

What Predicts World Cup Success?

Anirudh Venkatesan

University of Virginia

JEL Classification: Z20, F02

Keywords: sports economics, international football, path dependence, World Cup

Abstract

A popular view in sports economics, associated with Kuper and Szymanski's *Soccernomics*, holds that a country's wealth and population are key drivers of its success in international football: larger populations provide bigger talent pools, and richer countries can better fund youth development. This paper tests that claim using 63 countries that played at least three FIFA World Cup matches across the eight tournaments from 1994 to 2022. A regression of points-per-game on log population and log GDP per capita (2023) explains only 13.5% of the cross-country variation. Adding a single variable, a country's total number of FIFA World Cup matches played all-time (a proxy for accumulated footballing infrastructure), raises the explained variation to 52.9%, and in a combined model this variable is the only statistically significant predictor ($p < 0.001$), while population and GDP per capita become indistinguishable from zero. The results suggest that current economic resources matter far less for World Cup performance than a country's accumulated history at this level.

1 Introduction

The 2026 FIFA World Cup, the first 48-team edition of the tournament, opened on June 11 with 16 host cities across the United States, Canada, and Mexico. A natural question for anyone watching is why some countries are perennial contenders while others, often much larger or wealthier, rarely advance past the group stage.

The most widely cited economic explanation comes from Kuper and Szymanski's *Soccernomics*, which argues that population and income are the main structural determinants of football success: a larger population means a larger pool of potential players, and higher income means more resources for coaching, facilities, and youth systems. This view has empirical support in the academic literature as well; Hoffmann, Ging, and Ramasamy (2002) find that GDP per capita and population are significant predictors of FIFA ranking points across a large sample of countries.

This paper asks a narrower version of the same question, focused specifically on World Cup performance over the last three decades: do GDP per capita and population predict how well a country actually performs at the World Cup, once the sample is restricted to countries that reach the tournament at all? And if not, what does?

2 Data

The sample consists of 63 countries that played at least three FIFA World Cup matches across the eight tournaments held from 1994 to 2022, drawn from a historical database of international football results covering 1930–2022. For each country, I compute points-per-game (PPG) over this period, awarding 3 points for a win, 1 for a draw, and 0 for a loss.

Two economic variables are taken from World Bank data for 2023: GDP per capita (current US dollars) and total population. A third variable, World Cup *experience*, is the country’s total number of FIFA World Cup matches played across all tournaments from 1930 to 2022, intended as a proxy for the accumulated footballing infrastructure (academies, domestic leagues, coaching pipelines) that a country has built up over time.

3 Methodology

All models are estimated by ordinary least squares (OLS), with points-per-game as the dependent variable:

$$\text{PPG}_i = \beta_0 + \beta_1 \ln(\text{Population}_i) + \beta_2 \ln(\text{GDP per capita}_i) + \varepsilon_i \quad (1)$$

$$\text{PPG}_i = \beta_0 + \beta_1 \ln(\text{Experience}_i + 1) + \varepsilon_i \quad (2)$$

$$\text{PPG}_i = \beta_0 + \beta_1 \ln(\text{Population}_i) + \beta_2 \ln(\text{GDP per capita}_i) + \beta_3 \ln(\text{Experience}_i + 1) + \varepsilon_i \quad (3)$$

Equation (1) is the standard “Soccernomics” specification. Equation (2) tests experience alone. Equation (3) combines all three variables to test whether population and GDP per capita retain explanatory power once experience is accounted for.

4 Results

Table 1 reports all three specifications. In Model 1, GDP per capita is a statistically significant predictor of points-per-game ($p = 0.008$), and population is marginally significant ($p = 0.073$), but together they explain only 13.5% of the variation. Model 2, using experience alone, explains 51.7% of the variation, nearly four times as much, with a highly significant coefficient ($p < 0.001$). In Model 3, adding experience to population and GDP per capita raises R^2 only marginally further, to 52.9%, and both population ($p = 0.316$) and GDP per capita ($p = 0.778$) become statistically indistinguishable from zero. An F-test comparing Model 1 to Model 3 confirms that adding experience produces a highly significant improvement in fit ($F = 49.3$, $p < 0.001$).

Figure 1 plots GDP per capita against points-per-game. The relationship is weak: Brazil and Argentina, with GDP per capita between \$10,000 and \$14,000, substantially outperform Germany and the Netherlands, whose economies are four to six times larger per person. Senegal, one of the

Table 1: OLS regressions of World Cup points-per-game (1994–2022), $N = 63$

	Model 1	Model 2	Model 3
$\ln(\text{Population})$	0.087 (0.073)		−0.040 (0.316)
$\ln(\text{GDP per capita})$	0.159 (0.008)		0.013 (0.778)
$\ln(\text{Experience} + 1)$		0.424 (<0.001)	0.440 (<0.001)
R^2	0.135	0.517	0.529
Adjusted R^2	0.106	0.509	0.505

p -values in parentheses.

poorer countries in the sample, sits well above the trend line, while Austria and Honduras, both above the sample median in GDP per capita, sit near the bottom.

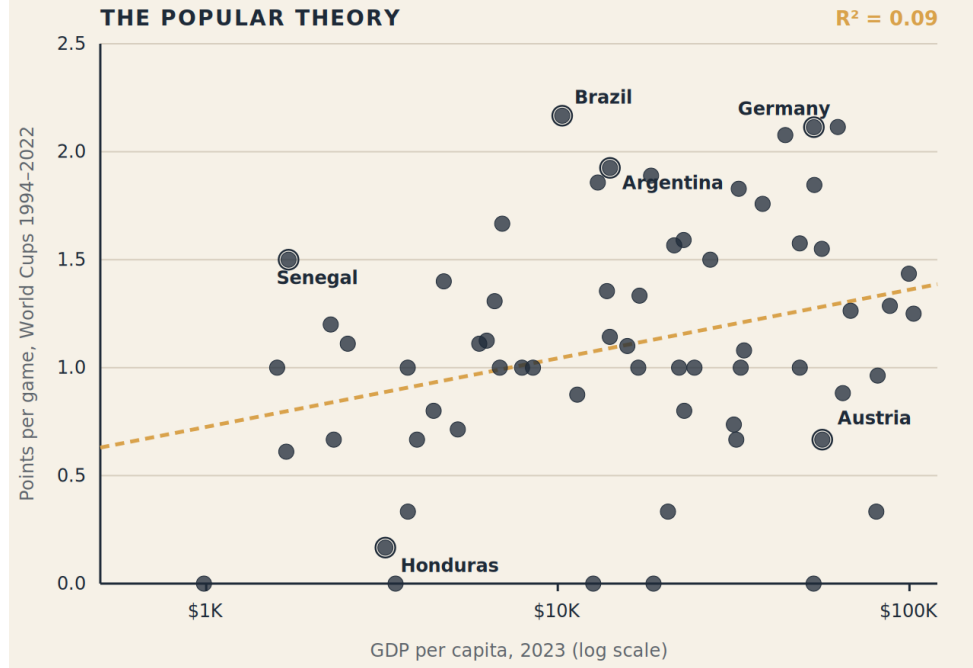


Figure 1: GDP per capita (2023, log scale) vs. World Cup points-per-game, 1994–2022. Dashed line is the bivariate OLS fit ($R^2 = 0.09$). Circled points are discussed in the text.

Figure 2 plots experience against points-per-game. The relationship is considerably tighter. Brazil and Germany, the two countries with the most all-time World Cup matches, also rank among the highest in points-per-game over 1994–2022. Turkey, with only 10 all-time matches before this period (almost entirely from its 2002 run to third place), sits well above the trend line, as do Senegal and Ukraine. Canada, Austria, and South Korea sit below the trend line despite having played a comparable number of matches to countries that perform better.

Table 2 reports the five largest positive and negative residuals from Model 3, identifying coun-

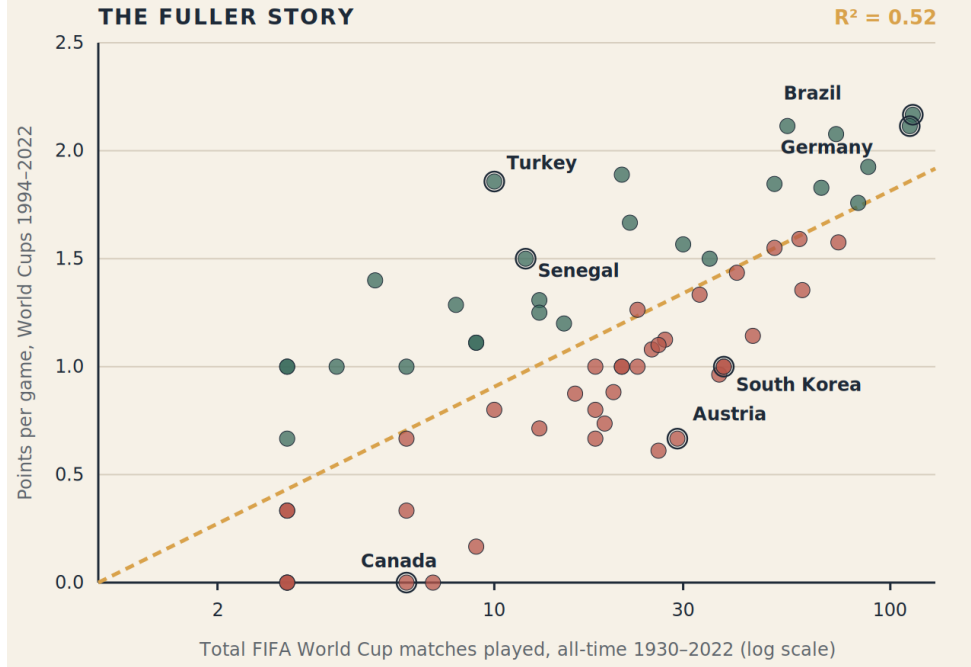


Figure 2: Total FIFA World Cup matches played, all-time 1930–2022 (log scale) vs. points-per-game, 1994–2022. Dashed line is the bivariate OLS fit ($R^2 = 0.52$). Point color indicates the sign of the residual from Model 3 (Table 1): green for overperformers, rust for underperformers.

tries whose recent World Cup record most exceeds or falls short of what population, GDP per capita, and experience would jointly predict.

Table 2: Largest residuals from Model 3 (Table 1)

Overperformers				Underperformers			
Country	PPG	Pred.	Resid.	Country	PPG	Pred.	Resid.
Turkey	1.86	0.81	+1.05	Austria	0.67	1.35	−0.69
Ukraine	1.40	0.56	+0.84	Honduras	0.17	0.83	−0.66
Romania	1.89	1.18	+0.71	Canada	0.00	0.65	−0.65
Senegal	1.50	0.91	+0.59	Egypt	0.00	0.63	−0.63
Colombia	1.67	1.14	+0.53	Cameroon	0.61	1.22	−0.60

5 Discussion

The central finding is that GDP per capita and population, the variables most commonly cited as drivers of footballing success, explain relatively little of the variation in World Cup performance once a country has reached the tournament repeatedly enough to be included in this sample. A single variable capturing a country’s accumulated World Cup experience explains roughly four times as much variation on its own, and absorbs essentially all of the explanatory power that population and GDP per capita had in Model 1.

One interpretation is that football success is path-dependent. The infrastructure that produces competitive national teams, youth academies, domestic leagues, coaching education, and a sport's cultural standing relative to others, takes decades to build. Once established, this infrastructure tends to reproduce itself: experienced footballing nations continue to produce players who keep those nations competitive, largely independent of the country's current economic conditions. A country's GDP per capita today may matter much less than the footballing institutions its grand-parents' generation built.

6 Limitations

Several limitations qualify these results. First, the sample is restricted to countries that played at least three World Cup matches between 1994 and 2022, which excludes most low-income and small-population countries entirely; the weak relationship between wealth and performance found here may not hold, or may reverse, in a sample that includes countries that never qualify.

Second, the experience variable is not fully independent of the outcome it predicts. Because the 1994–2022 matches used to compute points-per-game are also counted toward a country's all-time experience total, a country that performs well in this period (by advancing to later knockout rounds) mechanically accumulates more experience as a direct result. This is a meaningful limitation: part of the strong relationship in Figure 2 likely reflects recent quality feeding into the experience count, not only experience predicting recent quality. A cleaner design would define experience using only matches played before 1994, which I leave to future work.

Third, GDP per capita and population are measured in 2023, a single recent year, while the performance outcome spans 1994–2022; this treats both variables as roughly stable over nearly three decades, which is a reasonable approximation for population but less so for GDP per capita in countries that experienced significant growth or decline over this period.

7 Conclusion

Among countries that reach the World Cup with any regularity, GDP per capita and population are weak predictors of points-per-game (1994–2022), explaining 13.5% of the variation. A country's total all-time World Cup experience explains 51.7% on its own, and in a combined model, experience is the only statistically significant predictor. This suggests that footballing institutions built over decades matter considerably more for World Cup performance than a country's current wealth.

References

- Hoffmann, R., Ging, L. C., & Ramasamy, B. (2002). The socio-economic determinants of international soccer performance. *Journal of Applied Economics*, 5(2), 253–272.
- Kuper, S., & Szymanski, S. (2009). *Soccernomics: Why England Loses, Why Spain, Germany, and Brazil Win, and Why the U.S., Japan, Australia, Turkey – and Even Iraq – Are Destined to Become the Kings of the World's Most Popular Sport*. Nation Books.

Data Appendix

World Cup results (1930–2022) are from the `martj42/international_results` dataset. GDP per capita and population (2023) are from the World Bank, accessed via the `datasets/gdp` and `datasets/population` repositories. Replication code (`build_data.py`, `regression.py`, `make_charts.py`) is included with this paper.