Determinants of the Emergence (and Success) of Regime Changes – Theory and Empirical Findings (not only) for the Arab Spring

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Abstract

In our paper, we contribute to the ongoing debate on regime change and root causes of revolutions in particular with a view on the so-called "Arab Spring" and its further challenges. We first develop a theoretical approach which – by focussing on the role of demographic developments and the relevance of migration opportunities – helps to explain why some countries end up with a (successful) regime change while others do not. Second, we test our hypotheses empirically, based on new data-set which covers 92 countries for the period from 1986 to 2005. Based on the results, we discuss in how far a high "youth pressure", associated with missing migration opportunities work as reasons or at least triggers for regime changes as well as for the medium- and long-run success of revolutions (and therefore also for the current revolutions in the Middle East and North Africa), before we develop some policy recommendations.

1.   Introduction

Within the last two decades, a large number of dictatorships, in particular in Central and Eastern Europe (CEE) and currently in the Middle East and North Africa were hit by revolutions or regime transformations which changed the political system – towards more democracy – as well as the economic system towards a more market-oriented economy. The consequences of these regime changes are diverse – while some countries established democracies and market-oriented institutions, other countries "did not embrace democracy, but undertook significant economic reforms and grew, in China's case spectacularly" (Shleifer et al. 2003, p. 2). Empirical data like the Polity IV project support this observation strongly. But, generally spoken, the link between democracy and economic growth and/or welfare is not unquestioned since the early contributions of Schumpeter (1942) about capitalism, socialism, and democracy

Figure 1: Global Trends in Governance 1800-2011
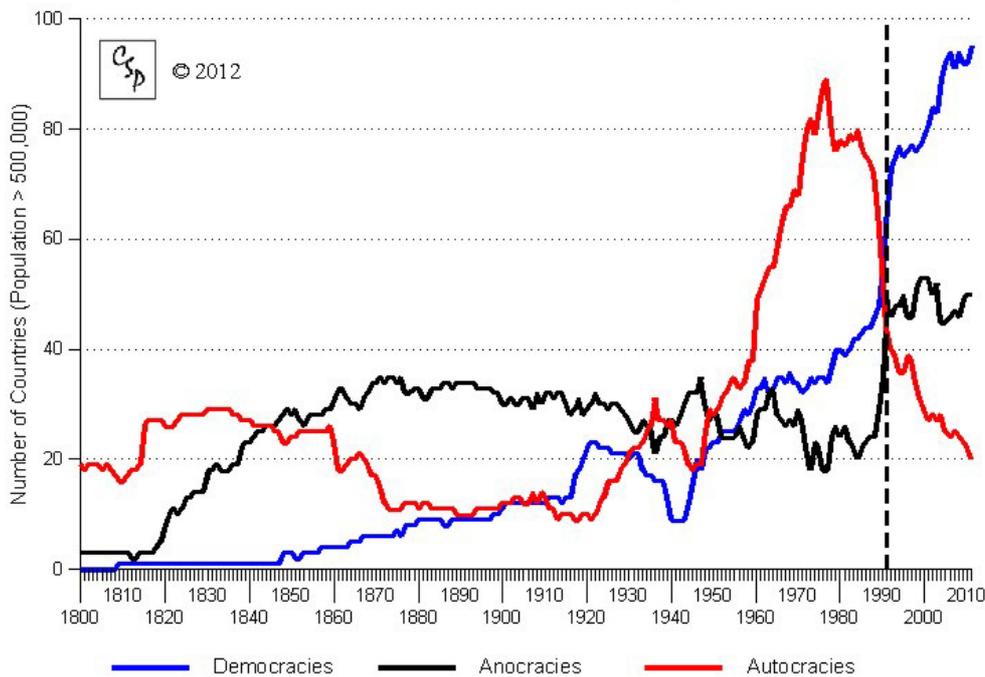

Source: PolityIV-Project 2013-06-26

Explanation: For this figure, following the definition of the PolityIV-Project, a country is defined as being a democracy if citizens can participate equally in the development and creation of laws, an autocracy is a system where power is concentrated in the hands of only one individual, whose decisions are not subject systematic mechanisms of

popular control. An anocracy is a regime where power is distributed amongst several elite groups who are competing for power, it is somewhat situated between an autocracy and a democracy.

In this context, several questions arise: why do radical regime changes or revolutions happen in some states, but not in others? Which factors do contribute to a "successful" regime change in the sense of increasing economic wealth of the people and/or the emergence of sound political institutions and the transfer of democratic structures to these countries, which are sustainable and remain above pre-transition level, while in other countries the quality of the political environment (and sometimes also the economic conditions) decreases (figure 2 for some evidence of CEE)? To put it very short: Are there new insights and aspects to Tullock's (1974) famous contribution about an economic theory of revolution? Is there a general theory of revolution or is it a case by case evidence of successful regime changes – or failures?

A wide array of literature exist which targets these questions, providing explanations as e.g. the important role of country-specific structural factors, or the speed of the post-revolution transition processes. The faster institutions change, the better it is for the long-term growth of the respective country. In addition, for the formerly socialist countries of the CEE, an additional set of explanations exists – the time a country spent under socialism and the dependency of resource-rents seems to matter in this context. In addition to these and other explanations, we develop and test a set of explanations, which may be able to explain the emergence *per se* and success of regime changes (in the sense of long-lasting democratic transition) within the last three decades, and may also give some insight into decisive factors for the current situation of the countries in the Middle East and North Africa (MENA), which are affected by the ongoing "Arab Spring" (see also Schomaker and Wentzel 2011).

Figure 2: Institutional Quality after Revolutionary Event/Begin of Transition Process
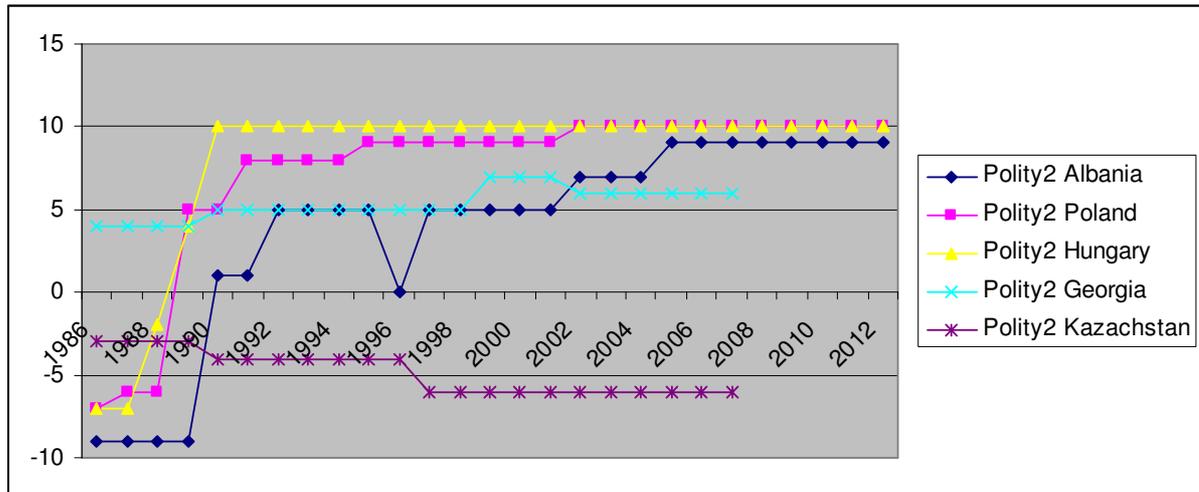
Source: Author's compilation, Polity IV Project Data Base

2. A "Theory of Regime Change"

2.1. The Role of Demography

Within the last decades, several researchers examined the question of how and to what extent the phenomena of a large proportion of young people in a society and social unrest or violent conflicts may be linked (e.g. for early works Choucri 1974). However, the scientific discussion about this link as well as the popular debate on this topic only started in the 1990s. In 1995, the term *youth bulge*[1] itself was coined by Fuller (1995) in his seminal paper on "*The Demographic backdrop to Ethnic Conflict: A Geographic Overview*". Moreover, Huntington (1996) "endorsed" Fuller's theory, and also Heinsohn's (2003) publication "*Sons and World Power: Terror in the Rise and Fall of Nations*" uses this approach. In contrast to most other youth bulge theories, Heinsohn's

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[1] The term "youth bulge" is used to define a situation in which the population share of the 15-24 year-olds exceeds 20 per cent and the share of the 0-14 year-olds (often also referred to as the "children bulge" and a good predictor of future youth bulges) is higher than 30 per cent. The corresponding youth bulge theory predicts that societies characterized by a youth bulge while simultaneously facing limited resources and, in particular, a lack of prestigious positions for "surplus" youngsters – i.e. the third, fourth, fifth etc. born children – are much more prone to social unrest and/or acting belligerent towards their neighbours than those societies without this demographic stressors. In theory, mostly the male population is addressed as being the decisive factor, even if there is no plausible assumption why not also females should be a part of this system. Nonetheless, we can adapt this approach, focussing implicitly on males, as in particular in the Middle East and North Africa the female part of the population may be – due to a younger marriage age and other socio-religious factors, not be that "visible" in the society and the economy, in particular in the labor market.

approach, which adopts Goldstone's (1991) notion of "young men desperate for positions", argues that it is an excess of young adult males within any given youth bulge which helps to explain most periods of internal and "exported" social unrest in human history.[2] The inference that "older" societies are more stable in terms of political or social change can not be assumed to be an automatism.

The idea that an exceptionally large share of young people or a large youth cohort size will lead to revolutions can be discussed based on several possible transmission channels, which are discussed in the following. Some of them implicitly or explicitly assume – as we do – that revolutions or regime changes are a public good and will therefore not be provided by an individual, rational behavior being given. Individuals will therefore cause regime changes somewhat "accidentally" while acting in their own interest, as e.g. while fighting for their own job opportunities. Other approaches do not stress that fact that much.

One of the most prominent approaches, focusing the "supply side", is based on the assumption that any youth bulge phenomenon increases the "supply of cheap rebel labor" (Urdal 2006). Limited employment opportunities – caused by the limited absorption capacity of the labor market in the face of a sudden surplus of labor – or decreasing relative (male) wages can result if more potential workers compete for only a few jobs (Easterlin 1987; Niang 2010). Dissatisfaction and frustration among young people are likely to be the consequence, in particular if – compared to their parents' smaller generation – potential lifetime income is perceived to be limited. These people may be the leading group in inducing a need for change for individual reasons, their own demand for a good job and an overall satisfying life perspective.

These arguments are backed by several studies in economic demography which suggest that the alternative costs of individuals who are a part of an existing youth bulge are lower in terms of "economic and social fortunes" (Urdal 2006), compared to members of smaller cohorts. Furthermore, younger cohorts "tend to have lower opportunity costs relative to older cohorts" (Niang 2010). While this effect might be inverted by increasing levels of education and a resulting rise in incomes, there is some evidence that it holds at least in the short run. Following Huntington (1996), it can be

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[2] Essentially, Heinsohn defines a youth bulge as when the ratio of adequate (i.e. prestigious and/or well-paid) positions (in companies or the public sector) to the amount of such positions demanded by succeeding sons is substantially smaller than 1.

argued that "young people are the protagonists of protests, instability, reform, and revolution" as they may have – due to their age and their specific circumstances of living – a natural need to change their current situation. They may be more likely to be attracted by new ideas due to their idealism or naivety, and more willing to question those authorities they are not (yet) a part of (Urdal 2006). In addition, as young people in most cases do not have responsibilities for their own families, they may have more time to engage in such – risky – activities (e.g. Goldstone 1991).[3]

In how far this also could be an argument when it comes to the ongoing "Arab Spring", the series of regime changes which started in Tunisia in 2010 and since then spread over many countries of the Middle East and North Africa? It is a fact that the most impressive youth bulge in recorded population growth has been evolving in the Muslim world, in particular the MENA countries[4], which has seen its population growing between 1900 and 2000 from 150 mio. to 1.2 bn.[5] While mortality decreases since the early 20th century, fertility (births per woman) did not decrease until the mid-1960s and early to mid-1970s and is still amongst the highest worldwide, so that births by far outnumber deaths for a period of more than a century now, even if the region's growth rate, after reaching a peak of 3 per cent a year around 1980, is declining since then (Asaad and Roudi-Fahimi 2007). Predicted youth rates as a percentage of working age population (as well as a percentage of the overall population) are high in most

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[3] The existing literature suggests several ways to operationalize "youth bulges", though these might be, as Urdal (2006) highlights, misleading in some cases. The most commonly used operationalization method, the use of the percentage of the total population under 15 years or between 15 and 24 years as a predictor for a "youth bulge" might lead to flawed findings. Therefore, the use of an indicator which shows the size of the youth cohort relative to the adult population (defined as population over the age of 15) is often seen as more appropriate, especially if one assumes that violence and social unrest comes from competition between younger and older cohorts in a society (Niang, 2010). However, the youth of today compete not only with today's adult population, but also with the following generation (today's and tomorrow's children). As only a few years may remain until the next, maybe larger generation enters the labor market, further reducing job opportunities and increasing rivalry for political influence, there is high competitive pressure for today's youth, as they may have only a narrow time slot in which to receive their goals. Therefore, time-consuming reform processes may not be the optimal choice, as the potential results of these reforms will mainly benefit the next generation; thus violent behavior can be expected. Therefore, in our study, we follow the "traditional" definition of "youth bulges," a share of young people relative to total population which exceeds a critical level of 20 per cent.

[4] Beyond the countries of the Middle East and North Africa, the term "Muslim world" comprises also Afghanistan, Pakistan, Iran, Indonesia, in some cases Malaysia and Sudan, whose shared characteristics are a large overall population as well as a high percentage of Muslims in the full population.

[5] By contrast, China has "only" tripled in population to 1.2 billion (from 400 million), while India's inhabitants quadrupled to 1 billion during the same period. It is noteworthy, that this is not the fastest increase in recent history: Brazil's population increased from 17 to 170 million in the 20th century, and the USA grew by a factor of 15 from 4 to 60 million from 1790 to 1890 as a result of massive immigration.

MENA countries, and so are the unemployment rates for these young people, which range from about ten per cent in the Emirates in the Arab Gulf to about 40 per cent in Algeria, Jordan or Egypt (Mauldin 2011). [6].

This fact is as more important as it is likely to assume that a lack of adequate jobs or at least the existence of labor market opportunities for young people becomes more relevant if the respective group of young people has a relatively high level of education: A higher level of education not only enables people actually to perform high-skilled jobs, but also may rise subjective expectations of a high life-time income and good positions, which may lead to frustration if these goals are not achieved. This missing match between education and labor market opportunities can also be stated for the MENA region (Campante and Chor 2012).

2.2. *Institutions Matter – but which Institutions?*

Not only since the transition of the former socialist countries after 1989 we know that the institutional environment of a country is of highest importance. There is a huge variety of indicators and data banks – e.g. the *Ease of Doing Business* data bank from the World Bank, which scrutinize every detail of the institutional framework of every given country worldwide. "Institutions matter", so the widely accepted statement of the new institutional economics, as they regulate human behavior by providing rules "for the game" as well as representing the output of the game, and therefore can be regarded as a *conditio sine qua non* for economic development and a sound long-run economic performance of a country (e.g. Apolte 2004; North 1991; Sachs and Warner 1997; Wagener 2004, Möller 2013).[7] To recapitulate the main results of a meta-analysis of

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[6] In the Muslim world, some of the countries currently displaying the largest youth bulges (or rather: children bulges) – Gaza and the West Bank (47 per cent of the population younger than 15), Yemen (47 per cent), Sudan (45 per cent) Saudi Arabia (42 per cent), Afghanistan (42 per cent, including refugee camps), Iraq (41 per cent), and Pakistan (40 per cent) – are also affected by large-scale social unrest. In Gaza, the youth bulge is even intensified because the people live in an extremely densely populated area with no migration options neither to Western countries nor to the Arab world. This may also explain the huge political success of radical political groups like Hamas – also in "democratic" elections. The simple equation that democracy is defined through the existence of elections can be clearly rejected by the experiences in Gaza, but also in Egypt with the success of the Muslim Brotherhood.

[7] "Institutional quality" in these studies is defined in different ways and measured by using different data-bases – and not exclusively, e.g., as the rule of law, absence of corruption, a good regulatory quality, democratic participation and the accountability of the government, political stability, the protection of property rights, or efficient administration. One of the main challenges in that context is not only to define what a "sound institution" is, but how to operationalize the concept of "institutional quality" for quantitative research. Several problems have to be addressed in this context, with the difference between the material institution itself (content dimension) and the question if the institution is enforced or perceived to be so (trust dimension) being of pivotal importance (Voigt 2002).

empirical studies, independent of their respective definition of institutions (and the data sets used for empirical evaluations), it can be safely concluded that there is substantial evidence for a significant positive correlation between (high) institutional quality and (positive) rates of economic growth and/or wealth. Also, institutions like the rule of law or the level of political freedom are discussed to explain the emergence of revolutions, with countries in some intermediate range of political freedom being discussed are being exceptionally prone, so that a kind of "inverted-U-shape-relationship" between revolutions and social unrest on the one hand, and democracy on the other hand has been acknowledged by several scholars (e.g. Fearon and Laitin 2003; Urdal 2006). Nonetheless, the results of the respective studies might not be beyond dispute given the data and methodology used (see for details Niang 2010).

Moreover, this link is important (and therefore tested for) in our analysis. As in many countries worldwide and almost all Arab countries, which are of current interest and therefore to some extent targeted in our analysis, political participation is low and democratic structures are weak, even if there is some significant variation (see in detail Fish 2011; Noland and Pack, 2007).[8]

Furthermore, some studies single out religious or cultural factors influencing institutions to explain the emergence of revolutions and the – assumed lower – likelihood that a country adopts democratic institutions, but the range and explanatory power of this research remains limited. This is even more true regarding countries which have a Muslim majority, as Islam is often claimed to be more conducive to violence and less open towards democracy than other religions (for an overview of the reasoning see Fish 2011). The Islam's religious law, the so-called *Sharia*, remains an important source of the order for the societies in the Middle East and North Africa, not only in its design, but also concerning the status quo. It deals with personal life, governance, and business, and regulates most aspects of public and private. Based on different sources, mainly the *Qur'an* itself (the main religious text of Islam) and the compilation of the deeds and speeches of the prophet (*Hadith*), it can be interpreted not

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[8] For decades, political freedom, freedom of expression and so on (measured e.g. as "Voice and Accountability (VA)") have not been adequately provided for in the Middle East and North Africa; likewise, political stability (measured e.g. as "Political Stability and the absence of Violence (PV)") is low (Kaufmann et. al. 2008). This also applies if the take other indicators for democratic participation and institutional quality, e.g. from the Polity2 data, which use different methods to measure institutional quality. But, as the current uprisings and revolution processes in the Middle East and North Africa demonstrate, there is some dynamics which is likely to lead to sustainable changes in these indicators in the future.

as a fixed set of rules, but as a kind of framework, open to contemporary debate and interpretation. Until the 19th century, the development of legal theory as well as legal practice in the MENA countries remained in the hands of religious authorities and sometimes the political leaders themselves (see Coulson 1964 for details on the development and diversity of Islamic law). This changed with the colonization, when theory and practice of Islamic law started to change, and codified law and its organizations replaced more and more the traditional jurisprudence. Today, most MENA countries have a legal system based on both, the traditional Islamic law and modern laws, and maintain a dual system of secular and religious courts[9]. As a consequence, and also in formally relatively secular states, Islamic legal scholarship still is an important authority and continues to have a significant social and political impact.[10]

This hypothesized link between youth bulges, "weak" or at least special institutions in the MENA region and political instability or revolution has been highlighted before, e.g. by Urdal (2004), who concludes that "after September 11, 2001, youth bulges have become a popular explanation for current political instability in the Arab world." Thus, we will include the specific research question of whether the Muslim countries of the Middle East and North Africa are particularly prone to revolution and missing democracy due to the – wide ranging – absence of a "rule of law" in the narrow sense[11]. So, again, the relevance for our research design becomes obvious.

2.3.   *Extending the Scope of Our Approach – Migration and Revolution as "Exit" and "Voice"*

As anecdotal evidence shows, not all countries facing youth bulges are exceptionally prone to revolutions, so some adjustments may be necessary. A factor which might mitigate the revolutionary potential of youth bulges by addressing the underlying needs

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[9] In the philosophy of law was laid out by Hart (1994) and others, the success of a legal system depends on the harmonious coherence between formal and informal foundations of law. This is definitely a crucial point in the Muslim world where frictions between the different layers of law may occur more likely.

[10] An important factor nonetheless is the fact that the religion of Islam is not homogeneous, but comprises a wide variety of different "schools" and interpretations, which are mirrored by the respective legal systems and social norms.

[11] With the exception of Turkey, no country in the Middle East and North Africa has a strict secular regime.

of the revolutionists is the option to migrate[12]. Emigration in this context may help to diminish some of the negative effects of youth bulges and thereby might reduce the risk of revolutions – revolutions being understood as the "voice option" and migration as the "exit option," as introduced in Hirschman's (1970) "Exit, Voice, and Loyalty" (see e.g. Ware 2005). In this context also the question of loyalty would be relevant, which may influence the decision to choose one of the other two options, or at least the point in time in which one option outplays the other. Not being focused here, this element will be included in further work.

While a wide range of economic literature addresses the question of how individuals react to framework conditions which do not fit their individual utility function, in our work we focus on the model of "exit and voice" to explain the different choices: According to Hirschman (1970 and 1978), there are two general options for an individual to cope with their discontent: they can either voice their complaints in order to change the system, or they can exit the system (if the exit costs are not prohibitive for personal, legal and/or economic reasons). This choice is a general one and may be made regardless of whether the "system" is a state or another institution.

But, under what conditions one option will prevail over the other option? What determines the individual's choice? What will be the reactions and consequences for the whole system, e.g. does the society take notice of exits by its members, and will the exit cause satisfaction or dissatisfaction for the group that remains (Hirschman 1978)? "Exit" and "voice" therewith can be interpreted as two contrasting, but "not mutually exclusive categories" (Hirschman 1970), as there may be other reaction options – such as, for example, doing nothing.

Following this argument, the "exit-voice-scheme" is suitable for our analysis of situations in which individuals participate – peacefully or violently – in the system or leave it. Following Hirschman, if the exit option exists for citizens (in the sense of voting population), then free competition unfolds in the market. In our specific model extension, this would imply that a regime has to react to exit as well as to voice – e.g. by adjusting policies or modifying structures. In particular, problems occur when neither exit nor voice have the "usual attention-forcing effect because the loss of revenue [… is] not a matter of the utmost gravity" (Hirschman 1970).

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[12] For an overview about different migration theories and new developments in the media perception of migration see Wentzel (2010).

Our hypothesis that the existence of a migration opportunity can reduce the probability of a regime change (as well as other alternative ways of "voice", see Schomaker 2013) taking place in a country is based on Hirschman's assumption that "the presence of the exit option can sharply reduce the probability that the voice option will be taken up widely and effectively. Exit was shown to drive out voice." If we expand that idea to participation in a country's political process inclusive also of revolution against it or migration from it, we can – in general – assume that the option to leave the system via migration will be preferred over the option to stay in the system and start a revolution (if no traditional "voice" in the sense of voting is possible) and therewith maybe to change the political system to the better (defined as "more democracy"). If the relative benefits from working outside the country will outperform the option to stay in the system, it is a rational decision to "exit". This assumption is even more plausible in those cases where participation in regime change is associated with high costs, as being a revolutionist for the individual can result in punishment, social isolation, or death, in particular if the revolution fails.

So, this situation being given, migration "works as a safety valve" (Urdal 2006). If migration opportunities are "substantially restricted, developing countries that previously relied on exporting surplus youth may experience increased pressures from youth bulges accompanied by a higher risk of political violence" (Urdal 2006). Again, the case of the Gaza strip is a very impressing empirical case study. It can be hypothesized that whenever a significant part of the youth bulge can be "exported" to other countries, the risk of youth discontent, resulting in violence and revolutions, can be substantially reduced (Urdal 2006). The restriction itself – whether due to geography, legal restrictions, or prohibitively high costs of migration – can, therefore, be seen as a trigger for revolutions. This is likely to be true regardless of where these young people emigrate to – whether to more developed countries at the other end of the world or to neighboring states.

This linkage between a lack of migration opportunities and an increase in the probability of a revolution can be easily modeled in several ways. One "channel", applicable to dictatorships or autocratic regimes, can be the frustration of the people. In non-democratic, autocratic regimes, the people do not have a regular option of elections; they cannot vote out the dictator, the leading political elite, or party, as elections do not take place or are subject to fraud and manipulation. In these cases the only option to change the political system and thereby increase the individual chances within this

system is the violent one – be it through protests and revolution (Möller 2011 and 2013). Another "channel" is the individual income situation. The individual's utility-level depends on the budget constraint, in which consumption depends on the individual income. The decision to become a revolutionist is a subjective one and depends on the personal expectation of the benefits from the action. Therefore, in this scenario revolution will be the choice only if the expected benefits of the revolution exceed the benefits expected from migration, e.g. expressed by the relative wage: A classical finding already analyzed by Tullock (1974) and – with a specific German perspective – by Tietzel, Weber and Bode (1991).

In recent surveys, almost half of the Arab youth expressed a desire to emigrate resulting from concerns over job opportunities and education, in particular in the labor-rich countries such as Egypt (Urdal 2006; UNDP 2002). It can be assumed that this tendency will further intensify through the use of modern media and the internet, because young people in the MENA countries have increasingly better information about the living conditions of people their age in other parts of the world (see Wentzel 2010). This trend is reflected by current numbers and may become manifest in real migration rates in the future if migration opportunities are given then – this is not the case today, as most countries (as e.g. the EU or also the US) have relatively strict migration regimes. Today, migration from the MENA region to other global regions on average exceeds migration to the MENA, even if the lion share of migration in MENA still is intra-regional migration, from the labor-rich countries of the region towards the countries of the Arab Gulf, as e.g. the United Arab Emirates, Qatar or Saudi Arabia (Pew 2011). Projections indicate that the MENA countries will – between 2010 and 2015 – lose an annual average of 66 people per 100,000 in the general population.

3. *Model and Data*

The econometric analysis has to cope with the problem that institutions are complex and almost impossible to measure properly. Per definition, institutions in the sense of rules, procedures and norms which constrain human behavior "need to be reasonably permanent or durable" (Glaeser et al. 2004, p. 7). Many potential indicators for institutional quality are non-durable or related to non-permanent "institutions", and therewith do not fulfill the criteria outlined above. As a consequence, institutions have to be simplified or substituted by proxies for the empirical analysis (Williamson 2000).

These proxies – e.g. rule of law, bureaucratic quality, corruption – are often more policy outcomes than institutions, and also volatile and subject to change, so they are not able to test for the quality of permanent rules, norms and procedures. In addition, they may be biased by and correlated with the *status quo* of the economic development of a country. As a consequence, in economics there is no consensus which proxies may be suitable, despite a bunch of indicators, as e.g. the *Heritage Foundation Index of Economic Freedom*, the *World Bank's Governance Indicators*, or the *Polity IV Data-Set,* is used by a large number of scholars and seem to be widely accepted in the scientific community (see for the discussion in detail Glaeser et al. 2004).

This methodological *caveat* is as more relevant as – from the viewpoint of new institutional economics – the concept of institutions comprises not only the formal institutions, but also informal or "substantial" institutions which are more complex to measure and also to proxy for: While formal institutions comprise the law, regulations, and organizational resources, substantial institutions focus on the effects of institutions and in how far institutional transfer is completed in reality (Andretta and Baetge 1998, North 1991, Leipold 2006). As for our study, we focus on proxies for formal institutions by using Polity IV which concentrates on authority patterns of the state regime only.

Using a dummy variable for "regime change" (or, used synonymously, "revolution") as well as a more differentiated approach for "successful revolution" towards more democratic institutions, we tested our assumptions empirically.[13]

"Revolution" only indicates if there has been a major regime change (which is not a simple coup-d'-etat) in a given period, being it to the better or the worse (in terms of democratic participation afterwards). To measure "successful revolution" we used the variable *Regime Transition*, as provided by the Polity IV Data Set: Within this data set, a country is featured with a high "democracy score" (on a 0 to 10 scale, which is based on an evaluation of a list of different institutional features) if it demonstrates characteristics of a sound democracy. We see a regime change as being successful if the database provides "major democratic transition" or "minor democratic transition", which indicates that the regime change has led to an increase in democratic participation, as expressed following Polity IV in a 3-point change in the Polity2 variable at least. To differentiate between the simple fact that there has been a major

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[13]   In addition, we used a numeric post-regime-change Polity2 score as a proxy for successful revolutions to test for the robustness of our findings.

change in the political sphere, driven by the people, and the success of such an event enables us to test two lines of argumentation: First, the question if and in how far specific characteristics (namely youth bulges and missing exit options, paired with restrictions in voice) contribute to a general instability of a country, and second if and in how far this instability results in more democracy.

Or main hypothesis, following the idea of the pressure induced by youth bulges and the theory of "exit" and "voice", tests for the influence these characteristics have if they realize in combination ("locked-in under pressure"). The quality of institutions matters in this context also: If a youth bulge exists, reducing young peoples' opportunities (in the labor market), while the overall quality of governance is low, and democratic participation is not given, carrying out a revolution may be the only "voice" people have. This may be as more true without the chance to leave the system. Therefore we also test if a missing migration opportunity increases the likelihood of a regime change for the better.

In addition, in line with the considerations outlined above, we test whether the fact that a country has a Muslim majority may result in a low likelihood of a successful revolution in the sense of the sustainable introduction of democratic institutions.

Depending on the data given (unbalanced panel, for units i at time period t) our model could simply be written as follows:

$$Y_{it} = \beta_0 + \beta x_{it} + \varepsilon_{it}$$

With i = 1, …, N being the sample of units in the data set, t = 1, .., T being the 5-year periods (1991-1995; 1996-2000 for the dependent variable, with the period 1986-1990 additionally for some lagged independent variables) observed.

As testing did not display significant country fixed effects, and there is no plausible need to assume that some countries are more prone to regime changes, we decided to set aside the country-specific component (and tested for cultural factors which may be closely linked to specific countries separately with a Muslim dummy, which also proxies for the current situation in the Middle East and North Africa, as only Muslim countries are affected by the ongoing "Arab Spring"). Also the time-component does not seem to be of relevance, as most of the control variables are dummies with low or no variance over time. We therefore assume that the constant is constant across all units *i,* and over time *t,* and that the effect of any given x on y is constant across observations and over time (assuming also that there are no interactions in x).

As a consequence, we used Pooled Cross Section Analysis instead (at the cost of increased heterogeneity, which we tested for). Depending on the dependent variable used (dummy) we have chosen a model with a binary outcome variable, based on a binomial distribution[14]. The basis model is with n determining factors:

$$Y = \beta_0 + \beta_1 x_1 + \ldots + \beta_n x_n + \varepsilon_i$$

Assuming that ε_i is a residual with $E(\varepsilon_i) = 0$, with $x_1, \ldots, x_n$ being the different predictors.

As we have a binary outcome variable which can be 0 or 1, we need a transformation to ensure that the co-domain is the same for both sites of the equation.

$$\text{Logit}\,(\pi) = \beta_0 + \beta_1 x_1 + \ldots + \beta_n x_n + \varepsilon_i$$

With $\pi \in [1; 0]$: logit (π): $\rightarrow$ log $(\pi/1\text{-}\pi)$

So we can write

$$\text{Logit}\ P(y=1|x) = \beta_0 + \beta_1 x_1 + \ldots + \beta_n x_n + \varepsilon_i$$

The regression coefficients in this model can be interpreted as the rate of change between the independent variable and the log of the change of the dependent variable. These log odds are not easy to interpret (the relevant information in these models comes from the significance level of the variable and the direction of the sign (positive or negative effect on the dependent variable)), so we decided to display $\exp(\beta)$ instead.

Most models show an overall significance at the 1 per cent level for the *Omnibus-Test*.[15] Additionally, the values of AIC and BIC for the models used indicate a strong goodness of fit.[16]

A dummy which indicates if there has been a regime change or a successful regime change with the introduction of democratic institutions in a given period of time (five-year intervals: 1991-1995, 1996-2000, 2001-2005) in a country is the dependent variable. From our point of view, the question if a revolution or transition process starts

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[14] The binomial distribution, a discrete probability distribution reflects the number of successes in a sequence of *n* independent trials or experiments, each of which yields success – e.g. regime change or no regime change – with probability *p*.

[15] Indicating that the model used (with several explaining variables) is significantly better than an alternative model without these variables

[16] As compared to other models tested (different variables, limited data set) and not used in this study.

on the 31st of December or on January 1st may be the consequence of random effects. We try to bypass this problem by using a five-year period for the dependent as well as five-year averages for some of the influencing factors.

In the different models, as independent variables/predictors, we used indicators for economic growth and political stability (averages for five-year periods each) and included several Dummies:

- Average GDP growth (World Bank data): Despite that several studies came to the conclusion that economic conditions may not be the most decisive factor when it comes to revolution, there are indications that economic conditions might matter – at least as wealthy countries can redistribute resources better in order to smooth out dissatisfaction (Henderson and Singer 2000). Economic well-being is often estimated as the average GDP per capita, but as we implicitly assume that perspectives are of importance, we use average GDP growth (for a five year period) instead. The necessary data comes from the World Bank "World Development Indicators".

- Average quality of governance (Polity 2) for the previous and current period: Data for average political stability and for the construction of the Dummy for "State Failure Problems" (Polity 2) is collected from a modification of the Polity IV project by *Marshall* and *Jaggers* (2000) and *Marshall, Jaggers* and *Gurr* (2010), with values ranging from -10 (most autocratic) to 10 (most democratic).

- Dummy variable for "Muslim Majority": this dummy becomes 1 if more than 50 per cent of population identify themselves as being Muslim, and is constructed with data from the Pew Research Center 2011 and in some cases additional country statistics.

- Dummy variable "Locked-in under pressure": This dummy becomes 1 if there are no easy migration opportunities, while at the same time a youth bulge exists in the respective country. We use the existence of a so-called *children bulge* – population aged 0 to 14 years exceeds 30 per cent – in a country as a predictor of and therefore an appropriate dummy for further

youth bulges, by using the average for the previous five year period.[17] Migration opportunities are qualified as missing if there is no legal migration opportunity, or if this opportunity is correlated to prohibitively high costs, and as being given if a – legal and easy – migration opportunity exists. The information comes from different sources and is coded by the authors. So, for example, if a country became a member of the *Commonwealth of Nations*[18] before the year 1971, or is still linked closely to Great Britain, then its citizens fall under specific permissive regulations regarding living and working – the right to abode – in Great Britain. Furthermore, if a country has signed a bi- or multilateral agreement on labor migration with one or more foreign countries, e.g., allowing the domestic population to work elsewhere, migration opportunities are classified as being given. Additionally, we capture the effect of a country having an active anti-migration policy, e.g. in the form of migration restrictions such as requirements for an exit visa to leave the county in this dummy.

To capture effects which amplify each other, or only occur if other conditions are fulfilled simultaneously, interaction terms are inserted in some regression models. In line with the theoretical considerations, of particular importance is the interaction of the restriction of institutional quality (Polity2) and the dummy for "Locked-in under pressure", which covers the existence of a youth bulge without exit-options.

4. *Empirical Analysis*

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[17]   Using the children bulge is necessary due to a lack of data for the 14 to 24 year old demographic, but the choice seems methodically appropriate – and given that we used averages for a five-year period each it is unlikely that the young population is reduced substantially due to migration or death, which would mean that the children do not reach the status of youth five years later. Only in the unlikely case that the following generation is so large that the forerunning average children bulge never becomes a youth bulge would this approach would be misleading. Given the decreasing birth rates over the last 50 years worldwide, this does not seem to be a problem which occurs very often and can therefore be ignored in our study. With our design we can capture the large group of young persons (under 20 years old), which is, according to the related literature, accountable for a large share of violence and therefore seems to be relevant to our study (Niang 2010). Nevertheless, it should not be ignored that other studies found an older part of the population being also of relevance when it comes to uprisings (see e.g. Campante and Chor 2012).

[18]   The *Commonwealth of Nations* is a political association of independent states, most of them being former colonies of Great Britain. In British immigration law several regulations existed or still exists which guarantee citizens of *Commonwealth* members specific rights to live and work in Great Britain or apply for British citizenship, easing emigration from their home-countries for those groups of people.

The descriptive statistics for the continuous variables are displayed below.

Table 1: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	S.D.
Average Polity2 (previous 5year period)	265	-10,0	10,0	3,983	6,1892
Average GDP per capita growth (annual %)	265	-20,14	29,17	1,40	3,86
Average Polity2	265	-10,0	10,0	2,81	6,72
Population 0 to 15 years (in %; 5yrs before)	265	16,85	51,79	35,39	10,17

Table 2 displays the results of several regression models (probit and logit models).

Table 1: Empirical Results

Parameter	Exp(B) i (successful revolution)	Exp(B) ii (revolution)	Exp(B) iii (revolution)	Exp(B) iv (successful revolution)
Intercept	,114*	,276 *	,459*	,285*
MuslimMarD=1	,979	,737	,850	,983
Average GDP growth (current 5 year period)	,919***	,886*	,943*	,948**
Average Polity2 Score (average in 5 year period before)	1,262*	1,140*	1,077*	1,143*
Interaction "Locked-in under pressured=1" and Average Polity2	,832*	,897**	,940**	,900*

Score				
Locked-in under pressured=1	2,564**	2,281**	1,636*	1,681**
*Indicates significance at the 1 per cent level,** 5 per cent level, *** 10 per cent level*				
Logit (i, ii), Probit (iii, iv), Binomial, N 265				

Source: Author's calculation

As can be drawn from table 3, the odd that a revolutionary incident *per se* or a regime change which leads to increased democracy (at least 3 scores increase in Polity2) takes place, is – in line with theory – significantly higher if there is a "locked-in" youth bulge without easy "exit-options" in a country.[19] In these cases, the large share of young people without an exit-option does not only increase the general risk for the respective country to experience violence and civil unrest, as stated by many authors in previous work. It rather increases the likelihood that also democratic institutions are implemented via a harsh change of the country's hitherto existing structures.[20] This finding is as more relevant as the widely discussed (being it in the scientific community or the public debate) negative effect does not stand *per se*, but is accompanied by an effect which can be valued as being positive from a normative point of view – more democratic participation.

The fact that a country has a Muslim majority has no significant influence, neither in the models displayed nor other models tested (the same applies to countries with a large Muslim minority of more than five per cent, which also have been tested to capture the role of Muslim belief). "Being Muslim" for a country therefore does not seem to foster nor to hinder the likelihood of a regime change *per se*, or a regime change which leads to the implementation of democratic institutions in the respective country, at least in the short run (see also Möller 2013). This indicator proxies to some extent for the often mentioned hypothesis that Muslim countries in the Arab World could be more prone to

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[19]   As for the long-run impact of these characteristics, measured by the numeric Polity2-score in the 5 year period after the revolution, the models (not displayed) used give mostly positive signs, which means a positive influence, but are not in all cases significant.

[20] In addition to the arguments outlined above, positive effects of locked-in youth bulges may also be triggered by the fact that younger people use more modern communication technologies and therefore may be more interested in the – foreign – institutions (and the implementation thereof) they already know from the mass media.

revolutions and uprisings, but less able to establish democratic institutions. This being given, the current regime changes in the Middle East and North Africa can not easily be explained by a specific "Muslim factor", being it to good or bad account.

In the models displayed, a high pre-revolutionary governance score (Polity2) has a significant, slightly positive influence on the odd that a regime change takes place. This finding is to some degree counterintuitive, as one would expect that more democratic participation – and therewith the opportunity to "voice" in the traditional way – may decrease the odd of a regime change. One explanation may be that an increase in political freedom also increases the odd of a regime change until a specific threshold of democracy is reached (an argument linked to the already mentioned "inverted-U-shape-relationship"), which is perceived as being sufficient in the sense that traditional voting can serve in the same way as revolution does. Despite we did not find evidence for that in our data, this approach will be tracked further. In addition, as to be expected, the higher the governance quality was pre-revolutionary, the more likely the regime-change will be a long-term success (measured via the 5-year-post-revolution average Polity2) (not displayed).

To control for the economic "perspectives" of the population, we included average growth of GDP per capita in our model. This factor, taken the average of the previous 5-year period, in most models has a slightly negative, significant influence on the odd that a (successful) revolution happens – the higher the per-capita growth of GDP in the previous 5-year period was, the lower the probability of a (successful) revolution was. As people may be more satisfied with the current government if they experience an improvement – or at least the perception thereof – of their economic situation, the likelihood that they will start an uprising or revolution may be reduced.

Taking into consideration that the traditional intuition (and therewith interpretation) from linear models can not be extended to nonlinear models without adjustment, it is important to interpret the interaction term very carefully as e.g. the "statistical significance of the interaction effect is often stronger when the interaction effect is positive" (Ai and Norton 2003). Nonetheless, we used this kind of interaction between the average Polity2-Score in a given period and the dummy "locked-in under pressure". This interaction displays a significant negative influence, which would be in line with our theoretical considerations. If the Polity2 score is relatively high, and democracy is given, it is plausible to assume that a given youth bulge and missing migration

opportunities will not lead to a revolution: Even if young people may be not satisfied with their perspectives, they do not have to start a revolution, but can use "voice" in elections.

As for an extension of our research, we did some tests with annual data (instead of 5 year periods), which shows more or less the same results. A very interesting addition would be to test for the interaction of youth bulges and unemployment rates for the respective group as well as overall unemployment rates, as this indicator would be able to test more precisely for the perspectives of young individuals. We will include this approach in further research, even if in particular for the MENA region the important *caveat* that due to the high share of people employed in the informal sector this indicator might be biased.

5.   *Conclusion and Policy implications*

Beyond the general finding that pressing youth bulges, associated to missing migration opportunities, increase the odd of a regime change to happen, and to be "successful" in the sense that it leads to a significant increase in the Polity2-score, what policy implications can be drawn with a view on the ongoing transition in the Middle East and North Africa? First, regarding youth bulges in MENA, the positive effect on post-revolutionary democratic institutions may be relevant. It may lead to the assumption that despite current drawbacks the overall perspective for the implementation of democratic institutions is not bad. At the same time, an attenuation of this effect by opening up the country for emigration may be an important option to avoid other negative effects which may be associated with these youth bulges (Schomaker 2013). Anyway, long-term birth rates are decreasing also in the MENA region, meaning that these youth bulges are likely to disappear within the next 25 years in most countries. But patience is never a popular policy implication.

If we take the fact that "being Muslim" does not matter, this is good news and bad news at the same time: The simple notion that democratic institutions can generally not be implemented in these countries does not seem to hold, and also the anecdotal evidence of a "roll-back" e.g. in Egypt is no evidence for this. Of course we acknowledge that institutional transfers are even more difficult in regions and states where extremist religious groups try to replace the rule of law by the rule of religion: Everything else would be naive. But it would be too easy and not at all supported by the

data to say that the transition efforts in the MENA region is without a realistic chance of success only because of the close affiliation to the Muslim religion. Anecdotal evidence, e.g. the case of Turkey, demonstrates that the introduction of a secular regime would probably improve the political and economic climate and attract more foreign direct investment.

It is a commonplace and sounds almost like a platitude, but education and the promotion of civil society seems to be the key factor for a successful transition in the MENA region. A few days after the fall of the Berlin wall, Jeffrey Sachs (1990) published a legendary paper in the Economist about "What has to be done", promoting privatization, liberalization, private property and many other things that were missing in the communist system that had collapsed. After spending a decade as a political adviser in Eastern Europe, Sachs was completely disillusioned about the possibility to implement political and economic reforms fast even if the knowledge exists how institutions could be improved. The "logic of collective action" (Olson 1968) clearly explains why inefficient institutions can persist very long. This seems to be true also for the MENA region.

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World Bank Development Indicators

Appendix

List of Countries

Albania	India	Poland
Algeria	Indonesia	Portugal
Angola	Iran	Romania
Argentina	Ireland	Saudi Arabia
Armenia	Japan	Senegal
Australia	Jordan	Sierra Leone
Austria	Kenya	South Africa
Bahrain	Korea, South	Sri Lanka
Bangladesh	Kuwait	Sudan
Bangladesh	Laos	Sweden
Belgium	Lebanon	Switzerland
Bolivia	Liberia	Syria
Brazil	Madagascar	Tajikistan
Bulgaria	Malaysia	Tanzania
Burundi	Mali	Thailand
Cambodia	Mauritania	Tunisia
Canada	Mexico	Turkey
Central African Republic	Mongolia	Uganda
Chad	Morocco	United Arab Emirates
Chile	Mozambique	United Kingdom
China, People's Republic of	Nepal	United States
Colombia	Netherlands	Uruguay
Costa Rica	New Zealand	Venezuela
Cyprus	Nicaragua	Yemen
Denmark	Nigeria	Zambia
Dominican Republic	Norway	Zimbabwe
Ecuador	Pakistan	
Egypt	Paraguay	
El Salvador	Peru	
Ethiopia	Philippines	
Finland		
France		
Greece		
Guatemala		
Honduras		
Hungary		