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Economic voting and economic revolutionizing? The economics of incumbency changes in European democracies and revolutionary events in the Arab World

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Economic Voting and Economic Revolutionizing? The Economics of Incumbency Changes in European Democracies and Revolutionary Events in the Arab World

Marie Möller

Abstract While people in democracies can vote their government out when they are discontent with its policies, those in dictatorships cannot do so. They can only attempt to expel the dictator via mass protests or revolutions. Based on a general cause-and-effect mechanism, the author analyzes whether such mass protests are more likely when the economic situation is poor and vote outs are more likely under bad economic conditions. The empirical analysis provides evidence of economic voting in the European democracies. On the other hand, the results for the Arab World show that economic revolutionizing does not occur there. For this reason, the economics of the Arab Spring are analyzed in greater detail. It can be concluded that bad policy is punished in democracies only. Therefore, by using positive analysis, the investigation demonstrates the malfunctioning of the political market in dictatorships.

Keywords Economic Voting, Revolutionary Events, Arab Spring, Political Economy, Political Protest, Degree of Democracy, Dictatorship

JEL-Codes D72, H11, P0

Ökonomische Ursachen von Regierungswechseln in europäischen Demokratien und Revolutionen in der arabischen Welt

Zusammenfassung In diesem Aufsatz wird der Zusammenhang von Abwahl- bzw. Revolutionswahrscheinlichkeit und der ökonomischen Performance untersucht. Basierend auf einem allgemeinen Ursache-Wirkungs-Mechanismus werden die Thesen abgeleitet, dass eine schlechte ökonomische Performance zwar die Abwahlwahrscheinlichkeit erhöht, nicht jedoch die Revolutionswahrscheinlichkeit, da das Zustandekommen einer Revolution davon abhängt, ob das Kollektivgutproblem gelöst werden kann. Die empirische Analyse der europäischen Demokratien zeigt, dass eine schlechte ökonomische Performance vor einem Wahltermin häufiger mit einer Abwahl als mit einer Wiederwahl einhergeht. Die Untersuchung für Revolutionen und Aufstände in der arabischen Welt dagegen zeigt, dass dort kein solcher Zusammenhang besteht, weshalb eine genauere Betrachtung der potentiellen ökonomischen Ursachen des arabischen Frühlings erfolgt. Ausgehend von der Annahme, dass die ökonomische Performance auch ein Maß für die Qualität der Regierungsarbeit ist, liefert die Analyse ein weiteres, nicht normatives Argument für die Überlegenheit von demokratischen Systemen gegenüber nicht-demokratischen, da schlechte Regierungsführung in letzteren nicht unmittelbar bestraft wird.

Schlagwörter Revolution, Abwahl, Arabischer Frühling, Demokratie, Diktatur, Neue politische Ökonomie

JEL-Codes D72, H11, P0

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Westfälische Wilhelms-Universität Münster
CIW – Centrum für Interdisziplinäre Wirtschaftsforschung
Scharnhorststraße 100
D-48151 Münster

Tel: +49-251/83-25329 (Sekretariat)
E-Mail: clementine.kessler@uni-muenster.de
Internet: www.wiwi.uni-muenster.de/ciw

Economic Voting and Economic Revolutionizing?

The Economics of Incumbency Changes in European Democracies and Revolutionary Events in the Arab World

When you think economics, think elections;
When you think elections, think economics.
(Tufte, 1978, p. 65)

1. Introduction

It can be assumed that the dismissal of a football team's trainer is more likely if the team is unsuccessful – below average. Thus, it seems likely that a greater deviation from average success has an impact on the probability of being dismissed. There is surely a causal relationship. Let us now switch to the political market. The economic voter hypothesis (Key 1964), which has been convincingly confirmed by various studies (for an overview, see e.g. Lewis-Beck & Stegmaier, 2000) predicts that if a country's economic situation is good, the citizens will vote for the present government and they will vote against it otherwise. Hence, if a democratic government is unsuccessful[1], it will be voted out. Note that at this point collective action problems are excluded from the initial analysis, namely that there is probably no real individual incentive to cast one's ballot, even if a government does not make a good job (Downs 1957).

By contrast, in non-democratic countries, citizens do not have the option of voting out the dictator and can only resort to mass protests or revolution. The aim of the present paper is to find out whether mass protests or revolutions are more likely when the economic situation is bad, and whether there really is something like "economic revolutionizing". Therefore, the first step is to analyze whether economic voting does exist in European democracies. In other words, are less successful governments more likely to be voted out than governments that perform well in this (fairly homogenous) sample of countries. Given these questions, real Gross Domestic Product per capita data from 1950 to the present and its effect on government changes (on vote outs) was analyzed. Economic voting does indeed exist in this sample. The second step was to investigate the Arab world using the same method and the corresponding data, which revealed that economic revolutionizing does not occur there – the most important result of the paper. These findings are validated when taking a closer look at the Arab Spring and possible economic reasons for the protests. One can therefore conclude that the political

[1] From now on, "successful" and "good performance" refer to the economic situation.

market is more effective in democracies than in dictatorships – another argument for supporting the superiority of democracies, this time by using positive analysis.

The first innovation is a general cause-and-effect mechanism that underlies both vote outs and revolutions. The mechanism consists of a necessary and sufficient condition to be satisfied when a vote out or a revolution occurs. Because it is mainly the sufficient condition that impedes revolutions, it can be assumed that whether revolutionary events occur or not depends on circumstances other than the economic situation. These include the degree of oppression, military power, a revolution occurring in a neighboring country and support by prominent individuals of the opposition (e.g. the Nobel Peace Prize laureate Mohamed el-Baradei in Egypt during the revolutionary action in Egypt in 2011).

The second innovation is, besides the broad new data set, the introduction of the total average deviation (TAD) of the growth trend in the years before elections/protests, as the explanatory variable, instead of the Gross Domestic Product (GDP) or growth rate itself. Accordingly, the log-linear growth trend of real GDP per capita was shifted parallel to its maximum and the deviation of the shifted trend, in other words, the deviation of production potential, was used as the subsequent explanatory variable. The assumption that voters consider the best possible situation when evaluating the prevailing economic situation (Chappell & Veiga, 1998, p. 1) is confirmed by this method. Also new is the binary dependent variable, which only measures instances of deselection or reelection (new president/chancellor or not) or revolution/mass protests or not. In the case of voting-functions, the percentage of the votes for the ruling party or the opposition party is usually regarded as the variable which requires explanation. By using a binary variable, some information gets lost, but in return, I am able to work with a large data set which also includes non-democratic countries where no voting takes place.

The paper is, strictly speaking, not part of the Political Business Cycle literature (Nordhaus, 1975), because changes between different voting periods are examined, but not the changes within each voting periods.

The paper proceeds as follows. The next section provides a short survey of the literature dealing with economic voting and the economic causes of revolutions. Moreover, the general cause-and-effect mechanism is developed and the theoretical hypotheses are presented. The following section contains the description of the data and variables and the results of the empirical analysis are presented. Additionally, the economics of the Arab Spring are analyzed. The final section discusses the research results and concludes.

2. Background

What causes a head of the government to be voted out, how do we find this out and what have others found out so far? What follows is a short overview of the literature that deals with economic voting and with the causes of revolutions. Moreover, a new theoretical approach is developed.

The original microeconomic theory of voting behavior is the Rational-Voter-Hypothesis (Downs, 1957). The Downsian Voter votes for the party which provides him the greatest expected net benefit. The Economic-Voter-Hypothesis is more general and macro-orientated. This theory states that voters have a simple decision rule; if they are satisfied with the performance of the current government, they will vote for it again and if not, they will vote for the opposition. In turn, this means that the probability of a government being voted out of power is supposed to be higher when there is poor economic performance – holding other factors constant. This simple but plausible relationship depends on the condition that voters believe that the government is responsible for economic development, both good and bad (Responsibility-Hypothesis).

Studies that examine economic influences on votes can be divided into two branches. On the one hand, there are popularity functions that measure the popularity of the incumbent party; on the other hand vote functions measure the actual number of votes for the incumbent party on the election day. Both are functions of macroeconomic variables such as the unemployment, inflation or the growth rates. In addition to economic factors, voters also take political factors (domestic and foreign affairs) as well as other factors (scandals) into account (Nannestad & Paldam, 1994). However, political and other factors are sometimes difficult to quantify or measure, which are common reasons for omitting them from analysis or for only including them as dummy variables.

If one uses macroeconomic variables as the explanatory variables, it is necessary to impute sociotropic behavior to the voter. Such behavior means that the voter bases his or her decision on the overall economic situation of the country or a part of it, rather than deciding in accordance with his or her own economic situation (also known as egotropic decision making). Whether the sociotropic assumption makes sense or whether the voter should be better thought of as an egotropic decision maker, depends among other things, on the particular culture. United States (U.S.) citizens, for example, do not tend to blame others if their own economic situation has been deteriorating (Nannestad & Paldam, 1994, p. 228). They do not hold the government responsible for their own misfortune, but rather for the economic situation of the country in general.

By using previous macroeconomic variables as explanatory variables, one must assume that voters vote retrospectively (they impute decision making by extrapolating past developments into the future). Dropping the assumption of retrospective voting and assuming that voting is based on forward-looking expectations instead, leads to a diminishing borderline between ego and sociotropic behavior (Nannestad & Paldam, 1994, p. 225 f.). Moreover, there is a problem with the distribution of information. How can a voter know whether the government's performance is good or bad? Does the press present the situation and does it influence people's views substantially? As Nannestad & Paldam (1994, p. 231 f.) argue, the information problem cannot be solved, so that the only solution is to ignore it and assume a perfect political market in this context.

Most studies on economic voting are based on the election results of one country (generally the U.S.) and there are only a few studies covering more than one country (Lewis-Beck & Stegmaier, 2000, p. 184). One of the early studies on the influence of macroeconomic variables on voting behavior in the U.S. was conducted by Kramer (1971), who introduced the vote function and analyzed 31 elections in the U.S. He identified the growth rate of real income, consumer prices and changes in the unemployment rate as the decisive macroeconomic factors. In his study, the dependent variable is the proportion of votes the president's party gains in congress in a year without an election, compared to one with an election. One result of the regression is that the election results in the period 1896 to 1964 were strongly influenced by the real GDP growth rate. The higher the growth rate, the more votes the incumbent party received. Kramer's work was criticized for disregarding the fact that voters may also make foresighted decisions. Moreover, his approach lacked a microeconomic basis by not considering the behavior of individuals who act as self-interested voters. However, his work started a debate not only on the results and their interpretation, but also on the appropriate statistical procedures (Fair, 1978, p. 159).

All of the first twenty studies on economic voting that are based on Down's concepts of a rational voter, simplified it to the hypothesis that voters hold the government responsible for economic development. They all assumed a positive relationship between economic development and popularity, but, as Mueller (1970) found, the relationship is weaker for high economic performance than for low (grievance asymmetry). The *big two* economic variables (i.e. the variables that are significant) of the vote/popularity function are the unemployment rate and the inflation rate. Sometimes, the real growth rate explains more than the unemployment rate (strongly positively correlated, Okun's law). Lewis-Beck (1988) found that another important factor is the number of parties in the ruling coalition; the more parties, the less clear

the responsibility and thus the less strong the effect of the economy on voting behavior. After all, in all these cases, it is evident that the results of the within-one-nation studies show that economic fluctuations exert an influence on elections.

The results differ from those of cross-national comparisons in which the explanatory variables are seldom significant. Lewis-Beck and Mitchell (1990) found a significant effect, but they only pooled five countries. Paldam (1991) looked at 17 high-income countries and did not find evidence of the economic voting hypothesis. The coefficients for the inflation rate, unemployment rate and GDP growth rate all yield the expected direction, but none is significant. Powell and Whitten (1993) argued that in cross-nation studies, it is necessary to concentrate on the specific political and electoral context. They did just this and the results of their study (100 aggregated elections in 19 industrialized countries) were extremely sensitive to whether the government was held responsible for economic development or not, so that the effects were significant only in countries with a clear allocation of responsibility. Chappell & Veiga (1998) looked at 13 Western European democracies and 136 pooled elections and found, by contrast, that only inflation was significant. In a cross section of 13 European countries for 1994 Anderson (2000) found retrospective and sociotropic economic voting; the effect was even greater when the responsibility, and consequently the accountability, is clearer.
There are also studies on low income countries, in the post-communist societies voting behavior is, for example, strongly influenced by economic developments (see e.g Anderson et al. 2000, Fidrmuc 2000 or Pacek 1994). Pacek & Radcliff (1995) analyzed 52 elections in eight developing countries. The results showed that economic factors are even more important in poor than in rich countries. Wilkin et al. (1997) confirmed this finding. Thus, they concluded, ”Regardless of the complexities of the political context […] voters around the world find a way of translating economic demands into partisan support” (Wilkin, Haller & Norporth, 1997, p. 314).

The question is whether they do likewise in non-democratic countries where there are in fact no voters, but only potential revolutionaries. There are far fewer surveys on what I refer to as economic revolutionizing than on economic voting. One reason is that revolutions are much rarer than vote outs, so that the data sets are much smaller. This is because scientists often conduct case studies, such as on the French revolution (see e.g Skopol 1985), in order to examine causes. Minier (2001) found that the “demand for democracy” increases with per capita income. In the tradition of Lipset (1959), Huntington (1991) and Barro (1996), she investigated whether democracy is a normal good or not, i.e. if more wealth automatically increases the demand for democracy. Her results revealed an increase in the probability of a

democratic movement with increasing GDP. However, the significantly positive effect is only observable up to a per capita income level of approximately $ 5000 a year (Minier, 2001, p. 1002). Focusing on revolutionary activities, there is the deprivation theory of Gurr (1970). He explained revolutionary activities as the result of comparisons between people's actual situation and one situation that would be possible with better or more effective policies.[2] This theory means that a poor economic situation makes a revolution more likely, exactly what I examine in section 3.4.

When examining causes of revolutions and vote outs, it would be helpful to assume a general mechanism that underlies both. I assume the following mechanism as a general cause-and-effect-mechanism (Fig. 1). In the following section the similarities and differences between the conditions relating to a dictatorship or a democracy are explained.

Necessary condition	**Sufficient condition**	**Result/effect**
Cause (social, economic, political factors)	Solution of the collective-action-problem	Vote out or revolution/mass protests

Figure 1: Mechanism in democracies and dictatorships

A sufficient condition for a vote out or a revolution is that collective action (CA) occurs. However, if there is no individual incentive to participate, the CA-problem occurs leading to a social dilemma in which collective and individual rationality diverge. Even if the entire population wishes to get rid of the government/the dictator, this does not automatically lead to individual action. Individual action is only rational when the benefits exceed the costs. In case of a vote out or a revolution, the participation of one individual does not exert a significant effect on the success, but on the other hand, everyone (also non-participants) benefits from the collective good of a new government/successful revolution or vote out. By contrast, the costs of participation only devolve on those who participate. While the costs of casting ones vote are small, the costs of participation in mass protests are high. It is possible to get injured, arrested, tortured or even killed (as in Syria at the time of writing). In democracies, the solution of the CA-problem is solved if one assumes a small selective benefit such as everyone wishing to fulfill his civic duty. The solution relating to revolution-participation is much more problematic, not only because of the higher costs, but also because of the first-mover-problem (see Olsson-Yahouzis, 2010, p. 293 ff.). If the latter could be solved, it would be possible to transform the social dilemma into a coordination problem, whose solution demands a focal

[2] See also Bloch (1986).

point (Schelling, 1980) or coordination.[3] This in turn depends on the dictator's[4] behavior; the greater the oppression, the smaller the chance of overcoming the CA-problem. One can conclude that the sufficient condition for vote outs and mass protests, namely the solution of the CA-problem, is always satisfied in democratic countries (because it is easy to solve it there). On the other hand, it is quite difficult to solve it in dictatorships and so that it could prevent revolutions.

The necessary condition can be assumed as to be revolution or vote-out potential. It exists when people are discontent and it depends, among other factors, positively on inequality, a low degree of freedom, low economic performance, poverty and the unemployment rate. Because the degree of freedom is relatively low in dictatorships, there is always a positive and generally substantial revolution potential and that is why, contrary to the sufficient condition, the necessary condition is almost always satisfied in dictatorships. However, this positive revolution potential only culminates in mass protests when the sufficient condition is satisfied, i.e. when the CA-problem is solved, and that also depends on the behavior of the dictator. If there is a solution to the problem, they then attempt to get rid of the dictator through mass protests, revolutions or by fighting for more rights and institutional reforms. In many countries which are classified as not free, there is positive revolution potential, but no revolution occurs (e.g. China). I believe that in such countries, the sufficient condition is not satisfied, because the regime is able to keep the expected likelihood of punishment sufficiently discouraging and tries everything to impede people in their efforts to coordinate protests. In democracies, on the other hand, solving the CA-problem is much easier because of the low costs. While in dictatorships an occurrence of a revolution depends mostly on whether the CA-problem could be solved, in democracies it depends on the necessary condition, which is for example satisfied when the economic situation is poor. People can vote out a government which does not generate sufficient wealth.

Based on the above considerations and assumptions, the probability *P* of a revolution or a vote out in country *c* in year *i* can be expressed as (1), in which the TAD (the total average deviation of the real GDP per capita from the shifted trend, see Section 3.1. for the calculation) is a measure of the economic performance.

$$(1) \qquad P_{ci} = \beta_0 + \beta_1 TAD_{ci} + \boldsymbol{\beta}_2 \boldsymbol{z}_{ci}$$

[3] If thousands of people are at the same place at the same time, the probability of being punished and therefore the costs diminish (Möller, 2011).
[4] The dictator need not be a single person, it could also be an elite group.

The higher the TAD, the greater the gap between the current economic situation and the best possible one, so that a high TAD means bad economic performance. $\bar{z}$ is a vector of other variables that influence a voting out or a revolution (such as inequality, freedom, scandals). Unfortunately, β_2 could not be calculated, because of missing variables as explained below. Therefore, the estimation equation would be (2).

$$P_{ci} = \beta_0 + \beta_1 TAD_{ci} + \hat{u}_{ci} \qquad (2)$$

Because the sufficient condition, namely the solution of the CA-problem, is always satisfied in democracies, the TAD has a positive impact on the vote-out probability. On the other hand, in dictatorships, the sufficient condition is seldom satisfied, so that the TAD has no significant effect on the probability of a revolution or protests occurring. Thus, the hypotheses are H1 and H2, which are verified in the next section.

Hypothesis H1: $\beta_1 > 0$ in the European democracy sample.

Hypothesis H2: $\beta_1 = 0$ in the Arab World sample.

3. Analysis

In order to determine whether economic voting and economic revolutionizing do really exist, I examine two regionally confined areas, the democratic European countries and the mostly[5] non-democratic Arab World. The next section deals with the data, the variables and the empirical analysis. The final part of this section refers to the Arab Spring.

3.1. Data and Variables

How does one define success? The first important problem to be solved is how to measure the success of a government. What is considered as good government? What variables are directly or indirectly influenced by its policies? There are several variables which meaningfully measure the economic situation, such as the unemployment rate, the inflation rate or GDP. I have selected the latter real GDP per capita (rGDPc). There are various reasons for using rGDPc as the explanatory variable. The main reason is that GDP is available for almost every country, even for non-democratic ones, and for long, retroactive time period. Furthermore, the measure is a good indicator of people's overall economic situation. Thirdly, it is strongly influenced by the quality of the government's economic policy (even if lagged), or at least, I assume this to be the case (responsibility hypothesis, see, for instance, Nannestad

[5] All 24 Arab countries are classified as either "not free" or "partly free" (Freedom House, 2011).

& Paldam, 1994). The data on GDP is collected from the *Penn World Tables* from 1950 to 2009 (Heston, Summers & Aten, 2011).

In order to test the first hypothesis, I focused the research on European democracies, entailing 34 countries. I argue that the European countries can be regarded as homogenous (at least to some extend) and that the economic-voting effect might therefore be fairly consistent. Former socialist countries such as Poland are included in the sample only from 1990 onwards. In testing the first hypothesis, it is necessary that elections take place. I define the dependent variable as 0=reelection or 1=deselection. A deselection is defined as a change of the head of government, on the condition that it belongs to another party, that is, other than the previous one. Accordingly a change in the ruling coalition, as occurred in Germany in 2009, when the ruling coalition changed from CDU and SPD to CDU and FDP and Angela Merkel remained chancellor, is not defined as a vote out. If the vote out is caused by a vote of no confidence, I designate this as "1". One can argue that a vote of no confidence is not exactly the people's vote and I agree with this objection. However, I also believe that parliament should function as the people's agent and therefore, it could possibly be considered as a vote out. The sample consists of 359 elections: 202 reelections and 157 vote outs.[6]

In order to test the second hypothesis, I consider the Arab World. The Arab World contains 24 countries when categorized by language.[7] Again, I assume that these countries are homogenous in at least some respects. Therefore, I exclude Israel from the data set, because of the two-in-one-state difficulty. Excluding Israel from the data set yields 23 Arab countries for study. The binary variable is a revolutionary event (=1) or no revolutionary event (=0), instead of a reelection and vote out. A revolutionary event is defined as a mass protest against a dictator (against the ruling party) or an upheaval that is not arranged or initiated by another country. This definition does not apply, for example, to the overthrow of Sadam Hussein in 2003 by the U.S. The sample consists of 172 observations: 147 with no events and 25 with a revolutionary event. [8]

The rGDPc is a variable that is non-stationary, so that it must be transformed. I take its natural logarithm into account, so that the stochastic trend is eliminated. In order to eliminate the deterministic trend as well, I use the deviation of the log(rGDPc) from the log-linear trend

[6] The dates on which the elections took place come from "Parties and Elections in Europe" (Nordsiek, 2011).
[7] Another possibility would be a categorization according to a political criterion, that is to say, to take all member states of the Arab League. Compared to a categorization according to the language criterion, one obtains the same countries except for Chad, Eritrea and Israel (the Palestinian Territories are a member state of the Arab League).
[8] The data to 2007 comes from the Political Instability Task Force (PITF), which belongs to the *Polity IV* Project of the *Centers for Global Policy, George Mason University*. For the Protests' data in 2010/2011; see Hanelt & Bauer (2011).

of the rGDPc. Moreover, I shift the trend in parallel to its maximum for each country to avoid positive and negative deviation. As a result I obtain the country-specific total deviation (TD) of the shifted trend for each country for each year. As elections do not take place at the same time in different countries, a panel-estimation was not possible (for this reason, I could not use country or time fixed effects). In order to determine whether the GDP in the years before elections has an impact on the probability of being reelected, I built the average of the TD in the years before an election. For the denotation, see Table 1.

i	election dates (years)
i+1	year in which new government is in office
e	event years (revolutionary action, mass protests)
c	country
y_{tc}	log(rGDPc)
$\bar{y}_c$	country-specific linear trend of the log(rGDPc)
$\bar{\bar{y}}_c$	country-specific linear trend of the log(rGDPc) shifted parallel to its maximum

Table 1: Definitions of the variables

See (3) for the total average deviation (TAD) of the shifted trend in the years before the election. Note that if the voting period is shorter than four years, I use the average of the years before, including the first year of the deselected (or reelected) government.

$$TAD: TAD_i \equiv \bar{\bar{y}}_c - \frac{1}{4}\sum_{a=i}^{a=i-3} y_a \tag{3}$$

Whether a reelection or a vote out takes place, is denoted as a dummy-vector, see (4). x_i displays the vote-out potential, see (1) and (2).

$$P: x_i \equiv \left\{ \begin{array}{l} 1 \;\; if: deselection\ in\ i \\ 0 \;\; if: reelection\ in\ i \end{array} \right\} \tag{4}$$

Analogous to this proceeding, I do the same for the non-democratic countries, where two important problems arise. The first is that there are no elections and therefore no vote outs. As mentioned above, I perceive mass protests or revolutionary events as vote outs, because mass protests against the dictator act as a signal of dissatisfaction (signal of potential deselection) with the government (here: dictator). The second problem is that the reference years, in which no protests take place, are not as easy to define as the reelection years. I therefore proceed as

follows. If there was a mass protest in, for example, 1960 in country C (and only in C), I define this as a "1". As the reference group ("0"), I use all other countries of the Arab world in the year 1960. There were 25 cases of mass protests of which 16 belong to the Arab Spring.[9] The calculation of the TAD is analogous to the proceeding regarding the European democracies (see Table 1 for definitions) and is denoted as follows:

$$TAD: TAD_e \equiv \bar{\bar{y}}_c - \frac{1}{4}\sum_{a=e}^{a=e-3} y_a \tag{5}$$

$$P: x_e \equiv \begin{Bmatrix} 1 \;\; if: revolution\ in\ e \\ 0 \;\; if: no\ revolution\ in\ e \end{Bmatrix} \tag{6}$$

The following problem also arises. If, in one country, the deviation of the trend is large because of a high peak, the deviations from the trend are always high, and on average higher than in other countries. Thus, if in one country, 0.2 is the highest deviation, it could be 0.9 in another. Pooling these variables may lead to incorrect or biased results. One way of solving this problem is to use the percentage decrease or increase in the (average) deviation of the shifted trend. Good performance means that the deviation of the trend is lower than before. Conversely, the government performs badly when the deviation increases. An advantage of this method is that the government could perform well when the outcome is bad, i.e. the deviation is high in this case and they had bad starting conditions. A disadvantage of this method is that one must assume that the potential voters rate the government for a change and not for the situation itself. This does not seem to be a realistic view. Another method might be the division of the average deviation by the maximum average deviation, in order to place the variables between one and zero (in order to normalize the explanatory variable). However, I do not think that people are really able to weight the deviation. The potential solutions to the problem described above are even worse than the problem itself, so that I use the TAD (see (3) and (5)). Here, I do not assume that the people base their voting decision on the current growth-rate or on anything similar; I merely assume that the GDP is a good indicator of many different developments, the economic situation and so on.

3.2. Results for European democracies

In order to determine whether the probability of being voted out is affected by the TAD, I considered different models and estimation methods. Because the dependent variable

[9] The calculation of the TAD for the 16 cases that belong to the Arab Spring differs slightly (because the GDP data for 2010 and 2011 are not available) and is denoted as $TAD: y_e \equiv \bar{\bar{y}}_c - \frac{1}{2}\sum_{a=e-2}^{a=e-3} y_a$.

is binary, it is obvious that a *Logit*-Model[10] is the right choice. The results (Table 2, Column 2) indicate a positive effect of the TAD on the probability of being voted out ($\hat{\beta}_1 = 2.05$).[11] The effect is significant at the 1 percent level. McFadden's R-squared is fairly small, indicating omitted variables. While omitted variables in OLS[12]-estimations only constitute a problem when correlated with the explanatory variables, in *Logit*-Models, there is a problem even when they do not correlate. As a result, the estimators are biased and inconsistent. One solution to this problem is to add more explanatory variables, but these are not available for the Arab World sample. Therefore, in order to avoid the missing variable problem, I use a *Linear Probability*-Model (LPM) for the estimation, so again, the dependent variable is a binary variable. The results are also shown in Table 2 (Column 3). One can see that the TAD has a positive significant effect on the voting-out probability at a one percent level ($\hat{\beta}_1 = 0.5$). Because the model would be heteroscedastic (the variance of a binary variable is not constant, but dependent on the explanatory variable) it is necessary to use *White* error terms to avoid inefficiency and biased standard errors.

Sample: European Democracies		
Dependent Variable	Model – Method	
VOTE OUT (binary variable)	**ML** – Binary Logit (Quadratic hill climbing)	**LPM** – LS (White Heteroskedasticity-Consistent Standard Errors & Covariance)
TAD	2.05 *** [0.765]	0.5 *** [0.178]
Constant	-0.67 *** [0.176]	0.35 *** [0.041]
(Mc-Fadden) R^2	0.015	0.02
Akaike/Schwarz-criterion	1.36/1.38	1.43/1.45
LR-Statistic/DW-Statistic	7.42/	/1.8
S.E. of regression	/	0.49
Prob (F-statistic)	/	0.00
Obs. with dep.=0/1 total Obs.	202/157 359	202/157 359

*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level

Table 2: The effect of the TAD on the probability of vote out

In an LPM model, the predicted likelihood could be below zero or above one. Furthermore, it is not realistic to assume a linear relationship, because this would imply that an increase in deviation from the trend by the same amount, has the same effect on the probability of being voted out, regardless of whether it describes a ten percent increase at a high or a low level.

[10] I could not use a *Probit*-Model, because this would require a normally distributed explanatory variable and this is not the case.
[11] Using the relative average deviation (RAD) or the percanted change of the deviation (PAD), the effect is insignificant in both estimations.
[12] *Ordinary Least Squared*

Because of these problems, it is not possible to interpret the coefficients, but one can validly state that there is a significant effect. The higher the deviation, the more likely a vote out.
In order to establish the dimension of the effect, I change the direction of the estimation, so that the question would be: Is the TAD significantly influenced by the dummy-vector defined in (4)? See (7) for the estimation equation and Table 3 for the corresponding output.

$$TAD_i = c + \beta_v x_i + \hat{u}_i \tag{7}$$

Sample: European Democracies				
Dependent Variable:	Method	Method	Dependent Variable:	Method
TAD	LS	LS	LOGrGDPc	LS
Vote out (binary)	0.04*** [0.015]	0.028 *** [0.01]	Vote out (binary)	-0.028 * [0.015]
Constant	0.16 *** [0.01]	0.037*** [0.009]	Constant	0.422 *** [0.128]
TAD(-1)	/	0.724*** [0.035]	LOGrGDPc(-1)	0.96 *** [0.013]
R^2	0.02	0.55	R^2	0.94
Akaike/Schwarz-criterion	-1.067/-1.045	-1.86/-1.83	Akaike/Schwarz-criterion	-1.1/-1.07
S.E. of regression	0.14	0.095	S.E. of regression	0.139
Prob (F-statistic)	0.01	0.00	Prob (F-statistic)	0.00
DW-Statistic	0.55	1.79	DW-Statistic	2.08

*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level

Table 3: Relationship between deselection probability and TAD/GDP

It is evident that if a vote out takes place, the TAD is 0.04 higher compared to the TAD before a reelection. This effect is significant at the one percent level. The intercept is also significantly different from zero. However, as one can also see, the value of the Durbin-Watson (DW) statistic is close to zero, indicating positive autocorrelation. This is not surprising, because the depended variable, the TAD, includes business cycles, so that TAD_i is dependent of the TAD_{i-1} and so on. The estimators still remain unbiased and consistent, but they are no longer efficient, and also, the standard errors are biased. In order to solve the serial correlation problem, I add the lagged TAD (TAD(-1)) and exclude the cases in which the TAD(-1) refers to countries other than the TAD. The results are shown in Table 3 (Column 3). The R-squared is much higher when adding the lagged TAD, but still quite low (0.55). Moreover, the Durbin-Watson statistic is 1.79, so that one cannot reject the 0-Hypothesis at the five percent level. Assuming that the voters are myopic and that they base their decision on the actual economic situation and not on a possible situation, one can also estimate whether the log(rGDPc) is sig-

nificantly different in the election year, irrespective of whether a reelection or a deselection takes place (Table 3, Column 5) To control for serial correlation, it is necessary to add the log(rGDPc(-1)). The Durbin-Watson statistic no longer indicates serial correlation. The R-squared is almost one, which is explained mainly by the lagged GDP. However, it is also true that the log(rGDPc) is significantly (at the 10 percent level) lower before a reelection, compared to the situation in which a deselection takes place.

When comparing the reelection sample with the deselection sample, the same result occurs; the mean of the TAD before a vote out is 0.21. This is much higher than the mean of the TAD before a reelection, which is 0.16. The non-parametric Wilcoxon test (test for equality of the medians) rejects the 0-Hypothesis at the 10 percent level. Moreover, the mean of the rGDPc in reelection-years is higher than the rGDPc in the deselection-years (20.539 > 17.217).

Therefore one can safely state that there is a statistically significant difference between the two samples, and indeed a kind of economic voting in the European country sample, namely that a high deviation of production potential reduces the reelection chances or that good performance measured by the rGDPc increases the reelection chances. Is there a similar pattern in the non-democratic countries, specifically in the Arab world?

3.3. Results for the Arab World

The *Logit*-estimation of the Arab World sample indicates that there is no economic revolutionizing, because the TAD coefficient is not significantly unequal to zero (see Table 4, Column 2). Because of the omitted variable problem mentioned above, I applied an LPM estimation with *White* standard errors, which also indicates no effect (Table 4, Column 3).

Sample: Arab World		
Dependent Variable:	Model – Method	
REVOLUTIONARY EVENT (binary variable)	**ML** – Binary Logit (Quadratic hill climbing)	**LPM** – LS (White Heteroskedasticity-Consistent Standard Errors & Covariance)
TAD	-1.262 [0.915]	-0.104 [0.107]
Constant	-1.341 *** [0.353]	0.186 *** [0.051]
(Mc-Fadden) R^2	0.018	0.01
Akaike/Schwarz-criterion	0.84/0.87	0.76/0.8
LR-Statistic/DW-Statistic	2.53/	/2.19
S.E. of regression	/	0.35
Prob (F-statistic)	/	0.16
Obs. with dep.=0/1 total Obs.	147/25 172	147/25 172

*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level

Table 4: The effect of the TAD on the probability of a revolutionary event

To be sure that there is no effect, I estimate the other way round, that is, estimation equation (8), see Table 5. The DW-statistics indicate serial correlation (Column 2), so that I add the lagged TAD, see Table 5 (Column 3). The serial correlation problem has been solved and the coefficient of the protest dummy-vector remains insignificant, even when using the rGDPc instead of the TAD (Table 5, Column 5). The non-parametric Wilcoxon test also yields no statistically significant difference between the TAD, when comparing the two samples.

$$TAD_e = c + \beta_r x_e + \hat{u}_e \tag{8}$$

Sample: Arab World				
Dependent Variable:	Method		Dependent Variable:	Method
TAD	LS		LOGrGDPc	LS
Revolutionary Event (binary)	-0.11 [0.079]	-0.09 [0.078]	Revolutionary Event (binary)	-155.288 [569.836]
Constant	0.405 *** [0.03]	0.322*** [0.043]	Constant	-244.513 [172.064]
TAD(-1)	/	0.208*** [0.075]	LOGrGDPc(-1)	1.067 *** [0.011]
R^2	0.01	0.054	R^2	0.99
Akaike/Schwarz-criterion	0.822/0.859	0.79/0.85	Akaike/Schwarz-criterion	17.67/17.73
S.E. of regression	0.36	0.36	S.E. of regression	1645.935
Prob (F-statistic)	0.16	0.01	Prob (F-statistic)	0.00
DW-Statistic	1.60	2.03	DW-Statistic	1.79

*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level

Table 5: Relationship between revolutionary probability and TAD/GDP

If there is no economic revolutionizing, then the question would be: What other reasons are there to start a revolution (revolutionary event, protests)? Why do people in the Arab World demonstrate in some countries and in others not? To find answers to these questions and to identify protest (or social unrest) factors, I consider at the Arab world data and some variables of interest.

3.4. The Arab Spring

In the Arab World, in 16 of the 23 countries, there were (or still are) protests against the government or at least there were (are) protests in which demonstrators encourage political reforms. These protests started at the end of 2010 in Tunisia, moved on to Egypt and

spread to large parts of the Arab World. These events referred to as the Arab Spring[13]. I took a closer look at the data to see if the countries where protests took place differ from those where no protests occurred. Figure 2 shows the rGDPc in the 23 countries. The upper line displays countries where protests took/take place (P-Subgroup) and the lower line, countries where no protests took/take place (NP-Subgroup). It is evident, that there were no protests in particularly rich or particularly poor countries. The P-Subgroup, by contrast, reveals an essentially middle position, regarding the rGDPc.

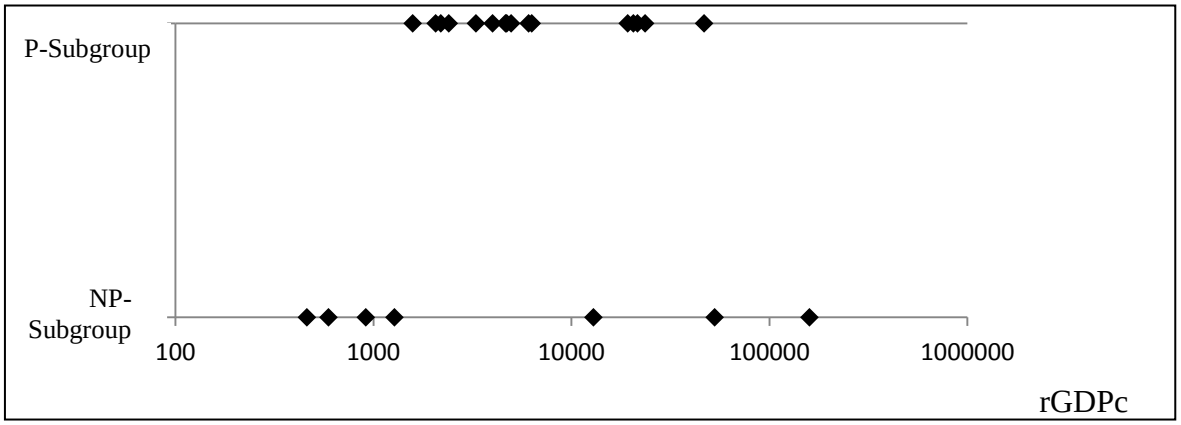

Figure 2: rGDPc in countries with and without protests

A particular interesting fact is that Qatar, the United Arab Emirates and Lebanon are the rich countries in the NP-subgroup. This is the case even by comparison to western democracies, and it is mainly because they produce oil. The average rGDPc in these three countries in 2009 is approximately $ 75.000 (int., PPP), which is very high. These figures are nearly a hundred times higher than the average rGDPc ($ 800, int., PPP) of the other four countries of the NP-Subgroup (Somalia, Eritrea, Chad and the Comoros). One can therefore assume that people in the latter four countries are unable even to fulfill their basic needs. Hence, it is implausible that they are able to organize themselves for political protests. The present appalling hunger crisis in the horn of Africa supports this assumption. On the other hand, in extremely rich countries, people are economically satisfied, so that they are possibly not interested in fighting for institutional reforms. However, that would only be the case when most of the people benefit from the high rGDPc. To make a statement about the income distribution, the Gini-Index is required. However, for the NP-Subgroup the Gini-Index is not available, except for Chad and the Comoros. In Chad, the Gini-Index is approximately 0.4, which is very similar to the P-Subgroup (the smallest Gini-Index in the P-Subgroup is 0.321 for Egypt, and the highest is 0.409 for Morocco). In the Comoros, by contrast, the Gini-Index is 0.643, which is extremely

[13] The term "Arab Spring" goes back to the Prague Spring in 1968.

high, indicating that the income (or wealth) of the society is very unequally distributed. After all, one cannot validly state that the two subgroups, protest-countries and no-protest-countries, differ from each other in terms of the Gini-Index.

Another starting point for explaining the occurrence of protests could be the degree of democracy. Is it especially low in countries where people went out on the streets? In the P-Subgroup, the Freedom-House-Indicator is on average 5.59 and in the NP-Subgroup 5.57. The Polity IV democracy indicator is quite similar in the two samples also (the higher the index, the more democratic the country, see Table A1 in the appendix). Moreover, a combination of the rGDPc and the degree of democracy does not indicate any relationship, as Figure 3 shows. The NP-Subgroup contains rich or poor strongly authoritarian countries as well as rich or poor strongly democratic countries.

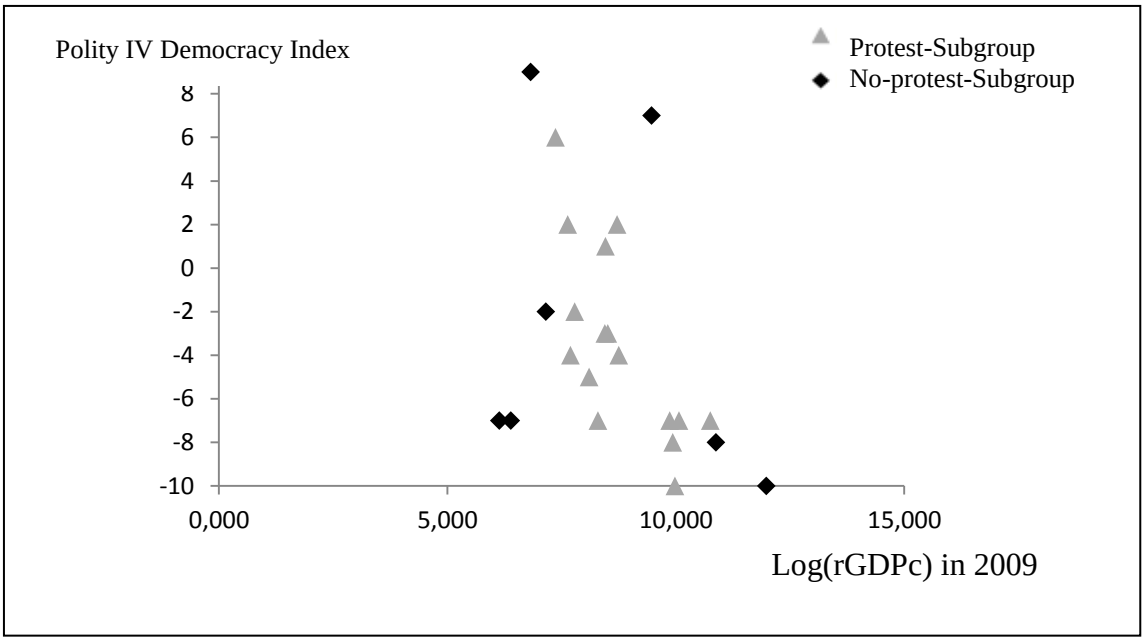

Figure 3: rGDPc and the degree of democracy in the Arab World

The comparison of all other considered variables (e.g. the unemployment rate, inflation rate, Human Development Index) does not deliver any explanation of protest occurrence. Sometimes, it is conditioned by the missing data. After all, some reasons for the "Arab awakening" were found in the literature as follows.

The generally "low coverage, quality and accessibility of data" in the Arab countries makes it difficult to examine economic causes of the protests, as Breisinger et al. (2011, p.1) mention. Nevertheless, they do say something about "the potential role of economics in the ongoing uprisings" (p.1). They first identified an increase in dissatisfaction with living stan-

dards in at least 13 of 18 Arab countries.[14] A relatively high increase in dissatisfaction with living standards could be observed in Egypt, for example which is also the country with the largest number of dissatisfied people in absolute terms in the Arab World. On the other hand, in Tunisia, where the protests had started, dissatisfaction with living standards has decreased over the last few years. However, I do not believe this yields explanation of the protests. Food security is the next issue that Breisinger et al. (2011) considered. They observed a decline in food security in most Arab countries, which goes hand in hand with the general increase in food prices. They assumed that declining food security and declining satisfaction with living standards both played decisive roles. Besides these subjective indicators, they also looked at objective factors. Despite high growth rates and poverty reduction between 1990 and 2010, especially between 2005 and 2010, the child malnutrition rate and the youth unemployment rate increased (from 20 to 30 percent, and from 20 to 35 percent). When poverty reduction is not successful regarding child malnutrition, it is referred to as "Arab Poverty-Nutrition Puzzle" (Breisinger et al., 2001, p. 2). If this is the case for every Arab country, we do not consider it a reason for the existence of protests in some countries and not in others.

Another cited factor is a high youth unemployment rate. This can be traced back to the "Arab youth bulge". This means that approximately 20 percent of the population in the Middle East and North African Region are between 15 and 24 years old (Assaad & Roudi-Fahimi, 2007, p. 1). While in developed countries, a third of the population is under the age of 25, in the Arab Region the figure is 54 percent (Mirkin, 2010, p. 11). Many critics in the literature hold the "youth bulge" responsible for the poor economic situation and for conflicts in general (see e.g. Urdal, 2004). However, I argue that the "youth bulge" could only explain the protests, if it is observed in the countries where protest occurred. This is not the case, as a simple example documents. The youngest country in the Arab World is Somalia, with a median age of 17.6 years and 64 percent of the population under 25 years (Mirkin, 2010, p. 11 and p. 33) and yet, Somalia is one of the countries where no protests took place. On the other hand, in the rich countries of the NP-Subgroup, the population is not as young as in the rest of the Arab World. In Qatar, only 34 percent and in the United Arab Emirates, only 31 percent are under the age of 25, which is even less than in the rest of the world. This fact supports the thesis that the "youth bulge" had an impact on the outbreak of the protests and therefore, that "economic revolutionizing", or "economic protesting" in general, does exist. Yet, if economic reasons are the only ones explaining why people in countries with authoritarian regimes demonstrate for democracy, one has to observe revolutions in many other countries. For example,

[14] The data is available for only 18 countries.

North Korea and Turkmenistan are at the lower end of the democracy scale and both have a relatively small rGDPc. However, there is no revolution. As Tullock (1971) pointed out, there is no individual incentive to demonstrate, as long as the potential improvements remain a public good. As I claimed elsewhere (Möller, 2011), the CA-problem could be transformed into a coordination problem that can be solved when the risk of punishment for organizing protests is sufficiently low. By using the internet to organize protests, the risk is very low. Regarding the Arab countries, the proportion of internet users in the poor countries of the NP-Subgroup is very low (Somalia: 1.1 percent, Chad: 1.2 percent, the Comoros: 3.6 percent, and Eritrea: 4.1 percent). By contrast, the proportion of internet users in the P-Subgroup is much higher (18 percent on average). This finding supports the thesis I proposed.

4. Conclusion

This paper introduces a general cause-and-effect mechanism for vote outs and revolutions, which consists of a necessary and a sufficient condition. This mechanism is confirmed and supported by the data. Because the sufficient condition (namely the solution of the CA-problem) is always satisfied in democracies, the probability of a deselection depends on economic performance. I analyzed whether the total average deviation of the rGDPc from the production potential in the years before an election has an impact on the reelection probability. The empirical results reveal that it does have an impact; the greater the deviation (i.e. the worse the economic situation), the more likely is a vote out. This statement applies to the European democracies, which are the countries I considered. Hence, I have found significant support of the existence of economic voting.

In dictatorships, by contrast, it is the sufficient condition that prevents revolutions. For this reason, the total average deviation should have no effect on the likelihood of a revolution. The analysis of the Arab World indeed shows that the probability of protests or revolutionary events is not influenced by the total average deviation of the rGDPc from the production potential. Thus, I find no evidence for economic revolutionizing in the Arab World sample.
Moreover, a more detailed analysis of the Arab Spring shows that economic reasons are not the only ones for the protests that occurred in many Arab countries. Besides economic causes, other factors, such as internet access[15], also play a decisive role. If not, people in every other authoritarian and poor country would sooner or later take to the streets.

One should rather examine the influence of the secret service and take the degree of repression and the population structure into account. Unfortunately, a broad analysis would

[15] Because the internet might provide a solution for the coordination problem.

acquire extensive data, which is not available. In determining which factors cause political protest, it would be useful to take a closer look at the conditions in countries like Russia, China or smaller countries in this region (Uzbekistan, Turkmenistan and so on).

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Appendix

No-Protest-Subgroup		**Protest-Subgroup**	
country	**Index**	**Index**	**country**
Chad	-2	2	Algeria
Comoros	9	-7	Bahrain
Eritrea	-7	2	Djibouti
Lebanon	7	-3	Egypt
Qatar	-10	1	Iraq
Somalia	-7	-3	Jordan
United Arab Emirates	-8	-7	Kuwait
		-7	Libya
		-5	Mauretanien
		6	Morocco
		-8	Oman
		-10	Saudi Arabia
		-4	Sudan
		-7	Syria
		-4	Tunisia
		-2	Yemen
Mean	**-2,571429**	**-1,428571**	**Mean**

Table A1: Polity IV Democracy Index in 2009 in the Arab World

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CIW – Centrum für Interdisziplinäre Wirtschaftsforschung
Scharnhorststr. 100
D-48151 Münster

Tel: +49-251/83-25329
Fax: +49-251/83-28429

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