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1
2 *****
3 ***Is Blood Thicker than Water?
4 ***The Impact of Player Agencies on Player Salaries: Empirical Evidence from Five
5 European Football Leagues
6 *****
7 ***Felix Sage & Joachim Prinz
8
9
10 clear all
11 set more off
12 import excel "C:\Users\Felix Sage\Desktop\Data.xlsx", sheet("Sheet1") firstrow
13
14
15 *****
16 *Figure 1: Distribution function of the absolute gross annual salaries.
17 *****
18
19 kdensity salary, normal
20
21
22 *****
23 *Figure 2: Distribution function of the logarithmized gross annual salaries.
24 *****
25
26 kdensity lnsalary, normal
27
28
29 *****
30 *Table 1: Categorization of player agencies
31 *****
32
33 * Collapse the data by agency, keeping the first value of number_of_managed_playersactiv
34 collapse (firstnm) number_of_managed_playersactiv, by(agency)
35
36 * Generate the category variable
37 gen category =.
38 replace category = 1 if number_of_managed_playersactiv == 1
39 replace category = 2 if number_of_managed_playersactiv >= 2 &
40 number_of_managed_playersactiv < 6
41 replace category = 3 if number_of_managed_playersactiv >= 6 &
42 number_of_managed_playersactiv < 26
43 replace category = 4 if number_of_managed_playersactiv >= 26 &
44 number_of_managed_playersactiv < 51
45 replace category = 5 if number_of_managed_playersactiv >= 51 &
46 number_of_managed_playersactiv < 101
47 replace category = 6 if number_of_managed_playersactiv >= 101 &
48 number_of_managed_playersactiv <= 500
49 replace category = 7 if number_of_managed_playersactiv > 500
50
51 * Define labels for the categories
52 label define category 1 "1" 2 "2-5" 3 "6-25" 4 "26-50" 5 "51-100" 6 "101-500" 7 ">500"
53 label values category category
54
55 * Display the frequency table
56 tabulate category
57
58 clear all
59 set more off
60 import excel "C:\Users\Felix Sage\Desktop\Data.xlsx", sheet("Sheet1") firstrow
61
62 *****
63 *Table 2: Representation model changes.
64 *****
65
66 sort Nr period_t
67
68 gen prev_representation_model = representation_model[_n-1] if Nr == Nr[_n-1]
69
70 keep if prev_representation_model != representation_model
71

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68 tabulate prev_representation_model representation_model, matcell(freq)
69
70 clear all
71 set more off
72 import excel "C:\Users\Felix Sage\Desktop\Data.xlsx", sheet("Sheet1") firstrow
73
74
75 *****
76 *Table 3: Representation model distribution.
77 *****
78
79 tab representation_model
80
81
82 ***Generate Factor variables
83 **Defensive Actions (f1 for t-1):
84 global xlist tackles_t1 tackles_won_t1 tackles_middle_third_t1 tackles_attacking_third_t1
shots_blocked_t1 passes_blocked_t1 interceptions_t1 clearances_t1 errors_t1
85
86 global ncomp 1
87
88 factor $xlist
89
90 *Factor analysis (pf principal factors, pcf principal component factors)
91 factor $xlist, mineigen(1)
92 factor $xlist, factor($ncomp)
93 factor $xlist, factor($ncomp) blanks(0.3)
94 factor $xlist, factor($ncomp) pcf
95
96 *Factor rotations
97 rotate, varimax
98 rotate, varimax blanks(.3)
99 rotate, clear
100
101 rotate, promax
102 rotate, promax blanks(.3)
103 rotate, clear
104
105 estat common
106
107 *Scores of the components
108 predict f1
109
110 *KMO measure of sampling adequacy
111 estat kmo
112
113 *Average interitem covariance
114 alpha $xlist
115
116 *Barlett's test for sphericity
117 factortest $xlist
118
119
120 **Goal and Shot Creation (f2 for t-1):
121 global xlist shotcreatingactions_t1 shotcreatingactions90_t1 scadeadballpass_t1
scatakeon_t1 scashot_t1 scafoulsdrawn_t1 scadefensiveaction_t1 goalcreatingactions_t1
goalcreatingactions90_t1 gcaliveballpass_t1 gcadeadballpass_t1 gcatakeon_t1
gcacfoulsdrawn_t1 gcadefensiveaction_t1
122
123 global ncomp 1
124
125 factor $xlist
126
127 *Factor analysis (pf principal factors, pcf principal component factors)
128 factor $xlist, mineigen(1)
129 factor $xlist, factor($ncomp)
130 factor $xlist, factor($ncomp) blanks(0.3)
131 factor $xlist, factor($ncomp) pcf
132
133 *Factor rotations
134 rotate, varimax
135 rotate, varimax blanks(.3)
136 rotate, clear
137
138 rotate, promax

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139 rotate, promax blanks(.3)
140 rotate, clear
141
142 estat common
143
144 *Scores of the components
145 predict f2
146
147 *KMO measure of sampling adequacy
148 estat kmo
149
150 *Average interitem covariance
151 alpha $xlist
152
153 *Barlett's test for sphericity
154 factortest $xlist
155
156
157 **Further + Miscellaneous Statistics (f3 for t-1):
158 global xlist yellowcards_t1 redcards_t1 secondyellowcard_t1 foulscommitted_t1 foulsdrawn_t1
    offsidest_t1 crosses_t1 penaltykickswon_t1 penaltykickscanceled_t1 owngoals_t1
    ballrecoveries_t1 aeriawon_t1 aeriawonlost_t1 percentageofaerialswon_t1 npegeag90_t1
    nonpenaltyexpectedgoals90_t1 egeag90_t1 expectedassistedgoals90_t1 expectedgoals90_t1
    nonpenaltygoalsassists90_t1 nonpenaltygoals90_t1 goalsassists90_t1 assists90_t1 goals90_t1
    nonpenaltygoals_t1 goalsassists_t1
159
160 global ncomp 1
161
162 factor $xlist
163
164 *Factor analysis (pf principal factors, pcf principal component factors)
165 factor $xlist, mineigen(1)
166 factor $xlist, factor($ncomp)
167 factor $xlist, factor($ncomp) blanks(0.3)
168 factor $xlist, factor($ncomp) pcf
169
170 *Factor rotations
171 rotate, varimax
172 rotate, varimax blanks(.3)
173 rotate, clear
174
175 rotate, promax
176 rotate, promax blanks(.3)
177 rotate, clear
178
179 estat common
180
181 *Scores of the components
182 predict f3
183
184 *KMO measure of sampling adequacy
185 estat kmo
186
187 *Average interitem covariance
188 alpha $xlist
189
190 *Barlett's test for sphericity
191 factortest $xlist
192
193
194 **Passing (f4 for t-1):
195 global xlist passescompleted_t1 passesattempted_t1 passescompletionpercentage_t1
    totalpassingdistance_t1 progressivepassingdistance_t1 shortpassescompleted_t1
    shortpassesattempted_t1 spcp_t1 mediumpassescompleted_t1 mediumpassesattempted_t1 mpcp_t1
    longpassescompleted_t1 longpassesattempted_t1 lpcp_t1 assists_t1 expectedassistedgoals_t1
    expectedassists_t1 amega_t1 keypasses_t1 passesintofinalthird_t1 passesintopenaltyarea_t1
    crossesintopenaltyarea_t1 progressivepasses_t1
196
197 global ncomp 1
198
199 factor $xlist
200
201 *Factor analysis (pf principal factors, pcf principal component factors)
202 factor $xlist, mineigen(1)
203 factor $xlist, factor($ncomp)

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204 factor $xlist, factor($ncomp) blanks(0.3)
205 factor $xlist, factor($ncomp) pcf
206
207 *Factor rotations
208 rotate, varimax
209 rotate, varimax blanks(.3)
210 rotate, clear
211
212 rotate, promax
213 rotate, promax blanks(.3)
214 rotate, clear
215
216 estat common
217
218 *Scores of the components
219 predict f4
220
221 *KMO measure of sampling adequacy
222 estat kmo
223
224 *Average interitem covariance
225 alpha $xlist
226
227 *Barlett's test for sphericity
228 factortest $xlist
229
230
231 **Pass Types (f5 for t-1):
232 global xlist passesattempted_t1 deadballpasses_t1 passesfromfreekicks_t1 throughballs_t1
switches_t1 crosses_t1 throwinstaken_t1 cornerkicks_t1 inswingingcornerkicks_t1
outswingingcornerkicks_t1 straightcornerkicks_t1 passescompleted_t1 passesoffside_t1
passesblocked_t1
233
234 global ncomp 1
235
236 factor $xlist
237
238 *Factor analysis (pf principal factors, pcf principal component factors)
239 factor $xlist, mineigen(1)
240 factor $xlist, factor($ncomp)
241 factor $xlist, factor($ncomp) blanks(0.3)
242 factor $xlist, factor($ncomp) pcf
243
244 *Factor rotations
245 rotate, varimax
246 rotate, varimax blanks(.3)
247 rotate, clear
248
249 rotate, promax
250 rotate, promax blanks(.3)
251 rotate, clear
252
253 estat common
254
255 *Scores of the components
256 predict f5
257
258 *KMO measure of sampling adequacy
259 estat kmo
260
261 *Average interitem covariance
262 alpha $xlist
263
264 *Barlett's test for sphericity
265 factortest $xlist
266
267
268 **Playing Time (f6 for t-1):
269 global xlist matchesplayed_t1 minutesplayed_t1 minutespermatchplayed_t1
percentageofminutesplayed_t1 ninetyssp_t1 minutespermatchstarted_t1
completetameatchesplayed_t1 substituteappearances_t1 minutespersubstitution_t1
matchesasusedsub_t1 pointspermatch_t1 goalsallowedonpitch_t1 plusminusgoals_t1
plusminusgoals90_t1 plusminusnet90_t1 expectedgoalsonpitch_t1 egawop_t1
plusminusexpectedgoals_t1 plusminusnetexpectedgoals90_t1

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270

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271  global ncomp 1
272
273  factor $xlist
274
275  *Factor analysis (pf principal factors, pcf principal component factors)
276  factor $xlist, mineigen(1)
277  factor $xlist, factor($ncomp)
278  factor $xlist, factor($ncomp) blanks(0.3)
279  factor $xlist, factor($ncomp) pcf
280
281  *Factor rotations
282  rotate, varimax
283  rotate, varimax blanks(.3)
284  rotate, clear
285
286  rotate, promax
287  rotate, promax blanks(.3)
288  rotate, clear
289
290  estat common
291
292  *Scores of the components
293  predict f6
294
295  *KMO measure of sampling adequacy
296  estat kmo
297
298  *Average interitem covariance
299  alpha $xlist
300
301  *Barlett's test for sphericity
302  factortest $xlist
303
304
305  **Possession (f7 for t-1):
306  global xlist touches_t1 touchesindefensivepenaltyarea_t1 touchesindefensive13_t1
  touchesinmiddle13_t1 touchesinattacking13_t1 touchesinattackingpenaltyarea_t1
  touchesliveball_t1 takeonsattempted_t1 successfultakeons_t1
  percentageofsuccessfultakeons_t1 timestackledduringtakeon_t1
  tackledduringtakeonpercentage_t1 carries_t1 totalcarryingdistance_t1
  progressivecarryingdistance_t1 carriesintofinal13_t1 carriesintopenaltyarea_t1
  miscontrols_t1 dispossessed_t1 progressivecarries_t1 progressivepassesreceived_t1
307
308  global ncomp 1
309
310  factor $xlist
311
312  *Factor analysis (pf principal factors, pcf principal component factors)
313  factor $xlist, mineigen(1)
314  factor $xlist, factor($ncomp)
315  factor $xlist, factor($ncomp) blanks(0.3)
316  factor $xlist, factor($ncomp) pcf
317
318  *Factor rotations
319  rotate, varimax
320  rotate, varimax blanks(.3)
321  rotate, clear
322
323  rotate, promax
324  rotate, promax blanks(.3)
325  rotate, clear
326
327  estat common
328
329  *Scores of the components
330  predict f7
331
332  *KMO measure of sampling adequacy
333  estat kmo
334
335  *Average interitem covariance
336  alpha $xlist
337
338  *Barlett's test for sphericity
339  factortest $xlist

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340
341
342 **Shooting (f8 for t-1):
343 global xlist goals_t1 shotstotal_t1 shotsontarget_t1 shotsontargetpercentage_t1
shotstotal90_t1 shotsontarget90_t1 goalsshots_t1 goalsshotsontarget_t1
averageshotdistance_t1 shotsfromfreekicks_t1 penaltykicksmade_t1 penaltykicksattempted_t1
expectedgoals_t1 nonpenaltyexpectedgoals_t1 npegps_t1 goalsminusexpectedgoals_t1
npgmnppeg_t1
344
345 global ncomp 1
346
347 factor $xlist
348
349 *Factor analysis (pf principal factors, pcf principal component factors)
350 factor $xlist, mineigen(1)
351 factor $xlist, factor($ncomp)
352 factor $xlist, factor($ncomp) blanks(0.3)
353 factor $xlist, factor($ncomp) pcf
354
355 *Factor rotations
356 rotate, varimax
357 rotate, varimax blanks(.3)
358 rotate, clear
359
360 rotate, promax
361 rotate, promax blanks(.3)
362 rotate, clear
363
364 estat common
365
366 *Scores of the components
367 predict f8
368
369 *KMO measure of sampling adequacy
370 estat kmo
371
372 *Average interitem covariance
373 alpha $xlist
374
375 *Barlett's test for sphericity
376 factortest $xlist
377
378
379 *****
380 *Table 4: Descriptive statistics.
381 *****
382
383 *Recoding the variables
384 encode representation_model, gen(representation_model4)
385 drop representation_model
386 rename representation_model4 representation_model
387
388 encode position, gen(position1)
389 drop position
390 rename position1 position
391
392 encode foot, gen(foot1)
393 drop foot
394 rename foot1 foot
395
396 encode club, gen(club1)
397 drop club
398 rename club1 club
399
400 encode league, gen(league1)
401 drop league
402 rename league1 league
403
404 encode nationality, gen(nationality1)
405 drop nationality
406 rename nationality1 nationality
407
408 encode country, gen (country1)
409 drop country
410 rename country1 country

```

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411
412 encode agency, gen (agency1)
413 drop agency
414 rename agency1 agency
415
416 *Interaction Term:
417 tab representation_model, gen(d_representation_model)
418 gen Inter1 = d_representation_model3 * number_of_managed_playersactiv
419
420 sum salary lnsalary representation_model Inter1 age age2 height foot captain position
nationality nationality_equals nation of lea f1 f2 f3 f4 f5 f6 f7 f8 trunk t1 tgoals t1
tgoalsagainst_t1 league club

421
422
423 *****
424 *Table 5: Fixed effects model series.
425 *****
426
427 global Nr Nr
428 global period_t period_t
429
430 sort $Nr $period_t
431 xtset $Nr $period_t
432
433 *Model 1:
434 xtreg lnsalary ib3.representation_model ib1.league ib1.club, fe vce (cluster Nr)
435
436 *Model 2:
437 xtreg lnsalary ib3.representation_model Inter1 ib1.league ib1.club, fe vce (cluster Nr)
438
439 *Model 3:
440 xtreg lnsalary ib3.representation_model Inter1 f1 f2 f3 f4 f5 f6 f7 f8 ib1.league ib1.club
, fe vce (cluster Nr)
441
442 *Model 4:
443 xtreg lnsalary ib3.representation_model Inter1 f1 f2 f3 f4 f5 f6 f7 f8 trunk_t1 tgoals_t1
tgoalsagainst_t1 ib1.league ib1.club, fe vce (cluster Nr)
444
445 *Model 5:
446 sum lnsalary, detail
447 gen IQR = r(p75) - r(p25)
448 gen lower_bound = r(p25) - 1.5 * IQR
449 gen upper_bound = r(p75) + 1.5 * IQR
450 gen is_outlier = (lnsalary < lower_bound) | (lnsalary > upper_bound)
451 xtreg lnsalary ib3.representation_model Inter1 f1 f2 f3 f4 f5 f6 f7 f8 trunk_t1 tgoals_t1
tgoalsagainst_t1 ib1.league ib1.club if is_outlier == 0, fe vce (cluster Nr)

452
453
454 *****
455 *Table 6: Logistic regression on player representation.
456 *****
457
458 gen combined_representation =.
459 replace combined_representation = 1 if representation_model == 3
460 replace combined_representation = 0 if representation_model == 1 | representation_model ==
2
461 logit combined_representation age age2 height ib3.foot captain ib1.nationality
nationality_equals_nation_of_lea ib1.position
462 margins, dydx(*) post
463
464
465
466
467

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