	
90%	4.299037	2509.52	Variance
95%	6.032601	5019.788	Skewness
99%	17.89349	5019.788	Kurtosis

2295 . replace markup_OLS42 = . if markup_OLS42<r(p1) | markup_OLS42>r(p99)
(310 real changes made, 310 to missing)

2296 . tabstat markup_OLS42, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS42	2.53325	2.025065	1.793842

2297 .

2298 .

2299 . reg go k cogs i.year if nace2==43, cluster(id)

Linear regression	Number of obs	=	5,132
	F(17, 808)	=	215.51
	Prob > F	=	0.0000
	R-squared	=	0.8562
	Root MSE	=	.49496

(Std. err. adjusted for 809 clusters in id)

go	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
k	.103456	.0178451	5.80	0.000	.0684279	.1384842
cogs	.7894154	.0260694	30.28	0.000	.7382437	.8405871
year						
2007	.0164396	.0322368	0.51	0.610	-.0468382	.0797174
2008	.0182648	.0301756	0.61	0.545	-.040967	.0774966
2009	-.0070831	.0344372	-0.21	0.837	-.0746801	.0605138
2010	-.0628265	.0324878	-1.93	0.053	-.126597	.0009439
2011	-.0505984	.034636	-1.46	0.144	-.1185856	.0173888
2012	-.0638445	.0340975	-1.87	0.062	-.1307745	.0030856
2013	-.0473167	.0449678	-1.05	0.293	-.135584	.0409507
2014	-.0229836	.0362026	-0.63	0.526	-.0940457	.0480786
2015	.0172926	.0360252	0.48	0.631	-.0534214	.0880066

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2016	.0223417	.0414252	0.54	0.590	-.0589721	.1036554
2017	.023818	.0410855	0.58	0.562	-.0568289	.1044649
2018	.0580483	.0414508	1.40	0.162	-.0233157	.1394123
2019	.0317638	.0407374	0.78	0.436	-.0481999	.1117275
2020	.0098621	.0405335	0.24	0.808	-.0697013	.0894256
2021	-.0158983	.043282	-0.37	0.713	-.1008568	.0690603
_cons	2.660115	.3069676	8.67	0.000	2.057567	3.262663

2300 . estimates store ols43

2301 . gen bwols43=_b[cogs]

2302 . gen bkols43=_b[k]

2303 . gen markup_OLS43=_b[cogs]/cogss
(30,987 missing values generated)

2304 . sum markup_OLS43,d

markup_OLS43

Percentiles		Smallest	
1%	.8344772	.7894154	
5%	.9235089	.7973893	
10%	1.003962	.797631	Obs 15,590
25%	1.205214	.7977116	Sum of wgt. 15,590
50%		Mean 3.063885	
		Largest Std. dev. 48.41007	
75%	2.225586	789.4255	
90%	3.380795	1973.505	Variance 2343.535
95%	4.744082	3947.598	Skewness 74.1475
99%	14.07157	3947.598	Kurtosis 5837.174

2305 . replace markup_OLS43 = . if markup_OLS43<r(p1) | markup_OLS43>r(p99)
(310 real changes made, 310 to missing)

2306 . tabstat markup_OLS43, statistics(mean median sd)

Variable	Mean	p50	SD
markup_OLS43	1.992166	1.592527	1.410691

2307 .

2308 .

2309 . estout ols41 ols42 ols43, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N)

	ols41 b/se	ols42 b/se	ols43 b/se
k	0.079*** (0.013)	0.029 (0.036)	0.103*** (0.018)
cogs	0.848*** (0.026)	1.004*** (0.046)	0.789*** (0.026)
Year=2006	0.000 (.)	0.000 (.)	0.000 (.)
Year=2007	0.012 (0.027)	-0.028 (0.038)	0.016 (0.032)
Year=2008	-0.032 (0.033)	-0.114 (0.065)	0.018 (0.030)
Year=2009	-0.079* (0.034)	-0.086 (0.065)	-0.007 (0.034)
Year=2010	-0.113** (0.035)	-0.145* (0.066)	-0.063 (0.032)
Year=2011	-0.076* (0.037)	-0.130 (0.073)	-0.051 (0.035)
Year=2012	-0.100** (0.037)	-0.206** (0.073)	-0.064 (0.035)

	(0.038)	(0.073)	(0.034)
Year=2013	-0.157*** (0.044)	-0.225** (0.074)	-0.047 (0.045)
Year=2014	-0.168*** (0.042)	-0.102 (0.061)	-0.023 (0.036)
Year=2015	-0.063 (0.036)	-0.094 (0.069)	0.017 (0.036)
Year=2016	-0.101** (0.038)	-0.169* (0.071)	0.022 (0.041)
Year=2017	-0.100** (0.037)	-0.174** (0.066)	0.024 (0.041)
Year=2018	-0.066 (0.038)	-0.214** (0.067)	0.058 (0.041)
Year=2019	-0.065 (0.038)	-0.163* (0.067)	0.032 (0.041)
Year=2020	-0.080* (0.038)	-0.150* (0.070)	0.010 (0.041)
Year=2021	-0.151*** (0.037)	-0.151 (0.081)	-0.016 (0.043)
Constant	2.295*** (0.359)	0.363 (0.433)	2.660*** (0.307)
N	7064.000	1072.000	5132.000

* p<0.05, ** p<0.01, *** p<0.001

```

2310 .
2311 . gen markup_OLS = markup_OLS41 if nace2==41
      (38,499 missing values generated)

2312 . replace markup_OLS = markup_OLS42 if nace2==42
      (1,265 real changes made)

2313 . replace markup_OLS = markup_OLS43 if nace2==43
      (5,937 real changes made)

2314 .
2315 .
2316 . sum markup_OLS,d

```

markup_OLS

	Percentiles	Smallest	Obs	15,280
1%	.8787882	.8344772		
5%	.9615899	.8344772		
10%	1.043021	.8349184	Sum of wgt.	15,280
25%	1.271404	.8350068		
50%	1.699731		Mean	2.117568
		Largest	Std. dev.	1.48988
75%	2.382765	14.5459		
90%	3.494853	14.82563	Variance	2.219741
95%	4.609862	14.8516	Skewness	3.607843
99%	9.042552	14.87766	Kurtosis	21.38237

```
2317 . tabstat markup_OLS, statistics( median )
```

Variable	p50
markup_OLS	1.699731

2318 . tabulate zakazky_last3_dummy, summarize(markup_OLS)

zakazky_last3_dummy	Summary of markup_OLS		
	Mean	Std. dev.	Freq.
0	2.0443315	1.6543867	8,048
1	2.1990671	1.2774235	7,232
Total	2.1175676	1.4898797	15,280

2319 .

2320 . /* plot the graph */

2321 . tw (kdensity markup_OLS if nace2 == 41, lw(medthick) lp(_.) lc(ebblue)) (kdensity markup_OLS if nace2 == 42, lw(medthick) lp(_.-) lc(forest_green)) /*
/ // if markup_OLS > 0 & markup_OLS < 3, ytitle("Density") xtitle("mu_OLS") legend(order(1 "Sector 41" 2 "Sector 42"))

2322 .

2323 .

2324 . gen lmu_OLS= ln(markup_OLS)
(31,297 missing values generated)

2325 .

2326 .

2327 . *-----fixed effects-----*

2328 .

2329 . xtreg go cogs k i.year, fe cluster(id)

Fixed-effects (within) regression Number of obs = **13,268**
 Group variable: id Number of groups = **1,875**

R-squared:

Within = **0.6803**Between = **0.8649**Overall = **0.8521**

Obs per group:

min = **1**avg = **7.1**max = **16**F(17, 1874) = **152.53**Prob > F = **0.0000**

(Std. err. adjusted for 1,875 clusters in id)

go	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
cogs	.7410653	.0267691	27.68	0.000	.688565	.7935656
k	.0415544	.0084119	4.94	0.000	.0250567	.0580522
year						
2007	.0322021	.0145143	2.22	0.027	.0037362	.0606679
2008	.0051981	.0166966	0.31	0.756	-.0275477	.0379439
2009	-.0342972	.0179298	-1.91	0.056	-.0694617	.0008673
2010	-.0709708	.0186882	-3.80	0.000	-.1076227	-.0343189
2011	-.0479405	.0199772	-2.40	0.017	-.0871204	-.0087607
2012	-.0939459	.0203616	-4.61	0.000	-.1338797	-.0540121
2013	-.0755895	.0217743	-3.47	0.001	-.1182938	-.0328851
2014	-.066816	.0213068	-3.14	0.002	-.1086037	-.0250284
2015	-.0317526	.0204365	-1.55	0.120	-.0718334	.0083282
2016	-.0663632	.0215082	-3.09	0.002	-.1085458	-.0241806
2017	-.0465172	.02212877	-2.19	0.029	-.0882673	-.004767
2018	-.0132583	.02213723	-0.62	0.535	-.0551743	.0286578
2019	-.0123762	.02213521	-0.58	0.562	-.0542525	.0295002
2020	-.0468873	.02211033	-2.22	0.026	-.0882758	-.0054988
2021	-.0714352	.0209702	-3.41	0.001	-.1125625	-.0303079
_cons	4.605188	.4043628	11.39	0.000	3.812139	5.398237
sigma_u	.5024006					
sigma_e	.27394175					
rho	.77082271	(fraction of variance due to u_i)				

```

2330 .
2331 . gen bcogsolsfe_gocogs=_b[cogs]
2332 . gen bkolsfe_vaw=_b[k]
2333 . gen markup_OLSfe_gocogs=_b[cogs]/cogss
      (30,987 missing values generated)
2334 . sum markup_OLSfe_gocogs,d

```

markup_OLSfe_gocogs

	Percentiles	Smallest		
1%	.7833672	.7410653		
5%	.8669459	.7485508		
10%	.9424715	.7487777	Obs	15,590
25%	1.131397	.7488534	Sum of wgt.	15,590
50%	1.494988		Mean	2.876229
		Largest	Std. dev.	45.44506
75%	2.089273	741.0749		
90%	3.173728	1852.632	Variance	2065.253
95%	4.453517	3705.816	Skewness	74.1475
99%	13.20972	3705.816	Kurtosis	5837.174

```

2335 . replace markup_OLSfe_gocogs = . if markup_OLSfe_gocogs<r(p1) | markup_OLSfe_gocogs>r(p99)
      (310 real changes made, 310 to missing)

```

```

2336 . tabstat markup_OLSfe_gocogs, statistics( median )

```

Variable	p50
markup_OLS~s	1.494988

```

2337 . tabulate nace2, summarize(markup_OLSfe_gocogs)

```

nace2	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
41	1.9883677	1.3120558	8,078
42	1.7644537	.83425619	1,265
43	1.7318223	1.4081599	5,937
Total	1.8701504	1.3242888	15,280

```

2338 . tabulate year, summarize(markup_OLSfe_gocogs)

```

Year	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7901605	1.2531071	568
2007	1.8560792	1.3279582	655
2008	1.7928016	1.2092566	734
2009	1.8057777	1.1355839	812
2010	1.8447284	1.3775467	869
2011	1.8369906	1.3339851	908
2012	1.7508081	1.2129399	939
2013	1.7247239	1.1562218	958
2014	1.7852128	1.2660287	998
2015	1.8719256	1.3765128	1,049
2016	1.8626924	1.3296415	1,018
2017	1.9155405	1.4204059	1,138
2018	2.0037523	1.4221877	1,169
2019	2.030255	1.4646224	1,165
2020	1.9703965	1.323097	1,194
2021	1.909684	1.3349592	1,106
Total	1.8701504	1.3242888	15,280

2339 .
 2340 . tabulate zakazky_last3_dummy, summarize(markup_OLSfe_gocogs)

zakazky_las t3_dummy	Summary of markup_OLSfe_gocogs		
	Mean	Std. dev.	Freq.
0	1.8329884	1.4904743	8,048
1	1.9115053	1.1091331	7,232
Total	1.8701504	1.3242888	15,280

2341 .
 2342 .
 2343 . tw (kdensity markup_OLSfe_gocogs if nace2 == 41, lw(medthick) lp(_.) lc(ebblue)) (kdensity markup_OLSfe_gocogs if nace2 == 43, lw(medthick) lp(..-) lc(forest_green)) /*
> */ if markup_OLSfe_gocogs > 0 & markup_OLSfe_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 2))
 2344 .
 2345 .
 2346 .
 2347 . *----- prodest: LP(2003) + ACF(2015) -----*
 2348 .
 2349 .
 2350 .
 2351 . *CD, cogs
 2352 . *sector
 2353 . prodest go if nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(yea

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 7064
 Group variable (id): id Number of groups = 953
 Time variable (t): year Obs per group: min = 1
 avg = 7.4
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8265677	.0004976	1661.21	0.000	.8255924 .8275429
k	.0668133	.0102918	6.49	0.000	.0466417 .086985
year	-.0155147	.0047997	-3.23	0.001	-.024922 -.0061074
zakazky_last3_dummy	.1612145	.0003622	445.07	0.000	.1605045 .1619244

Wald test on Constant returns to scale: Chi2 = 71.17
 p = (0.00)

2354 . estimates store cf41

2355 . prodest go if nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(yea

lp productivity estimator Cobb-Douglas PF
 ACF corrected
 Dependent variable: value added Number of obs = 1072
 Group variable (id): id Number of groups = 113
 Time variable (t): year Obs per group: min = 1
 avg = 9.5
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9853129	.0066522	148.12	0.000	.9722749 .998351
k	.0236331	.0328911	0.72	0.472	-.0408323 .0880984
year	-.0172191	.0010047	-17.14	0.000	-.0191883 -.0152498
zakazky_last3_dummy	.1050016	.0149338	7.03	0.000	.075732 .1342713

Wald test on Constant returns to scale: Chi2 = 36.36
p = (0.00)

2356 . estimates store cf42

2357 . prodest go if nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last3_dummy) control(year.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 5132
Group variable (id): id Number of groups = 809
Time variable (t): year Obs per group: min = 1
avg = 6.3
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7816284	.0060918	128.31	0.000	.7696887 .7935681
k	.101435	.0149988	6.76	0.000	.0720378 .1308322
year	.0010028	.0007057	1.42	0.155	-.0003803 .002386
zakazky_last3_dummy	.0977943	.0058147	16.82	0.000	.0863978 .1091908

Wald test on Constant returns to scale: Chi2 = 7.19
p = (0.01)

2358 . estimates store cf43

2359 .
2360 . estout ols41 cf41 ols42 cf42 ols43 cf43, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N) keep(cogs k)

	ols41 b/se	cf41 b/se	ols42 b/se	cf42 b/se	ols43 b/se	cf43 b/se
k	0.079*** (0.013)	0.067*** (0.010)	0.029 (0.036)	0.024 (0.033)	0.103*** (0.018)	0.101*** (0.015)
cogs	0.848*** (0.026)	0.827*** (0.000)	1.004*** (0.046)	0.985*** (0.007)	0.789*** (0.026)	0.782*** (0.006)
N	7064.000	7064.000	1072.000	1072.000	5132.000	5132.000

* p<0.05, ** p<0.01, *** p<0.001

2361 .

2362 . *+ market

2363 . prodest go if zakazky_last3_dummy==1 & nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 3747
Group variable (id): id Number of groups = 619
Time variable (t): year Obs per group: min = 1
avg = 6.1
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8955608	.0055461	161.48	0.000	.8846907 .9064308
k	.0561378	.0108566	5.17	0.000	.0348593 .0774163
year	-.0151032	.0028257	-5.34	0.000	-.0206415 -.009565

Wald test on Constant returns to scale: Chi2 = 651.10
p = (0.00)

2364 . estimates store cf41pp1

2365 . prodest go if zakazky_last3_dummy==0 & nace2==41, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator	Cobb-Douglas PF									
ACF corrected										
Dependent variable: value added										
Number of obs = 3317										
Group variable (id): id										
Number of groups = 712										
Time variable (t): year										
Obs per group: min = 1										
avg = 4.7										
max = 16										

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7967013	.0058675	135.78	0.000	.7852012 .8082013
k	.0443429	.0114174	3.88	0.000	.0219652 .0667205
year	.0109323	.00373	2.93	0.003	.0036217 .0182429

Wald test on Constant returns to scale: Chi2 = 466.86
p = (0.00)

2366 . estimates store cf41pp0

2367 .

2368 . prodest go if zakazky_last3_dummy==1 & nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator	Cobb-Douglas PF									
ACF corrected										
Dependent variable: value added										
Number of obs = 792										
Group variable (id): id										
Number of groups = 103										
Time variable (t): year										
Obs per group: min = 1										
avg = 7.7										
max = 15										

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	3.716709	1.326739	2.80	0.005	1.116348 6.317069
k	-.0359281	.0128323	-2.80	0.005	-.061079 -.0107772
year	.0012908	.0004667	2.77	0.006	.000376 .0022055

Wald test on Constant returns to scale: Chi2 = 4.16
p = (0.04)

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2369 . estimates store cf42pp1

2370 . prodest go if zakazky_last3_dummy==0 & nace2==42, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 280
Group variable (id): id Number of groups = 67
Time variable (t): year Obs per group: min = 1
Number of obs = 280
Number of groups = 67
Time variable (t): year Obs per group: avg = 4.2
max = 13

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8605481	.7166137	1.20	0.230	-.5439888 2.265085
k	.0661202	.0531733	1.24	0.214	-.0380975 .1703379
year	-.0261149	.080571	-0.32	0.746	-.1840312 .1318013

Wald test on Constant returns to scale: Chi2 = 0.02
p = (0.89)

2371 . estimates store cf42pp0

2372 .

2373 . prodest go if zakazky_last3_dummy==1 & nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 1812
Group variable (id): id Number of groups = 378
Time variable (t): year Obs per group: min = 1
Number of obs = 1812
Number of groups = 378
Time variable (t): year Obs per group: avg = 4.8
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8792095	.0000134	6.6e+04	0.000	.8791832 .8792357
k	.0934534	.0000116	8042.25	0.000	.0934306 .0934761
year	-.0062384

Wald test on Constant returns to scale: Chi2 = 8.4e+06
p = (0.00)

2374 . estimates store cf43pp1

2375 . prodest go if zakazky_last3_dummy==0 & nace2==43, va free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazk.....

lp productivity estimator Cobb-Douglas PF
ACF corrected
Dependent variable: value added Number of obs = 3320
Group variable (id): id Number of groups = 715
Time variable (t): year Obs per group: min = 1
Number of obs = 3320
Number of groups = 715
Time variable (t): year Obs per group: avg = 4.6
max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.7409568	.0043717	169.49	0.000	.7323885 .7495252
k	.0766042	.0084501	9.07	0.000	.0600423 .0931662
year	.0000709	.0055058	0.01	0.990	-.0107203 .010862

Wald test on Constant returns to scale: Chi2 = 1716.76
p = (0.00)

2376 . estimates store cf43pp0

2377 .
2378 .

2379 . estout cf41pp1 cf41pp0 cf42pp1 cf42pp0 cf43pp1 cf43pp0, cells(b(star fmt(3)) se(par fmt(3))) ///
> legend label varlabels(_cons Constant) ///
> stats(N) keep(k cogs)

	cf41pp1 b/se	cf41pp0 b/se	cf42pp1 b/se	cf42pp0 b/se	cf43pp1 b/se	cf43pp0 b/se
cogs	0.896*** (0.006)	0.797*** (0.006)	3.717** (1.327)	0.861 (0.717)	0.879*** (0.000)	0.741*** (0.004)
k	0.056*** (0.011)	0.044*** (0.011)	-0.036** (0.013)	0.066 (0.053)	0.093*** (0.000)	0.077*** (0.008)
N	3747.000	3317.000	792.000	280.000	1812.000	3320.000

* p<0.05, ** p<0.01, *** p<0.001

2380 .
2381 .
2382 .
2383 . *Translog, cogs
2384 . prodest go if nace2==41,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last
.....

lp productivity estimator	translog PF
ACF corrected	
Dependent variable: value added	Number of obs = 7064
Group variable (id): id	Number of groups = 953
Time variable (t): year	Obs per group: min = 1
	avg = 7.4
	max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.0100155	.0001088	92.04	0.000	.0098022 .0102288
k	.1387979	.0000148	9379.04	0.000	.1387689 .1388269
year	-.0082624	.0000866	-95.46	0.000	-.008432 -.0080927
zakazky_last3_dummy	.1816242	.0000364	4986.93	0.000	.1815528 .1816955
var_1_1	.0349797	.0000119	2933.18	0.000	.0349564 .0350031
var_1_2	-.0239404	.000098	-244.39	0.000	-.0241324 -.0237484
var_2_2	.0105711	.0001136	93.07	0.000	.0103485 .0107937

Wald test on Constant returns to scale: Chi2 = 1.0e+10
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type predict, parameters

2385 . predict, parameters

Translog elasticity estimates	prodest	postestimation
Elasticity Parameter	Value	
beta_cogs	0.835	
beta_k		

2386 . prodest go if nace2==42,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last
.....

lp productivity estimator
 ACF corrected
 Dependent variable: value added
 Group variable (id): id
 Time variable (t): year
 translog PF
 Number of obs = 1072
 Number of groups = 113
 Obs per group: min = 1
 avg = 9.5
 max = 16

	go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
zakazky_last3_dummy	cogs	.1393843	.0001023	1362.10	0.000	.1391837 .1395848
	k	.1400846	2.07e-06	6.8e+04	0.000	.1400806 .1400887
	year	.0045726	.0000317	144.05	0.000	.0045104 .0046348
		.1350138	.0000377	3579.52	0.000	.1349399 .1350878
	var_1_1	.0559602	.0000164	3419.74	0.000	.0559281 .0559922
	var_1_2	-.0284343	4.31e-06	-6603.93	0.000	-.0284427 -.0284258
	var_2_2	.0102294	.0002481	41.24	0.000	.0097432 .0107156

Wald test on Constant returns to scale: Chi2 = 7.6e+07
p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type [predict](#), [parameters](#)

2387 . predict, parameters

Translog elasticity estimates	prodest postestimation
Elasticity Parameter	Value
beta_cogs	1.615
beta_k	

2388 . prodest go if nace2==43,va translog method(lp) free(cogs) proxy(proxy) state(k) acf endogenous(proxy zakazky_last
.....

lp productivity estimator
 ACF corrected
 Dependent variable: value added
 Group variable (id): id
 Time variable (t): year
 translog PF
 Number of obs = 5132
 Number of groups = 809
 Obs per group: min = 1
 avg = 6.3
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	-.2401373	.0154856	-15.51	0.000	-.2704885 -.2097861
k	.0361117	.0022202	16.26	0.000	.0317601 .0404633
year	-.000606	.0006862	-0.88	0.377	-.0019508 .0007389
zakazky_last3_dummy	.0949345	.0065954	14.39	0.000	.0820079 .1078612
var_1_1	.0533752	.0035684	14.96	0.000	.0463812 .0603691
var_1_2	-.0431598	.0030095	-14.34	0.000	-.0490583 -.0372613
var_2_2	.0258113	.0014887	17.34	0.000	.0228936 .028729

Wald test on Constant returns to scale: Chi2 = 43770.98

p = (0.00)

Estimated parameters displayed. To see estimated input elasticities, type predict, parameters

2389 . predict, parameters

Translog elasticity estimates		prodest postestimation
Elasticity Parameter	Value	
beta_cogs	0.915	
beta_k		

2390 .
 2391 . *----- prodest: Wooldridge (WRDG, 2009)-----*
 2392 .
 2393 .
 2394 .
 2395 . *Cobb-Douglas
 2396 . prodest go, va method(wrdg) free(cogs) state(k) proxy(proxy) endogenous(proxy zakazky_last3_dummy) control(year za

wrdg productivity estimator Cobb-Douglas PF

Dependent variable: value added Number of obs = 9899
 Group variable (id): id Number of groups = 1875
 Time variable (t): year Obs per group: min = 1
 avg = 7.1
 max = 16

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.8377605	.0143058	58.56	0.000	.8097217 .8657993
k	.0695639	.005263	13.22	0.000	.0592487 .0798792
year	1.241478	.4171308	2.98	0.003	.4239166 2.059039
zakazky_last3_dummy	-3.661229	.9923085	-3.69	0.000	-5.606118 -1.71634
nace2	-.0380421	.0187997	-2.02	0.043	-.0748889 -.0011953

Wald test on Constant returns to scale: Chi2 = 9.77

p = (0.00)

Hansen's J statistic for overidentification = 584.25
 p = (0.00)

```
2397 . gen bcogswrdg_gocogs=_b[cogs]
2398 . gen bkwrdf_gocogs=_b[k]
2399 . gen markup_wrdg_gocogs=_b[cogs]/cogss
      (30,987 missing values generated)
2400 . sum markup_wrdg_gocogs,d
```

markup_wrdg_gocogs

	Percentiles	Smallest		
1%	.8855819	.8377604		
5%	.9800661	.8462227		
10%	1.0654446	.8464792	Obs	15,590
25%	1.279024	.8465648	Sum of wgt.	15,590
50%	1.690055		Mean	3.251522
		Largest	Std. dev.	51.37478
75%	2.361884	837.7712		
90%	3.58784	2094.366	Variance	2639.368
95%	5.034618	4189.355	Skewness	74.1475
99%	14.93334	4189.355	Kurtosis	5837.174

```
2401 . replace markup_wrdg_gocogs= . if markup_wrdg_gocogs <r(p1) | markup_wrdg_gocogs >r(p99)
      (310 real changes made, 310 to missing)
```

```
2402 . tabstat markup_wrdg_gocogs, statistics( median )
```

Variable	p50
markup_wrd~s	1.690055

```
2403 . tabulate year, summarize(markup_wrdg_gocogs)
```

Year	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
2006	2.0237429	1.416614	568
2007	2.0982628	1.5012319	655
2008	2.0267286	1.3670419	734
2009	2.0413979	1.2837564	812
2010	2.0854309	1.5572907	869
2011	2.0766835	1.5080451	908
2012	1.9792557	1.3712059	939
2013	1.9497681	1.307087	958
2014	2.0181497	1.4312218	998
2015	2.1161768	1.5561219	1,049
2016	2.1057388	1.5031348	1,018
2017	2.1654827	1.6057423	1,138
2018	2.2652044	1.6077565	1,169
2019	2.2951652	1.6557282	1,165
2020	2.2274963	1.4957363	1,194
2021	2.1588619	1.5091464	1,106
Total	2.1141699	1.4970837	15,280

```
2404 . tabulate nace2, summarize(markup_wrdg_gocogs)
```

nace2	Summary of markup_wrdg_gocogs		
	Mean	Std. dev.	Freq.
41	2.2478125	1.4832544	8,078
42	1.9946818	.94311099	1,265
43	1.9577926	1.5918983	5,937
Total	2.1141699	1.4970837	15,280

```

2405 .
2406 . tw (kdensity markup_wrdg_gocogs if nace2 == 41, lw(medthick) lp(.) lc(ebblue)) (kdensity markup_wrdg_gocogs if nac
>          /* (kdensity markup_wrdg_gocogs if nace2 == 43, lw(medthick) lp(.-.) lc(forest_green)) */
>          /* if markup_wrdg_gocogs > 0 & markup_wrdg_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order( 1
2407 .
2408 .
2409 . *TRANS
2410 . prodest go if zakazky_last3_dummy ==1, va method(wrdg) free(cogs) state(k) proxy(proxy) endogenous(proxy zakazky_1

```

wrdg productivity estimator

Cobb-Douglas PF

Dependent variable: value added
 Group variable (id): id
 Time variable (t): year

Number of obs = **4586**
 Number of groups = **1100**
 Obs per group: min = **1**
 avg = **5.8**
 max = **16**

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9095842	.0165533	54.95	0.000	.8771403 .9420281
k	.0361107	.0076904	4.70	0.000	.0210377 .0511836
year	-1.4553	.470664	-3.09	0.002	-2.377785 -.5328155
zakazky_last3_dummy	-1.372841	1.115242	-1.23	0.218	-3.558675 .8129929
nace2	.0180947	.0242751	0.75	0.456	-.0294836 .0656729

Wald test on Constant returns to scale: Chi2 = 6.22

p = (0.01)

Hansen's J statistic for overidentification = 279.11

p = (0.00)

```
2411 . predict, parameters
```

go	Coefficient	Std. err.	z	P> z	[95% conf. interval]
cogs	.9095842	.0165533	54.95	0.000	.8771403 .9420281
k	.0361107	.0076904	4.70	0.000	.0210377 .0511836
year	-1.4553	.470664	-3.09	0.002	-2.377785 -.5328155
zakazky_last3_dummy	-1.372841	1.115242	-1.23	0.218	-3.558675 .8129929
nace2	.0180947	.0242751	0.75	0.456	-.0294836 .0656729

```
2412 .
```

```
2413 .
```

```
2414 .
```

```
2415 .
```

```
2416 .
```

```
2417 . *----- markupest: De Loecker and Warzynski (DLW, 2012)-----
```

```
2418 . */
```

```
2419 .
```

```
2420 . *ACF Cobb-Douglas
```

```
2421 . bys nace2: markupest markup_dlw_gocogs,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) verb
> ear zakazky_last3_dummy")
```

-> nace2 = 41

go	Coefficient
cogs	.8585709
k	.0473221
year	.0021374
zakazky_last3_dummy	.1938003

-> nace2 = 42

go	Coefficient
cogs	.9857993
k	.0240819
year	-.0167327
zakazky_last3_dummy	.105488

-> nace2 = 43

go	Coefficient
cogs	.7945072
k	.0874629
year	.0064659
zakazky_last3_dummy	.1110341

2422 . sum markup_dlw_gocogs,d

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.180286	1.109667		
5%	1.254406	1.146283		
10%	1.317847	1.146581	Obs	13,268
25%	1.521363	1.149212	Sum of wgt.	13,268
50%	1.837515		Mean	1.929789
		Largest	Std. dev.	1.410475
75%	2.077615	34.2663		
90%	2.359313	41.41539	Variance	1.98944
95%	2.655459	74.25587	Skewness	27.74893
99%	4.402648	75.48882	Kurtosis	1200.322

2423 . replace markup_dlw_gocogs= . if markup_dlw_gocogs<r(p1) | markup_dlw_gocogs >r(p99)
(264 real changes made, 264 to missing)

2424 . tabstat markup_dlw_gocogs, statistics(median)

Variable	p50
markup_dlw~s	1.837515

2425 . tabulate year, summarize(markup_dlw_gocogs)

Year	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
2006	1.8097122	.43752793	497
2007	1.8144706	.45058438	566
2008	1.8167726	.4347368	653
2009	1.8559522	.48070027	731
2010	1.8465325	.44981972	785
2011	1.8460227	.46153738	740
2012	1.8424537	.43530268	704
2013	1.8346914	.45555971	362
2014	1.8586157	.44326699	535
2015	1.8661973	.45556822	1,028
2016	1.8736628	.43862902	999
2017	1.8671299	.42708586	1,109
2018	1.863736	.43076704	1,125
2019	1.8604246	.41164889	1,142
2020	1.8496902	.38217765	1,131
2021	1.8224123	.38295679	897
Total	1.849397	.43326673	13,004

2426 . tabulate nace2, summarize(markup_dlw_gocogs)

nace2	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
41	2.0020573	.35685757	6,996
42	2.1552859	.33619481	1,064
43	1.5675449	.39586889	4,944
Total	1.849397	.43326673	13,004

2427 .

2428 .

2429 . /* plot the graph */

2430 . tw (kdensity markup_dlw_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if nace2 == 42, /*/ (kdensity markup_dlw_gocogs if nace2 == 43, lw(medthick) lp(.-.) lc(forest_green)) /*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 2 3))

2431 .

2432 .

2433 .

2434 . *ACF Translog

2435 . bys nace2: markupest markup_dlw_gocogst1,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) ve
>) control(year zakazky_last3_dummy) "

-> nace2 = 41

go	Coefficient
cogs	-.0017422
k	.1282182
year	-.0196115
zakazky_last3_dummy	.1702845
cogsXcogs	.0237837
cogsXk	-.0328583
kXk	.0009781

-> nace2 = 42

go	Coefficient
cogs	.1255442
k	.1316233
year	-.0054497
zakazky_last3_dummy	.1247756
cogsXcogs	.0469655
cogsXk	-.0361572
kXk	.0151412

-> nace2 = 43

go	Coefficient
cogs	-.191458
k	.0346217
year	.0040892
zakazky_last3_dummy	.0828737
cogsXcogs	.046679
cogsXk	-.0337801
kXk	.0204431

2436 . sum markup_dlw_gocogst,d

markup_dlw_gocogst1

	Percentiles	Smallest		
1%	.5559377	-14.27977		
5%	.5824589	-1.84766		
10%	.6027295	-0.3381836	Obs	13,268
25%	.6805061	0.180695	Sum of wgt.	13,268
50%	.7983467		Mean	1.258191
		Largest	Std. dev.	.8580595
75%	1.656891	15.25991		
90%	2.171302	15.50261	Variance	.7362661
95%	2.495963	15.62809	Skewness	4.94053
99%	3.744581	23.86908	Kurtosis	93.39462

2437 . replace markup_dlw_gocogst= . if markup_dlw_gocogst<r(p1) | markup_dlw_gocogst >r(p99)
(264 real changes made, 264 to missing)

2438 . tabstat markup_dlw_gocogst, statistics(median)

Variable	p50
markup_dlw~1	.7983467

2439 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst1		
	Mean	Std. dev.	Freq.
2006	1.2293484	.67042125	523
2007	1.2083152	.63564602	594
2008	1.2133347	.64593766	672
2009	1.2137142	.65128712	738
2010	1.2107498	.64739078	794
2011	1.2164507	.65055417	742
2012	1.2184227	.65010953	703
2013	1.173886	.60746126	362
2014	1.1952688	.62239237	531
2015	1.2201645	.64800664	1,021
2016	1.2242336	.62979601	993
2017	1.2398757	.66043305	1,102
2018	1.2406005	.66304826	1,113
2019	1.2298481	.64681405	1,126
2020	1.2301833	.63776511	1,111
2021	1.2376352	.64143162	879
Total	1.2226934	.6459153	13,004

2440 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst1		
	Mean	Std. dev.	Freq.
41	.69043991	.13438668	6,930
42	2.5160687	.36865646	989
43	1.6965122	.28268817	5,085
Total	1.2226934	.6459153	13,004

```

2441 .
2442 .
2443 /* plot the graph */
2444 tw (kdensity markup_dlw_gocogst if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst if nac
> */ (kdensity markup_dlw_gocogst if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> */if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order( 1 "M
2445 .
2446 .
2447 .
2448 .
2449 //production function separately for procurement and non-procurement firms
2450 .
2451 .
2452 *homogenous production function
2453 *CD
2454 bys nace2: markupest markup_dlw_gocogs,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) verb
> genous(proxy zakazky_last3_dummy) " replace

```

-> nace2 = 41

go	Coefficient
cogs	.8508989
k	.0404789
year	.0291699
zakazky_last3_dummy	.2051246

-> nace2 = 42

go	Coefficient
cogs	.9691671
k	.0074497
year	-.0333649
zakazky_last3_dummy	.0888558

-> nace2 = 43

go	Coefficient
cogs	.7960469
k	.0869457
year	.0074193
zakazky_last3_dummy	.1039089

```
2455 . sum markup_dlw_gocogs,d
```

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.182574	1.111817		
5%	1.256837	1.148505		
10%	1.320402	1.148803	Obs	13,268
25%	1.51814	1.15144	Sum of wgt.	13,268
50%	1.822356		Mean	1.918172
		Largest	Std. dev.	1.404276
75%	2.058228	33.96011		
90%	2.338673	41.49566	Variance	1.971991
95%	2.634664	74.39977	Skewness	27.85267
99%	4.368783	74.81426	Kurtosis	1205.307

```

2456 . replace markup_dlw_gocogs= . if markup_dlw_gocogs<r(p1) | markup_dlw_gocogs >r(p99)
(264 real changes made, 264 to missing)

2457 . bysort year: egen markup_dlw_gocogs_p50 = pctile(markup_dlw_gocogs), p(50)

2458 . bysort year: egen markup_dlw_gocogs_p75 = pctile(markup_dlw_gocogs), p(75)

2459 . bysort year: egen markup_dlw_gocogs_p90 = pctile(markup_dlw_gocogs), p(90)

2460 . tabulate year, summarize(markup_dlw_gocogs)

```

Year	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
2006	1.7967618	.42829205	497
2007	1.8017111	.44159805	566
2008	1.8045575	.42587552	653
2009	1.8434594	.4715582	731
2010	1.8342108	.44098376	785
2011	1.8342074	.45350124	740
2012	1.830672	.42747302	704
2013	1.8309902	.46739794	363
2014	1.8474455	.43499314	535
2015	1.852169	.44124041	1,027
2016	1.8622646	.43067529	999
2017	1.8559515	.41969232	1,109
2018	1.8528574	.42456677	1,125
2019	1.8493002	.40452832	1,142
2020	1.8390982	.37555911	1,131
2021	1.8124639	.37708357	897
Total	1.8379494	.42561954	13,004

```
2461 . tabulate nace2, summarize(markup_dlw_gocogs)
```

nace2	Summary of markup_dlw_gocogs		
	Mean	Std. dev.	Freq.
41	1.9845081	.35479065	6,997
42	2.1189224	.33052261	1,064
43	1.5700097	.39462289	4,943
Total	1.8379494	.42561954	13,004

```
2462 . tabulate nace2, summarize(markup_dlw_gocogs_p50)
```

nace2	Summary of markup_dlw_gocogs_p50		
	Mean	Std. dev.	Freq.
41	1.8165246	.02662929	24,193
42	1.8136143	.02742426	2,545
43	1.8176484	.0259274	19,839
Total	1.8168443	.0263936	46,577

```
2463 . tabulate nace2, summarize(markup_dlw_gocogs_p75)
```

nace2	Summary of markup_dlw_gocogs_p75		
	Mean	Std. dev.	Freq.
41	2.0528146	.02170346	24,193
42	2.0541175	.02112517	2,545
43	2.0525573	.02193661	19,839
Total	2.0527762	.0217743	46,577

2464 . tabulate nace2, summarize(markup_dlw_gocogs_p90)

nace2	Summary of markup_dlw_gocogs_p90		
	Mean	Std. dev.	Freq.
41	2.3221861	.03562024	24,193
42	2.3223385	.03533167	2,545
43	2.3224449	.0356466	19,839
Total	2.3223046	.03561523	46,577

2465 . tabstat markup_dlw_gocogs, statistics(median)

Variable	p50
markup_dlw~s	1.822356

2466 . gen lmu_1=ln(markup_dlw_gocogs)
(33,573 missing values generated)

2467 .

2468 . /* plot the graph */

2469 . tw (kdensity markup_dlw_gocogs if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 "41
43"))

2470 .

2471 . tw (kdensity markup_dlw_gocogs if zakazky_last3_dummy == 1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs if zakazky_last3_dummy == 0, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("Markup") legend(order(1 "1
0"))

2472 .

2473 . *translog

2474 . bys nace2: markupest markup_dlw_gocogst,method(dlw) output(go) inputvar(cogs) free(cogs) state(k) proxy(proxy) version(11)
> y endogenous(proxy zakazky_last3_dummy) " replace

-> nace2 = 41

markup_dlw_gocogst does not exist. No replace

go	Coefficient
cogs	-.0081908
k	.2493182
year	-.070037
zakazky_last3_dummy	.3195472
cogsXcogs	.0413791
cogsXk	-.0514813
kXk	.0234375

-> nace2 = 42

go	Coefficient
cogs	.1106404
k	.1243307
year	-.0183311
zakazky_last3_dummy	.1142884
cogsXcogs	.0390366
cogsXk	-.0393989
kXk	.0173322

-> nace2 = 43

go	Coefficient
cogs	-.2021817
k	.0289541
year	-.005345
zakazky_last3_dummy	.0767812
cogsXcogs	.0408641
cogsXk	-.0352286
kXk	.0218318

2475 . sum markup_dlw_gocogst,d

markup_dlw_gocogst

	Percentiles	Smallest		
1%	1.061265	-17.84382		
5%	1.092964	-2.927781		
10%	1.127478	-1.815819	Obs	13,268
25%	1.202672	.2297882	Sum of wgt.	13,268
50%	1.312537		Mean	1.390604
		Largest	Std. dev.	.4646101
75%	1.470696	9.906258		
90%	1.619367	9.993059	Variance	.2158625
95%	1.842119	10.20568	Skewness	3.399319
99%	2.8165	16.3163	Kurtosis	389.2568

2476 . replace markup_dlw_gocogst= . if markup_dlw_gocogst<r(p1) | markup_dlw_gocogst >r(p99)
(264 real changes made, 264 to missing)

2477 . bysort year: egen markup_dlw_gocogst_p50 = pctile(markup_dlw_gocogst), p(50)

2478 . bysort year: egen markup_dlw_gocogst_p75 = pctile(markup_dlw_gocogst), p(75)

2479 . bysort year: egen markup_dlw_gocogst_p90 = pctile(markup_dlw_gocogst), p(90)

2480 . tabulate year, summarize(markup_dlw_gocogst)

Year	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
2006	1.4035337	.2859852	495
2007	1.3934678	.27710574	570
2008	1.3841868	.26726715	646
2009	1.3827504	.27408589	722
2010	1.3693026	.25673249	787
2011	1.3618857	.25743003	744
2012	1.3590204	.24967629	707
2013	1.3443951	.22190071	364
2014	1.3575573	.24307674	539
2015	1.3704251	.23534053	1,030
2016	1.3662875	.21452481	999
2017	1.3722382	.23248283	1,114
2018	1.3664381	.21981987	1,127
2019	1.3631837	.21451377	1,138
2020	1.3499551	.19913466	1,128
2021	1.3401191	.20002249	894
Total	1.366624	.2372715	13,004

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2481 . tabulate nace2, summarize(markup_dlw_gocogst)

nace2	Summary of markup_dlw_gocogst		
	Mean	Std. dev.	Freq.
41	1.3843728	.16302852	7,008
42	1.7983973	.30297126	1,017
43	1.2534491	.19891553	4,979
Total	1.366624	.2372715	13,004

2482 . tabulate nace2, summarize(markup_dlw_gocogst_p50)

nace2	Summary of markup_dlw_gocogst_p50		
	Mean	Std. dev.	Freq.
41	1.3232149	.03983975	24,193
42	1.3197938	.03942982	2,545
43	1.3237866	.04024471	19,839
Total	1.3232715	.03999939	46,577

2483 . tabulate nace2, summarize(markup_dlw_gocogst_p75)

nace2	Summary of markup_dlw_gocogst_p75		
	Mean	Std. dev.	Freq.
41	1.473405	.03961746	24,193
42	1.4779634	.04041968	2,545
43	1.4713733	.03877266	19,839
Total	1.4727887	.03933561	46,577

2484 . tabulate nace2, summarize(markup_dlw_gocogst_p90)

nace2	Summary of markup_dlw_gocogst_p90		
	Mean	Std. dev.	Freq.
41	1.6055231	.04926096	24,193
42	1.6101149	.04998037	2,545
43	1.6031951	.04888515	19,839
Total	1.6047824	.0491695	46,577

2485 . tabstat markup_dlw_gocogst, statistics(median)

Variable	p50
markup_dlw~t	1.312537

2486 . gen lmu_2=ln(markup_dlw_gocogst)
(33,573 missing values generated)

2487 .

2488 . /* plot the graph */

2489 . tw (kdensity markup_dlw_gocogst if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
*/ if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order(1

2490 .

```

2491 . tw (kdensity markup_dlw_gocogst if zakazky_last3_dummy == 1, lw(medthick) lp(_) lc(ebblue)) (kdensity mark
> */ if markup_dlw_gocogst > 0 & markup_dlw_gocogst < 3, ytitle("Density") xtitle("Markup") legend(order( 1
2492 .
2493 .
2494 .
2495 . *different production function for procurement vs. private
2496 . *CD
2497 . bys nace2: markupest markup_dlw_gocogs_p1 if zakazky_last3_dummy==1,method(dlw) output(go) inputvar(cogs) free(cog
> ear zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) " ) replace

```

-> nace2 = 41
markup_dlw_gocogs_p1 does not exist. No replace

go	Coefficient
cogs	.902853
k	.0634325
year	-.007811
zakazky_last3_dummy	.0032062

-> nace2 = 42

go	Coefficient
cogs	1.071587
k	-.0135157
year	-.0027477
zakazky_last3_dummy	.0068491

-> nace2 = 43

go	Coefficient
cogs	.8577429
k	.0720068
year	-.027715
zakazky_last3_dummy	-.0125471

2498 . sum markup_dlw_gocogs_p1,d

markup_dlw_gocogs_p1

	Percentiles	Smallest		
1%	1.324736	.7541496		
5%	1.435474	.858404		
10%	1.552967	.9323701	Obs	6,351
25%	1.914018	.9434847	Sum of wgt.	6,351
50%	2.104027		Mean	2.102588
		Largest	Std. dev.	.5550441
75%	2.274661	10.27399		
90%	2.471878	12.50436	Variance	.3080739
95%	2.700964	15.47694	Skewness	12.07479
99%	3.354656	21.40794	Kurtosis	328.8882

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2499 . replace markup_dlw_gocogs_p1 = . if markup_dlw_gocogs_p1<r(p1) | markup_dlw_gocogs_p1 >r(p99)
(126 real changes made, 126 to missing)

2500 . tabstat markup_dlw_gocogs_p1, statistics(median)

Variable	p50
markup_dl~p1	2.104027

2501 . tabulate year, summarize(markup_dlw_gocogs_p1)

Year	Summary of markup_dlw_gocogs_p1		
	Mean	Std. dev.	Freq.
2006	2.3114811	.3511534	140
2007	2.2772661	.33315551	176
2008	2.2610758	.31983813	222
2009	2.2691029	.35440351	254
2010	2.2492191	.34710009	273
2011	2.2329443	.33022369	246
2012	2.183859	.34225967	256
2013	2.137212	.3467543	150
2014	2.088453	.36798156	248
2015	2.0618946	.3556303	554
2016	2.0673296	.35766546	561
2017	2.0427744	.32769805	630
2018	2.015029	.31403305	661
2019	1.9957234	.31495718	691
2020	1.9751731	.29956914	665
2021	1.9622345	.30678221	498
Total	2.0810146	.34743223	6,225

2502 . tabulate nace2, summarize(markup_dlw_gocogs_p1)

nace2	Summary of markup_dlw_gocogs_p1		
	Mean	Std. dev.	Freq.
41	2.1893987	.21156756	3,704
42	2.3937055	.30807807	782
43	1.7095486	.29523142	1,739
Total	2.0810146	.34743223	6,225

2503 . *

2504 . bys nace2: markupest markup_dlw_gocogs_p0 if zakazky_last3_dummy==0, method(dlw) output(go) inputvar(cogs) free(cogs
> ear zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) ") replace

-> nace2 = 41

markup_dlw_gocogs_p0 does not exist. No replace

go	Coefficient
cogs	.7790603
k	.0670749
year	-.0111941
zakazky_last3_dummy	-.0067292

-> nace2 = 42

go	Coefficient
cogs	.8862305
k	.0917725
year	-.0004526
zakazky_last3_dummy	.0146013

-> nace2 = 43

go	Coefficient
cogs	.7255256
k	.0993043
year	-.0001941
zakazky_last3_dummy	-.0053828

2505 . sum markup_dlw_gocogs_p0,d

markup_dlw_gocogs_p0

	Percentiles	Smallest		
1%	1.057586	.7759047		
5%	1.104037	.7906194		
10%	1.149482	.9465493	Obs	6,917
25%	1.294228	.9664928	Sum of wgt.	6,917
50%	1.494307		Mean	1.772627
		Largest	Std. dev.	4.186874
75%	1.755368	51.45277		
90%	2.138714	55.10361	Variance	17.52992
95%	2.62527	56.01607	Skewness	62.10597
99%	5.342595	315.1927	Kurtosis	4555.72

2506 . replace markup_dlw_gocogs_p0= . if markup_dlw_gocogs_p0<r(p1) | markup_dlw_gocogs_p0 >r(p99)
(138 real changes made, 138 to missing)

2507 . tabstat markup_dlw_gocogs_p0, statistics(median)

Variable	p50
markup_dl~p0	1.494307

2508 . tabulate year, summarize(markup_dlw_gocogs_p0)

Year	Summary of markup_dlw_gocogs_p0		
	Mean	Std. dev.	Freq.
2006	1.5219491	.45863428	357
2007	1.4973147	.43171506	398
2008	1.4934346	.421458	449
2009	1.5562051	.52371497	491
2010	1.5622265	.50777478	527
2011	1.5759276	.47828462	499
2012	1.5979781	.49245962	452
2013	1.5676387	.46956028	214
2014	1.6183381	.44426859	287
2015	1.6403202	.51754727	471
2016	1.6471894	.54136085	439
2017	1.6590251	.53306638	475
2018	1.6742294	.54562593	452
2019	1.6720179	.51798715	438
2020	1.6722338	.47199313	447
2021	1.6465832	.48770215	383
Total	1.6015327	.49799638	6,779

2509 . tabulate nace2, summarize(markup_dlw_gocogs_p0)

nace2	Summary of markup_dlw_gocogs_p0		
	Mean	Std. dev.	Freq.
41	1.7462997	.48439765	3,281
42	1.8023887	.4090688	276
43	1.4369093	.4655439	3,222
Total	1.6015327	.49799638	6,779

2510 . *

2511 . gen markup_dlw_gocogs_pp = markup_dlw_gocogs_p1 if zakazky_last3_dummy==1
(40,352 missing values generated)

2512 . replace markup_dlw_gocogs_pp = markup_dlw_gocogs_p0 if zakazky_last3_dummy==0
(6,779 real changes made)

2513 . *

2514 . sum markup_dlw_gocogs_pp,d

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.080861	1.057586		
5%	1.153464	1.058097		
10%	1.234231	1.058575	Obs	13,004
25%	1.442524	1.058704	Sum of wgt.	13,004
50%	1.781911		Mean	1.83106
		Largest	Std. dev.	.4943967
75%	2.150002	5.19739		
90%	2.376008	5.267684	Variance	.2444281
95%	2.587219	5.310747	Skewness	1.174723
99%	3.24992	5.342595	Kurtosis	7.187415

2515 .

2516 . bysort year: egen markup_dlw_gocogs_pp_p50 = pctile(markup_dlw_gocogs_pp), p(50)

2517 . bysort year: egen markup_dlw_gocogs_pp_p75 = pctile(markup_dlw_gocogs_pp), p(75)

2518 . bysort year: egen markup_dlw_gocogs_pp_p90 = pctile(markup_dlw_gocogs_pp), p(90)

2519 . tabulate year, summarize(markup_dlw_gocogs_pp)

Year	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
2006	1.7443525	.55849405	497
2007	1.7364636	.54091332	574
2008	1.7474083	.53213409	671
2009	1.7992602	.58112149	745
2010	1.7966627	.56301079	800
2011	1.7928754	.53350622	745
2012	1.8098221	.52564527	708
2013	1.802353	.50748734	364
2014	1.8362605	.47265735	535
2015	1.8681761	.48520579	1,025
2016	1.8828881	.49367951	1,000
2017	1.8778143	.46830583	1,105
2018	1.876627	.45531516	1,113
2019	1.8701406	.43534941	1,129
2020	1.8533981	.40638402	1,112
2021	1.8250104	.42534234	881
Total	1.8310601	.49439667	13,004

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2520 . tabulate nace2, summarize(markup_dlw_gocogs_pp)

nace2	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
41	1.9812659	.42760016	6,985
42	2.239449	.42561531	1,058
43	1.5324787	.43383375	4,961
Total	1.8310601	.49439667	13,004

2521 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p50)

nace2	Summary of markup_dlw_gocogs_pp_p50		
	Mean	Std. dev.	Freq.
41	1.7939857	.12695451	24,193
42	1.7790993	.12868923	2,545
43	1.7994262	.12487651	19,839
Total	1.7954896	.12625587	46,577

2522 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p75)

nace2	Summary of markup_dlw_gocogs_pp_p75		
	Mean	Std. dev.	Freq.
41	2.158248	.05471829	24,193
42	2.1641206	.05444418	2,545
43	2.1559249	.05438519	19,839
Total	2.1575794	.05459474	46,577

2523 . tabulate nace2, summarize(markup_dlw_gocogs_pp_p90)

nace2	Summary of markup_dlw_gocogs_pp_p90		
	Mean	Std. dev.	Freq.
41	2.3713437	.05657155	24,193
42	2.3766502	.05547602	2,545
43	2.3694022	.05673385	19,839
Total	2.3708067	.05660553	46,577

2524 . *

2525 . sum markup_dlw_gocogs markup_dlw_gocogs_pp

Variable	Obs	Mean	Std. dev.	Min	Max
markup_dlw~s	13,004	1.837949	.4256195	1.182574	4.368783
markup_dlw~p	13,004	1.83106	.4943967	1.057586	5.342595

2526 . cor markup_dlw_gocogs markup_dlw_gocogs_pp
(obs=12,859)

	markup.. markup~p
markup_dlw~s	1.0000
markup_dlw~p	0.9258

```
2527 . *
2528 . tabstat markup_dlw_gocogs_pp, statistics( median )
```

Variable	p50
markup_dlw~p	1.781911

```
2529 . gen lmu_1_pp=ln(markup_dlw_gocogs_pp)
(33,573 missing values generated)
```

```
2530 . *
```

```
2531 .
```

```
2532 .
```

```
2533 . /* plot the graph */
```

```
2534 . *sector
```

```
2535 . tw (kdensity markup_dlw_gocogs_pp if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp if
>           /* (kdensity markup_dlw_gocogs_pp if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) */
>           /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order
```

```
2536 .
```

```
2537 . /* plot the graph */
```

```
2538 . *market
```

```
2539 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp
>           /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order
```

```
2540 .
```

```
2541 . /* plot the graph */
```

```
2542 . *sector-market
```

```
2543 . tw (kdensity markup_dlw_gocogs_pp if nace2 == 41 & zakazky_last3_dummy==0, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp
>           /* (kdensity markup_dlw_gocogs_pp if nace2 == 42& zakazky_last3_dummy==0 , lw(medthick) lp(..) lc(forest_green))
>           /* (kdensity markup_dlw_gocogs_pp if nace2 == 43 & zakazky_last3_dummy==0, lw(medthick) lp(1) lc(navy)) (purple)
>           /* if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("Markup") legend(order
```

```
2544 .
```

```
2545 .
```

```
2546 .
```

```
2547 .
```

```
2548 . *trans
```

```
2549 . bys nace2: markupest markup_dlw_gocogst_p1 if zakazky_last3_dummy==1,method(dlw) output(go) inputvar(cogs) free(cc)
> ntrol(year zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy) " replace
```

-> nace2 = 41

markup_dlw_gocogst_p1 does not exist. No replace

go	Coefficient
cogs	.8314937
k	1.761102
year	-.1777657
zakazky_last3_dummy	-.0740173
cogsXcogs	.1000661
cogsXk	-.2194304
kXk	.0689483

-> nace2 = 42

go	Coefficient
cogs	.3793127
k	-.0045371
year	-.0212673
zakazky_last3_dummy	-.0115442
cogsXcogs	.0245666
cogsXk	-.0475864
kXk	.0095933

-> nace2 = 43

go	Coefficient
cogs	1.09599
k	-.3905271
year	-.0053643
zakazky_last3_dummy	.0090003
cogsXcogs	.0063818
cogsXk	-.0039931
kXk	.0171267

2550 . sum markup_dlw_gocogst_p1,d

markup_dlw_gocogst_p1			
Percentiles	Smallest		
1%	.7808318	-2.12475	
5%	.9126233	.066648	
10%	1.024108	.1245574	Obs
25%	1.484819	.2219846	Sum of wgt.
50%	1.947768		Mean
			Std. dev.
75%	2.345547	7.717949	
90%	2.706097	8.300896	Variance
95%	3.015626	13.07567	Skewness
99%	3.932787	14.41218	Kurtosis

2551 . replace markup_dlw_gocogst_p1= . if markup_dlw_gocogst_p1<r(p1) | markup_dlw_gocogst_p1 >r(p99)
(126 real changes made, 126 to missing)

2552 . tabstat markup_dlw_gocogst_p1, statistics(median)

Variable	p50
markup_~t_p1	1.947768

2553 . tabulate year, summarize(markup_dlw_gocogst_p1)

Year	Summary of markup_dlw_gocogst_p1		
	Mean	Std. dev.	Freq.
2006	2.0524323	.654615	139
2007	2.0078607	.60197789	173
2008	1.9783716	.60320024	218
2009	1.9284778	.63694689	250
2010	1.8766499	.61681035	270
2011	1.8671151	.61075023	245
2012	1.9270898	.66330118	257
2013	2.0110929	.60719044	148
2014	1.9658438	.58290525	249
2015	1.9709347	.62166161	553
2016	1.9518335	.63725117	553
2017	1.9610649	.61915656	627
2018	1.9338979	.59310481	664
2019	1.8952208	.57550742	694
2020	1.8908966	.58365658	676
2021	1.874969	.58446099	509
Total	1.9314804	.60808972	6,225

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2554 . tabulate nace2, summarize(markup_dlw_gocogst_p1)

nace2	Summary of markup_dlw_gocogst_p1		
	Mean	Std. dev.	Freq.
41	1.8643269	.49229549	3,675
42	1.0441935	.23093996	772
43	2.4555381	.38050487	1,778
Total	1.9314804	.60808972	6,225

2555 . *

2556 . bys nace2: markupest markup_dlw_gocogst_p0 if zakazky_last3_dummy==0, method(dlw) output(go) inputvar(cogs) free(cntrl(year zakazky_last3_dummy) endogenous(proxy zakazky_last3_dummy)) replace

-> nace2 = 41

markup_dlw_gocogst_p0 does not exist. No replace

go	Coefficient
cogs	-.0618074
k	.0333058
year	.0011872
zakazky_last3_dummy	.0038315
cogsXcogs	.0364317
cogsXk	-.0111386
kXk	.0071485

-> nace2 = 42

go	Coefficient
cogs	-2.839632
k	.3983194
year	.0152115
zakazky_last3_dummy	.021138
cogsXcogs	.118279
cogsXk	.041224
kXk	-.0339714

-> nace2 = 43

go	Coefficient
cogs	-.8843376
k	.416635
year	-.00495
zakazky_last3_dummy	-.0183753
cogsXcogs	.069391
cogsXk	-.0667814
kXk	.026428

2557 . sum markup_dlw_gocogst_p0,d

markup_dlw_gocogst_p0

	Percentiles	Smallest	
1%	.5076488	-258.6608	
5%	.6419548	-30.49068	
10%	.6897178	-27.2887	Obs 6,917
25%	.7836139	-10.60803	Sum of wgt. 6,917

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50%	1.801908	Mean	1.569319
		Largest	3.391439
75%	2.129607	18.03501	
90%	2.588435	18.83935	Variance 11.50186
95%	3.288264	19.55379	Skewness -65.32888
99%	4.765446	27.73752	Kurtosis 5016.184

2558 . replace markup_dlw_gocogst_p0= . if markup_dlw_gocogst_p0<r(p1) | markup_dlw_gocogst_p0 >r(p99)
(138 real changes made, 138 to missing)

2559 . tabstat markup_dlw_gocogst_p0, statistics(median)

Variable	p50
markup_~t_p0	1.801908

2560 . tabulate year, summarize(markup_dlw_gocogst_p0)

Year	Summary of markup_dlw_gocogst_p0		
	Mean	Std. dev.	Freq.
2006	1.6325265	.88911382	382
2007	1.6198445	.86353574	416
2008	1.5894995	.84217531	448
2009	1.6023429	.88516517	485
2010	1.6112735	.88805827	519
2011	1.5963508	.87317242	495
2012	1.6271242	.90517425	452
2013	1.5601459	.84740202	214
2014	1.6029512	.85512841	286
2015	1.5723399	.80391336	468
2016	1.5470662	.82072387	433
2017	1.5606063	.82098006	472
2018	1.5201702	.79388271	451
2019	1.5541419	.79852846	435
2020	1.5106956	.78988304	445
2021	1.4351008	.73198073	378
Total	1.5724516	.84054115	6,779

2561 . tabulate nace2, summarize(markup_dlw_gocogst_p0)

nace2	Summary of markup_dlw_gocogst_p0		
	Mean	Std. dev.	Freq.
41	2.1836323	.38931365	3,276
42	3.5761965	.45114933	252
43	.80125154	.14907475	3,251
Total	1.5724516	.84054115	6,779

2562 . *

2563 . gen markup_dlw_gocogst_pp = markup_dlw_gocogst_p1 if zakazky_last3_dummy==1
(40,352 missing values generated)

2564 . replace markup_dlw_gocogst_pp = markup_dlw_gocogst_p0 if zakazky_last3_dummy==0
(6,779 real changes made)

2565 . *

2566 . sum markup_dlw_gocogst markup_dlw_gocogst_pp

Variable	Obs	Mean	Std. dev.	Min	Max
markup_dlw~t	13,004	1.366624	.2372715	1.061265	2.8165
markup_~t_pp	13,004	1.744318	.7598965	.5076488	4.765446

2567 . cor markup_dlw_gocogs_pp markup_dlw_gocogst_pp
(obs=12,821)

	mar~s_pp	mar~t_pp
markup_~s_pp	1.0000	
markup_~t_pp	0.2868	1.0000

2568 . *
2569 . tabulate nace2, summarize(markup_dlw_gocogst_pp)

nace2	Summary of markup_dlw_gocogst_pp		
	Mean	Std. dev.	Freq.
41	2.0148152	.47428517	6,951
42	1.6673036	1.1317012	1,024
43	1.3861236	.83134192	5,029
Total	1.7443183	.7598965	13,004

2570 . tabstat markup_dlw_gocogst_pp, statistics(median)

Variable	p50
markup_~t_pp	1.870104

2571 . gen lmu_2_pp=ln(markup_dlw_gocogst_pp)
(33,573 missing values generated)

2572 .
2573 . /* plot the graph */
2574 . tw (kdensity markup_dlw_gocogst_pp if nace2 == 41, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogst_pp
> /*/ (kdensity markup_dlw_gocogst_pp if nace2 == 43, lw(medthick) lp(..) lc(forest_green)) /*
> /*/ if markup_dlw_gocogst_pp > 0 & markup_dlw_gocogst_pp < 3, ytitle("Density") xtitle("Markup") legend(order
2575 .
2576 .
2577 . /* plot the graph */
2578 . *market
2579 . tw (kdensity markup_dlw_gocogst_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_
> /*/ if markup_dlw_gocogst_pp > 0 & markup_dlw_gocogst_pp < 3, ytitle("Density") xtitle("Markup") legend(order
2580 .
2581 .
2582 . save "data_with_markups", replace
file **data_with_markups.dta** saved

2583 .
2584 .
2585 .
2586 .
2587 . /*
> RESULTS
> */
2588 . *use "data_with_results", replace
2589 . set seed 42

2590 .
2591 . bys year: summarize(markup_dlw_gocogs_pp) if zakazky_last3_dummy == 1

-> year = 2006

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	140	2.311481	.3511534	1.437222	3.27948

-> year = 2007

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Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	176	2.277266	.3331555	1.362989	3.315436

-> year = 2008

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	222	2.261076	.3198381	1.3565	3.30064

-> year = 2009

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	254	2.269103	.3544035	1.369363	3.316291

-> year = 2010

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	273	2.249219	.3471001	1.37064	3.287849

-> year = 2011

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	246	2.232944	.3302237	1.335584	3.274485

-> year = 2012

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	256	2.183859	.3422597	1.329236	3.230533

-> year = 2013

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	150	2.137212	.3467543	1.408765	3.148255

-> year = 2014

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	248	2.088453	.3679816	1.369031	3.070362

-> year = 2015

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	554	2.061895	.3556303	1.361892	3.343872

-> year = 2016

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	561	2.06733	.3576655	1.335834	3.354656

-> year = 2017

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Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	630	2.042774	.3276981	1.327675	3.315409

-> year = 2018

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	661	2.015029	.314033	1.325051	3.282304

-> year = 2019

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	691	1.995723	.3149572	1.324736	3.194163

-> year = 2020

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	665	1.975173	.2995691	1.330788	3.121504

-> year = 2021

Variable	Obs	Mean	Std. dev.	Min	Max
markup_~s_pp	498	1.962235	.3067822	1.32688	3.315153

2592 .
2593 . bys nace2: summarize(markup_OLS) ,d

-> nace2 = 41

markup_OLS					
	Percentiles	Smallest			
1%	.925995	.8970974			
5%	1.042954	.8972872			
10%	1.152366	.8981426	Obs	8,078	
25%	1.411495	.8983328	Sum of wgt.	8,078	
50%	1.848962		Mean	2.275357	
		Largest	Std. dev.	1.50143	
75%	2.572115	14.5459			
90%	3.755651	14.82563	Variance	2.254292	
95%	4.873713	14.8516	Skewness	3.428473	
99%	8.861295	14.87766	Kurtosis	20.15768	

-> nace2 = 42

markup_OLS					
	Percentiles	Smallest			
1%	1.16955	1.066877			
5%	1.373785	1.074069			
10%	1.48803	1.082758	Obs	1,265	
25%	1.69967	1.085216	Sum of wgt.	1,265	
50%	2.104455		Mean	2.390076	
		Largest	Std. dev.	1.130059	
75%	2.706457	10.53332			
90%	3.471041	10.65632	Variance	1.277032	
95%	4.244503	11.00685	Skewness	3.226749	
99%	7.024668	11.43309	Kurtosis	19.31388	

-> nace2 = 43

markup_OLS			
Percentiles			Smallest
1%	.8535143		.8344772
5%	.9119864		.8344772
10%	.9615291		.8349184
25%	1.09489		.8350068
			Obs
			5,937
			Sum of wgt.
			5,937
50%			Mean
	1.409419		1.844813
			Largest
75%	1.923995		13.8494
90%	2.982302		13.87373
95%	4.276357		13.94726
99%	9.265444		14.07157
			Variance
			2.250101
			Skewness
			4.180294
			Kurtosis
			25.25641

2594 . bys nace2: summarize(markup_dlw_gocogs) ,d

-> nace2 = 41

markup_dlw_gocogs			
Percentiles			Smallest
1%	1.461529		1.375926
5%	1.542732		1.40039
10%	1.609867		1.401411
25%	1.757069		1.401419
			Obs
			6,997
			Sum of wgt.
			6,997
50%			Mean
	1.93838		1.984508
			Largest
75%	2.125433		4.286812
90%	2.364995		4.291848
95%	2.575319		4.309739
99%	3.362525		4.368783
			Variance
			.1258764
			Skewness
			1.921006
			Kurtosis
			9.892663

-> nace2 = 42

markup_dlw_gocogs			
Percentiles			Smallest
1%	1.669621		1.591818
5%	1.793792		1.612121
10%	1.827466		1.618962
25%	1.895361		1.622718
			Obs
			1,064
			Sum of wgt.
			1,064
50%			Mean
	2.028665		2.118922
			Largest
75%	2.226912		3.570707
90%	2.614925		3.874444
95%	2.826028		4.031509
99%	3.076525		4.328367
			Variance
			.1092452
			Skewness
			1.733405
			Kurtosis
			7.348475

-> nace2 = 43

markup_dlw_gocogs			
Percentiles			Smallest
1%	1.190024		1.182574
5%	1.219152		1.182718
10%	1.251971		1.182774
25%	1.322176		1.182973
			Obs
			4,943
			Sum of wgt.
			4,943

50%	1.45015	Mean	1.57001
		Largest	.3946229
75%	1.675343	4.261304	
90%	2.017179	4.281734	Variance
95%	2.294073	4.321065	Skewness
99%	3.260153	4.362866	Kurtosis

2595 . bys nace2: summarize(markup_dlw_gocogs_pp) ,d

-> nace2 = 41

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.331784	1.076766	
5%	1.383105	1.07691	
10%	1.437491	1.079026	Obs
25%	1.627505	1.126238	Sum of wgt.
50%	2.022283		Mean
			1.981266
75%	2.210914	5.195734	Std. dev.
90%	2.394894	5.19739	Variance
95%	2.58377	5.267684	Skewness
99%	3.262011	5.310747	Kurtosis

-> nace2 = 42

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.497424	1.424094	
5%	1.570841	1.464805	
10%	1.644154	1.482643	Obs
25%	2.045107	1.4835	Sum of wgt.
50%	2.223841		Mean
			2.239449
75%	2.443465	3.315436	Std. dev.
90%	2.818371	3.415402	Variance
95%	3.025526	4.665208	Skewness
99%	3.27546	5.342595	Kurtosis

-> nace2 = 43

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.067171	1.057586	
5%	1.100845	1.058097	
10%	1.131938	1.058575	Obs
25%	1.225713	1.058704	Sum of wgt.
50%	1.4358		Mean
			1.532479
75%	1.704632	4.912507	Std. dev.
90%	2.00505	4.968339	Variance
95%	2.304711	5.133815	Skewness
99%	3.173372	5.192597	Kurtosis

2596 .
 2597 .
 2598 . bys zakazky_last3_dummy: summarize(markup_OLS) ,d

-> zakazky_last3_dummy = 0

markup_OLS

	Percentiles	Smallest		
1%	.865682	.8344772		
5%	.9345671	.8344772		
10%	.9956865	.8349184	Obs	8,048
25%	1.171192	.8350068	Sum of wgt.	8,048
50%	1.535678		Mean	2.044332
		Largest	Std. dev.	1.654387
75%	2.168815	13.97078		
90%	3.444835	14.07157	Variance	2.736995
95%	5.021725	14.8516	Skewness	3.631737
99%	10.03582	14.87766	Kurtosis	19.61601

-> zakazky_last3_dummy = 1

markup_OLS

	Percentiles	Smallest		
1%	.9110724	.8350951		
5%	1.029896	.8362451		
10%	1.147239	.839625	Obs	7,232
25%	1.441915	.8406084	Sum of wgt.	7,232
50%	1.872273		Mean	2.199067
		Largest	Std. dev.	1.277424
75%	2.542331	14.349		
90%	3.540829	14.42222	Variance	1.631811
95%	4.412607	14.5459	Skewness	3.445384
99%	7.129439	14.82563	Kurtosis	23.26804

2599 . bys zakazky_last3_dummy: summarize(markup_dlw_gocogs) ,d

-> zakazky_last3_dummy = 0

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.192763	1.182574		
5%	1.231245	1.182718		
10%	1.274751	1.182774	Obs	6,667
25%	1.433528	1.182973	Sum of wgt.	6,667
50%	1.658601		Mean	1.730203
		Largest	Std. dev.	.4421017
75%	1.887899	4.286812		
90%	2.213368	4.309739	Variance	.1954539
95%	2.538162	4.321065	Skewness	2.008724
99%	3.52712	4.362866	Kurtosis	9.323301

-> zakazky_last3_dummy = 1

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.290737	1.193908		
5%	1.339622	1.22546		
10%	1.419435	1.256945	Obs	6,337
25%	1.75076	1.25766	Sum of wgt.	6,337

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50%	1.960369	Mean	1.951306
		Largest	.375588
75%	2.136815	4.256094	
90%	2.362433	4.291848	Variance .1410663
95%	2.549693	4.328367	Skewness .7614506
99%	3.069562	4.368783	Kurtosis 5.721659

2600 . bys zakazky_last3_dummy: summarize(markup_dlw_gocogs_pp) ,d

-> zakazky_last3_dummy = 0

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.07051	1.057586	
5%	1.112497	1.058097	
10%	1.156544	1.058575	Obs 6,779
25%	1.300278	1.058704	Sum of wgt. 6,779
50%	1.494307		Mean 1.601533
		Largest	Std. dev. .4979964
75%	1.749095	5.19739	
90%	2.098764	5.267684	Variance .2480004
95%	2.468601	5.310747	Skewness 2.846901
99%	3.683776	5.342595	Kurtosis 15.67824

-> zakazky_last3_dummy = 1

markup_dlw_gocogs_pp

	Percentiles	Smallest	
1%	1.355453	1.324736	
5%	1.453512	1.324933	
10%	1.57287	1.325051	Obs 6,225
25%	1.921771	1.325122	Sum of wgt. 6,225
50%	2.104027		Mean 2.081015
		Largest	Std. dev. .3474322
75%	2.270417	3.316291	
90%	2.453198	3.327531	Variance .1207092
95%	2.625595	3.343872	Skewness .1597686
99%	3.071796	3.354656	Kurtosis 3.73175

2601 .

2602 .

2603 . /* plot the graph */

2604 . *market

2605 . tw (kdensity markup_OLS if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_OLS if zakazky_> /* if markup_OLS > 0 & markup_OLS < 3, ytitle("Density") xtitle("mu_OLS") legend(order(1 "Procurement act

2606 .

2607 . /* plot the graph */

2608 . *market

2609 . tw (kdensity markup_dlw_gocogs if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs > /* if markup_dlw_gocogs > 0 & markup_dlw_gocogs < 3, ytitle("Density") xtitle("mu") legend(order(1 "Proc

2610 .

```

2611 . /* plot the graph */
2612 . *market
2613 . tw (kdensity markup_dlw_gocogs_pp if zakazky_last3_dummy==1, lw(medthick) lp(_) lc(ebblue)) (kdensity markup_dlw_gocogs_pp if markup_dlw_gocogs_pp > 0 & markup_dlw_gocogs_pp < 3, ytitle("Density") xtitle("mu_pp") legend(order(1 2)))
2614 .
2615 .
2616 . /* plot the graph */
2617 . *whole industry
2618 . tw (kdensity lmu_OLS , lw(medthick) lp(_) lc(ebblue)) /*
>          */ (kdensity lmu_1, lw(medthick) lp(-) lc(maroon))//*
>          */ (kdensity lmu_1_pp , lw(medthick) lp(..) lc(forest_green)) /*
>          */ if (lmu_OLS > 0 & lmu_OLS< 1.1)&(lmu_1 > 0 & lmu_1 < 1.1)&(lmu_1_pp > 0 & lmu_1_pp < 1.1), ytitle("Density")
2619 .
2620 . summarize(markup_OLS) if markup_OLS>3,d

```

markup_OLS

	Percentiles	Smallest		
1%	3.013036	3.001862		
5%	3.060936	3.001862		
10%	3.132601	3.001869	Obs	2,226
25%	3.374557	3.002721	Sum of wgt.	2,226
50%	3.97016		Mean	4.819889
		Largest	Std. dev.	2.240152
75%	5.259264	14.5459		
90%	7.694104	14.82563	Variance	5.018279
95%	9.941694	14.8516	Skewness	2.123973
99%	13.4483	14.87766	Kurtosis	7.530387

```
2621 . summarize(markup_dlw_gocogs) if markup_OLS>3,d
```

markup_dlw_gocogs

	Percentiles	Smallest		
1%	1.249537	1.188498		
5%	1.397626	1.193908		
10%	1.530857	1.195275	Obs	1,988
25%	1.799663	1.197006	Sum of wgt.	1,988
50%	2.020894		Mean	2.110875
		Largest	Std. dev.	.5254762
75%	2.325287	4.261304		
90%	2.767998	4.271346	Variance	.2761252
95%	3.121275	4.286812	Skewness	1.286432
99%	3.952984	4.368783	Kurtosis	5.525504

```
2622 . summarize(markup_dlw_gocogs_pp) if markup_OLS>3,d
```

markup_dlw_gocogs_pp

	Percentiles	Smallest		
1%	1.138522	1.059587		
5%	1.331669	1.062281		
10%	1.430571	1.064542	Obs	1,992
25%	1.729929	1.064979	Sum of wgt.	1,992
50%	2.095841		Mean	2.134277
		Largest	Std. dev.	.6018301
75%	2.362186	5.19739		
90%	2.841364	5.267684	Variance	.3621994
95%	3.200862	5.310747	Skewness	1.47735
99%	4.411573	5.342595	Kurtosis	7.557074

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2623 .
2624 . correlate markup_dlw_gocogs zakazky_last3_dummy
(obs=13,004)

markup.. zakaz~my	
markup_dlw~s	1.0000
zakazky_la~y	0.2597 1.0000

2625 . correlate markup_dlw_gocogs_pp zakazky_last3_dummy
(obs=13,004)

mar~s_pp zakaz~my	
markup~s_pp	1.0000
zakazky_la~y	0.4845 1.0000

2626 .
2627 . correlate markup_dlw_gocogs zakazky_last3_share
(obs=13,004)

markup.. zakazk~e	
markup_dlw~s	1.0000
zakazky_la~e	0.2055 1.0000

2628 . correlate markup_dlw_gocogs_pp zakazky_last3_share
(obs=13,004)

mar~s_pp zakazk~e	
markup~s_pp	1.0000
zakazky_la~e	0.3120 1.0000

2629 .
2630 . tabulate zakazky_last3_dummy if nace2==41, summarize(markup_dlw_gocogs_pp)

zakazky_las t3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.7462997	.48439765	3,281
1	2.1893987	.21156756	3,704
Total	1.9812659	.42760016	6,985

2631 . tabulate zakazky_last3_dummy if nace2==42, summarize(markup_dlw_gocogs_pp)

zakazky_las t3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.8023887	.4090688	276
1	2.3937055	.30807807	782
Total	2.239449	.42561531	1,058

2632 . tabulate zakazky_last3_dummy if nace2==43, summarize(markup_dlw_gocogs_pp)

zakazky_las t3_dummy	Summary of markup_dlw_gocogs_pp		
	Mean	Std. dev.	Freq.
0	1.4369093	.4655439	3,222
1	1.7095486	.29523142	1,739
Total	1.5324787	.43383375	4,961

```

2633 .
2634 .
2635 . /*
> graph twoway (tsline average_markup1) (tsline average_markup0), ///
> legend(label(1 1) label(2 0))
>
> graph twoway (tsline median_markup1) (tsline median_markup0), ///
> legend(label(1 1) label(2 0))
>
> table year, contents(mean markup_dlw_gocogs_pp) by(zakazky_last3_dummy)
> */
2636 .
2637 .
2638 . //pooled OLS
2639 . eststo clear

2640 . foreach j in OLS 1 1_pp {
2.
2641 .         *dummy
2642 .         eststo: xi: qui reg lmu_`j' zakazky_last3_dummy cogs k i.year*i.nace2, cluster(id)
3.
2643 .         *share
2644 .         eststo: xi: qui reg lmu_`j' zakazky_last3_share cogs k i.year*i.nace2, cluster(id)
4.
2645 .
2646 . }
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est1 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est2 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est3 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est4 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est5 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)
(est6 stored)
i.year          _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#     (coded as above)

2647 . noi esttab , ///
>           cells(b(star fmt(%9.3f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N" )) starlevels(* 0.1
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_dummy zakazky_last3_share )

(1)          (2)          (3)          (4)          (5)          (6)
zakazky_last3_dummy   lmu_OLS       lmu_OLS       lmu_1        lmu_1        lmu_1_pp      lmu_1_pp
                    0.132***    0.131***    0.005       0.005       0.284***    0.271****
                     0.019       0.005       0.005       0.005       0.005       0.012
                     0.09,0.17   0.12,0.14   0.13,0.17   0.27,0.29
zakazky_last3_share          0.312***    0.151***    0.25,0.29
                           0.036       0.010
                           0.24,0.38   0.13,0.17
N                  13038        13038        13004        13004        13004        13004

```

```

2648 .
2649 . //fixed effects
2650 . eststo clear

2651 . foreach j in OLS 1 1_pp {
2652 .         2.
2653 .         *dummy
2654 .         eststo: xi: qui xtreg lmu_`j' zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
2655 .
2656 . }
2657 . }  

i.year      _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2     _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#  (coded as above)
(est1 stored)
i.year      _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2     _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#  (coded as above)
(est2 stored)
i.year      _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2     _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#  (coded as above)
(est3 stored)

2658 . noi esttab , ///
>           cells(b(star fmt(%9.2f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N rho, fmt(%9.0g) labels("N" "rho")) starla
>           label plain collabels(none) depvars numbers replace keep(zakazky_last3_share )  

  


|                     | (1)                                    | (2)                                    | (3)                                      |
|---------------------|----------------------------------------|----------------------------------------|------------------------------------------|
| zakazky_last3_share | lmu_OLS<br>0.01<br>0.030<br>-0.05,0.07 | lmu_1<br>0.03***<br>0.009<br>0.02,0.05 | lmu_1_pp<br>0.03**<br>0.013<br>0.01,0.06 |
| N                   | 13038                                  | 13004                                  | 13004                                    |
| rho                 | .7883331                               | .8703552                               | .8112483                                 |

  

2659 .
2660 . *intensity revisited
2661 .
2662 . gen share2 = zakazky_last3_share^2
  

2663 . xi: reg lmu_1_pp zakazky_last3_dummy cogs k i.year*i.nace2 , cluster(id)
i.year      _Iyear_2006-2021    (naturally coded; _Iyear_2006 omitted)
i.nace2     _Inace2_41-43      (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#  (coded as above)  

  

Linear regression
Number of obs      = 13,004
F(50, 1864)        = 207.54
Prob > F          = 0.0000
R-squared          = 0.7349
Root MSE           = .13394  

  

(Std. err. adjusted for 1,865 clusters in id)

```

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2836412	.0051486	55.09	0.000	.2735437 .2937388
cogs	-.1343929	.0057513	-23.37	0.000	-.1456727 -.1231132
k	.0656801	.0029751	22.08	0.000	.0598452 .0715151
_Iyear_2007	-.0069172	.00688	-1.01	0.315	-.0204106 .0065761
_Iyear_2008	-.0087126	.0087497	-1.00	0.319	-.0258729 .0084477
_Iyear_2009	-.0118712	.008765	-1.35	0.176	-.0290615 .0053191
_Iyear_2010	-.0228818	.0082774	-2.76	0.006	-.0391158 -.0066477
_Iyear_2011	-.0294705	.0089065	-3.31	0.001	-.0469382 -.0120028
_Iyear_2012	-.0336821	.0095117	-3.54	0.000	-.0523368 -.0150274
_Iyear_2013	-.0488371	.0110292	-4.43	0.000	-.0704679 -.0272063
_Iyear_2014	-.0525256	.0102054	-5.15	0.000	-.0725409 -.0325104
_Iyear_2015	-.0495247	.0094428	-5.24	0.000	-.0680443 -.031005
_Iyear_2016	-.0506102	.0099603	-5.08	0.000	-.0701447 -.0310757
_Iyear_2017	-.0620148	.0096181	-6.45	0.000	-.0808781 -.0431514

_Iyear_2018	-.0732376	.0093243	-7.85	0.000	-.0915248	-.0549505
_Iyear_2019	-.0763426	.0097354	-7.84	0.000	-.0954361	-.0572492
_Iyear_2020	-.0913024	.0093752	-9.74	0.000	-.1096894	-.0729155
_Iyear_2021	-.0955033	.0106318	-8.98	0.000	-.1163547	-.0746519
_Inace2_42	.1428387	.0320811	4.45	0.000	.0799201	.2057573
_Inace2_43	-.2996202	.0152328	-19.67	0.000	-.3294954	-.269745
_IyeaXnac_2007_42	-.0377865	.0228487	-1.65	0.098	-.0825981	.0070252
_IyeaXnac_2007_43	.0050332	.0121864	0.41	0.680	-.0188673	.0289336
_IyeaXnac_2008_42	-.0143665	.0222122	-0.65	0.518	-.05793	.0291969
_IyeaXnac_2008_43	.0149562	.0154701	0.97	0.334	-.0153844	.0452968
_IyeaXnac_2009_42	-.0056156	.0266851	-0.21	0.833	-.0579515	.0467202
_IyeaXnac_2009_43	.0182041	.0156077	1.17	0.244	-.0124062	.0488144
_IyeaXnac_2010_42	-.0446714	.0264843	-1.69	0.092	-.0966133	.0072706
_IyeaXnac_2010_43	.0406971	.015606	2.61	0.009	.0100901	.0713041
_IyeaXnac_2011_42	-.0222469	.0298214	-0.75	0.456	-.0807337	.0362398
_IyeaXnac_2011_43	.0582121	.0160934	3.62	0.000	.0266492	.089775
_IyeaXnac_2012_42	-.0439392	.030066	-1.46	0.144	-.1029057	.0150272
_IyeaXnac_2012_43	.0694553	.0163631	4.24	0.000	.0373633	.1015472
_IyeaXnac_2013_42	-.0439656	.0573462	-0.77	0.443	-.1564351	.0685039
_IyeaXnac_2013_43	.0900179	.0194659	4.62	0.000	.0518407	.1281951
_IyeaXnac_2014_42	-.067091	.0378188	-1.77	0.076	-.1412626	.0070806
_IyeaXnac_2014_43	.0952721	.0177116	5.38	0.000	.0605354	.1300089
_IyeaXnac_2015_42	-.0728189	.0290103	-2.51	0.012	-.129715	-.0159228
_IyeaXnac_2015_43	.093642	.0164022	5.71	0.000	.0614734	.1258105
_IyeaXnac_2016_42	-.0957944	.0280884	-3.41	0.001	-.1508825	-.0407063
_IyeaXnac_2016_43	.0980236	.016787	5.84	0.000	.0651003	.1309468
_IyeaXnac_2017_42	-.0920252	.0281912	-3.26	0.001	-.1473148	-.0367355
_IyeaXnac_2017_43	.1071694	.0165882	6.46	0.000	.074636	.1397029
_IyeaXnac_2018_42	-.0980299	.0264646	-3.70	0.000	-.1499332	-.0461267
_IyeaXnac_2018_43	.1209131	.0168205	7.19	0.000	.087924	.1539022
_IyeaXnac_2019_42	-.0857706	.0301355	-2.85	0.004	-.1448736	-.0266677
_IyeaXnac_2019_43	.1084766	.0166616	6.51	0.000	.0757993	.141154
_IyeaXnac_2020_42	-.089979	.0312151	-2.88	0.004	-.1511992	-.0287587
_IyeaXnac_2020_43	.1316119	.0164965	7.98	0.000	.0992583	.1639655
_IyeaXnac_2021_42	-.0827409	.0338096	-2.45	0.014	-.1490495	-.0164322
_IyeaXnac_2021_43	.1469116	.0174443	8.42	0.000	.1126993	.181124
_cons	1.83891	.077954	23.59	0.000	1.686024	1.991796

```

2664 .
2665 .
2666 . //fixed effects
2667 . eststo clear

2668 . foreach j in 1 1_pp {
    2.
2669 .
2670 .      eststo: xi: qui xtreg lmu_`j' zakazky_last3_share share2 cogs k i.year*i.nace2 , cluster(id) fe i(id)
    3.      nlcom -_b[zakazky_last3_share]/(_b[share2]*2)
    4.      gen sharestar_`j' = -_b[zakazky_last3_share]/(_b[share2]*2)
    5.      nlcom sharestar_`j'*_b[zakazky_last3_share]+sharestar_`j'^2*_b[share2]
    6. }
i.year          _Iyear_2006-2021      (naturally coded; _Iyear_2006 omitted)
i.nace2         _Inace2_41-43        (naturally coded; _Inace2_41 omitted)
i.year*i.nace2 _IyeaXnac_#_#       (coded as above)
(est1 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

```

lmu_1	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.5403666	.015675	34.47	0.000	.5096441 .571089

_nl_1: sharestar_1*_b[zakazky_last3_share]+sharestar_1^2*_b[share2]

lmu_1	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.0776927	.0068558	11.33	0.000	.0642557 .0911297

i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _Iyeaxnac_#_# (coded as above)
 (est2 stored)

_nl_1: -_b[zakazky_last3_share]/(_b[share2]*2)

lmu_1_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.5081587	.01111396	45.62	0.000	.4863254 .5299919

_nl_1: sharestar_1_pp*_b[zakazky_last3_share]+sharestar_1_pp^2*_b[share2]

lmu_1_pp	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_nl_1	.1397175	.0105636	13.23	0.000	.1190133 .1604217

2671 .
 2672 . noi esttab , ///
 > cells(b(star fmt(%9.3f)) se(fmt(%9.3f)) ci(fmt(%9.2f))) stats(N, fmt(%9.0g) labels("N")) starlevels(* 0.1
 > label plain collabels(none) depvars numbers replace keep(zakazky_last3_share share2)

	(1)	(2)
lmu_1	lmu_1_pp	
zakazky_last3_share	0.288*** 0.022 0.24,0.33 share2 -0.266*** 0.020 -0.31,-0.23	0.550*** 0.035 0.48,0.62 -0.541*** 0.030 -0.60,-0.48
N	13004	13004

2673 .
 2674 .
 2675 . xi: xtreg lmu_1 c.zakazky_last3_share##c.zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _Iyeaxnac_#_# (coded as above)
 note: _Inace2_42 omitted because of collinearity.
 note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression Number of obs = 13,004
 Group variable: id Number of groups = 1,859
 R-squared:
 Within = 0.4504 Obs per group:
 Between = 0.1871 min = 1
 Overall = 0.1375 avg = 7.0
 max = 16
 F(49, 1858) = 26.35
 corr(u_i, Xb) = -0.3754 Prob > F = 0.0000

(Std. err. adjusted for 1,859 clusters in id)

lmu_1	Coefficient	Robust				
		std. err.	t	P> t	[95% conf. interval]	
zakazky_last3_share	.2875555	.0221047	13.01	0.000	.2442028	.3309083
c.zakazky_last3_share#c.zakazky_last3_share	-.2660745	.020114	-13.23	0.000	-.3055229	-.2266261
cogs	-.1586099	.00621	-25.54	0.000	-.1707892	-.1464306
k	.0517218	.003194	16.19	0.000	.0454576	.0579859
_Iyear_2007	.00356	.0056613	0.63	0.530	-.0075431	.0146631

_Iyear_2008	.0068957	.0070007	0.98	0.325	-.0068344	.0206258
_Iyear_2009	-.0042096	.0070685	-0.60	0.552	-.0180727	.0096536
_Iyear_2010	-.0124194	.0069092	-1.80	0.072	-.0259699	.0011312
_Iyear_2011	-.0202858	.0072133	-2.81	0.005	-.0344329	-.0061387
_Iyear_2012	-.0235128	.0076292	-3.08	0.002	-.0384756	-.0085501
_Iyear_2013	-.0199508	.0082471	-2.42	0.016	-.0361255	-.0037761
_Iyear_2014	-.0258026	.007963	-3.14	0.002	-.0406381	-.0094032
_Iyear_2015	-.0187391	.0075784	-2.47	0.013	-.0336021	-.0038761
_Iyear_2016	-.0207092	.0077883	-2.66	0.008	-.0359838	-.0054345
_Iyear_2017	-.0213077	.0077505	-2.75	0.006	-.0365082	-.0061072
_Iyear_2018	-.0260158	.0077031	-3.38	0.001	-.0411235	-.0109082
_Iyear_2019	-.0246099	.0079062	-3.11	0.002	-.0401158	-.009104
_Iyear_2020	-.038923	.0078882	-4.93	0.000	-.0543937	-.0234522
_Iyear_2021	-.0394677	.0082655	-4.77	0.000	-.0556783	-.023257
_Inace2_42	0	(omitted)				
_Inace2_43	0	(omitted)				
_Iyeaxnac_2007_42	-.0046608	.0186739	-0.25	0.803	-.0412849	.0319632
_Iyeaxnac_2007_43	-.0021136	.0108997	-0.19	0.846	-.0234905	.0192633
_Iyeaxnac_2008_42	.009433	.0204149	0.46	0.644	-.0306055	.0494715
_Iyeaxnac_2008_43	-.0030101	.0113203	-0.27	0.790	-.0252119	.0191917
_Iyeaxnac_2009_42	.0095442	.0222499	0.43	0.668	-.0340932	.0531816
_Iyeaxnac_2009_43	.0148506	.0121632	1.22	0.222	-.0090045	.0387056
_Iyeaxnac_2010_42	-.018373	.0214589	-0.86	0.392	-.060459	.0237131
_Iyeaxnac_2010_43	.0256008	.0123923	2.07	0.039	.0012965	.0499051
_Iyeaxnac_2011_42	-.0006069	.023572	-0.03	0.979	-.0468373	.0456235
_Iyeaxnac_2011_43	.0380651	.012805	2.97	0.003	.0129515	.0631788
_Iyeaxnac_2012_42	-.0206735	.0242238	-0.85	0.394	-.0681823	.0268352
_Iyeaxnac_2012_43	.0455125	.0131343	3.47	0.001	.0197531	.071272
_Iyeaxnac_2013_42	-.0324406	.036541	-0.89	0.375	-.1041063	.0392251
_Iyeaxnac_2013_43	.0537356	.0149882	3.59	0.000	.0243401	.083131
_Iyeaxnac_2014_42	-.0350932	.0252333	-1.39	0.164	-.0845819	.0143955
_Iyeaxnac_2014_43	.0614448	.0136525	4.50	0.000	.0346721	.0882239
_Iyeaxnac_2015_42	-.0393094	.0223768	-1.76	0.079	-.0831957	.004577
_Iyeaxnac_2015_43	.0623366	.0128254	4.86	0.000	.037183	.0874903
_Iyeaxnac_2016_42	-.0545696	.0217061	-2.51	0.012	-.0971405	-.0119986
_Iyeaxnac_2016_43	.0692167	.0133349	5.19	0.000	.0430637	.0953696
_Iyeaxnac_2017_42	-.0619957	.0219093	-2.83	0.005	-.104965	-.0190263
_Iyeaxnac_2017_43	.0744287	.0131538	5.66	0.000	.0486308	.1002266
_Iyeaxnac_2018_42	-.0635932	.0212325	-3.00	0.003	-.1052353	-.0219511
_Iyeaxnac_2018_43	.0846098	.0135249	6.26	0.000	.0580843	.1111354
_Iyeaxnac_2019_42	-.0825561	.0230908	-3.58	0.000	-.1278428	-.0372695
_Iyeaxnac_2019_43	.0821697	.013662	6.01	0.000	.0553752	.1089643
_Iyeaxnac_2020_42	-.0749947	.0233872	-3.21	0.001	-.1208626	-.0291268
_Iyeaxnac_2020_43	.0932693	.0135236	6.90	0.000	.0667462	.1197923
_Iyeaxnac_2021_42	-.0594	.0242358	-2.45	0.014	-.1069322	-.0118677
_Iyeaxnac_2021_43	.1039416	.014053	7.40	0.000	.0763803	.1315028
_cons	2.483516	.0931933	26.65	0.000	2.300742	2.666291
sigma_u	.19910287					
sigma_e	.07663274					
rho	.87097358	(fraction of variance due to u_i)				

2676 . margins, dydx(zakazky_last3_share) at(zakazky_last3_share=(0(0.1)1))

Average marginal effects
Model VCE: Robust

Number of obs = 13,004

```
Expression: Linear prediction, predict()
dy/dx wrt: zakazky_last3_share
1._at: zakazky_last3_~e = 0
2._at: zakazky_last3_~e = .1
3._at: zakazky_last3_~e = .2
4._at: zakazky_last3_~e = .3
5._at: zakazky_last3_~e = .4
6._at: zakazky_last3_~e = .5
7._at: zakazky_last3_~e = .6
8._at: zakazky_last3_~e = .7
9._at: zakazky_last3_~e = .8
10._at: zakazky_last3_~e = .9
11._at: zakazky_last3_~e = 1
```

	Delta-method					
	dy/dx	std. err.	z	P> z	[95% conf. interval]	
zakazky_last3_share						
_at						
1	.2875555	.0221047	13.01	0.000	.2442311	.33088
2	.2343406	.0184339	12.71	0.000	.1982109	.2704704
3	.1811257	.0149453	12.12	0.000	.1518335	.210418
4	.1279108	.0118018	10.84	0.000	.1047797	.1510419
5	.0746959	.0093578	7.98	0.000	.056355	.0930369
6	.021481	.0082596	2.60	0.009	.0052926	.0376695
7	-.0317339	.0090132	-3.52	0.000	-.0493994	-.0140683
8	-.0849488	.0112526	-7.55	0.000	-.1070035	-.062894
9	-.1381637	.0142958	-9.66	0.000	-.1661829	-.1101444
10	-.1913786	.0177337	-10.79	0.000	-.226136	-.1566211
11	-.2445935	.0213768	-11.44	0.000	-.2864911	-.2026958

2677 . marginsplot

Variables that uniquely identify margins: zakazky_last3_share

2678 .

2679 . xi: xtreg lmu_1_pp c.zakazky_last3_share##c.zakazky_last3_share cogs k i.year*i.nace2 , cluster(id) fe i(id)
 i.year _Iyear_2006-2021 (naturally coded; _Iyear_2006 omitted)
 i.nace2 _Inace2_41-43 (naturally coded; _Inace2_41 omitted)
 i.year*i.nace2 _IyeaXnac_#_# (coded as above)
 note: _Inace2_42 omitted because of collinearity.
 note: _Inace2_43 omitted because of collinearity.

Fixed-effects (within) regression

Number of obs = 13,004

Group variable: id

Number of groups = 1,865

R-squared:

Obs per group:

Within = 0.3367

min = 1

Between = 0.1297

avg = 7.0

Overall = 0.0830

max = 16

F(49, 1864) = 21.73

corr(u_i, Xb) = -0.3568

Prob > F = 0.0000

(Std. err. adjusted for 1,865 clusters in id)

		Robust				
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
lmu_1_pp						
zakazky_last3_share	.5498972	.0345735	15.91	0.000	.4820904	.6177041
c.zakazky_last3_share#c.zakazky_last3_share	-.5410684	.0303707	-17.82	0.000	-.6006326	-.4815043
cogs	-.1502255	.0084264	-17.83	0.000	-.1667517	-.1336992
k	.0479753	.0038255	12.54	0.000	.0404725	.0554781
_Iyear_2007	.0114798	.0095443	1.20	0.229	-.0072388	.0301985
_Iyear_2008	.0210471	.0110302	1.91	0.057	-.0005858	.04268
_Iyear_2009	.0186234	.0117774	1.58	0.114	-.0044749	.0417217
_Iyear_2010	.0071714	.011681	0.61	0.539	-.0157378	.0300806
_Iyear_2011	.0025844	.0121362	0.21	0.831	-.0212175	.0263863
_Iyear_2012	.0056956	.0130865	0.44	0.663	-.0199701	.0313612
_Iyear_2013	.0130664	.01375	0.95	0.342	-.0139006	.0400333
_Iyear_2014	.0139174	.0133261	1.04	0.296	-.0122183	.040053
_Iyear_2015	.029132	.0130307	2.24	0.025	.0035758	.0546883
_Iyear_2016	.0322881	.0134656	2.40	0.017	.0058789	.0586973
_Iyear_2017	.0319104	.0133129	2.40	0.017	.0058007	.0580261
_Iyear_2018	.0291037	.0130774	2.23	0.026	.0034557	.0547516
_Iyear_2019	.0334223	.0131993	2.53	0.011	.0075353	.0593092
_Iyear_2020	.0210612	.013016	1.62	0.106	-.0044663	.0465888
_Iyear_2021	.0203363	.0136626	1.49	0.137	-.0064593	.047132
_Inace2_42	0	(omitted)				
_Inace2_43	0	(omitted)				
_IyeaXnac_2007_42	-.0175642	.0235442	-0.75	0.456	-.0637399	.0286116
_IyeaXnac_2007_43	-.0101141	.0144589	-0.70	0.484	-.0384714	.0182432
_IyeaXnac_2008_42	.0170549	.0267585	0.64	0.524	-.0354249	.0695348

_IyeaXnac_2008_43	- .0014818	.0168172	-0.09	0.930	- .0344644	.0315008
_IyeaXnac_2009_42	.0037487	.030377	0.12	0.902	- .0558278	.0633251
_IyeaXnac_2009_43	.0074567	.0188155	0.40	0.692	- .0294449	.0443584
_IyeaXnac_2010_42	-.0259493	.0309381	-0.84	0.402	- .0866263	.0347277
_IyeaXnac_2010_43	.0256524	.0184562	1.39	0.165	- .0105446	.0618494
_IyeaXnac_2011_42	-.0085465	.0326784	-0.26	0.794	- .0726365	.0555436
_IyeaXnac_2011_43	.0428458	.0188684	2.27	0.023	.0058403	.0798512
_IyeaXnac_2012_42	-.0542126	.0327675	-1.65	0.098	- .1184776	.0100523
_IyeaXnac_2012_43	.054225	.0197328	2.75	0.006	.0155243	.0929257
_IyeaXnac_2013_42	-.0313402	.047364	-0.66	0.508	- .1242322	.0615517
_IyeaXnac_2013_43	.0837495	.0224071	3.74	0.000	.0398038	.1276952
_IyeaXnac_2014_42	-.0461368	.0361063	-1.28	0.201	- .1169497	.0246761
_IyeaXnac_2014_43	.1007536	.0209596	4.81	0.000	.0596469	.1418603
_IyeaXnac_2015_42	-.03968	.0317006	-1.25	0.211	- .1018523	.0224923
_IyeaXnac_2015_43	.1008029	.0200484	5.03	0.000	.0614832	.1401226
_IyeaXnac_2016_42	-.0483891	.0325408	-1.49	0.137	- .1122093	.0154312
_IyeaXnac_2016_43	.1015198	.0205087	4.95	0.000	.0612973	.1417422
_IyeaXnac_2017_42	-.0556218	.0322814	-1.72	0.085	- .1189334	.0076897
_IyeaXnac_2017_43	.1035408	.0208872	4.96	0.000	.0625761	.1445055
_IyeaXnac_2018_42	-.0409513	.0318003	-1.29	0.198	- .1033193	.0214167
_IyeaXnac_2018_43	.1078772	.0207363	5.20	0.000	.0672085	.148546
_IyeaXnac_2019_42	-.0686996	.0321716	-2.14	0.033	- .1317957	- .0056035
_IyeaXnac_2019_43	.1014093	.0208458	4.86	0.000	.0605256	.1422929
_IyeaXnac_2020_42	-.0688782	.0320602	-2.15	0.032	- .1317558	- .0060006
_IyeaXnac_2020_43	.1079019	.0208177	5.18	0.000	.0670735	.1487303
_IyeaXnac_2021_42	-.0528479	.0323117	-1.64	0.102	- .1162189	.0105231
_IyeaXnac_2021_43	.1075704	.0214626	5.01	0.000	.0654772	.1496636
_cons	2.325834	.1296496	17.94	0.000	2.071561	2.580108
		sigma_u	.23268192			
		sigma_e	.11267651			
		rho	.81004502	(fraction of variance due to u_i)		

2680 . margins, dydx(zakazky_last3_share) at(zakazky_last3_share=(0(0.1)1))

Average marginal effects
Model VCE: Robust

Number of obs = 13,004

```
Expression: Linear prediction, predict()
dy/dx wrt: zakazky_last3_share
1._at: zakazky_last3~e = 0
2._at: zakazky_last3~e = .1
3._at: zakazky_last3~e = .2
4._at: zakazky_last3~e = .3
5._at: zakazky_last3~e = .4
6._at: zakazky_last3~e = .5
7._at: zakazky_last3~e = .6
8._at: zakazky_last3~e = .7
9._at: zakazky_last3~e = .8
10._at: zakazky_last3~e = .9
11._at: zakazky_last3~e = 1
```

	Delta-method				
	dy/dx	std. err.	z	P> z	[95% conf. interval]
zakazky_last3_share					
_at					
1	.5498972	.0345735	15.91	0.000	.4821344
2	.4416835	.0289501	15.26	0.000	.3849425
3	.3334699	.0235515	14.16	0.000	.2873097
4	.2252562	.018575	12.13	0.000	.1888497
5	.1170425	.0144631	8.09	0.000	.0886953
6	.0088288	.0121293	0.73	0.467	-.0149442
7	-.0993849	.0126036	-7.89	0.000	-.1240875
8	-.2075986	.0156323	-13.28	0.000	-.2382374
9	-.3158123	.0200918	-15.72	0.000	-.3551915
10	-.4240259	.0252345	-16.80	0.000	-.4734847
11	-.5322396	.0307192	-17.33	0.000	-.5924482

2681 . marginsplot

Variables that uniquely identify margins: zakazky_last3_share

2682 .
2683 .
2684 . save "data_with_results", replace
file data_with_results.dta saved2685 .
2686 . *extra by sector
2687 . *OLS
2688 . reg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id)

Linear regression

	Number of obs	=	6,997
F(18, 945)	=	77.67	
Prob > F	=	0.0000	
R-squared	=	0.7232	
Root MSE	=	.08544	

(Std. err. adjusted for 946 clusters in id)

lmu_1	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
zakazky_last3_dummy	.1600261	.0055473	28.85	0.000	.1491396	.1709126
cogs	-.1315901	.0070096	-18.77	0.000	-.1453462	-.1178341
k	.0688296	.003928	17.52	0.000	.061121	.0765382
year						
2007	-.0102463	.0049538	-2.07	0.039	-.0199679	-.0005247
2008	-.0120184	.0070597	-1.70	0.089	-.0258728	.0018361
2009	-.0226866	.0069725	-3.25	0.001	-.0363701	-.0090032
2010	-.0323883	.0067792	-4.78	0.000	-.0456922	-.0190843
2011	-.0398873	.0072898	-5.47	0.000	-.0541934	-.0255812
2012	-.0483024	.0073779	-6.55	0.000	-.0627814	-.0338234
2013	-.0530393	.0096027	-5.52	0.000	-.0718844	-.0341942
2014	-.060908	.0089065	-6.84	0.000	-.0783868	-.0434293
2015	-.0625667	.0077435	-8.08	0.000	-.0777631	-.0473702
2016	-.0645561	.0086347	-7.48	0.000	-.0815015	-.0476107
2017	-.0744356	.0080579	-9.24	0.000	-.0902491	-.0586221
2018	-.0837135	.0078968	-10.60	0.000	-.0992108	-.0682162
2019	-.0846557	.0086749	-9.76	0.000	-.1016799	-.0676315
2020	-.0991729	.0080999	-12.24	0.000	-.1150688	-.083277
2021	-.1077747	.0084064	-12.82	0.000	-.1242721	-.0912773
_cons	1.824439	.0709725	25.71	0.000	1.685157	1.963721

2689 . reg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id)

Linear regression

	Number of obs	=	1,064
F(18, 112)	=	8.43	
Prob > F	=	0.0000	
R-squared	=	0.3595	
Root MSE	=	.11475	

(Std. err. adjusted for 113 clusters in id)

lmu_1	Robust					
	Coefficient	std. err.	t	P> t	[95% conf. interval]	
zakazky_last3_dummy	.1063332	.017727	6.00	0.000	.0712093	.141457
cogs	.0409185	.0179923	2.27	0.025	.005269	.0765679
k	-.0020007	.013714	-0.15	0.884	-.0291731	.0251718
year						
2007	-.0167653	.0120326	-1.39	0.166	-.0406064	.0070758
2008	-.0345039	.0102018	-3.38	0.001	-.0547174	-.0142903
2009	-.0218684	.0155508	-1.41	0.162	-.0526803	.0089434
2010	-.0501983	.0120978	-4.15	0.000	-.0741685	-.0262281
2011	-.0321663	.0148063	-2.17	0.032	-.0615031	-.0028294
2012	-.0540959	.0113931	-4.75	0.000	-.0766699	-.031522

2013	-.0581064	.0202927	-2.86	0.005	-.0983137	-.017899
2014	-.0373861	.0240851	-1.55	0.123	-.0851076	.0103353
2015	-.0855329	.0164772	-5.19	0.000	-.1181803	-.0528855
2016	-.0869662	.0169147	-5.14	0.000	-.1204804	-.0534519
2017	-.0972405	.0186222	-5.22	0.000	-.134138	-.0603429
2018	-.1199391	.0180407	-6.65	0.000	-.1556844	-.0841938
2019	-.1236553	.017707	-6.98	0.000	-.1587394	-.0885712
2020	-.1302607	.0193662	-6.73	0.000	-.1686324	-.0918889
2021	-.1362615	.0228572	-5.96	0.000	-.18155	-.0909729
_cons	.036512	.1821727	0.20	0.842	-.3244398	.3974637

2690 . reg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id)

Linear regression

Number of obs	=	4,943
F(18, 799)	=	50.63
Prob > F	=	0.0000
R-squared	=	0.6399
Root MSE	=	.12475

(Std. err. adjusted for 800 clusters in id)

lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.0926783	.0072579	12.77	0.000	.0784316 .1069251
cogs	-.1734494	.0089194	-19.45	0.000	-.1909576 -.1559412
k	.0775843	.0046912	16.54	0.000	.0683757 .0867929
year					
2007	.0073961	.0105345	0.70	0.483	-.0132824 .0280746
2008	.0039414	.0104474	0.38	0.706	-.0165662 .0244491
2009	-.0000329	.0106151	-0.00	0.998	-.0208697 .020804
2010	.004072	.0108395	0.38	0.707	-.0172054 .0253493
2011	.0128557	.0116601	1.10	0.271	-.0100323 .0357436
2012	.0159678	.0120689	1.32	0.186	-.0077227 .0396584
2013	.0163166	.0147685	1.10	0.270	-.012673 .0453062
2014	.0128616	.0129047	1.00	0.319	-.0124696 .0381928
2015	.017815	.0115425	1.54	0.123	-.0048422 .0404721
2016	.0225145	.0133255	1.69	0.091	-.0036425 .0486716
2017	.0247483	.0122134	2.03	0.043	.0007743 .0487224
2018	.0287982	.012501	2.30	0.021	.0042596 .0533369
2019	.0251609	.0125971	2.00	0.046	.0004335 .0498883
2020	.0269345	.0121189	2.22	0.027	.0031459 .0507231
2021	.0360871	.0124941	2.89	0.004	.011562 .0606122
_cons	2.134267	.1122639	19.01	0.000	1.9139 2.354634

2691 .

2692 . reg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id)

Linear regression

Number of obs	=	6,985
F(18, 949)	=	170.00
Prob > F	=	0.0000
R-squared	=	0.7230
Root MSE	=	.10842

(Std. err. adjusted for 950 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2998863	.0063094	47.53	0.000	.2875043 .3122682
cogs	-.1297052	.0074132	-17.50	0.000	-.1442534 -.115157
k	.0650293	.0042381	15.34	0.000	.0567123 .0733464
year					
2007	-.0072459	.0067366	-1.08	0.282	-.0204663 .0059744
2008	-.0090872	.0088064	-1.03	0.302	-.0263695 .0081951
2009	-.0115278	.0088964	-1.30	0.195	-.0289867 .0059312
2010	-.0226703	.008477	-2.67	0.008	-.0393061 -.0060345

2011	-.0287847	.0092108	-3.13	0.002	-.0468606	-.0107087
2012	-.033199	.0098531	-3.37	0.001	-.0525354	-.0138626
2013	-.049358	.0115938	-4.26	0.000	-.0721103	-.0266056
2014	-.0529357	.0108927	-4.86	0.000	-.0743124	-.0315591
2015	-.0512244	.0098964	-5.18	0.000	-.0706458	-.031803
2016	-.0528673	.0105538	-5.01	0.000	-.0735788	-.0321557
2017	-.0643314	.0102062	-6.30	0.000	-.0843608	-.044302
2018	-.0763204	.0099124	-7.70	0.000	-.0957731	-.0568677
2019	-.079533	.0103693	-7.67	0.000	-.0998824	-.0591835
2020	-.094301	.0100329	-9.40	0.000	-.1139902	-.0746118
2021	-.0986449	.0112442	-8.77	0.000	-.1207112	-.0765785
_cons	1.76129	.0842878	20.90	0.000	1.595878	1.926702

2693 . reg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id)

Linear regression

Number of obs	=	1,058
F(18, 112)	=	26.98
Prob > F	=	0.0000
R-squared	=	0.6188
Root MSE	=	.11683

(Std. err. adjusted for 113 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2855726	.0182785	15.62	0.000	.2493561 .3217891
cogs	.0298766	.0205167	1.46	0.148	-.0107745 .0705278
k	.0113157	.0149863	0.76	0.452	-.0183777 .0410091
year					
2007	-.0222653	.0128881	-1.73	0.087	-.0478015 .0032708
2008	-.0275637	.0109624	-2.51	0.013	-.0492843 -.005843
2009	-.0230632	.0175411	-1.31	0.191	-.0578186 .0116923
2010	-.0363399	.0194217	-1.87	0.064	-.0748215 .0021417
2011	-.0340608	.0184451	-1.85	0.067	-.0706074 .0024858
2012	-.0586274	.0158185	-3.71	0.000	-.0899697 -.0272851
2013	-.0084542	.0476618	-0.18	0.860	-.10289 .0859815
2014	-.0472433	.0225321	-2.10	0.038	-.0918877 -.0025989
2015	-.0810844	.0177427	-4.57	0.000	-.1162394 -.0459294
2016	-.0929165	.019391	-4.79	0.000	-.1313373 -.0544957
2017	-.1020586	.0182014	-5.61	0.000	-.1381223 -.0659949
2018	-.1172545	.0183098	-6.40	0.000	-.153533 -.080976
2019	-.1220039	.018737	-6.51	0.000	-.1591288 -.084879
2020	-.1383807	.0190197	-7.28	0.000	-.1760659 -.1006955
2021	-.1470588	.0188579	-7.80	0.000	-.1844233 -.1096942
_cons	-.0740703	.1727648	-0.43	0.669	-.4163816 .2682411

2694 . reg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id)

Linear regression

Number of obs	=	4,961
F(18, 801)	=	120.87
Prob > F	=	0.0000
R-squared	=	0.6580
Root MSE	=	.13985

(Std. err. adjusted for 802 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2573144	.0089638	28.71	0.000	.239719 .2749098
cogs	-.1721869	.0085516	-20.14	0.000	-.188973 -.1554007
k	.0736465	.004356	16.91	0.000	.0650961 .082197
year					
2007	.0027783	.0100815	0.28	0.783	-.017011 .0225675
2008	.0124935	.0120517	1.04	0.300	-.0111631 .0361502
2009	.0066319	.0123724	0.54	0.592	-.0176543 .0309181

2010	.0169162	.0128025	1.32	0.187	-.0082142	.0420467
2011	.0235878	.0130128	1.81	0.070	-.0019554	.049131
2012	.0325744	.0131645	2.47	0.014	.0067334	.0584154
2013	.0400115	.0160794	2.49	0.013	.0084487	.0715743
2014	.0393224	.0147624	2.66	0.008	.0103449	.0682999
2015	.0464275	.014024	3.31	0.001	.0188993	.0739558
2016	.0481527	.014844	3.24	0.001	.0190149	.0772904
2017	.0426303	.0146576	2.91	0.004	.0138585	.071402
2018	.0457245	.0149597	3.06	0.002	.0163596	.0750895
2019	.0334814	.014627	2.29	0.022	.0047696	.0621931
2020	.0370579	.0148114	2.50	0.013	.0079841	.0661317
2021	.045853	.0149143	3.07	0.002	.0165774	.0751287
_cons	2.069321	.1144992	18.07	0.000	1.844567	2.294075

2695 .
2696 . *FE
2697 . xtreg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 6,997
Group variable: id Number of groups = 946

R-squared: Obs per group:
Within = 0.7224 min = 1
Between = 0.6702 avg = 7.4
Overall = 0.6512 max = 16

F(18, 945) = 260.44
corr(u_i, Xb) = -0.2602 Prob > F = 0.0000

(Std. err. adjusted for 946 clusters in id)

	lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.1780543	.0028774	61.88	0.000	.1724075	.1837011
cogs	-.1575076	.0058584	-26.89	0.000	-.1690046	-.1460105
k	.0545945	.0037461	14.57	0.000	.0472427	.0619462
year						
2007	-.003314	.0046718	-0.71	0.478	-.0124824	.0058544
2008	-.0036177	.0058021	-0.62	0.533	-.0150043	.0077688
2009	-.016995	.005293	-3.21	0.001	-.0273824	-.0066076
2010	-.024448	.0049045	-4.98	0.000	-.034073	-.0148229
2011	-.0322319	.0051539	-6.25	0.000	-.0423464	-.0221174
2012	-.0396206	.0052882	-7.49	0.000	-.0499986	-.0292426
2013	-.0486272	.0054345	-8.95	0.000	-.0592923	-.037962
2014	-.0573494	.0054924	-10.44	0.000	-.068128	-.0465707
2015	-.0606475	.0053416	-11.35	0.000	-.0711304	-.0501647
2016	-.0681192	.0053418	-12.75	0.000	-.0786023	-.0576361
2017	-.0739523	.0054559	-13.55	0.000	-.0846593	-.0632453
2018	-.0811822	.0054832	-14.81	0.000	-.0919428	-.0704216
2019	-.0848351	.0058198	-14.58	0.000	-.0962562	-.0734139
2020	-.0986067	.0055682	-17.71	0.000	-.1095342	-.0876791
2021	-.1020347	.0061645	-16.55	0.000	-.1141324	-.089937
_cons	2.483659	.0902039	27.53	0.000	2.306636	2.660682
sigma_u	.09060453					
sigma_e	.05131838					
rho	.757112					(fraction of variance due to u_i)

2698 . xtreg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id) fe i(id)

Fixed-effects (within) regression
 Group variable: id

R-squared:
 Within = 0.3176
 Between = 0.0000
 Overall = 0.0241

Number of obs = 1,064
 Number of groups = 113

Obs per group:
 min = 1
 avg = 9.4
 max = 16

F(18, 112) = 12.93
 corr(u_i, Xb) = -0.2558
 Prob > F = 0.0000

(Std. err. adjusted for 113 clusters in id)

	lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.1085493	.0105374	10.30	0.000	.0876708	.1294277
cogs	-.0205003	.0258824	-0.79	0.430	-.0717829	.0307823
k	-.0067032	.0102509	-0.65	0.515	-.027014	.0136077
year						
2007	-.0014642	.010184	-0.14	0.886	-.0216426	.0187142
2008	-.0058293	.0091852	-0.63	0.527	-.0240285	.01237
2009	.0031863	.013512	0.24	0.814	-.0235859	.0299586
2010	-.0229941	.0099464	-2.31	0.023	-.0427016	-.0032866
2011	-.0157708	.0127792	-1.23	0.220	-.0410912	.0095495
2012	-.0328422	.0107453	-3.06	0.003	-.0541327	-.0115517
2013	-.0505264	.0181566	-2.78	0.006	-.0865014	-.0145514
2014	-.0430389	.016726	-2.57	0.011	-.0761793	.0098986
2015	-.063264	.0137896	-4.59	0.000	-.0905863	.0359417
2016	-.0749301	.0133728	-5.60	0.000	-.1014265	.0484337
2017	-.0870887	.0140239	-6.21	0.000	-.1148753	-.0593021
2018	-.1028678	.0148011	-6.95	0.000	-.1321943	-.0735412
2019	-.1132404	.0152255	-7.44	0.000	-.1434079	.0830729
2020	-.1215189	.0162432	-7.48	0.000	-.1537027	-.0893351
2021	-.1154319	.0153419	-7.52	0.000	-.1458299	-.0850339
_cons	1.196418	.4106772	2.91	0.004	.3827139	2.010122
sigma_u	.13386791					
sigma_e	.06411841					
rho	.81339825		(fraction of variance due to u_i)			

2699 . xtreg lmu_1 zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id) fe i(id)

Fixed-effects (within) regression
 Group variable: id

R-squared:
 Within = 0.5801
 Between = 0.6446
 Overall = 0.5682

Number of obs = 4,943
 Number of groups = 800

Obs per group:
 min = 1
 avg = 6.2
 max = 16

F(18, 799) = 45.09
 corr(u_i, Xb) = -0.3312
 Prob > F = 0.0000

(Std. err. adjusted for 800 clusters in id)

	lmu_1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.0915444	.006655	13.76	0.000	.078481	.1046077
cogs	-.1993911	.0110087	-18.11	0.000	-.2210004	-.1777818
k	.0540679	.0055452	9.75	0.000	.0431831	.0649528
year						
2007	.0014588	.0087923	0.17	0.868	-.0158	.0187176
2008	.0049202	.0085287	0.58	0.564	-.0118211	.0216616
2009	.0062254	.0094291	0.66	0.509	-.0122834	.0247343
2010	.0104253	.0100045	1.04	0.298	-.0092128	.0300635

2011	.0113256	.0099664	1.14	0.256	-.0082379	.0308891
2012	.0140811	.0102929	1.37	0.172	-.0061233	.0342855
2013	.0168972	.0116563	1.45	0.148	-.0059834	.0397778
2014	.0128406	.0106907	1.20	0.230	-.0081447	.0338259
2015	.0190148	.0100513	1.89	0.059	-.0007153	.0387448
2016	.021976	.0113541	1.94	0.053	-.0003113	.0442634
2017	.0267686	.0106631	2.51	0.012	.0058376	.0476996
2018	.0325465	.0109212	2.98	0.003	.0111089	.0539841
2019	.0322222	.0114457	2.82	0.005	.0097549	.0546894
2020	.0278067	.0109871	2.53	0.012	.0062397	.0493738
2021	.0417419	.011436	3.65	0.000	.0192938	.0641901
_cons	2.933439	.1458733	20.11	0.000	2.647099	3.219779
sigma_u	.12591751					
sigma_e	.07530673					
rho	.73655029	(fraction of variance due to u_i)				

2700 .
2701 . xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==41 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 6,985
Group variable: id Number of groups = 950

R-squared: Obs per group:
Within = 0.7406 min = 1
Between = 0.6386 avg = 7.4
Overall = 0.6550 max = 16

F(18, 949) = 260.84
corr(u_i, Xb) = -0.1979 Prob > F = 0.0000

(Std. err. adjusted for 950 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.3215531	.0054332	59.18	0.000	.3108906 .3322155
cogs	-.1570141	.0073711	-21.30	0.000	-.1714796 -.1425486
k	.0465636	.0044727	10.41	0.000	.0377861 .0553412
year					
2007	.0006919	.0063857	0.11	0.914	-.0118398 .0132237
2008	.0044676	.0071753	0.62	0.534	-.0096137 .0185488
2009	-.0014417	.007193	-0.20	0.841	-.0155578 .0126744
2010	-.0105192	.0068058	-1.55	0.123	-.0238753 .0028369
2011	-.0166278	.0073113	-2.27	0.023	-.0309761 -.0022795
2012	-.0215835	.0074483	-2.90	0.004	-.0362006 -.0069664
2013	-.0361072	.0077869	-4.64	0.000	-.0513887 -.0208256
2014	-.0426512	.0075856	-5.62	0.000	-.0575376 -.0277647
2015	-.0434056	.0076054	-5.71	0.000	-.058331 -.0284803
2016	-.0517956	.0075898	-6.82	0.000	-.0666903 -.0369009
2017	-.061561	.0076701	-8.03	0.000	-.0766133 -.0465087
2018	-.0687121	.007637	-9.00	0.000	-.0836995 -.0537248
2019	-.073669	.0080613	-9.14	0.000	-.0894891 -.0578489
2020	-.0855909	.0077888	-10.99	0.000	-.1008762 -.0703056
2021	-.0892027	.0090185	-9.89	0.000	-.1069013 -.0715042
_cons	2.504418	.1142259	21.93	0.000	2.280253 2.728583
sigma_u	.11384741				
sigma_e	.06728861				
rho	.74110813	(fraction of variance due to u_i)			

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2702 . xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==42 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 1,058
 Group variable: id Number of groups = 113

R-squared:
 Within = 0.5884 Obs per group:
 Between = 0.0652 min = 1
 Overall = 0.1489 avg = 9.4
 max = 16

F(18, 112) = 32.37
 corr(u_i, Xb) = -0.2796 Prob > F = 0.0000

(Std. err. adjusted for 113 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2898376	.0157368	18.42	0.000	.2586572 .321018
cogs	-.0615073	.0351051	-1.75	0.082	-.1310636 .008049
k	.0002521	.0121603	0.02	0.983	-.023842 .0243462
year					
2007	-.0075172	.0125813	-0.60	0.551	-.0324454 .0174111
2008	.005991	.0128056	0.47	0.641	-.0193817 .0313636
2009	.0059712	.0155207	0.38	0.701	-.0247811 .0367235
2010	-.0130099	.0177103	-0.73	0.464	-.0481005 .0220808
2011	-.0114426	.0170866	-0.67	0.504	-.0452974 .0224122
2012	-.0360131	.0162111	-2.22	0.028	-.0681333 -.003893
2013	-.0170991	.0300621	-0.57	0.571	-.0766633 .042465
2014	-.0491788	.0185926	-2.65	0.009	-.0860177 -.0123399
2015	-.0575112	.0164358	-3.50	0.001	-.0900766 -.0249458
2016	-.0757235	.0157146	-4.82	0.000	-.10686 -.044587
2017	-.089575	.0153919	-5.82	0.000	-.1200722 -.0590779
2018	-.0954879	.0161456	-5.91	0.000	-.1274783 -.0634975
2019	-.1077156	.0184377	-5.84	0.000	-.1442476 -.0711835
2020	-.1201615	.0194011	-6.19	0.000	-.1586024 -.0817206
2021	-.1144354	.0175405	-6.52	0.000	-.1491897 -.0796811
_cons	1.724246	.5207215	3.31	0.001	.692503 2.755989
sigma_u	.16390528				
sigma_e	.07351929				
rho	.83250443	(fraction of variance due to u_i)			

2703 . xtreg lmu_1_pp zakazky_last3_dummy cogs k i.year if nace2==43 , cluster(id) fe i(id)

Fixed-effects (within) regression Number of obs = 4,961
 Group variable: id Number of groups = 802

R-squared:
 Within = 0.6873 Obs per group:
 Between = 0.6535 min = 1
 Overall = 0.6176 avg = 6.2
 max = 16

F(18, 801) = 100.36
 corr(u_i, Xb) = -0.1241 Prob > F = 0.0000

(Std. err. adjusted for 802 clusters in id)

lmu_1_pp	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
zakazky_last3_dummy	.2650064	.0093164	28.45	0.000	.2467189 .2832938
cogs	-.1856376	.0199199	-9.32	0.000	-.224739 -.1465362
k	.0522643	.0060074	8.70	0.000	.0404721 .0640565
year					
2007	.0036915	.0077421	0.48	0.634	-.0115057 .0188887
2008	.0194196	.0091146	2.13	0.033	.0015282 .0373109
2009	.0184937	.0101538	1.82	0.069	-.0014374 .0384249
2010	.0256756	.0103205	2.49	0.013	.0054171 .0459341

2011	.0315481	.0104515	3.02	0.003	.0110325	.0520637
2012	.0393548	.0107043	3.68	0.000	.0183431	.0603666
2013	.0449662	.0123915	3.63	0.000	.0206425	.0692899
2014	.0438522	.0116232	3.77	0.000	.0210366	.0666677
2015	.0471956	.0113688	4.15	0.000	.0248794	.0695118
2016	.0438661	.0124107	3.53	0.000	.0195048	.0682274
2017	.0375814	.0130363	2.88	0.004	.0119921	.0631707
2018	.0352654	.0128151	2.75	0.006	.0101103	.0604204
2019	.0296166	.0131409	2.25	0.024	.0038219	.0554114
2020	.0228088	.0134599	1.69	0.091	-.003612	.0492297
2021	.0283624	.0141886	2.00	0.046	.0005112	.0562137
_cons	2.624265	.277423	9.46	0.000	2.079703	3.168827
sigma_u	.13291124					
sigma_e	.08472842					
rho	.7110442	(fraction of variance due to u_i)				

2704 .
 2705 .
 end of do-file
 2706 . exit, clear