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ABSTRACT

Seemingly Irrelevant Events Affect Economic Perceptions and Expectations: The FIFA World Cup 2006 as a Natural Experiment

Prominent economic theories have emphasized the role of commonly held perceptions and expectations for determining macroeconomic outcomes. A key empirical question is how such collectively held beliefs are formed. We use the FIFA World Cup 2006 as a natural experiment. We provide direct evidence that seemingly irrelevant events (the outcomes of soccer matches) can systematically affect individual perceptions about economic prospects, both on a personal and economy-wide level.

JEL Classification: D8, D0, E0

Keywords: expectation formation, sunspots, soccer world cup, macroeconomic outcomes, psychology

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1. Introduction

Macroeconomic outcomes such as the rate of economic growth, the business cycle, or stock market fluctuations are the outcome of decisions taken at the level of individuals. Microfounded theories have emphasized the importance of the perceptions and expectations of individuals for determining the macroeconomic outcomes that emerge from such interactions (see, e.g., Keynes, 1936; Cass and Shell, 1983; Cooper and John, 1988; Woodford, 1990; Morris and Shin, 1998). For example, in the presence of multiple equilibria, a critical mass of individuals with certain perceptions or expectations has the potential to tip the process towards a particular outcome. A key empirical question is how such collectively held perceptions and expectations are determined.

This paper provides direct evidence that seemingly irrelevant events can affect the formation of collective perceptions and expectations.[1] We use the FIFA World Cup 2006 in Germany as a natural experiment. We report the results of representative telephone surveys that were conducted exactly one day after each of the seven matches played by the German national team. As a control we ran the same interview prior to the start of the tournament. We show that the unexpectedly good performance of the German soccer team improved both economic perceptions and expectations. This holds on an individual level as well as on an economy-wide level. In the next section we describe the data. Section 3 contains the results and Section 4 concludes.

2. Data

Like the Olympics, the FIFA World Cup takes place every four years, each time in a different host country. This year's World Cup was hosted by Germany. Teams from 32

[1]An irrelevant event (for example, a sunspot) reflects "extrinsic uncertainty, that is, random phenomena that do not affect tastes, endowments, or production possibilities" (Cass and Shell, 1983, p. 194).

different nations participate. Nations must first compete in regional confederations in order to qualify. The World Cup tournament has two stages. The first is a group phase in which the teams compete in groups of four. The best two teams from each group advance to the second phase. The second phase is a single elimination tournament; losing one match means that a team is out.

During the FIFA World Cup, we conducted telephone surveys exactly one day after each of the seven matches played by the German national team. As a control we ran the same interview eleven days prior to the start of the tournament. The data were thus collected on 8 different dates: The first interview took place on May 29th. The other seven interviews were held on June 10th, June 15th, June 21st, June 25th, July 1st, July 5th and July 9th. Note that economic fundamentals are unlikely to have changed in the short span of time between interview dates. Also, note that the design mitigates the possibility that short-lived enthusiasm, present only immediately following each of the matches, drives our results. The interview does not occur until late in the afternoon on the next day.

The interview was conducted by experienced professional interviewers of *Infas*, one of Germany's leading and most distinguished institutes in the field of social science survey research. In each of the eight interview waves, about 400 subjects were interviewed. Importantly, each individual wave is a representative sample for the adult population aged 18 to 65 in Germany, drawn separately and exclusively from the population. In total, we have data on 3,231 subjects. A few of these have missing information on relevant variables.

The sampling procedure takes several steps: First, households are sampled based on entries in the telephone register, and also on randomly generated phone numbers to ensure a positive inclusion probability for numbers that are not listed in the official register. A stratified sampling design is then used that takes into account the shares of the population living in various regions. Once a sampled household is reached, a person is randomly

selected among all persons who permanently live in the household and are in the target group (i.e., aged 18 to 65 years). Randomization within the household is achieved by using the "birthday method", i.e., the interviewer asks to speak to the household member who is in the target group, and has the most recent birthday.[2]

Subjects were asked for their assessment of the current economic situation *in Germany*, their *personal* economic situation, and their expectation about changes in these economic conditions one year into the future. Perceptions of the current economic situation in Germany were elicited by the following question, translated from German: "Generally speaking, how do you judge the current economic situation in Germany?" Answers were given on a five point scale with answer categories "very good", "good" "somewhat good/somewhat bad", "bad" and "very bad". The data are coded such that a value of 1 means "very bad" and 5 means "very good". The wording of the question eliciting expectations about economic conditions in one year, translated from German, is as follows: "And what do you think, how will economic conditions in Germany be in one year?" There were again five answer categories ranging from "much better than today", "somewhat better than today", "constant", "somewhat worse than today" to "much worse than today". We coded answers from 1 to 5 such that a higher value corresponds to a more positive expectation.

The questions about a subject's perception and expectation about his/her *personal* economic situation read, respectively: "How do you judge your own personal economic situation today?" and "What do you think: how will your personal economic situation be one year from now?" The answer categories were the same as for the respective questions about the economic conditions in Germany in general. The questionnaire also included

[2] If this person was not present, the interviewer tried to schedule an appointment for a re-call with the individual at a later time on the same day. If this was not possible, the household was disregarded as a sampling unit.

questions about socio-demographic characteristics such as age, gender, household size, and net household income measured in five categories: less than 500 Euros, 500 -1,499 Euros, 1,500 – 2,499 Euros, 2,500 – 3,999 Euros, 4,000 Euros or more (1 Euro ~ 1.27 US Dollar). Table 1 presents descriptive characteristics for the subjects interviewed in each of the different waves.

3. Results

The German team performed unexpectedly well in the World Cup. Despite being ranked only 19th by FIFA before the start of the tournament, they won every match except for the semi-final, and ultimately placed 3rd.[3] This surprisingly successful performance induced a wave of enthusiasm and identification of the German population with the German soccer team. For example, many cities repeatedly enlarged the size of public viewing spaces during the course of the World Cup, to accommodate the increasingly large crowds of German fans.[4] By the end of the tournament, hundreds of thousands of little German flags were posted on cars and buildings, and many people were wearing soccer shirts, or had used grease paint to put flags on their cheeks.

We hypothesize that this enthusiasm also carried over to the economic domain, creating a positive impact on expectations regarding personal and national economic prospects. Table 2 presents regressions testing this hypothesis. The dependent variables in Columns (1) and (2) are individuals' assessments of the current economic condition in Germany, and their own personal economic situations, respectively. Columns (3) and (4)

[3] Germany played the opening match of the tournament against Costa Rica, on June 9th, and won 4 to 2. The German team then won the remaining two group matches against Poland (1:0), on June 14th, and against Ecuador (3:0), on June 20th. Germany proceeded to the round of 16 as the winner of its group, and then eliminated Sweden by winning 2 to 0 on June 24th. In the quarter-final Germany won against Argentina, on June 30th, after penalty shootouts (5:3). In the semi-final on July 4th, Germany lost against Italy in overtime, 0 to 2. Germany played the consolation match for 3rd place on July 8th, and won 3 to 1 against Portugal.

[4] For example, about 1,000,000 people watched the quarter-final match, Germany against Argentina, in the public viewing area in Berlin (see http://fifaworldcup.yahoo.com/06/de/060702/1/5gpe.html).

report the respondents' assessments of how much they expect economic conditions to change in the next year – relative to current levels. Economic changes for Germany as a whole are reported in Column (3) while Column (4) shows expected changes concerning personal economic conditions. The explanatory variables of interest are dummy variables, which indicate whether the assessment was made after a group match, after the match in the round of 16, after the quarter-final, after the semi-final, or after the consolation match for third place. The omitted category consists of responses collected in the control wave prior to the FIFA World Cup. All regression models also include controls for gender, age, net household income, and household size.

All coefficients on the variables of interest are positive and most are highly significant, which provides strong evidence in favor of the hypothesis. The coefficients in Column (1), e.g., show that relative to perceptions eleven days prior to the FIFA World Cup, perceptions about economic conditions in Germany were consistently higher after the group matches as well as after all matches in the second phase of the tournament. This effect is somewhat more pronounced for perceptions concerning Germany as a whole compared to perceptions about one's own economic conditions (see Column (2)). This result is quite intuitive in the sense that people typically have a much more profound understanding of their own situation than of general economic conditions. Similar results hold for expected economic changes, as shown in Columns (3) and (4). The positive coefficients for the dummy variables in Columns (3) and (4) that capture the effects of the tournament on economic expectations imply that respondents who were interviewed during the World Cup expect stronger improvements of general and personal economic conditions over the course of the next year than individuals who were asked about their economic expectations before the start of the tournament. The positive impact of the World Cup on expectations about future improvements in economic conditions is particularly striking, given that individuals

interviewed during the World Cup already have a more positive perception of the strength of current economic conditions.

Note that in all columns the positive impact on economic perceptions and expectations is particularly strong after the German team's victory in the quarter-final match, which Germany won against Argentina, and after the consolation match, won against Portugal. The victory against Argentina was a surprise, given that Argentina was at that time one of the top favorites for winning the championship. The victory against Portugal cemented Germanys place among the top 3 teams, and was an inspiring finish. After the semi-final match, however, in which Germany lost against Italy, the effect on perceptions and expectations is relatively small and in fact insignificant in all columns but Column (1). In sum, results in Table 2 reveal that Germany's good performance in the World Cup led individuals to have more positive perceptions and expectations regarding economic conditions, both personally and for the economy in general.

Another way to assess the impact of the World Cup is to compare perceptions and expectations about economic conditions before and during the tournament. We therefore define a dummy variable which is 1 if the respondent was interviewed during the World Cup and 0 if the interview took place in the control wave prior to the start of the tournament. We regress perceptions and expectations about economic conditions on this dummy variable, and the same set of additional controls as in Table 2. The coefficient on the dummy variable gives the treatment effect. Table 3 reports the results of these regressions.

The treatment effect due to the World Cup is not only highly significant and positive in all regressions, but is also quite large. To give a sense for the magnitude of the World Cup effect we focus on the regression in Column (2) of Table 3 and ask the following question: By how much would an individual's income have to increase, in order to have a comparable impact on perceptions of the current personal economic situation? Note first that

perceptions of current personal conditions are significantly higher for higher income groups, as might be expected. A comparison of the relative impact of these two events (an increase in income vs. experiencing the World Cup) on personal economic conditions reveals that moving an individual from the midpoint of the median income category, which ranges from 1,500 to 2,499 Euros, to the midpoint of the next higher income category (an increase of 1,250 Euros), improves perceptions of personal economic situation by 0.245 points on the five point scale. This compares to a coefficient of 0.092 of the World Cup dummy (i.e., individuals who were interviewed during the World Cup perceive their personal economic situation to be 0.092 points better than individuals who were interviewed before the World Cup). Combining this information reveals that the tournament's impact on the perceived strength of an individual's current economic position is roughly comparable to an increase in income of (0.092/0.245) * 1,250 Euros = 469 Euros. This is a 23.5 percent increase in net monthly household income for someone at the midpoint of the median income category. The magnitude of the World Cup effect is similar for individuals at different points of the income distribution.

It is noteworthy that the magnitude of the World Cup effect is even larger if we instead look at perceptions of current economic conditions in Germany. This is evident from the coefficients in Column (1). The World Cup has a similarly sizeable impact on expected future improvement of economic conditions. This can be inferred from the results of OLS regressions in Columns (3) to (4) of Table 3, where the dependent variables expectations about expected changes of general and personal economic conditions, respectively. Again, this impact on expectations about future improvements is particularly striking, because perceptions about current economic conditions are already substantially higher due to the World Cup treatment.

Conclusion

In this paper we have reported the impact of a natural experiment, the FIFA World Cup 2006, on economic perceptions and expectations. Our findings provide direct evidence that seemingly irrelevant events can have a substantial impact on collective perceptions and expectations.

The importance of these findings derives from the fact that perceptions and expectations about economic conditions are crucial determinants of macroeconomic outcomes, as has been shown in previous empirical research, for example, Acemoglu and Scott (1994), Matsusaka and Sbordone (1995), and Chauvet and Guo (2003). In other words, our findings make a strong case for the conjecture that much of the economic action is driven by "psychology", a view going back at least until Keynes. Since we can directly link expectations and perceptions to the World Cup treatment, our results also offer an explanation for the observed link between fluctuations in stock prices and outcomes of sporting events (e.g., Edmans et al., forthcoming).

A potential limitation of our findings concerns the four week time period of the World Cup. One could argue that a four week change in perceptions and expectations is not sufficient to have lasting macroeconomic effects. However, this does not undermine the main point of the paper, which is to provide convincing evidence that seemingly irrelevant events can shape beliefs about the current and future state of the economy. Furthermore, while it is true that we have documented an increase in perceptions and expectations only during the World Cup, it is quite possible that the levels are still higher than before the tournament, at the time of writing five weeks later. It is also not clear whether a four week "treatment" is long or short. During the four weeks of the World Cup, millions of consumers and investors have made millions of decisions and plans, potentially influenced by the change in perceptions and expectations. Only the future will show whether the positive

changes in perceptions and expectations induced decisions that will have a large and lasting positive impact on macroeconomic performance.

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Table 1: Descriptive Statistics

Date of Wave	Age (in years)		Gender (1 if female)		Income Category			Number of observations
	Mean	Standard deviation	Mean	Standard deviation	Median	Mean	Standard deviation	
29 May	43.52	13.35	0.538	0.499	3	3.37	1.01	405
10 June	44.13	12.34	0.524	0.500	3	3.20	1.05	401
15 June	42.66	12.76	0.525	0.500	3	3.08	1.02	400
21 June	43.35	13.12	0.519	0.500	3	3.06	1.11	405
25 June	43.16	13.06	0.519	0.500	3	3.04	1.01	405
1 July	44.53	13.27	0.519	0.500	3	2.97	1.04	405
5 July	44.25	12.91	0.519	0.500	3	3.08	1.04	405
9 July	44.17	12.97	0.519	0.500	3	2.91	1.04	405
Total	43.72	12.98	0.522	0.500	3	3.09	1.05	3231

Notes: There are five income categories coded from 1 to 5: less than 500 Euros, 500 -1,499 Euros, 1,500 – 2,499 Euros, 2,500 – 3,999 Euros, 4,000 Euros or more.

Table 2: The Impact of Soccer Matches During the FIFA World Cup 2006 on Economic Perceptions and Expectations – Detailed Results

	Dependent Variable: Assessment of			
	Current economic situation		Future economic situation	
	in Germany	personal	in Germany	personal
	(1)	(2)	(3)	(4)
Group matches	0.184***	0.111*	0.152**	0.155**
	[0.063]	[0.065]	[0.062]	[0.064]
Round of 16	0.248***	0.08	0.042	0.056
	[0.077]	[0.079]	[0.076]	[0.078]
Quarter-final	0.223***	0.269***	0.161**	0.134*
	[0.077]	[0.079]	[0.076]	[0.078]
Semi-final	0.158**	0.111	0.063	0.127
	[0.077]	[0.079]	[0.075]	[0.078]
Consolation match for 3rd place	0.254***	0.202**	0.205***	0.185**
	[0.077]	[0.079]	[0.076]	[0.078]
1 if female	-0.362***	-0.065	-0.148***	-0.101***
	[0.039]	[0.040]	[0.038]	[0.039]
Age in years	-0.003**	-0.001	-0.004***	-0.025***
	[0.002]	[0.002]	[0.002]	[0.002]
Net monthly household income:				
less than 500 Euros	-0.05	-0.785***	0.075	0.107
	[0.099]	[0.100]	[0.097]	[0.101]
500 to 1499 Euros	-0.207***	-0.564***	-0.151***	0.009
	[0.053]	[0.054]	[0.052]	[0.053]
2500 to 3999 Euros	0.141***	0.394***	0.096*	0.056
	[0.053]	[0.055]	[0.052]	[0.054]
4000 Euros or more	0.341***	0.941***	0.244***	0.226***
	[0.074]	[0.080]	[0.072]	[0.075]
Information on income missing	0.072	0.113	-0.063	0.072
	[0.072]	[0.074]	[0.071]	[0.074]
Number of persons living in HH	-0.029**	-0.040***	-0.050***	-0.030**
	[0.014]	[0.015]	[0.014]	[0.014]
Observations	3189	3184	3179	3159

Notes: Ordered Probit estimates reported. Standard errors are in brackets. ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent levels respectively.

Table 3: The Impact of the FIFA World Cup 2006 on Economic Perceptions and Expectations – OLS Estimates

	Dependent Variable: Assessment of			
	Current economic situation		Future economic situation	
	in Germany	personal	in Germany	personal
	(1)	(2)	(3)	(4)
1 if during World Cup	0.148***	0.092**	0.113**	0.100**
	[0.043]	[0.040]	[0.050]	[0.041]
1 if female	-0.256***	-0.042	-0.125***	-0.068**
	[0.028]	[0.026]	[0.033]	[0.027]
Age in years	-0.003**	-0.001	-0.004***	-0.017***
	[0.001]	[0.001]	[0.001]	[0.001]
Net monthly household income:				
less than 500 Euros	-0.053	-0.582***	0.062	0.072
	[0.072]	[0.068]	[0.084]	[0.070]
500 to 1499 Euros	-0.159***	-0.399***	-0.133***	0.006
	[0.039]	[0.036]	[0.046]	[0.037]
2500 to 3999 Euros	0.100**	0.245***	0.085*	0.044
	[0.039]	[0.036]	[0.046]	[0.037]
4000 Euros or more	0.243***	0.534***	0.216***	0.161***
	[0.054]	[0.050]	[0.063]	[0.052]
Information on income missing	0.049	0.067	-0.053	0.051
	[0.053]	[0.049]	[0.062]	[0.051]
Number of persons living in HH	-0.023**	-0.024**	-0.045***	-0.022**
	[0.010]	[0.010]	[0.012]	[0.010]
Constant	2.968***	3.493***	2.988***	3.725***
	[0.079]	[0.074]	[0.093]	[0.076]
R-squared	0.05	0.14	0.02	0.08
Observations	3189	3184	3179	3159

Notes: OLS estimates reported. Standard errors are in brackets. ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent levels respectively.