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Kurrild-Klitgaard, Peter

University of Copenhagen

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It's the weather, stupid!

Individual participation in collective May Day demonstrations¹

PETER KURRILD-KLITGAARD

Dept. of Political Science, University of Copenhagen

Abstract. We investigate the possible explanations of variations in aggregate levels of participation in large-scale political demonstrations. A simple public choice inspired model is applied to data derived from the annual May Day demonstrations of the Danish labour movement and socialist parties taking place in Copenhagen in the period 1980-2009. The most important explanatory variables are variations in the weather conditions. Political and socio-economic conditions exhibit few or no robust effects.

Keywords. Collective action; demonstrations; free-riding.

1. Introduction

The number of participants taking part in political demonstrations is usually seen as an indication of the extent of popular support for the cause addressed by the demonstration. If there are many, “the people” supports it, and if there are few they do not; if there are more than last time a comparable demonstration took place, popular support is on the rise, and if there are fewer it is waning.

Or so the popular logic would seem to go. However, demonstrations are instances of large-scale collective action where the participation of the average supporter will make no difference for the outcome, and where the benefit produced by the demonstration itself constitutes a “public good” which will be shared by all sympathizers, irrespective of whether they take part or not. In contrast, the costs of participating in the demonstration are concentrated and private. So, why should rational individuals

demonstrate, when they know that there at least some personal

given by Mancur Olson and scholars of his ilk is that rational individuals should not participate in large-scale collective action—at least not in the absence of what he termed “selective incentives”, i.e., carrots and sticks (private benefits attached to participation itself or private costs attached to non-participation). We should, in other words, not expect political variables or for that matter general socio-economic trends to have any significant impact on, say, political demonstrations, but rather that the dynamics of such will be driven exclusively by changes in the private costs and benefits of participation.

Many attempts have been made at applying an Olsonian logic to demonstrations and protests (e.g., DeNardo 1985; Finkel, Muller & Opp 1989; Opp 1989; Kuran 1989; Kuran 1991; Opp 1991; Oberschall 1994; Kuran 1995; Kurrild-Klitgaard 1997; cf. Lichbach 1995; Kurrild-Klitgaard 2004). However, there are at least two serious methodological problems with regard to empirically investigating whether Olson’s theory holds up when applied to demonstrations:

(1) Micro-level data are usually not accessible, and (2) it is very

seeking to empirically analyze participation in demonstrations have tended to be either somewhat anecdotal macro-narratives (e.g., Tullock 1971; Tullock 1974) or have relied on survey data which given the nature of demonstrations will tend to be ex post and potentially with considerable problems relating to representativity or ex post rationalization (e.g., Finkel, Muller & Opp 1989).

In the present study we shall try to tackle this in a new way and with a novel type of data, namely by looking at May Day demonstrations such as those organized by labour unions and socialist parties in many countries each year on May 1st since the late 19th century.² These share the rather unique feature that they have been taking place regularly, over long time periods, organized by groups with basically very similar ideological beliefs, under the same set of symbols, at the exact same time of the year, and often at the same locations. As such May Day demonstrations are probably as close to a natural experiment as may be found in this area of research. What vary then are the socio-economic and political

contexts, as well as the more accidental circumstances that may affect individual participation.

2. The data

In the following we seek to test alternative explanations of variation in the extent of collective participation in May Day demonstrations—specifically the annual May Day demonstrations organized by the Danish socialist parties and labour unions in Copenhagen, which is the country’s largest May Day celebration. These are highly institutionalized, ritual phenomena which have been taking place since 1890 at *Nørre Fælled* (“Northern Commons”), later *Fælledparken* (“The Commons Park”), which for decades had been the meeting place of left-wing demonstrators and where on the 5th of May 1872 a rather dramatic clash took place between socialist agitators and armed police. May Day is not a public holiday, but many employees have the half or full day off due to agreements with the employers, and at many Danish workplaces—including the

employers, governments, or right-wing parties. Even to this day participation is usually sought justified by appeals to the difference participation may make with regard to achieving the public good of a “better” society, as evidenced from a recent historical overview by Danish national labour movement (LO):

“May 1st is the most important day of demonstration and celebration of the labour movement. On May 1st workers in most parts of the world demonstrate and express opinions about better working and living conditions, cleaner working environment and greater political freedom. ... It is still the day where you express your solidarity with the oppressed and opposition to war. ... Under all circumstances, it is good to show up. The world is constantly changing, and there will always be a need for political and organizational action in order to change it to a better and more just world.” (LO 2006: 2 & 11; author’s translation)

Similar sentiments are frequently aired by speakers at May Day demonstrations, e.g., the Social Democratic party leader, Ms. Helle Thorning-Schmidt, in 2009:

It is a day where we can show and signal, that we stand together in defense of important values.”³

May Day demonstrations are, in other words, to this day presented as important causes, where individual participation will have consequences for the realization of joint political goals. In contrast, a pure public choice analysis would, as indicated, suggest that variables representing public goods in practice are of no importance, whereas variables measuring the private benefits and costs of participating would be the important ones (and have positive and negative signs respectively). In order to test these alternative explanations, we will assume that individuals considering whether or not to join a demonstration may be motivated by the value of the public good itself, by the symbolic or “moral” value of participating, and by the private benefits and costs of participating. Specifically, we will assume that an individual’s utility of participation in a demonstration, P , may be defined through the function:

satisfaction from doing “the right thing”, C are the private costs, E is a measure of the individual’s efficacy, and Q is some set of further factors that potentially may influence the utility of participating (cf., e.g., Mueller 2003).

2.1. The dependent variable

The dependent variable of the analysis is the number of participants in the May Day demonstrations in the *Fælledpark* (cf. Table 1, which contains descriptive statistics for all the data considered as well as the sources). These figures are, where possible, obtained from the Copenhagen Police Department, which on a regular basis estimates the number of participants in demonstrations. However, the Police do not keep such records permanently and so missing data have been supplemented with observations collected from the coverage of the demonstrations by Danish newspapers, which in turn usually has been based on the estimations of the Police Department. If there is a divergence between the two, the Police estimate has been used

and sometimes very impressive: In 1990 the estimated number of participants was ca. 250,000, corresponding to roughly 5 pct. of the country's population and approximately $\frac{1}{4}$ of the metropolitan area's total population.

2.2. The independent variables

In order to examine the factors potentially determining the variation in number of participants at the May Day demonstration, a number of independent variables will be considered, all of them in the form of "objective", non-survey based data. The first part of the statistical analysis presents simple bi-variate correlations between the dependent variable and all other variables considered. The second part consists of standard ordinary least squares multiple regression analyses. Because of the relatively small number of observations in the data set, the analysis will need to limit the number of variables included in the multiple regression analysis, and we accordingly adopt an estimation strategy where we first test a baseline model

which can explain most of the variation solely with statistically significant variables.

Following the outlined utility function, the baseline model will include (a) unemployment (as a measure of the “public bad” to be removed by collective action by the unions and the left-wing); (b) the ideological colour of the ruling government (as an indication of the “moral” duty of participation); (b) the weather (as a measure of the private benefits from participating); (d) the day (as a measure of the private costs of participating); and (e) the strength of the labour unions (as an inverse proxy of the individual participant’s efficacy):

- *Unemployment*, i.e., the number of unemployed Danes. Concerns for achieving as high a level of employment as possible have always been among the stated top-priorities of the labour unions, and indeed of the socialist parties, and may reasonably be seen as the over-all public good sought after by the organized left. Everything else being equal, a traditional argument would be that high employment is a public good and hence that more

ideological colour of the government might mobilize its opponents. Again an Olsonian analysis would suggest that this will be a purpose that as a public good is open to free-riding, but for the present purposes, we will assume that left-voting Danes will see it as a form of moral duty—something giving them a participation related satisfaction—to demonstrate against a non-socialist government, irrespective of any political effects. Accordingly, we will expect, everything else being equal, that a non-socialist government is associated with higher number of participants, while the opposite is the case for a socialist government.

- Weather: The May Day weather could reasonably be seen as potentially entering into both the private benefits and private costs of the calculus of participants. If the weather is cold and wet, it will be uncomfortable, while if it is warm and sunny the demonstration itself may be a pleasure.⁵ We therefore expect that *temperatures* will be positively correlated with the number of participants.⁶ For purposes of analysis we have tested several

different temperature variables: daily *minimum temperatures*, daily *maximum temperatures* and *average temperatures* based in a simple average of the two former. Similar expectations apply to the number of hours of *sunshine*, while the reverse goes for the amount of rain. For the latter we have included both the measured amount of rain (*rain (millimetres)*) and a dummy for whether or not there has been rain (*rain (dummy)*). Finally, we have constructed an interaction variable, appropriately termed *good weather*, which multiplies minimum temperatures, maximum temperatures and number of sunshine hours.

- *Workday*: May 1st will fall either on an ordinary workday or on a day where employees have the day off (weekends, national and religious holidays, etc.). Participation is always costly, even if the cost is low—either because it conflicts with work, or because it takes time away from other private activities. On the other hand, if leisure is a good, using an opportunity to take time off from work (when possible), may actually be a private benefit. For the present purposes we will expect the private costs to be higher if

- *Labour union strength*: Two opposing hypotheses may be compared by considering labour union strength. A more classic, pluralist approach would suggest that larger special interest groups would lead to more participation, while the Olsonian analyses would suggest that the larger a group is, the less effect a typical participant will have on any outcome, and the more rational it will be to free-ride. Everything else being equal, one would expect larger labour unions to be better at mobilizing larger number of demonstrators—or alternatively that larger labour unions would make free-riding more attractive (and easier).

2.3. The control variables

In order to control for spurious correlations, the statistical analysis also includes a number of alternative control variables, which conceivably could be of importance, although they do not all fit any particular theoretical explanation of collective action:

the number of people participating in the most important annual event of the political left.

- *Number of socialist parties:* While the electoral strength of the left-wing can be important, its organizational basis may also be. Everything else being equal we expect a larger number of parties to be better at mobilizing potential sympathizers and therefore expect a positive correlation between the number of socialist parties and the number of May Day demonstrators.
- *Labour conflict:* A large number of work-days lost to labour conflicts indicate a high level of social conflict and a well-organized labour movement, and a case of the latter will be better able to mobilize many demonstrators. We therefore expect a positive correlation between number of days lost to strikes and the number of May Day participants.
- *Prosperity:* A standard theory in much of 20th century voting analysis has been that if living standards are poor, voters may be seen as being more willing to protest (and perhaps especially to support the political left), while higher living standards might

participation in May Day demonstrations. We accordingly hypothesize that lower (higher) economic growth (measured as change from previous year's GDP) will result in higher (lower) turnout.

- *Government size*: Conceivably the left's demonstrations may be influenced by the extent to which the public sector realizes the left's political program. We therefore expect that public sector size (measured by the tax levels, i.e., total taxes and percentage of GDP) will exhibit a negative correlation with the number of May Day demonstrators.
- *Fall of the Soviet Union*: Since at least one prominent left-wing party, the Danish Communist Party (DKP), was financed partly by a foreign state, and simultaneously hosted one of the largest factions of the annual May Day demonstrations, the collapse of the Communist regimes that took place 1989-1991 may be seen as potentially having had a negative effect on turnout.⁷ Also, the fall of so many regimes having an at least self-proclaimed socialist nature might be seen as potentially depressing effect on

the Soviet Union disintegrated, and our expectation is a negative correlation.

- *Bandwagon effect*: Collective action may exhibit so-called “bandwagon effects”,⁸ where participants make their own participation dependent on their expectations of how many others will participate, and where these expectations are formed on the basis of prior events. For the present purposes we expect that the number of participants in a given year will be related to the number of participants in the previous year, so that a high (low) level in year t_2 will correlate with a high (low) level in year t_1 .
- *Trend*: There are well-known potential problems related to the use of time-series data in OLS-multiple regression analysis. For that purpose we have included a trend-line as a simple control of whether participation has systematically declined over time.

3. The analysis

coefficients, a very large number of them have the expected signs. More rain, post-Soviet Union era, higher living standards and higher economic growth go with lower turnout. More sunshine, higher temperatures, a strong and well-organized left-wing, more union members, more unemployed and high turnout the previous year all go with bigger crowds. But a number of variables do not have the expected signs—for example higher labour conflict levels, more right-leaning governments, and whether May 1st falls on a workday go with lower participation, while bigger government goes with higher.

However, more importantly, if we look not simply at the signs of the coefficients but also at statistical significance, almost none of the correlations are statistically significant—that is, except the weather variables (the three different temperature measures, the number of sunshine hours and the rain dummy, but not the amount of rain). All other correlations are statistically insignificant. To appreciate the strength of the possible effect of weather conditions on turnout, the scatter plot of Figure 2 correlates the most highly statistically

labour union strength variables. Over-all the coefficients all have the hypothesized signs: More unemployed, non-left governments, more labour union members, more sunshine hours and higher temperatures, and whether May 1st falls on a regular workday all correlate positively with higher turnout. The total amount of variation explained is far from trivial (adj. $R^2 = 0.494$). However, virtually all explanatory power of the baseline model stems from the two only variables whose coefficients are statistically significant: The temperature and the sunshine. This is illustrated by a regression analysis with only these two variables included (model 2), which has only a slightly less good fit (adj. $R^2 = 0.479$). In virtually all subsequent models the four other variables of the baseline model are statistically insignificant: The colour of the government, labour union strength and workday are never significant (and the latter two often change signs), and unemployment is only occasionally so. These results, in other words, cannot be seen as corroborating any public goods or “moral duty” explanation of political participation. Neither the ideology of

them display statistically insignificant coefficients. For example, when applied individually to the baseline-model the amount of labour conflict is not correlated to a statistically significant extent with May Day turnout (model 3), and neither is government size (model 4), rain (model 5), an assumption that there simply has been an over-all systematic trend of lower participation as time goes by (model 6), the fall of the Soviet Union (model 7), the income levels (model 9), the number of socialist parties (model 11) or the left's electoral strength (model 12). Only two control-variables come out statistically significant: Economic growth has the expected (negative) relationship with turnout and at a statistically significant level (model 10), just as there seems to be a possible "bandwagon effect" of participation (model 8).

The best fitting model, in the sense of the model with the highest explanatory power and with all coefficients statistically significant, is one relying solely on temperatures, sunshine, fall of the Soviet Union, unemployment and economic growth (model 13), which together explains 66 pct. of the variation in turnout,⁹ and with most

decreases it. Government size, however, exhibits an unexpected positive correlation with turnout, which is statistically significant in the best-fit model but not robust to other specifications. If taken at it is, it suggests that more distribution will go hand in hand with higher turnout. It is difficult to say for the present how that should be explained, although it would be consistent with a Say's Law interpretation of the demand for and supply of public expenditures: That a supply of more government begets demands for a yet larger government.

It is important to stress that of the variables of the baseline model only the weather variables remain statistically important when control variables are added: Temperatures are statistically significant across all model specifications, while sunshine is so in the vast majority.¹⁰ Of the other baseline model variables only unemployment occasionally is statistically significant but not consistently so. In fact, over a large set of regressions (not reported but obtainable from the author) only temperatures remain statistically significant, irrespective of what other variables are

How should the importance of the non-weather related variables be interpreted? Clearly, there is some indication that poor socio-economic conditions (higher unemployment, lower economic growth) have the hypothesized positive effect on turnout, so May Day demonstrators could be seen as reacting to economic crisis (or their opposites) to some extent. However, the effect is, as seen, far from robust, at least in the case of unemployment, and in a relative perspective the effects are less than impressive: In model 13 the effect of a one percent change in annual economic growth is only slightly higher than the effect of a one degree change in temperature and less than that of two hours of sunshine. Similarly, the less than statistically robust unemployment variable would need to exhibit an increase of ca. 50,000 unemployed workers before the effect on participation would exceed that of a one degree change in temperature.

All in all, the analysis suggests that there will always be some turnout at May Day demonstrations, by the dedicated idealists—but how many will turn out in total depend not least on the weather—

will affect turnout by ca. 4,100-5,800, depending on the specific model. That weather may be so important for political participation may surprise some, but really should not: A number of other studies have applied weather data for the explanation of turnout on election days and have found the expected relationships: That weather conditions may have a significant effect on turnout, especially at the margin (Merrifield 1993; Matsusaka & Palda 1999; Gomez, Hansford & Krause 2007; cf. Knack 1994). What is most surprising here is not the relationship but that it has such an extraordinarily strong and robust effect.

4. Conclusion

The previous analysis suggests that the public good factors usually assumed to rationalize individual participation in such collective demonstrations as those on May Day are, at best, non-robust or trivial. There is, at least in the case considered, no support for claims that turnout at such demonstrations can be explained by e.g.

strength of the labour unions or by purely partisan or ideological factors (e.g., the strength of the left-wing parties or the colour of the government). In other words, politics largely disappears. The only political factor with visible effects is the fall of the Soviet Union and what importance this may have had for the annual feast of the socialist left. The most important factors for the explanation of turnout seems to be whether the weather is sufficiently pleasant for people to fight for what they believe is a better and more just society.

Table 1. Variables and descriptive statistics.

| Variables | Description | N | Mean | Standard deviation | Min. | Max. | Sources | |
|-----------------------|---|---|-----------|--------------------|------------|---------|------------------|---|
| Dependent variable | Participation | Participants in May Day celebrations in Fælledparken, Copenhagen, number | 30 | 72,500 | 61,542.67 | 15,000 | 250,000 | 1980-2000: Berlingske Tidende (newspaper); 2001-2009: Copenhagen Police Department. |
| Independent variables | Colour of government | Dummy (centre-right government: 1; no: 0) | 30 | 0.60 | 0.50 | 0 | 1 | Parliament Hansard |
| | Unemployment | Unemployed, number on annual basis | 29 | 189,332.17 | 68,788.83 | 80,270 | 323,437 | Danmarks Statistik (Statistisk Tiårsoversigt 1991, 1992, 1997, 2007; Statistikbanken online) |
| | Temperature, min. | Daily minimum number of Celsius degrees | 30 | 11.12 | 4.81 | 4.00 | 22.30 | Danish Meteorological Institute |
| | Temperature, max. | Daily maximum number of Celsius degrees | 30 | 10.92 | 3.93 | 2.90 | 18.10 | Danish Meteorological Institute |
| | Temperature, average (min./max.) | Average of daily minimum and maximum number of Celsius degrees | 30 | 11.17 | 2.68 | 5.55 | 17.15 | Own calculations |
| | Sunshine | Sunshine, number of hours | 30 | 7.28 | 4.66 | 0 | 13.90 | Danish Meteorological Institute |
| | Rain (millimetres) | Rain, millimetres | 30 | 0.75 | 1.65 | 0 | 7.00 | Danish Meteorological Institute |
| | Rain (dummy) | Rain, dummy (no millimeters: 0; more than 0 millimeters: 1) | 30 | 0.27 | 0.45 | 0 | 1 | Own calculations |
| Control variables | Good weather | Interaction (min. temp. * max. temp. * [sunshine hours + 1]) | 30 | 1,093.90 | 956.46 | 31.20 | 4,324.30 | Own calculations |
| | Workday | Dummy (no: 0; yes: 1) | 30 | 0.73 | 0.45 | 0 | 1 | Own observations |
| | Left-wing vote share | Votes for left-wing parties§ as pct. of all votes cast in most recent national parliamentary election | 30 | 45.03 | 4.88 | 35.50 | 50.10 | Parliament website |
| | Socialist parties | Number of socialist§ participating in most recent national parliamentary election | 30 | 4.93 | 1.62 | 3 | 9 | Parliament website |
| | Labour union strength | Members of the national Labour Union (LO), millions. | 30 | 1.40 | 0.08 | 1.22 | 1.51 | Danmarks Statistik (Statistisk Tiårsoversigt 1981, 1997, 2007; Statistikbanken online) |
| | Labour conflict | Workdays lost to labour conflicts, number on annual basis | 29 | 362,755.17 | 753,607.71 | 51,300 | 3,173,000 | Danmarks Statistik (Statistisk Tiårsoversigt 1991, 1997, 2007; Nyt fra Danmarks Statistik 2009) |
| | Prosperity | Real GDP per cap., Danish Kroner (constant 1990 prices) | 30 | 215,028.21 | 34,860.65 | 157,726 | 270,403 | IMF World Economic Outlook 2008 |
| | Economic growth | Year-to-year change in real GDP per cap., Danish Kroner (constant 1990 prices) | 29 | 1.86 | 1.66 | -0.93 | 5.20 | IMF World Economic Outlook 2008 |
| | Government size | Total taxes, etc., as pct. of GDP | 30 | 47.65 | 2.37 | 41.60 | 51.00 | Danish Treasury, August 2009 |
| | Fall of the Soviet Union | Dummy (prior to December 1991: 0; after: 1) | 30 | 0.60 | 0.50 | 0 | 1 | Own observations |
| Bandwagon | Participants in May Day demonstrations in Fælledparken, Copenhagen, previous year, number | 29 | 71,206.90 | 62,215.86 | 15,000 | 250,000 | Cf. above. | |
| Trend | Monotonically increasing value | 30 | 15.50 | 8.80 | 1 | 30 | Own calculations | |

§ Social Democrats, Socialist People's Party (SF), Danish Communist Party (DKP), Left-Socialists (VS), Socialist Unity List (EL), Socialist Workers' Party (SAP), Communist Workers' Party (KAP), Marxist-Leninist Party (MLP), Common Course (FK), etc.

Figure 1. Estimated number of participants in Copenhagen May Day demonstrations, 1980-2009.

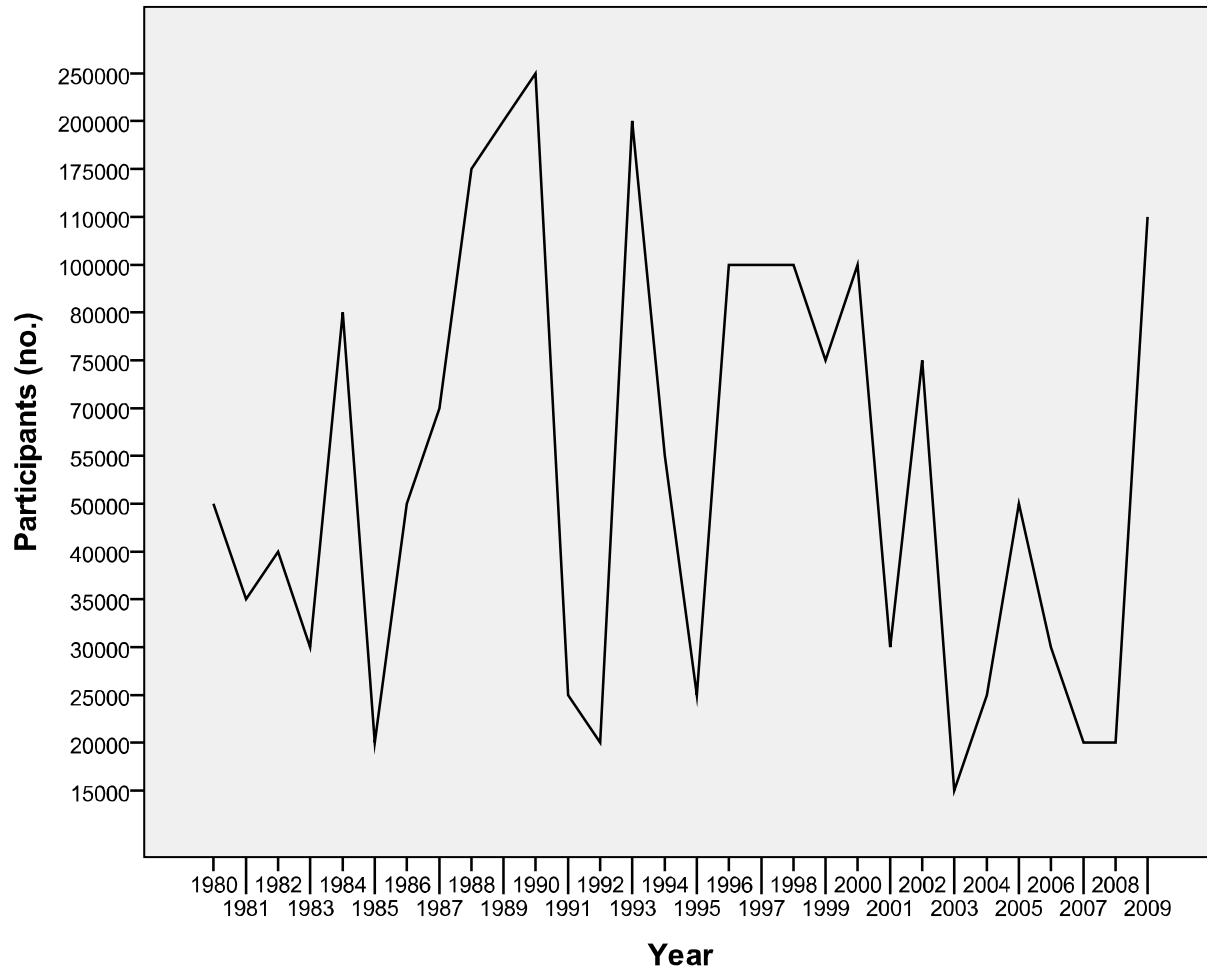


Table 2. Bi-variate correlation analyses, all variables considered: Correlation with no. of participants.

| Variable | Pearson correlation coefficient (significance, 2-tailed) | N |
|---|---|----|
| Good weather (interaction min. temp. * max. temp. * sunshine) | 0.761 (0.000)**** | 30 |
| Temperature, average (max./min.) | 0.653 (0.000)**** | 30 |
| Temperature, max. | 0.644 (0.000)**** | 30 |
| Temperature, min. | 0.561 (0.001)**** | 30 |
| Sunshine | 0.530 (0.003)**** | 30 |
| Rain (dummy) | -0.374 (0.042)*** | 30 |
| Left-wing vote share | 0.297 (0.111) | 30 |
| Bandwagon | 0.295 (0.120) | 29 |
| Economic growth | -0.272 (0.152) | 29 |
| Labour union strength | 0.231 (0.219) | 30 |
| Unemployment | 0.224 (0.243) | 29 |
| Rain (millimetres) | -0.221 (0.241) | 30 |
| Socialist parties | 0.190 (0.314) | 30 |
| Fall of the Soviet Union | -0.174 (0.357) | 30 |
| Government size | 0.158 (0.405) | 30 |
| Prosperity | -0.151 (0.424) | 30 |
| Trend | -0.133 (0.483) | 30 |
| Labour conflict | -0.103 (0.596) | 29 |
| Colour of government | -0.045 (0.813) | 30 |
| Workday | -0.021 (0.912) | 30 |

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$. **** $p < 0.005$.

Figure 2. Correlation between good weather interaction variable (min. temperature * max. temperature * sunshine hours) and estimated number of participants in May Day demonstrations in Copenhagen, 1980-2009.

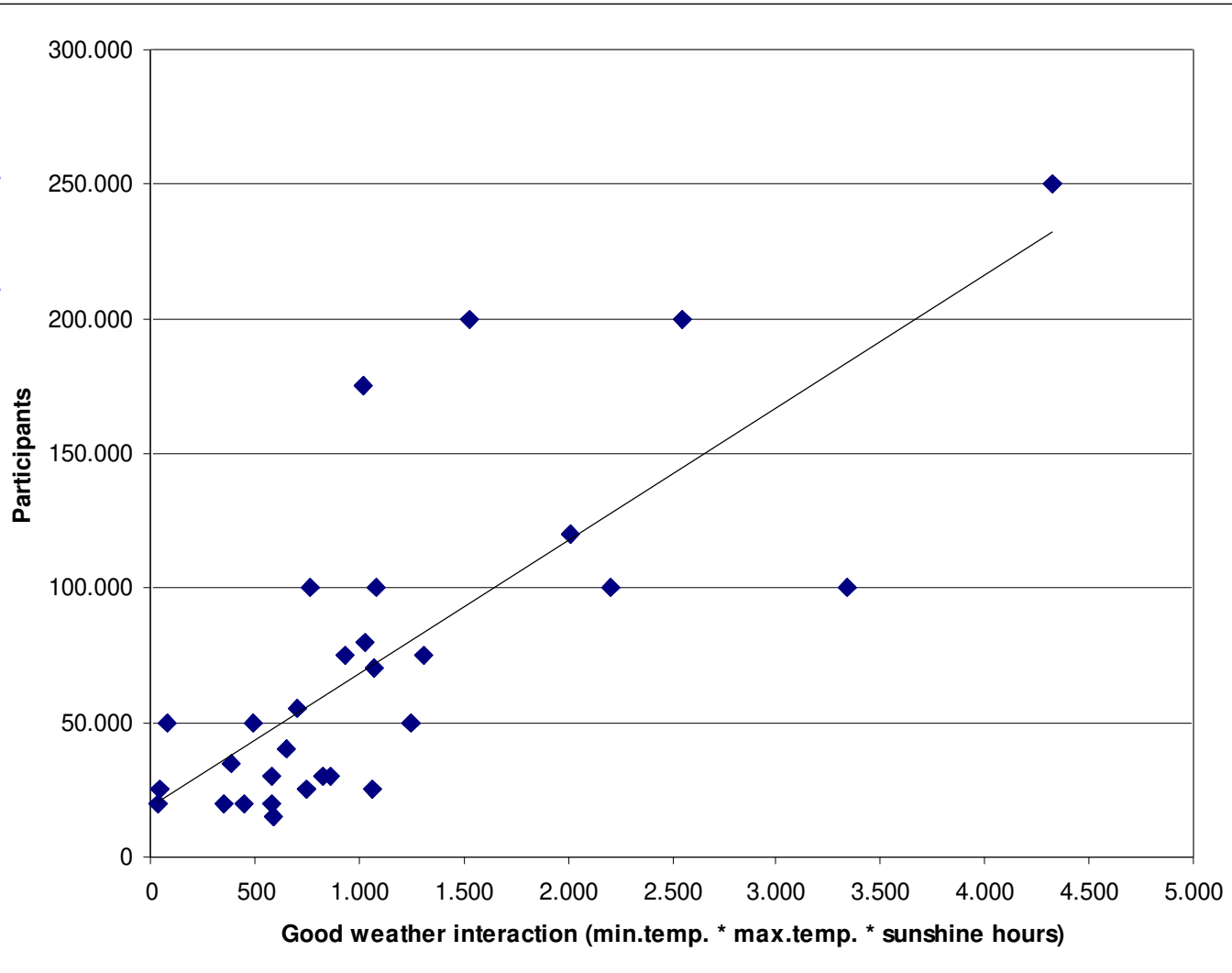


Table 3. OLS multiple regression analyses. Dependent variable: Number of participants in May Day protests in Fælledparken, Copenhagen, 1980-2009. Unstandardized coefficients (t-values).

| Variables | Model 1 (Baseline model) | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 | Model 10 | Model 11 | Model 12 | Model 13 |
|-----------------------------------|--------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|--------------------------|
| Colour of government | 17,441.23 (0.75) | - | 15,545.21 (-0.62) | 15,369.85 (0.62) | 12,977.89 (0.53) | 18,594.59 (0.78) | 9,714.62 (0.42) | 12,658.47 (0.58) | 19,178.32 (0.81) | 21,259.42 (0.96) | 13,130.14 (0.54) | 28,704.82 (1.16) | - |
| Unemployment | 0.24 (1.63) | - | 0.24 (1.56) | 0.28 (1.37) | 0.28* (1.76) | 0.14 (0.65) | 0.09 (0.53) | 0.19 (1.39) | 0.10 (0.43) | 0.28* (1.95) | 0.15 (0.85) | 0.06 (0.27) | 0.23* (1.92) |
| Temperature, average (min/max) | 12,719.73**** (3.44) | 12,068.10**** (3.61) | 12,863.87**** (3.30) | 12,543.88**** (3.28) | 12,679.72**** (3.39) | 12,681.87**** (3.38) | 12,504.43**** (3.48) | 13,384.73**** (3.91) | 12,668.60**** (3.40) | 10,892.88*** (3.00) | 12,238.02**** (3.24) | 11,862.35**** (3.19) | 9,535.85*** (3.05) |
| Sunshine hours | 5,254.41* (2.01) | 4,556.97** (2.22) | 4,926.47 (1.60) | 5,198.93* (1.95) | 4,300.40 (1.46) | 5,425.76* (2.05) | 5,505.55** (2.17) | 5,241.10** (2.18) | 5,461.17* (2.07) | 5,820.97** (2.34) | 5,474.33* (2.07) | 5,547.20** (2.14) | 5,870.25*** (3.12) |
| Workday | 171.43 (0.01) | - | 406.89 (0.02) | 1,568.73 (0.08) | 680.69 (0.04) | -1,918.76 (-0.10) | -4,450.32 (-0.24) | -4,505.52 (-0.26) | -1,898.05 (-0.1) | -3,221.67 (-0.18) | 644.21 (0.03) | -2,091.50 (-0.11) | - |
| Labour union strength | 11,920.75 (0.08) | - | 16,951.91 (0.09) | -31,609.65 (-0.15) | -45,806.22 (-0.26) | 38,053.76 (0.24) | 87,413.37 (0.56) | -81,445.62 (-0.55) | 49,764.08 (0.31) | 51,936.68 (0.35) | 44,182.21 (0.28) | 37,387.63 (0.24) | - |
| Labour conflict | - | - | -0.00 (-0.31) | - | - | - | - | - | - | - | - | - | - |
| Government size | - | - | - | 1,767.19 (0.29) | - | - | - | - | - | - | - | - | 8,481.47* (1.97) |
| Rain (dummy) | - | - | - | - | -17,477.87 (-0.72) | - | - | - | - | - | - | - | - |
| Trend | - | - | - | - | - | -1,009.16 (-0.69) | - | - | - | - | - | - | - |
| Fall of the Soviet Union | - | - | - | - | - | - | -32,939.46 (-1.56) | - | - | - | - | - | -51,187.06** (-2.68) |
| Bandwagon | - | - | - | - | - | - | - | 0.31** (2.21) | - | - | - | - | - |
| Prosperity | - | - | - | - | - | - | - | - | -0.33 (-0.84) | - | - | - | - |
| Economic growth | - | - | - | - | - | - | - | - | - | -9,810.87* (-1.88) | - | - | -10,328.36** (-2.30) |
| Socialist parties | - | - | - | - | - | - | - | - | - | - | 6,414.39 (0.83) | - | - |
| Left-wing vote share | - | - | - | - | - | - | - | - | - | - | - | 3,429.50 (1.25) | - |
| Constant | -182,931.84 (-0.90) | -95,642.98** (-2.71) | -187,174.82 (-0.76) | -211,178.51 (-0.92) | -93,803.81 (-0.39) | -184,219.64 (-0.89) | -232,067.45 (-1.16) | -65,322.74 (-0.33) | -137,842.66 (-0.65) | -211,438.76 (-1.09) | -232,401.74 (-1.09) | -335,741.28 (-1.42) | -476,037.85** (-2.45) |
| N | 29 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| R ² (adjust.) | 0.494 | 0.479 | 0.459 | 0.472 | 0.482 | 0.481 | 0.525 | 0.570 | 0.486 | 0.546 | 0.486 | 0.506 | 0.661 |
| Std. errors | 44,465.64 | 44,427.58 | 46,497.07 | 45,418.74 | 44,966.24 | 45,011.62 | 43,081.03 | 40,980.20 | 44,774.45 | 42,099.81 | 44,791.42 | 43,920.25 | 36,357.14 |
| F-test | 5.55**** | 14.32**** | 4.27*** | 4.57**** | 4.72**** | 4.71**** | 5.14**** | 6.30**** | 4.79**** | 5.81**** | 4.78**** | 5.10**** | 10.12**** |

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$. **** $p < 0.005$.

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