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# Deep Dives: Measuring Level of Competition Around the World

by [Layne Vashro](#) 4 years ago

I am interested in projecting players into the NBA. I have done a lot of work projecting players from college, and in the past couple of years expanded my projections to some of the bigger international professional leagues. I am currently finalizing my efforts to include every league for which I can find publicly available data. I will make these projections available here at Nylon Calculus soon, but in the meantime I want to share one piece of this puzzle that serves as an interesting stand-alone resource.

One key part of projecting across different leagues is quantifying the relative strength of those leagues, or more specifically, identifying how heavily to weight performances in different venues in order to arrive at the most accurate player projections. Even if you do not ultimately put much stock in my projections, knowing how the many different competitions around the world stack up might make it easier to balance your subjective assessments of player performances.

## The Method:

***[Warning... the following gets a bit hairy. If you just want to see the rankings and commentary, skip past this section. If you want to be able to understand how I got there, read on.]***

The process starts with a regression model that uses a collection of variables including age, per-possession boxscore statistics, and height to project NBA performance. The goal of this type of model is to find the weights for these variables that do the best job of accurately recovering the observed value of players in the NBA based on their pre-NBA production. Unfortunately, because this regression includes player-seasons from competitive venues as dramatically different as the Olympics and domestic European B leagues, it is going to lead to some whacky results. Not only will the resulting model under or overrate players depending on their competitive venue, but it will have a tough time understanding the true relationship between statistical production and ultimate NBA performance because it is clouded by strength-of-schedule effects. In order to get around this problem, I include a term that finds the optimal value to debit players in each competition in order to arrive at accurate predictions. As a result, I get "fixed effects" that give a reliable weighting of the importance of each variable, and "random effects" that take a stab at explaining the difference between all of the possible competitive venues.

However, this does not get us far enough. Not only is the sample of players who competed in the NBA and many of the international leagues extremely small, but there are even more leagues I am interested in projecting that have never produced an NBA player. To build more trustworthy competition rankings, and include the entire set of leagues, I need to take an additional step. At this stage, I project every player-season in the data into the NBA using the fixed effects I found above. This gives competition-agnostic projections for a player based on his production in a given venue. To this point, players in the Irish Superleague are held to the same standard as those in the Spanish ACB. Obviously this needs to be corrected. I accomplish this by looking at how the projections for players in each competition differ on average to those same players' scores in other venues. This results in a collection of relative scores that are ultimately anchored in the random effects I found above. For example, I may not know how a player from the Georgian Super Liga does in the NBA, but I know how he performs in Eurobasket and from the random effects above, I have an estimate for how Eurobasket performance translates to the NBA. The average increase or decrease in 'value' between the Georgian Super Liga and Eurobasket gives me one estimate of competition value by simply adding that difference to the original estimated value for

Eurobasket. I do the same to arrive at unique estimated values for the Georgian Super Liga relative to each of the other leagues that it shared players with. I then calculate a single estimated competition value using the mean across those estimates (weighted by number of cases). This gives a first approximation for the relative value of all the competitions not initially captured above. It also improves the estimates for the random effects by taking information from many additional between league transformations. After this step it gets a little more complicated, because in improving the estimates, all of the values that were used to find relative values are themselves moving around. In order to find a stable set of relative values, I need to iterate this process many times until the estimates settle into a final stable set of values. After all of this is finished, I translate the values into standardized scores such that the most average competitive venue in the data scores a 0, and a venue that is one standard-deviation more difficult than average scores a 1, while a venue one standard-deviation less difficult scores a -1.

### Relative Competition Scores:

One caveat before we move on to the numbers. **These are not exactly rankings for strength of competition in different conferences.** Instead, these are a measure of what statistical production in each league says about NBA potential. A player in a competition with a lower relative score needs to put up more impressive numbers to be considered on the same level as a player in a higher scoring competition. Obviously this concept is highly correlated with "strength of competition", but it is not exactly the same thing.

Here are the results:

Venue	from	to	
1NBA Playoffs	2002	2015	3.84
2NBA	2002	2016	3.26
3Team USA Exhibitions	2012	2014	3.03
4Olympic Games	2004	2012	2.56
5EuroBasket Final Round	2003	2005	2.21
6Diamond Ball Tournament	2004	2008	2.14
7FIBA World Cup	2002	2014	1.85
8London Invitational Tournament	2011	2011	1.78
9EuroBasket	2007	2015	1.70
10Euroleague	2002	2016	1.61
11Tuto Marchand Continental Cup	2007	2015	1.57
12Spanish ACB	2002	2016	1.52
13FIBA Americas Championship	2003	2015	1.50
14Team Canada Exhibitions	2013	2013	1.49
15Pan American Games	2007	2015	1.39
16Spanish Cup	2012	2015	1.38
17Olympic Qualifying Tournament	2008	2012	1.37
18Euroleague Qualification	2012	2015	1.22
19NBA D-League	2002	2015	1.21
20Italian Cup	2012	2015	1.17
21EuroBasket Semi-Final Round	2003	2003	1.16
22Russian PBL	2012	2013	1.13
23Italian Lega Basket Serie A	2002	2016	1.12
24Intercontinental Cup	2014	2015	1.10
25Borislav Stankovic Cup	2013	2013	0.97
26PAC 10 NCAA	2002	2011	0.96
27South American Championship	2003	2008	0.96
28Saporta Cup	2002	2002	0.93
29Eurocup	2003	2016	0.92
30VTB United League	2012	2016	0.87
31French Leaders Cup LNB	2013	2015	0.84

32Adriatic League Liga ABA	2002	2016	0.82
33Australian NBL	2012	2016	0.80
34CentroBasket	2003	2008	0.79
35Turkish BSL	2012	2016	0.77
36ACC NCAA	2002	2015	0.76
37French LNB Pro A	2003	2016	0.69
38SEC NCAA	2002	2015	0.68
39German BBL	2012	2016	0.65
40Big East NCAA	2002	2015	0.56
41Belgium Scoore League	2012	2016	0.56
42PAC 12 NCAA	2012	2015	0.54
43Korac Cup	2002	2002	0.53
44Israeli BSL	2012	2016	0.52
45Big 12 NCAA	2002	2015	0.50
46Baltic League BBL Elite Division	2012	2012	0.49
47EuroBasket Preliminary Round	2003	2003	0.49
48Big 10	2002	2015	0.48
49BBL Cup	2013	2015	0.47
50EuroBasket Qualification	2012	2014	0.47
51Eurochallenge	2012	2015	0.47
52Eurochallenge Qualification	2012	2013	0.46
53FIBA Africa Championship	2006	2015	0.45
54Greek HEBA A1	2002	2016	0.43
55EuroBasket Qualifying Round	2003	2003	0.42
56Puerto Rican BSN	2012	2015	0.41
57World Championships u21	2005	2005	0.40
58Lithuanian LKL	2012	2016	0.33
59EuroCup Challenge	2003	2006	0.33
60Conference USA NCAA	2002	2015	0.31
61Spanish LEB Gold	2012	2016	0.30
62MWC NCAA	2002	2015	0.30
63WAC USA	2002	2015	0.28
64WCC USA	2002	2015	0.25
65Atlantic 10 NCAA	2002	2015	0.25
66Sun Belt NCAA	2002	2015	0.23
67Argentinian Liga A	2012	2016	0.23
68Polish TBL	2012	2016	0.22
69AAC NCAA	2014	2015	0.21
70Canadian NBL	2012	2015	0.20
71Ukrainian Superleague	2012	2015	0.19
72Cypriot Division A	2012	2015	0.15
73Serbian KLS	2012	2016	0.14
74FIBA Europe Regional Challenge Cup	2003	2003	0.10
75CAA NCAA	2002	2015	0.06
76Spanish LEB Silver	2012	2016	0.06
77Venezuelan LPB	2012	2015	0.04
78French LNB Pro B	2012	2016	0.03
79Balkan BIBL	2012	2016	0.00
80European Championship Final Round u20	2002	2015	0.00
81Liga Americas	2012	2015	-0.02
82The Americas Tournament u21	2004	2004	-0.02
83MAC NCAA	2002	2015	-0.02
84Premier Basketball League	2012	2012	-0.03
85Italian Serie A2 Basket	2012	2016	-0.04

86Chinese CBA	2012	2015	-0.04
87Slovenian SKL	2012	2016	-0.04
88Mid-Continent NCAA	2002	2007	-0.04
89Horizon NCAA	2002	2015	-0.04
90Big Sky NCAA	2002	2015	-0.05
91MVC NCAA	2002	2015	-0.05
92Finnish Korisliiga	2012	2016	-0.05
93Baltic League BBL Challenge Cup	2012	2012	-0.06
94German Pro A	2013	2016	-0.08
95Ivy League NCAA	2002	2015	-0.10
96Baltic Basketball League	2013	2016	-0.10
97Big West NCAA	2002	2015	-0.11
98FIBA Asia Championship	2007	2015	-0.12
99Mexican LNBP	2012	2016	-0.13
100Romanian Divizia A	2012	2016	-0.14
101Southern NCAA	2002	2015	-0.14
102MEAC NCAA	2002	2015	-0.15
103MAAC NCAA	2002	2015	-0.15
104Austrian A Bundesliga	2012	2016	-0.16
105Croatian A 1 Liga	2012	2016	-0.16
106NEC NCAA	2002	2015	-0.17
107Latvian LBL	2012	2016	-0.18
108Southland NCAA	2002	2015	-0.19
109Brazilian NBB	2012	2015	-0.19
110Summit NCAA	2008	2015	-0.19
111Swiss LNA	2012	2016	-0.22
112World Championships u19	2003	2015	-0.23
113Atlantic Sun NCAA	2002	2015	-0.24
114AEC NCAA	2002	2015	-0.25
115Bulgarian NBL	2012	2016	-0.25
116Netherlands DBL	2012	2016	-0.29
117NIKE Global Challenge prep	2007	2015	-0.30
118Swedish Basketligan	2012	2016	-0.30
119Big South NCAA	2002	2015	-0.30
120FIBA Europe Cup	2016	2016	-0.31
121Universiade univ	2011	2015	-0.32
122Estonian KML	2012	2016	-0.32
123Independent NCAA	2002	2015	-0.39
124OVC NCAA	2002	2015	-0.42
125adidas Nations prep	2012	2015	-0.43
126Czech NBL	2012	2016	-0.44
127Macedonian Superleague	2012	2016	-0.46
128Turkish TBL	2012	2016	-0.46
129European Championship Qualifying Round u20	2002	2004	-0.48
130SWAC NCAA	2002	2015	-0.48
131European Championship Final Round u18	2002	2015	-0.49
132Montenegrin Prva A Liga	2012	2016	-0.49
133French NM1	2013	2016	-0.50
134Americas Championships u18	2006	2014	-0.53
135Luxembourg Total League	2013	2016	-0.53
136GWC NCAA	2010	2013	-0.55
137Patriot League NCAA	2002	2015	-0.55
138Liga Sudamericana	2012	2016	-0.55
139Mexican CIBACOPA	2012	2015	-0.57

140Slovakian Extraliga	2012	2016	-0.59
141Hungarian NBIA	2012	2016	-0.59
142Portuguese LPB	2012	2016	-0.59
143British BBL	2012	2016	-0.62
144Ciutat De LHospitalet Tournament ANGT prep	2012	2015	-0.63
145Lebanese Division A	2013	2015	-0.64
146McDonalds All-American prep	2002	2015	-0.65
147adidas Next Generation Tournament	2012	2015	-0.65
148Bosnian BiH Liga	2012	2016	-0.65
149World Championships u17	2010	2014	-0.70
150International Basketball League	2012	2014	-0.76
151Jordan Classic prep	2002	2015	-0.79
152South Korean KBL	2012	2016	-0.81
153European Championship Challenge Round u18	2002	2004	-0.85
154Kazakhstani National League	2013	2015	-0.86
155Danish Basketligaen	2012	2016	-0.90
156Nike Hoop Summit prep	2004	2015	-0.93
157Georgian Super Liga	2013	2016	-0.93
158Albert Schweitzer Tournament u18	2014	2014	-0.96
159European Championship B u18	2005	2015	-0.97
160European Championship Final Round u16	2003	2015	-0.97
161European Championship B u20	2005	2015	-0.99
162German Pro B	2015	2016	-1.04
163New Zealand NBL	2012	2015	-1.04
164Filipino PBA	2012	2016	-1.04
165Japanese JBL	2012	2013	-1.07
166Citta Di Roma Tournament ANGT prep	2012	2015	-1.08
167Siauliu Tournament ANGT prep	2013	2013	-1.17
168Ukrainian SL Favorit Sport	2016	2016	-1.23
169National Basketball League of Japan	2014	2016	-1.25
170European Championships C u18	2013	2015	-1.31
171Belgrade Tournament ANGT prep	2012	2015	-1.31
172European Championship Qualifying Round u16	2003	2003	-1.34
173Icelandic Dominos League	2013	2016	-1.34
174Belarusian BPL	2012	2016	-1.37
175European Championship Qualifying Round u18	2002	2004	-1.38
176Kaunas Tournament ANGT prep	2012	2015	-1.39
177European Championship Challenge Round u16	2003	2003	-1.44
178Americas Championships u16	2009	2015	-1.56
179Norwegian BLNO	2012	2016	-1.64
180Irish Superleague	2012	2016	-1.78
181European Championship B u16	2004	2015	-1.79
182All-American Championship prep	2011	2012	-1.92
183Derby Classic prep	2010	2015	-2.04
184Jordan Classic Regional prep	2008	2015	-2.12
185Jordan Classic International prep	2008	2015	-2.24
186European Championships C u16	2013	2015	-2.78

So.... what are some fun things that jump out of this list?

The NBA and of course the NBA Playoffs are by far the most competitive basketball venues, while prep and cadet tournaments occupy the bottom slots. These findings should not surprise anybody, but they at least help the method pass the smell test.

You might notice that I broke up the NCAA into different conferences. This lets us not only see how college competition compares to international professional leagues, but also helps contextualize the difference between major and mid-major college conferences. The range in relative difficulty for the NCAA ended up being larger than I expected. The Patriot League and Great West conferences are at the bottom, just behind the Luxembourg Total League. Meanwhile, the major conferences are on par with some of the better European domestic leagues.

Those familiar with international basketball might be surprised to see the two Russian leagues (Russian PBL and VTB United League) trailing only the Spanish ACB among domestic competitions.

The Chinese Basketball Association rates lower than I expected. The CBA sees a lot of players with at least marginal NBA talent. Many international scouts malign the defensive effort in the CBA, which would allow players to put up gaudy but empty numbers. In addition, the talent skew resulting from low-level domestic players and a few high-level American players may result in extreme usage for those good players, who are ultimately the individuals most represented in between league comparisons.

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