

## The Long-Run Impacts of the World Cup

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Preliminary Results: *Caveat Emptor*

# The Long-Run Impacts of the World Cup

## *Abstract*

We empirically investigate whether there is any statistically and economically meaningful correlation between the success a nation's soccer team in the FIFA World Cup Finals and that nation's real per-capita GDP growth. Using an unbalanced panel of countries from 1950 through 2004, we find that, for certain continents, there are non-trivial correlations between the World Cup finals, World Cup success, and real per-capita GDP growth. In Europe, North America, and South America, real per-capita GDP growth declines by approximately one percentage point in the years during which the World Cup Finals occur. Moreover, we find that in Africa, North America, and South America, the further a nation's team advances in the month-long tournament the further the decline in real per-capita GDP growth. We estimate the contemporaneous impacts of the 2002 World Cup finals on per-capita income and a counterfactual real per-capita GDP series incorporating the varying levels of success in all of the World Cup finals held during our sample period.

**JEL Classifications:** L83, O50

**Keywords:** soccer, growth models, economic impacts, counterfactual.

## **1. Introduction**

Association football, called soccer in the United States, is the most popular sport in the world. Every four years the world governing body of soccer, FIFA (Fédération Internationale de Football Association), holds the World Cup tournament. The World Cup involves over 150 national teams who participate in qualifying rounds in geographic regions. Ultimately, 32 teams qualify for the World Cup finals, a one-month elimination tournament from which the world champion is crowned. The World Cup final draws the attentions of hundreds of millions of people and is by far the most widely watched sporting event in the world. This paper empirically investigates whether the World Cup finals itself, a country's participation in the World Cup finals, and a country's success in the World Cup finals influences annual GDP growth in the year of the finals.

While having a national team qualify for the World Cup finals might be reason for celebration, it is possible the national team's success might have a negative influence on GDP growth. Anecdotal evidence suggest that in many countries, especially where soccer is most popular, the World Cup finals is associated with considerable revelry and excitement, much of which might intentionally or unintentionally detract from otherwise productive activity. Individuals in these countries might "purchase" their enjoyment of the World Cup with reduced GDP growth in the year the finals take place. While contemporaneous tradeoffs are not unexpected, over time repeated and systematic reductions in annual GDP growth can compound and contribute to an overall reduction in per-capita GDP years in the future.

As the World Cup finals have been held every four years since 1930, it is possible that contemporaneous consumption of world cup finals games is bought with the future growth of a nation's economy. However, rather than consider any negative impact of the World Cup finals as

a negative externality, we interpret any negative impact as the implicit price the local population is willing to pay for their World Cup experience. For example, in Argentina, a country which has had considerable success in World Cup finals, real per-capita income was approximately 10,000 in 2004. Our counterfactual estimates suggest that had the Argentine national team not participated in the World Cup, Argentinean per-capita income would be approximately \$12,000. In 1990, the last year that Argentina won the World Cup championship, our estimates suggest that if the national team had not had the same level of success, per-capita income would have been approximately \$600 higher.

Our empirical strategy is rather straightforward. We relate real per-capita income growth to the previous year's growth, various country characteristics, and a series of variables which measure whether the nation's team qualified for the World Cup finals and how successful the team was in the tournament. The greater the success of a nation's team, the longer the team participates in the finals; the final game takes place roughly one month after the first game. Thus, a country whose team plays in the championship game might have had a large proportion of its population distracted, to greater or lesser degrees, by the tournament for an entire month. While this might seem insignificant, an economy that essentially takes a month off every four years sacrifices 2.1% of months between tournaments.

## **2. The World Cup Tournament**

The World Cup is an elimination tournament in which national teams participate in qualifying rounds centered on geographic groups. The two best teams from each regional group qualifies for the world cup tournament hosted in a particular country in the world, whose national team automatically qualifies for the tournament.

Those teams that qualify for the tournament are randomly assigned to one of eight four-team groups who play an in-group round-robin tournament to determine which two teams will qualify for the second round of the tournament. Starting in the second round, teams are matched according to seeding in a single-elimination format. In some countries, interest in the tournament is not very strong, regardless of whether the nation's team qualified for the tournament; the United States might fall in this category. In other countries, interest in the tournament wanes considerably if the national team is eliminated from play; perhaps a country like Trinidad & Tobago would fall in this category. In other countries, interest in the tournament might remain at a high level even if the national team has been eliminated, perhaps many European countries would fall in this category.

### 3. Data and Empirical Methodology

To test the impact of the World Cup finals on national GDP growth, we estimate the following equation for each of six different continents:

$$GROWTH_{it} = \beta_i + \beta_1 WCUP_{it} + \beta_2 QUALIFIED_{it} + \beta_3 SECONDRND_{it} + \beta_4 QUARTERFINALS_{it} + \beta_5 SEMIFINALS_{it} + \beta_6 FINALS_{it} + \beta_7 HOST_{it} + \beta_8 LOWINCOME_{it} + \beta_9 ISLAMIC_{it} + \beta_{10} USRECESSION_{it} + \beta_{11} GROWTH_{i,t-1} + \varepsilon_{it}, \quad (1)$$

where the dependent variable is the year-to-year percentage change in real per-capita GDP (in 2000 chained dollars), the  $\beta$ 's are parameters to be estimated, and  $\varepsilon$  is a zero-mean stochastic error term.

Our specification includes two sets of variables: the first pertains to the World Cup finals and the second controls for general national and world macroeconomic conditions. The World Cup variables comprise a set of dummy variables that indicate whether the World Cup finals occurred in the current year (*WORLD CUP*), whether the nation's team qualified for the World

Cup finals (*QUALIFIED*), and whether the country hosted the World Cup finals (*HOST*). As mentioned in the previous section, each team that qualifies for the World Cup finals plays a round-robin tournament against the other three teams in their group. The two best teams in each group continue on to the second round, at which point the World Cup finals becomes a single-elimination tournament. We create a set of dummy variables that reflect how long each team participated in the World Cup finals after the first round: the second round (*SECONDRND*), the quarterfinals (*QUARTERFINALS*), the semi-finals or round of four (*SEMIFINALS*), and the championship game (*FINALS*).<sup>1</sup> For each round in which the team participates, the appropriate dummy variables take a value of one and zero otherwise. The aggregate impact of the World Cup finals on per-capita real GDP growth in a country is thus calculated as:

$$\frac{\Delta GROWTH_{it}}{\Delta WORLD CUP_{it}} = \beta_1 WCUP_{it} + \beta_2 QUALIFIED_{it} + \beta_3 SECONDRND_{it} + \beta_4 QUARTERFINALS_{it} + \beta_5 SEMIFINALS_{it} + \beta_6 FINALS_{it} + \beta_7 HOST_{it}.$$

The remaining independent variables control for local and world-wide economic characteristics. We include the natural logarithm of the country's population (*lnPOP*), a dummy variable that takes a value of one if the country is predominantly Islamic (*ISLAMIC*), the once-lagged growth rate (*GROWTH<sub>t-1</sub>*), a dummy variable that takes a value of one if the nation's per-capita GDP was below the median nation's real per-capita in that year (*LOWINCOME*), and a dummy variable that takes a value of one if the United States was in a recession (*USRECESSION*).

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<sup>1</sup> There are sixteen teams in the second round, eight teams in the quarterfinals, four teams in the semifinals and two teams in the finals. There is a consolation game to determine the third place team, however controlling for whether a nation's team participated in this game yielded no significant results and therefore we dropped this variable from our final specification.

Our intention is not to estimate a standard growth model, and therefore many of the variables included in other studies are not utilized here; we assume that many of the institutional variables such as economic freedom or corruption are captured by the lagged dependent variable. While the inclusion of a lagged dependent variable introduces the potential for bias, the estimates remain consistent and many of our subsamples would seem to merit large sample consideration.

Nevertheless, we anticipate that larger countries have higher growth rates, the impact of being predominantly Islamic is ambiguous, that there is a positive relationship between previous year's growth and current year's growth, that countries with lower income levels have lower economic growth and when the U.S. is in recession there is a possibility that the U.S.'s slowdown is "exported" to other countries.

The data on real per-capita gross domestic product and national population were obtained from the Penn World Tables v6.2, whether countries are Islamic or not was obtained from *worldatlas.com*, whether a country was low income was determined by comparing each country's real per-capita GDP to the world median real per-capita GDP for each year. The years during which the United States was in recession were obtained by the National Bureau of Economic Research.

The data comprise an unbalanced panel, starting in 1950 and ending in 2004, for 185 countries. We employ a Generalized Least Squares panel estimator in which each panel is characterized by heteroscedasticity and each country has its own first-order autocorrelation coefficient. We divide our full sample into six sub-samples based on continents: Africa, Asia, Europe, North America, Oceania, and South America. We elected to divide the sample along these lines because of the substantial differences in growth rates in the various continents, and the considerable differences in both the popularity of soccer and the success of national teams in

the World Cup finals. Specifically, World Cup champions have only come from South America and Europe and only in two instances has a team from North America made it to the semifinals. Pooling all countries could confound potentially different impacts of the World Cup in the different continents, generating either insignificant or considerably misleading results. For instance, pooled regression results would be difficult to interpret for a country that has never enjoyed World Cup finals success.

Table 1a reports the descriptive statistics for the entire sample and Table 1b reports the mean and standard deviation of each variable for each continent sub-sample. The average annual percentage change in real per-capita GDP for the entire sample was 2.5 percentage points. For the entire sample, approximately four percent of the observations are of countries that qualified for the World Cup Finals, two percent with countries that participated in the second (elimination) round, and one percent that participated in the quarter finals. Approximately 0.2% of the observations correspond with a country that hosted the World Cup Finals in that year, approximately 19% of all observations correspond with a country that is Islamic, half of the observations correspond with a country considered “low income” or below the world median per-capita income in a given year, and roughly 27% of the observations correspond with a year in which the United States was considered to be in a recession.

Table 1b shows that real per-capita GDP growth varies considerably across the various continents: the two highest averages are in Asia and Europe and the two lowest averages are in Africa and Oceania. As can be seen from the variables that describe World Cup success, Europe and South America have many more observations that correspond with countries that qualified and had further success in the World Cup Finals.

#### **4. Empirical Results and Discussion**

The empirical results from estimating equation (1) are reported in Table 2 and Table 3. In the former we include the once lagged annual percentage growth in real per-capita GDP; in the latter we include the once lagged level of real per-capita GDP. In each table we report several specifications using different sub-samples of our entire sample. The first column uses the entire sample of 185 countries, the second column uses a sample of fifty-one African countries, the third column a sample of 38 European countries, the fourth column a sample of 26 North American countries, the fifth column a sample of 12 Oceania countries, the sixth column a sample of 11 South American countries, and the final column a sample of 25 North American countries, excluding the United States.

Focusing on Table 2 initially, the first column shows that every year the World Cup finals occurred, average per-capita real GDP grew approximately 0.72 points less than otherwise, those nations that qualified for the World Cup finals experienced another 1.82 point reduction in annual per-capita GDP growth, those nations with a team playing in the championship game experienced another 2.5 percentage reduction in economic growth, and those countries that were below the median income of the world experienced lower growth rates. The results suggest that the World Cup finals and the various levels of success in the tournament influence individual country growth rates even after controlling for unobserved country heterogeneities and for the heteroscedastic nature of the unbalanced panel.

The remaining columns break the world sample into six sub-samples, one for each continent. These results show that the average impacts reported in the first column are not shared by all continents of the world. Indeed the impacts of the World Cup finals are dramatically different across the various continents of the world. Europe, North America, and South America

are the only three continents on which the World Cup finals itself correlates with a negative impact on economic growth at the national level; in only South America does qualifying for the World Cup finals correlate with an additional decline in economic growth; in Africa, Asia, and North America there is an additional decline in economic growth when a nation's team advanced to the quarterfinals (the second elimination round); and only in South America was there an additional decrease in economic growth correlated with a nation's team advancing to the championship game. In North America, hosting the World Cup finals (the United States in 1994) corresponded with an increase in economic growth whereas in South America hosting the World Cup finals correlated with an additional decrease in economic growth.

The remaining covariates take the expected sign if they are not always statistically significant. Larger countries tend to have higher growth rates, predominantly Islamic countries tend to have lower growth rates outside of Oceania and Europe, lower income countries tend to have lower growth rates, whether the U.S. is in recession does not seem to influence growth rates outside of South America (where growth rates are positively correlated with U.S. recessions), and the once lagged growth rate is generally not successful in predicting current growth rates.

We interpret the results concerning the World Cup finals variables as confirming the intuition that the World Cup finals are more popular in certain parts of the world, and this popularity can cause a decline in economic growth. However, one might question whether it is likely that the World Cup finals could cause a reduction in economic growth. Other confounding issues such as war, oil shocks, or natural disasters are possible. However, for the World Cup variables to be spurious, those teams who qualified and advanced further in the tournament would have to come from those countries which experienced these alternative shocks. An alternative explanation is that for certain countries the further the national team advances in

the tournament the more time is spent by an increasing proportion of the population watching World Cup matches, to include those matches in which the nation's team is not playing.

For instance, suppose Brazil advances from the round-robin first round to the second round of play. At this point, the tournament has progressed for approximately two weeks. Beginning in the second round, each game is a single elimination event, which will naturally pique the interest of the Brazilians when their national team is playing. However, the single elimination tournament now invites Brazilians to watch other matches in anticipation that one or the other participants might eventually square off against their team. Thus, the further the Brazilian team advances in the tournament the more time is spent watching soccer, by some number of people, and less time is necessarily spent in productive activities. While individuals watching sports might spend on beer, food, and other services, it is unlikely that they are spending more (in the short run) than they are worth in terms of national production during the same period of time. Therefore, as our estimates are reduced from they reflect the net effect of World Cup finals success across the various continents.

We test the robustness of our results by re-estimating the models including the once-lagged level of real per-capita GDP rather than the once-lagged growth rate. Our previous results are confirmed and countries with greater per-capita real GDP levels tend to experience smaller growth rates.

Our results suggest that the World Cup Finals might contribute up to a one percentage point decline in real per-capita GDP growth in the average country of the world, perhaps caused by the general popularity of the sport and the world's tournament. However, in certain continents, the further the national team advances in the tournament the more economic growth

declines, perhaps even becoming negative for the year during which the World Cup Finals occurred.

## **5. Counterfactual Analysis**

Having estimated the average impact of the World Cup Finals tournament on national real per-capita GDP growth rates, it is possible to estimate what impact the World Cup Finals had on contemporaneous real per-capita income during the last tournament in our sample: The 2002 World Cup jointly hosted by Japan and South Korea. We use a counterfactual argument that estimates what GDP growth rates would have been if a) the World Cup finals had not occurred and b) whether the nation's team had not qualified and advanced in the tournament. The estimated contemporaneous impacts are reported in Table 4.

Admittedly, counterfactual analysis requires several assumptions, not the least of which is that the world would have continued exactly as it did save for the World Cup Finals occurring. Nevertheless, while individual country values are perhaps estimated with noise, the last row in Table 4 reports that the average per-capita contemporaneous shock to real per-capita income across eighty one countries estimated to have been impacted by the World Cup finals was \$72. In other words, the World Cup finals cost individuals in these 81 countries around one half of one percent of their annual real income.

The contemporaneous impact of the 2002 World Cup finals on real per-capita income is only one possible counterfactual calculation. Another is to estimate what real per-capita GDP levels would have been in various countries if the World Cup finals had not been held at all during the sample period. This requires a stronger assumption that the world would have evolved as it did since 1950, the sole exception being the lack of a World Cup finals.

In this counterfactual, for every country in the sample we adjust the real per-capita GDP growth rate in the year of a World Cup finals by the appropriate parameters reported in Table 2. We assume real per-capita income growths are the same in the years during which the World Cup finals did not occur and project real per-capita income into the future through 2003 or 2004, depending on data availability.

Several examples of these counterfactual calculations are provided in the various figures. Figure 1 and Figure 2 show the actual and counterfactual real per-capita GDP for Brazil and Argentina, respectively, two South American countries that have enjoyed considerable success in World Cup finals play. As can be seen, the cumulative impacts of successful World Cup appearances are noticeable. Indeed, both Brazil and Argentina would have considerably higher per-capita real GDP in the counterfactual.

Figure 3 and Figure 4 depict the actual and counterfactual real per-capita GDP series for the Canada and Mexico. Both countries would have had a higher per-capita GDP in the counterfactual, but Mexico's would have been relatively more improved than Canada's. Figure 5 and Figure 6 depict the actual and counterfactuals for France and Italy, two European countries that have had relative success in the World Cup. In both cases, the counterfactual indicates that real per-capita GDP would be higher today if the World Cup finals had not taken place.

Figure 7 and Figure 8 depict the accumulated impacts of the numerous World Cup finals that have occurred during our sample period; Figure 7 for Argentina and Brazil, Figure 8 for France and Italy. In both cases, the accumulated impact on real per-capita income is several thousands of dollars, suggesting that there might be an inter-temporal price for World Cup finals which occurs because annual real per-capita GDP growth compounds over time.

Figures 9 through 12 depict the accumulated effects in a more dramatic fashion by depicting the actual real per-capita GDP and the counterfactual real per-capita GDP as a percentage of the actual U.S. real per-capita GDP. Figure 9 shows the ratios for Brazil. Rather than Brazil currently being approximately 22% of U.S. per-capita real GDP, the counterfactual suggests that Brazil could be as much as 35% of U.S. per-capita real GDP. This suggests that at least a portion of the growing disparity between Brazil and the United States might be attributed to the popularity of the World Cup Finals in Brazil relative to the United States. The remaining figures show a similar pattern; in each case, the counterfactual would have been a greater proportion of U.S. real per-capita GDP than the actual series.

Table 5 summarizes the contemporaneous and accumulated impacts of World Cup finals success for those teams from each continent that have participated in the quarterfinals the most often. In each case we report the actual real per-capita GDP in either 2003 or 2004, the estimated accumulated counterfactual through the same year, the potential increase in per-capita GDP the counterfactual represents and the percent the difference between the actual and the counterfactual represents of the disparity between the actual real per-capita GDP of the United States and the country in question.

For example, only two African teams had participated in the quarterfinals through the 2002 World Cup finals. In the case of Cameroon, the counterfactual suggests that real per-capita income could have been approximately 8% higher if the national team had not participated in the 1990 quarterfinals. The improvement in real per-capita income in Cameroon represented by the counterfactual would have accounted for less than one percent of the disparity in real per-capita income between Cameroon and the United States.

The remaining rows in Table 5 show that in Asia, where participating in the quarterfinals actually corresponds to an increase in real per-capita incomes (see Table 2 and Table 3), the counterfactual would actually correspond with lower per-capita real incomes. Perhaps these results can be explained by an increased sense of national pride and worker productivity when the national team performs well in the World Cup finals.

In Europe, the accumulated impacts of World Cup finals success represent an approximately 11-18% reduction in per-capita real GDP and the counterfactual would account for between 26 and 50% of the disparity between the real incomes of European countries and the United States. A similar story holds for Mexico, from North America, and especially for the South American teams that have had the most success in World Cup finals history. In the case of Brazil, Argentina, Chile, Peru, and Argentina, the potential increase in per-capita real GDP without the World Cup finals is dramatic; between 20% for Peru and 84% for Brazil. In other words, the accumulated impact of the World Cup Finals seems to be the greatest, in percentage terms, in South America. Indeed, the counterfactual can account for between three and thirty percent of the disparity between the various South American per-capita GDP levels and that of the United States.

The implication we draw from our counterfactual analysis is not that the World Cup is *per se* bad for the world but that our results are an indication of how much the populations of various countries value their national team's participation in the World Cup finals. In other words, we interpret the contemporaneous impact of the World Cup finals on real per-capita GDP as a measure of how much various societies are willing to "pay" to see their team play in the World Cup tournament (on average).

While in Asia, North America and Europe, annual real per-capita GDP growth is approximately one percentage point lower in the years of the World Cup finals than otherwise; in Africa, Oceania, and South America, the world cup finals has no significant impact on annual real per-capita GDP growth.

The upshot of our findings is that the impact of the world cup finals on annualized GDP growth, and the interest of the local population on the outcome of the events, puts a brake on economic growth which has a compounding influence over time. Indeed, a country like the United States, which historically has not had a strong interest in the playing of the World Cup finals, does not experience the reduced GDP growth that a country such as Brazil or Argentina might experience. Such set-backs can be overcome if they are rare and random, e.g., a national disaster, however, if our estimates withstand scrutiny, the set-backs for many South American countries are potentially non-random and recurring. If a country's GDP falls every four years whereas the United States economy, on average, continues to grow then the differences will begin to compound. While abolishing the World Cup Finals would not eradicate the income disparity between, say, Argentina and the United States, our counterfactual estimates suggest that without the World Cup success, there would have been a considerable reduction in the income disparities between the United States and many other countries. Testing whether abolishing the World Cup finals would be a net positive is not possible in our framework.

## **5. Conclusions**

Using an unbalanced panel of countries from 1950 through 2004, we find that, for certain continents, there are non-trivial correlations between the World Cup finals, World Cup success, and real per-capita GDP growth. Using data from the Penn World Tables, we estimate a simple growth model in which the year-to-year percentage change in real per-capita GDP is related to

several variables describing World Cup success and other covariates. The World Cup variables include a dummy variable which takes a value of one if the World Cup finals occurred in that year, a dummy variable for whether the country's national team qualified for the finals, and then a series of dummy variables which control for how far the nation's team advanced in the tournament: the second round (first elimination round), the quarterfinals, semifinals, and championship game. We also include a dummy variable for whether the country is the host country. Our other covariates include population, religious persuasion, whether the nation's real per-capita income is below median, and whether the United States was in recession in that year.

We estimate our specification for the entire world sample and then for six different continent sub-samples. We find that, on average, in Europe, North America, and South America, real per-capita GDP growth declines by approximately one percentage point in the years during which the World Cup Finals occur. In Africa, real GDP growth is not influenced unless the team advances to the quarterfinals, at which point real GDP growth declines by approximately seven percentage points. In contrast, in Asian countries where the national team advances to the quarterfinals, real per-capita income actually increases. In Europe, advancement through the tournament does not correlate with any further reduction in real per-capita GDP growth beyond that which occurs simply because the tournament is taking place. In North America, there is a reduction in real per-capita GDP growth if the country's team advances to the second round or the quarterfinals. There is no discernable effect of the World Cup finals on countries in Oceania.

The most dramatic impact of World Cup success seems to occur in South America, a continent from which numerous finalist and champions have come. We find that having qualified for the World Cup finals is correlated with a decline in real per-capita GDP growth by approximately three percentage points and if the team advances to the finals, which occurs at the

end of the month-long tournament, per-capita GDP growth slows another four percentage points. Finally, when a South American country hosts the World Cup finals, real per-capita GDP falls another four percentage points.

We interpret our findings as suggesting that different populations make trade-offs between contemporaneous economic growth and consumption of the FIFA World Cup tournament. We calculate the contemporaneous impact of the World Cup for 85 countries during the 2002 tournament and find that the average impact was approximately \$72 per-capita. We interpret this as suggestive of the willingness to pay on the part of soccer fans for their enjoyment of the World Cup finals in a given year.

However, systematic and regular reductions in per-capita GDP growth can compound over time. We calculate a counterfactual real per-capita GDP series, assuming the World Cup finals had not occurred over the sample period. We find that for many countries, the accumulated impact of the World Cup finals is non-trivial. Indeed, in Brazil, the counterfactual analysis suggests that real per-capita income might have been up to 80% higher than its current level if not for that country's World Cup success and the interest Brazilians place on the tournament. We also calculate the proportion of the income disparity between the U.S. per-capita GDP and various countries that can be accounted for by the difference between the actual and counterfactual real per-capita GDP. In Africa, the percentage is relatively small. In Europe, the accumulated impact of the World Cup might account for as much as forty to fifty percent of the income disparity between countries on that continent and the United States. In South America, however, the accumulated impact of the World Cup might account for as much as one third of the income disparity with the United States.

Table 1a: Descriptive Statistics of Entire Sample

Variable	Mean	Std. Dev.	Min.	Max.
<i>GROWTH</i>	2.363	15.97	-84.97*	1022.41**
<i>WCUP</i>	0.247	0.431	0	1
<i>QUALIFIED</i>	0.041	0.199	0	1
<i>SECONDROUND</i>	0.022	0.148	0	1
<i>QUARTERFINALS</i>	0.013	0.115	0	1
<i>SEMIFINALS</i>	0.008	0.088	0	1
<i>FINALS</i>	0.003	0.059	0	1
<i>HOST</i>	0.002	0.05	0	1
<i>lnPOP</i>	3.113	2.440	0.001	14.073
<i>ISLAMIC</i>	0.192	0.394	0	1
<i>LOWINCOME</i>	0.505	0.500	0	1
<i>USRECESSION</i>	0.267	0.442	0	1
No. Observations	5,100			
No. of Countries	185			
* Sierra Leone in 2001 ** Russia in 2001				

Table 1b: Descriptive Statistics of Continent Sub-samples

Variable	Africa	Asia	Europe	North America	Oceania	South America
<i>GROWTH</i>	1.226 (9.17)	4.353 (31.95)	2.876 (4.82)	2.048 (6.88)	1.653 (4.53)	1.521 (5.09)
<i>WCUP</i>	0.250 (0.43)	0.245 (0.43)	0.245 (0.43)	0.250 (0.43)	0.232 (0.42)	0.248 (0.43)
<i>QUALIFIED</i>	0.012 (0.11)	0.019 (0.14)	0.091 (0.28)	0.032 (0.17)	0.013 (0.11)	0.095 (0.29)
<i>SECONDROUND</i>	0.002 (0.05)	0.007 (0.08)	0.058 (0.23)	0.013 (0.11)	0.000 (0.00)	0.063 (0.24)
<i>QUARTERFINALS</i>	0.0005 (0.02)	0.005 (0.07)	0.036 (0.18)	0.005 (0.07)	0.000 (0.00)	0.042 (0.20)
<i>SEMIFINALS</i>	0.000 (0.00)	0.003 (0.05)	0.022 (0.14)	0.000 (0.00)	0.000 (0.00)	0.026 (0.16)
<i>FINALS</i>	0.000 (0.00)	0.000 (0.00)	0.008 (0.09)	0.000 (0.00)	0.000 (0.00)	0.017 (0.13)
<i>HOST</i>	0.000 (0.00)	0.002 (0.04)	0.006 (0.07)	0.005 (0.07)	0.000 (0.00)	0.004 (0.06)
<i>lnPOP</i>	2.624 (2.21)	4.229 (2.56)	3.285 (2.43)	2.576 (2.45)	2.304 (2.04)	2.941 (2.15)
<i>ISLAMIC</i>	0.321 (0.47)	0.402 (0.49)	0.011 (0.10)	0.000 (0.00)	0.013 (0.11)	0.000 (0.00)
<i>LOWINCOME</i>	0.848 (0.36)	0.638 (0.48)	0.251 (0.43)	0.386 (0.48)	0.219 (0.41)	0.286 (0.45)
<i>USRECESSION</i>	0.267 (0.44)	0.264 (0.44)	0.252 (0.43)	0.287 (0.45)	0.258 (0.43)	0.286 (0.45)
Observations	1681	1061	1064	616	155	523
Countries	51	47	38	26	12	11

Table 2: Impact of World Cup Appearances on Real Annual Per-capita GDP Growth

	World	Africa	Asia	Europe	North America	Oceania	South America	North America less U.S.
<i>WORLDCUP</i>	<b>-0.724**</b>	-0.456	-1.643	<b>-1.295***</b>	<b>-0.719*</b>	-0.308	<b>-0.914*</b>	-0.662
	(0.34)	(0.58)	(1.45)	(0.41)	(0.42)	(0.56)	(0.49)	(0.45)
<i>QUALIFIED</i>	<b>-1.822*</b>	0.0483	-7.960	0.664	-0.0244	0.0694	<b>-2.087*</b>	-0.0505
	(1.10)	(1.38)	(4.88)	(0.50)	(1.30)	(1.61)	(1.20)	(1.49)
<i>SECONDROUND</i>	-0.766	-0.238	2.991	-1.063	-0.869		0.230	-1.340
	(0.73)	(2.63)	(4.82)	(0.75)	(0.99)		(2.21)	(1.09)
<i>QUARTERFINALS</i>	1.670	<b>-7.141**</b>	<b>7.674***</b>	0.754	<b>-3.812***</b>		2.897	<b>-2.072***</b>
	(1.02)	(3.41)	(0.61)	(0.81)	(0.70)		(1.83)	(0.26)
<i>SEMIFINALS</i>	1.145		-2.435	0.588			2.340	
	(1.24)		(1.88)	(1.37)			(2.26)	
<i>FINALS</i>	<b>-2.467**</b>			-1.321			<b>-4.099***</b>	
	(1.20)			(1.48)			(1.49)	
<i>HOST</i>	-0.915		-11.13	0.943	<b>1.764**</b>		<b>-4.487***</b>	
	(1.07)		(10.5)	(1.15)	(0.76)		(1.45)	
<i>LnPOP</i>	<b>0.582*</b>	<b>0.243*</b>	1.378	<b>0.142**</b>	0.345	<b>0.172***</b>	<b>0.242***</b>	0.430
	(0.31)	(0.15)	(1.24)	(0.070)	(0.21)	(0.040)	(0.092)	(0.26)
<i>ISLAMIC</i>	-0.0375	-0.213	<b>-2.151*</b>	<b>3.604***</b>		<b>2.707***</b>		
	(0.41)	(0.56)	(1.31)	(0.56)		(0.86)		
<i>LOWINCOME</i>	<b>-1.968***</b>	<b>-2.995***</b>	-5.081	<b>-1.107**</b>	-0.301	<b>-1.750***</b>	-0.345	-0.415
	(0.58)	(0.93)	(3.87)	(0.52)	(0.57)	(0.24)	(0.60)	(0.60)
<i>USRECESSOIN</i>	1.104	-0.0183	4.354	0.161	0.843	-0.829	<b>0.747*</b>	1.230
	(0.86)	(0.74)	(3.80)	(0.45)	(1.04)	(1.02)	(0.41)	(1.07)
<i>GROWTH(t-1)</i>	0.0268	0.119	-0.000222	<b>0.286***</b>	0.115	0.159	<b>0.175***</b>	0.111
	(0.028)	(0.090)	(0.0097)	(0.062)	(0.075)	(0.11)	(0.029)	(0.078)
<i>Constant</i>	<b>1.450**</b>	<b>3.187***</b>	1.989	<b>1.883***</b>	0.999	<b>1.599***</b>	<b>0.757**</b>	0.838
	(0.61)	(0.90)	(2.33)	(0.33)	(0.65)	(0.31)	(0.37)	(0.66)
Observations	5100	1681	1061	1064	616	155	523	563
Countries	185	51	47	38	26	12	11	25

Notes: Dependent variable is one-year percentage change in real per-capita GDP. Income and population data obtained from the Penn World Tables v6.2, world cup data obtained from FIFA. World Cup finals qualifiers are defined as those countries participating in the finals. A country is considered low income if, in a given year, the country's real GDP per-capita falls below the world median real GDP per-capita. A country is considered Islamic if the majority of its population is Muslim. U.S. recession years are as defined by the National Bureau of Economic Research. Data comprise an unbalanced panel spanning from 1950 through 2004. Continental affiliations as defined by the CIA World Factbook. Parameters obtained using population-averaged panel estimator (xtgee in Stata 9.2) Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 3: Impact of World Cup Appearances on Real Annual Per-capita GDP Growth

	World	Africa	Asia	Europe	North America	Oceania	South America	North America less U.S.
<i>WORLDCUP</i>	<b>-0.799**</b>	-0.440	-1.889	<b>-0.747**</b>	<b>-0.680*</b>	-0.473	<b>-0.924**</b>	-0.579
	(0.38)	(0.51)	(1.59)	(0.35)	(0.41)	(0.57)	(0.40)	(0.45)
<i>QUALIFIED</i>	-1.565	0.690	-7.361	0.401	0.513	0.365	<b>-1.927**</b>	0.210
	(1.12)	(1.09)	(5.24)	(0.56)	(0.84)	(1.62)	(0.93)	(1.09)
<i>SECONDROUND</i>	-0.229	-0.945	2.696	-0.862	<b>-1.905**</b>		0.800	<b>-2.217***</b>
	(0.98)	(3.00)	(4.47)	(0.72)	(0.75)		(2.01)	(0.76)
<i>QUARTERFINALS</i>	1.195	<b>-6.544*</b>	<b>6.385***</b>	1.162	<b>-3.577***</b>		2.637	<b>-1.400***</b>
	(0.96)	(3.69)	(0.51)	(0.98)	(0.59)		(2.09)	(0.29)
<i>SEMIFINALS</i>	0.819		<b>-2.373***</b>	-0.243			1.992	
	(1.30)		(0.73)	(1.57)			(2.23)	
<i>FINALS</i>	<b>-2.314*</b>			-0.591			<b>-4.288***</b>	
	(1.21)			(1.27)			(1.49)	
<i>HOST</i>	-0.603		-4.774	0.453	<b>2.671**</b>		<b>-3.867***</b>	
	(1.18)		(4.73)	(0.97)	(1.07)		(0.91)	
<i>LnPOP</i>	<b>0.702*</b>	<b>0.303*</b>	1.538	<b>0.460***</b>	<b>0.641**</b>	<b>0.481***</b>	<b>0.334***</b>	<b>0.698**</b>
	(0.36)	(0.18)	(1.37)	(0.12)	(0.30)	(0.059)	(0.11)	(0.32)
<i>ISLAMIC</i>	-0.483	-0.453	-3.223	<b>3.315***</b>		<b>3.387***</b>		
	(0.54)	(0.69)	(2.05)	(1.01)		(0.28)		
<i>LOWINCOME</i>	<b>-3.933**</b>	<b>-5.050***</b>	-10.62	<b>-1.722*</b>	<b>-1.341*</b>	<b>-4.103***</b>	<b>-1.775***</b>	<b>-1.557**</b>
	(1.67)	(1.74)	(8.67)	(1.04)	(0.70)	(0.53)	(0.58)	(0.70)
<i>USRECESSOIN</i>	0.836	-0.255	3.609	-0.0974	0.719	-0.335	0.510	1.077
	(0.76)	(0.70)	(3.14)	(0.44)	(0.96)	(0.97)	(0.42)	(0.97)
<i>PERCAPGDP(t-1)</i>	<b>-0.239*</b>	<b>-0.319**</b>	-0.717	<b>-0.152***</b>	<b>-0.181**</b>	<b>-0.158***</b>	<b>-0.435***</b>	<b>-0.232**</b>
	(0.13)	(0.16)	(0.61)	(0.039)	(0.084)	(0.043)	(0.11)	(0.11)
<i>Constant</i>	<b>3.741***</b>	<b>5.787***</b>	<b>8.868**</b>	<b>3.368***</b>	<b>2.088***</b>	<b>3.418***</b>	<b>3.512***</b>	<b>2.196***</b>
	(0.77)	(1.74)	(3.82)	(0.55)	(0.51)	(0.63)	(0.53)	(0.54)
Observations	5272	1726	1110	1100	634	168	534	580
Countries	185	51	47	38	26	12	11	25

Notes: Dependent variable is one-year percentage change in real per-capita GDP. Income and population data obtained from the Penn World Tables v6.2, world cup data obtained from FIFA. World Cup finals qualifiers are defined as those countries participating in the finals. A country is considered low income if, in a given year, the country's real GDP per-capita falls below the world median real GDP per-capita. A country is considered Islamic if the majority of its population is Muslim. U.S. recession years are as defined by the National Bureau of Economic Research. Data comprise an unbalanced panel spanning from 1950 through 2004. Continental affiliations as defined by the CIA World Factbook. Parameters obtained using population-averaged panel estimator (xtgee in Stata 9.2) Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 4: Estimated Impacts of 2002 World Cup and World Cup Success on Per-Capita Income

Country	2002 Per-Capita GDP	Actual Growth Rate	Counterfactual Growth Rate	Counterfactual Per-capita GDP	Per-capita Cost of World Cup	Qualified for World Cup Finals	Rounds Played
Albania	4,135	1.9	3.19	4,289	54	0	0
Antigua	15,275	6.7	7.42	16,025	110	0	0
Argentina	9,562	-10.56	-7.56	15,942	287	1	0
Austria	27,346	0.57	1.87	32,154	354	0	0
Bahamas	18,377	-0.84	-0.12	18,511	132	0	0
Barbados	15,450	-0.31	0.41	16,692	111	0	0
Belarus	11,771	7.42	8.72	12,230	152	0	0
Belgium	25,106	1.15	2.44	29,560	325	1	1
Belize	6,832	8.64	9.36	7,121	49	0	0
Bermuda	33,958	1.06	1.78	34,200	244	0	0
Bolivia	2,971	0.54	1.45	3,413	27	0	0
Bosnia and Herzegovina	3,491	3.73	5.03	3,534	45	0	0
Brazil	6,950	-2.23	4.87	12,783	493	1	4
Bulgaria	7,905	6.05	7.34	8,207	102	0	0
Canada	27,513	2.09	2.8	30,173	198	0	0
Chile	11,784	1.06	1.97	15,299	108	0	0
China	4,630	8.16	0.2	4,290	-369	1	0
Colombia	6,045	0.37	1.29	7,356	55	0	0
Costa Rica	8,154	0.59	1.31	8,935	59	1	0
Croatia	9,501	3.11	4.41	9,740	123	1	0
Cuba	6,031	2.36	3.08	6,074	43	0	0
Czech Republic	14,181	1.56	2.85	14,735	184	0	0
Denmark	27,884	0.03	1.33	32,850	361	1	1
Dominica	7,906	2.78	3.5	7,961	57	0	0
Dominican Republic	7,158	5.21	5.93	7,828	51	0	0
Ecuador	4,297	-0.5	2.5	4,930	129	1	0
El Salvador	4,769	0.51	1.23	4,803	34	0	0
Estonia	12,609	8.93	10.23	13,084	163	0	0
Finland	23,460	2.38	3.68	27,606	304	0	0
France	25,583	0.56	1.86	30,120	331	1	0
Georgia	4,237	6.4	7.69	4,346	55	0	0
Germany	25,257	-0.25	1.05	27,959	327	1	4
Granada	6,099	2.31	3.03	6,400	44	0	0
Greece	15,090	3.41	4.7	17,792	195	0	0
Guatemala	3,783	-1.2	-0.48	4,150	27	0	0
Honduras	2,294	1.58	2.3	2,522	16	0	0
Hungary	12,521	4.79	6.09	13,854	162	0	0
Iceland	25,498	-3.08	-1.79	29,955	330	0	0
Ireland	27,220	4.13	5.43	32,012	353	1	1
Italy	22,896	0.28	1.58	26,930	297	1	1
Jamaica	4,589	0.2	0.92	5,027	33	0	0
Japan	23,760	-0.79	-8.74	20,087	-1,891	1	1
Latvia	10,215	6.87	8.17	10,603	132	0	0

Lithuania	10,239	6.16	7.46	10,632	133	0	0
Luxembourg	48,589	0.76	2.05	57,268	629	0	0
Macedonia	5,090	-1.89	-0.6	5,299	66	0	0
Malta	19,384	3.27	4.57	19,627	251	0	0
Mexico	7,927	-0.59	0.13	9,046	57	1	1
Moldova	2,580	11.26	12.56	2,647	33	0	0
Netherlands	26,355	-0.53	0.77	31,056	341	0	0
Netherlands Antilles	14,024	-0.31	0.41	14,125	101	0	0
Nicaragua	3,357	-3.25	-2.54	3,684	24	0	0
Norway	33,850	0.39	1.68	39,884	438	0	0
Panama	8,051	1.32	2.04	8,821	58	0	0
Paraguay	4,773	-4.45	-1.45	5,834	143	1	1
Peru	4,265	2.9	3.82	5,100	39	0	0
Poland	8,866	1.58	2.88	9,585	115	1	0
Portugal	17,573	0.14	1.44	20,677	228	1	0
Puerto Rico	21,490	2.29	3.01	21,641	154	0	0
Romania	5,789	5.73	7.03	6,025	75	0	0
Russia	10,875	8.22	0.26	4,159	-866	1	0
Saudi Arabia	14,689	-5.13	-13.09	13,457	-1,169	1	0
Senegal	1,371	-1.36	5.78	1,470	98	1	2
Serbia and Montenegro	2,922	36.35	37.65	2,950	38	0	0
Slovak Republic	10,476	4.8	6.09	11,013	136	0	0
Slovenia	19,282	3.32	4.61	20,012	250	1	0
South Korea	17,133	6.02	-9.62	9,774	-2,678	1	3
Spain	20,320	1.44	2.74	23,858	263	1	2
St. Kitts & Nevis	14,603	1.45	2.17	15,331	105	0	0
St. Lucia	6,566	1.32	2.04	6,843	47	0	0
St. Vincent & Grenadines	7,949	4.15	4.86	8,338	57	0	0
Suriname	5,940	-2.96	-2.05	5,996	54	0	0
Sweden	25,763	1.42	2.71	30,326	334	1	1
Switzerland	28,989	-0.11	1.18	34,214	376	0	0
Trinidad & Tobago	13,762	-5.02	-4.3	15,079	99	0	0
Turkey	5,473	4.25	-11.38	4,231	-856	1	3
Ukraine	5,861	4.84	6.14	6,195	76	0	0
United Kingdom	25,518	1.53	2.82	30,074	331	1	2
<b>United States of America</b>	<b>34,286</b>	<b>0.36</b>	<b>4.89</b>	<b>38,358</b>	<b>1,554</b>	<b>1</b>	<b>2</b>
Uruguay	8,759	-14.83	-11.83	11,598	263	1	0
Venezuela	6,759	-9.5	-8.58	7,616	62	0	0
Averages	13,624	1.88	2.37	14,986	72	0.34	0.37

Table 4: Estimated Accumulated Impacts of World Cup Success on Per-Capita Income  
(Teams reaching the quarterfinals most often by continent)

Continent	Country	Quarterfinals Appearances	Actual Real Per-capita GDP	Estimated Counterfactual	Potential increase in Actual Per-Capita Income	Percent of Disparity with U.S. per-capita income
Africa	Cameroon*	1	2,712	2,922	7.7	0.6
	Senegal*	1	1,406	1,508	7.2	0.3
Asia	Russia*	4	11,788	4,508	-61.7	-31.5
	South Korea	1	18,423	10,510	-42.9	-44.7
	Turkey	1	5,978.70	4,621	-22.7	-4.5
Europe	France	3	26,168	30,810	17.7	46.7
	Italy	5	23,175	27,257	17.6	31.6
	Germany	3	25,606	28,345	10.7	26.1
	Netherlands	4	26,479	21,203	17.8	49.1
	United Kingdom	7	26,762	31,541	17.9	51.2
North America	Mexico	2	8,165	9,318	14.1	4.1
	U.S.A.	1	36,098	40,384	11.8	---
South America	Argentina*	6	10,938	18,238	66.7	29
	Brazil*	10	7,204	13,252	83.9	21.8
	Chile*	1	12,677	16,459	29.8	16.1
	Peru*	2	4350	5202	19.6	2.8
	Uruguay	3	9,870	13,068	32.4	12.2

\* indicates through 2003, otherwise through 2004. No national team from Oceania has reached the quarterfinals through the 2002 World Cup Finals.

Figures

Figure 1

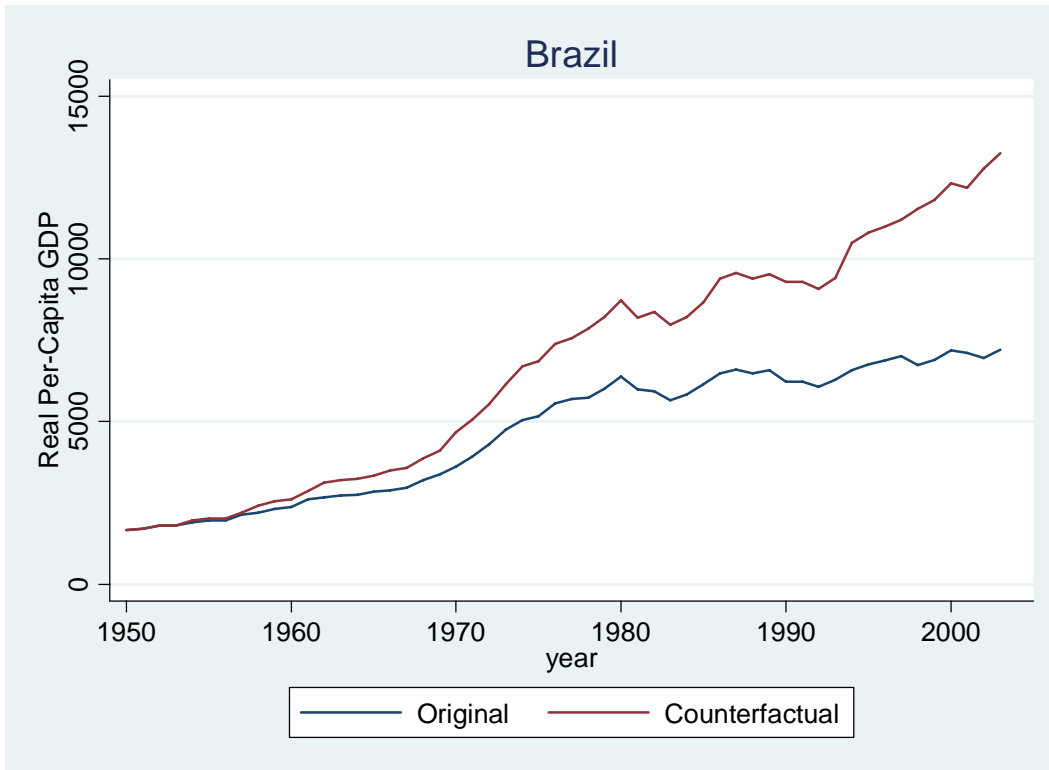


Figure 2

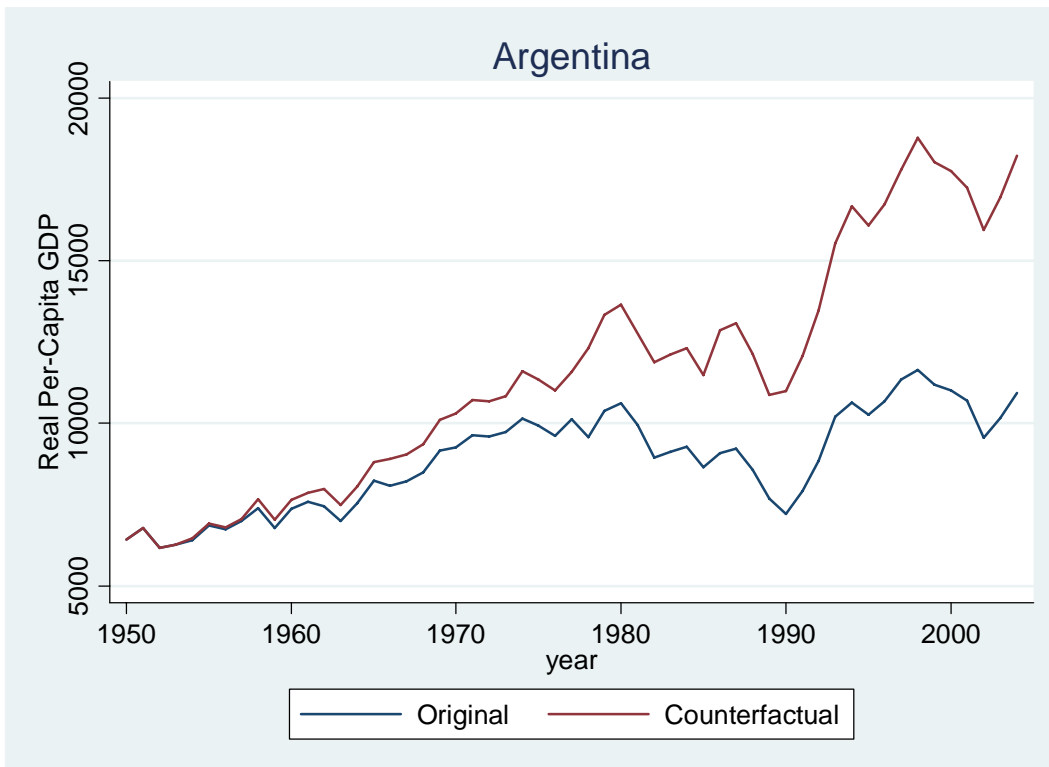


Figure 3

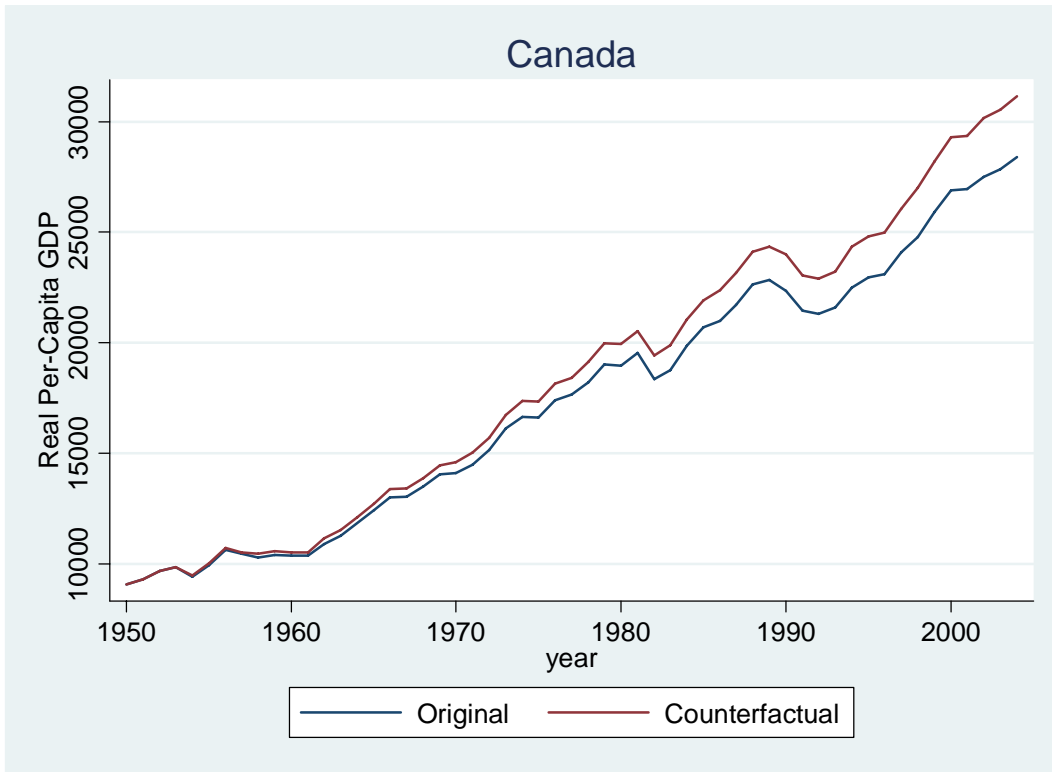


Figure 4

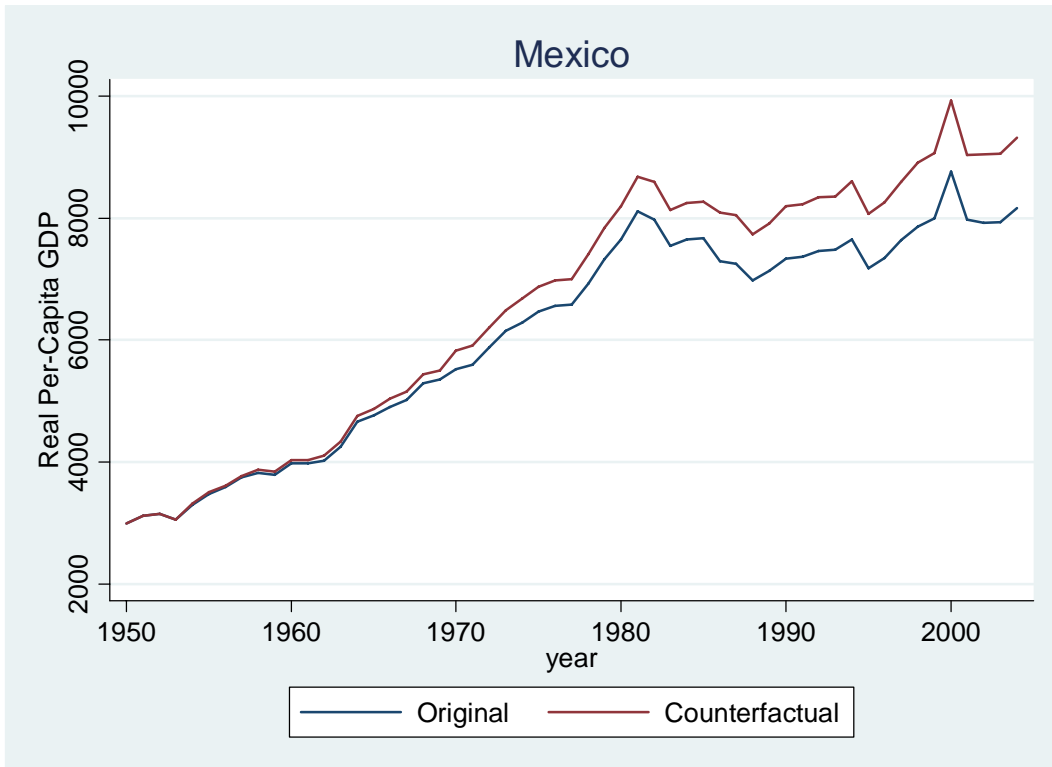


Figure 5

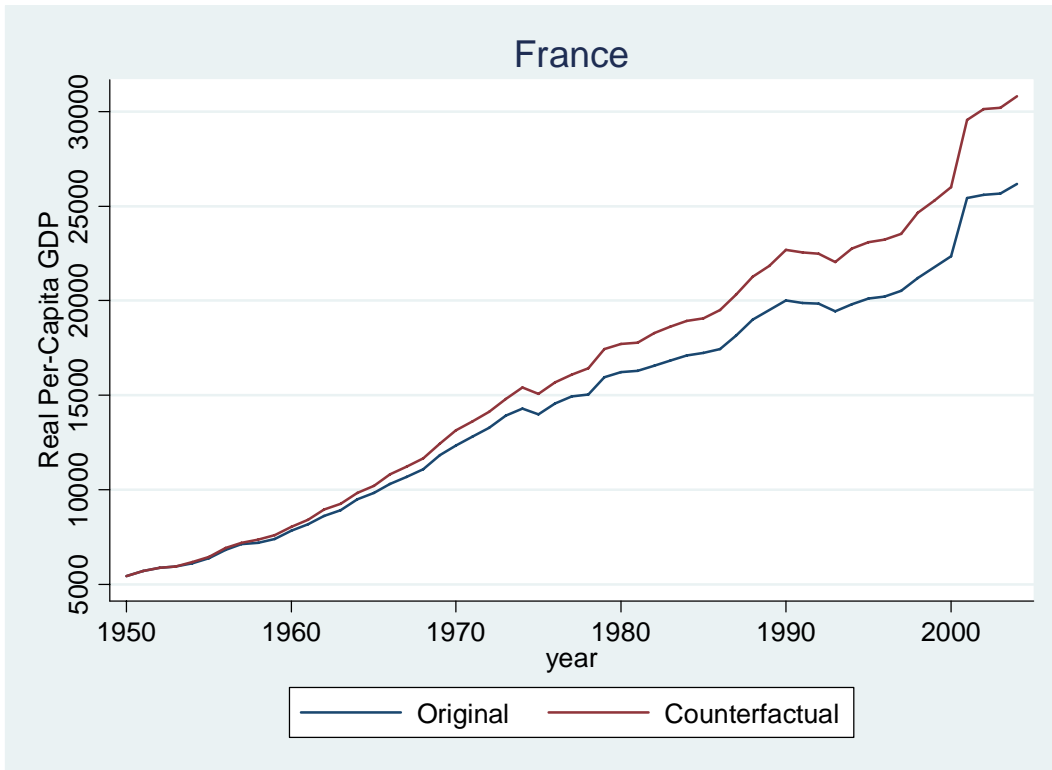


Figure 6

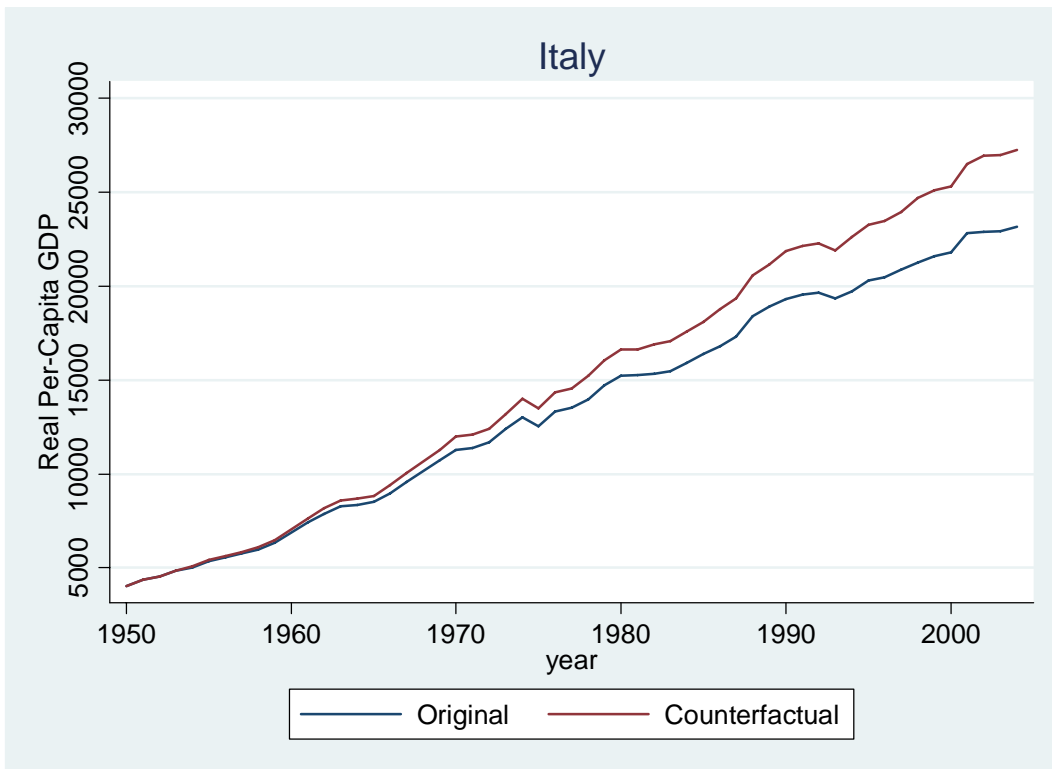


Figure 7

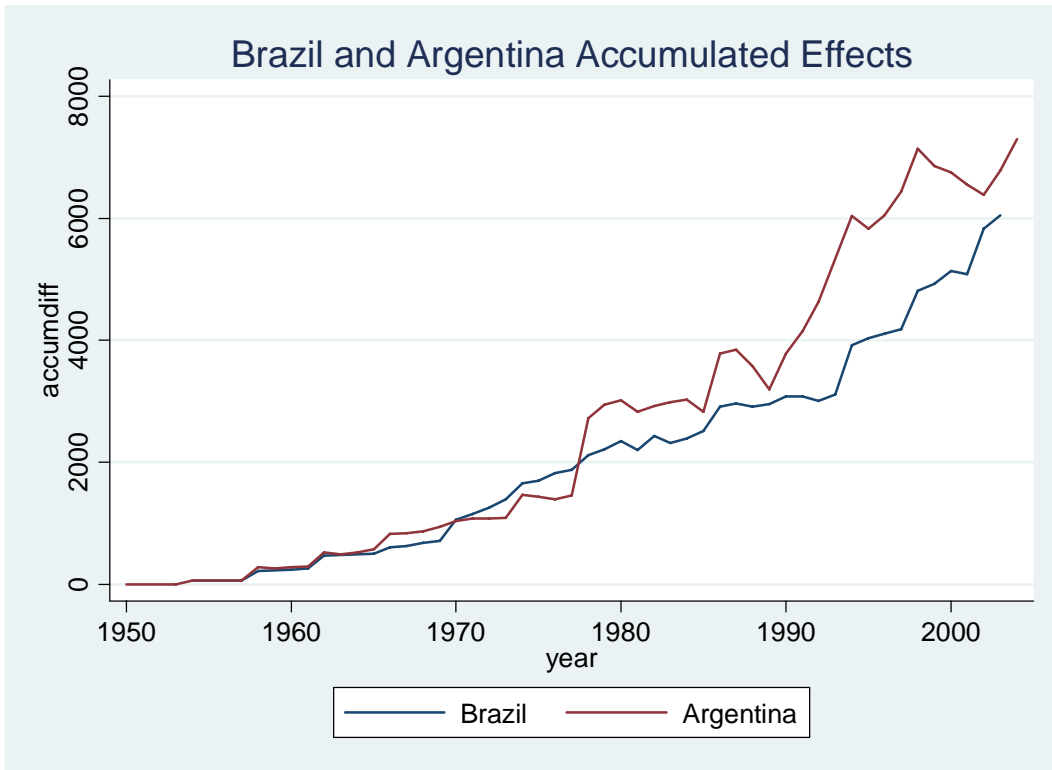


Figure 8

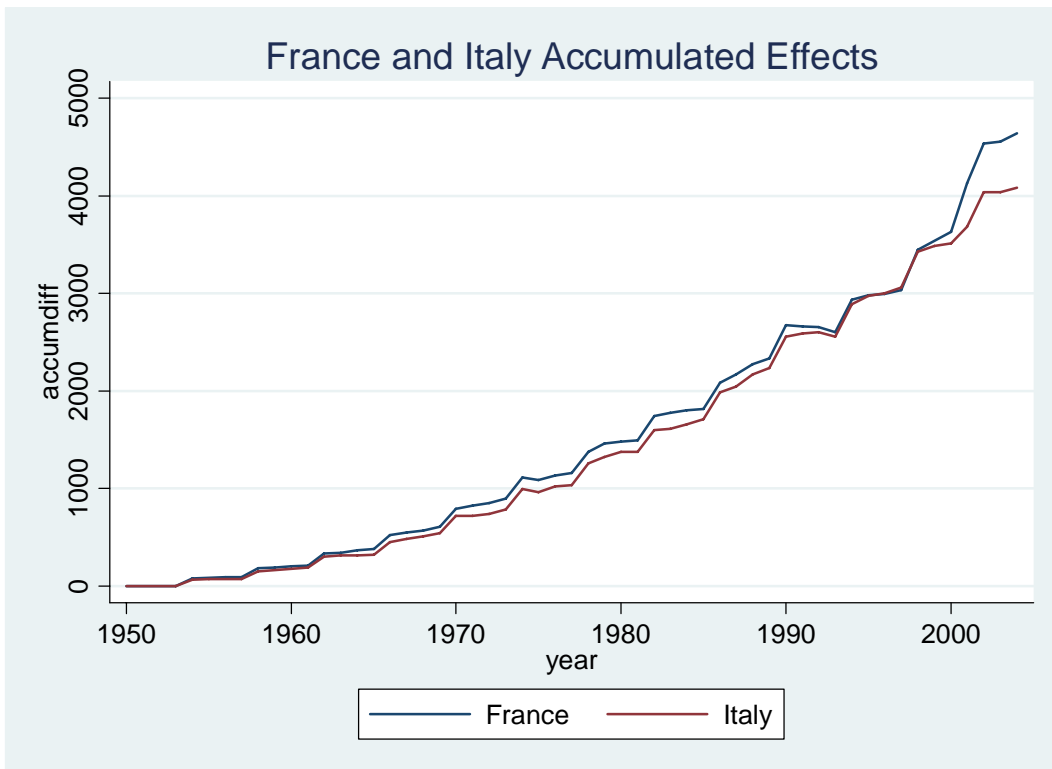


Figure 9

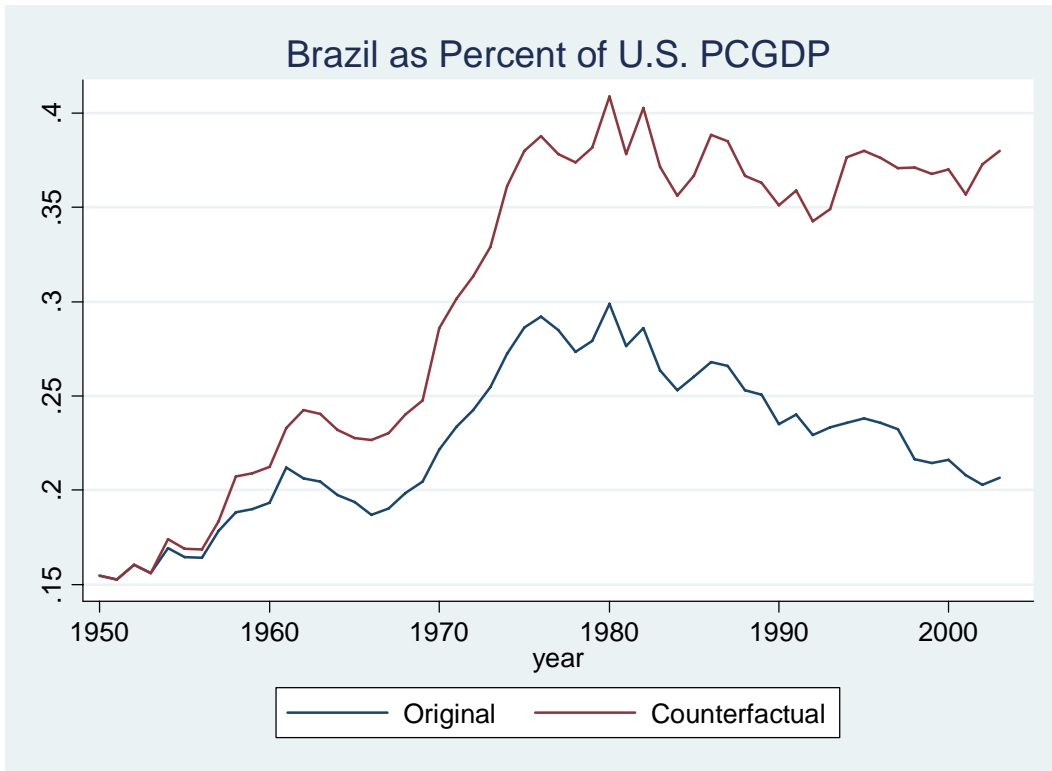


Figure 10

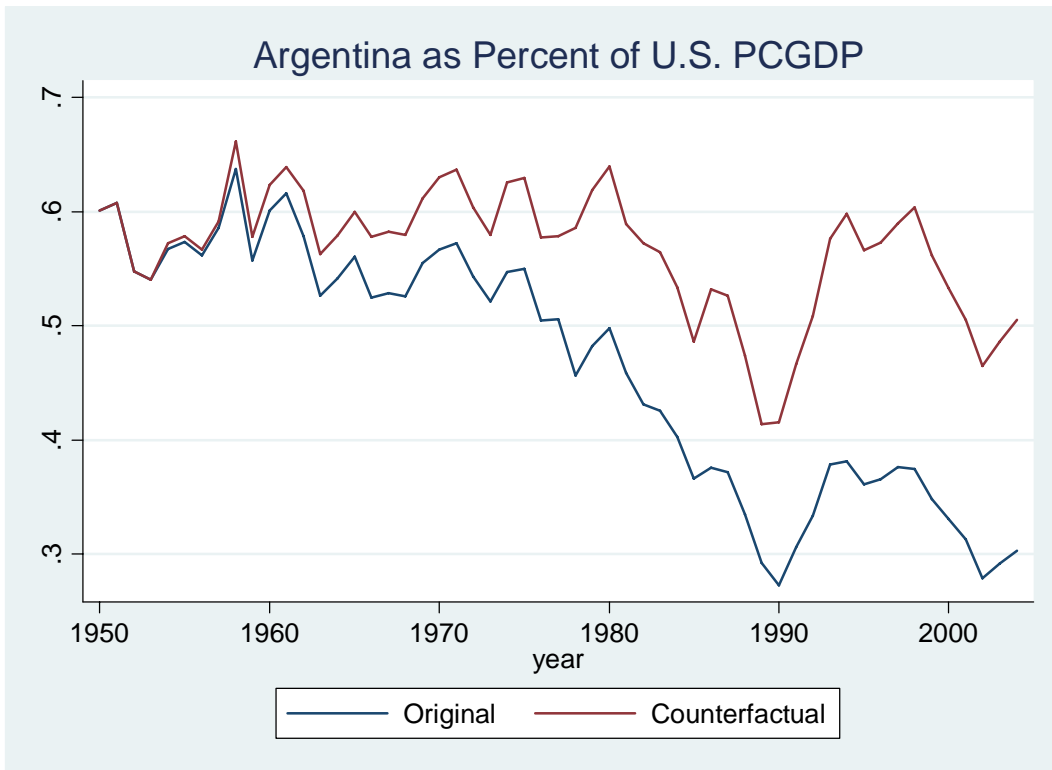


Figure 11

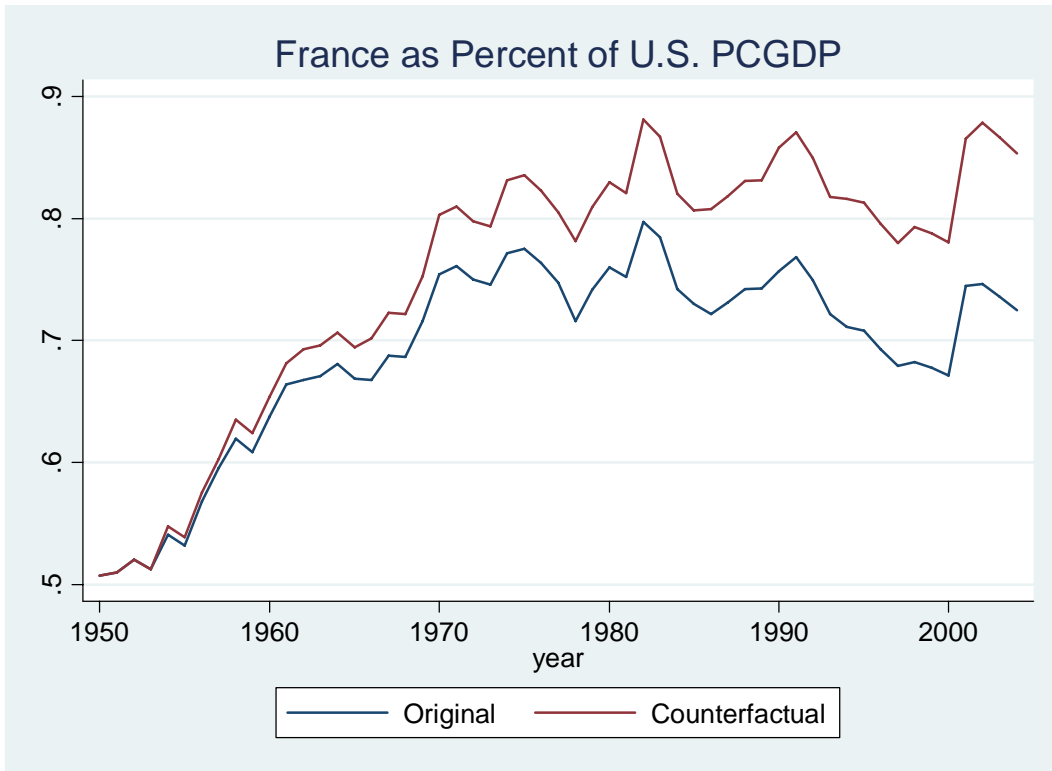


Figure 12

