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RESEARCH ARTICLE



Bread, freedom or social justice? An empirical investigation into the determinants of the Arab Spring

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ABSTRACT

Is it a yearning for more political freedom, or a demand for the more mundane economic necessities of life which drives large waves of potentially destabilizing mass protests against authoritarian regimes? We examine this question in the context of the Arab Spring, which originated from Tunisia and Egypt in 2011 and soon spread through the Middle East and North Africa (MENA) region. We use a static fixed effects model and a dynamic GMM model on a panel of 14 MENA countries for the period 2006–2017 to identify the major socio-economic and political determinants of both non-violent and violent Arab Spring protests. One of the main findings of our article is that, in contrast with the “intermediate regimes hypothesis”, the intermediate regimes tend to be more stable compared to both strictly authoritarian and relatively democratic regimes. Further, more nuanced dimensions of democracy, in terms of institutional checks on the authoritarian regime, have a positive impact on stability and reducing protests. With regard to socio-economic factors, our results show that factors leading to better living standards, such as higher economic growth and higher levels of GDP per capita, and transfers in the form of public expenditure (“authoritarian bargain”) partly mitigate the grievances and the resulting protests.

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1. Introduction

What causes the large waves of potentially destabilizing mass protests against incumbent authoritarian regimes at certain specific junctures of history? Is it a yearning for a better political system which ensures democracy and freedom? Or is it a general frustration with the material conditions, leading to a demand for the more mundane necessities of life? Lenin’s war cry of “Bread and Peace”¹ rallied the people of an entire nation behind him against the Tsar in a popular revolution (eventually evolving into the popular Bolshevik slogan of “Bread, Land and Peace”). On the other hand, “*Aīsh, huriyya, ‘adāla igtimā’iyya*” or “Bread, Freedom and Social Justice” constituted

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the key slogan of the protesters who gathered in Tahrir Square, Cairo (Egypt), in 2011 to overthrow the authoritarian rule of the President, Hosni Mubarak, soon spiraling into a wave of protests in several other MENA countries leading to the “Arab Spring”. More than a decade later, despite a substantial proliferation of literature around the Arab Spring, we are none the wiser on what provoked these protests.

We contend that there are three important questions in the context of the Arab Spring which the existing literature has failed to address adequately. Firstly, was the main objective of these protests to secure the basic economic necessities of life (“bread”), or were they driven by larger political goals like freedom and social justice?² Secondly, do we interpret the demand for freedom in these protests in the narrow sense of holding elections, or does it also include deeper democratic reforms in the form of institutional checks on the ruler? Thirdly, is the relationship between democracy and stability linear, or is it non-linear, where other factors acquire greater importance beyond a certain optimum level of political freedom? In this article, we attempt to answer these questions using an empirical analysis of various economic and political determinants of the Arab Spring. We also critically examine the “intermediate regimes hypothesis” in this context.

Prima facie, it is not so obvious from the socio-economic conditions of the MENA region whether it was the socio-economic distresses which caused Arab Spring events, or a desire for more political rights and civil liberties. The economic indicators show that, in the decade before the Arab Spring, the MENA region had notable achievements in terms of the Millennium Development Goals,³ the incomes of the bottom 40% were growing and the Gini inequality indices were low by international standards.⁴ Also, with regard to stability indices, most developing MENA countries were seen as relatively stable in the decade prior to the Arab Spring. Libya and Tunisia, two of the Arab Spring countries, appeared among the stronger and less fragile countries in the world, ranking 111th and 118th out of 177 countries, respectively.⁵ This apparently opposing relationship between the socio-economic conditions in the decade before the Arab Spring and the onset of Arab Spring protests calls for a deeper and more careful empirical study of political and institutional explanations beyond the mere socio-economic situation of the region. This motivates our work to also account for the lack of freedom and social justice in the region as the possible sources of grievances that may have triggered the Arab Spring.

The state of freedom and social justice in a society, however, is closely interlinked with the type of political system, in other words, whether the regime in that society is fully democratic, fully authoritarian or somewhere in between (that is, a hybrid regime or anocracy). This motivates our study to examine the “intermediate regimes hypothesis” in the context of the Arab Spring, the literature on which is scarce. The intermediate regimes hypothesis states that there is an inverted U-shaped relationship between the type of regime and the level of political instability, implying that semi-democracies (anocracies) are more prone to riots, instability and civil wars than consolidated autocracies or democracies. The early studies of this inverted U-shaped relationship date back to the 1970s,⁶ with subsequent studies further supporting it.⁷ However, some recent studies have questioned the nature and validity of this inverted U-shaped relationship. Slinko et al.⁸ find that the inverted U-shape of the intermediate regimes hypothesis is characterized by an asymmetry, with consistently authoritarian regimes being generally less stable than consolidated democracies. They also show that the character of this asymmetry changed substantially over time, with strict

authoritarian regimes becoming as unstable as the intermediate regimes after the fall of the USSR, while the more democratic regimes experienced more stability during this period. Similarly, Stockemer⁹ re-evaluates the inverted U-shaped relationship for the post-Cold War period and finds that the occurrence of minor intrastate wars and major civil wars does not differ between hybrid regimes (intermediate regimes) and autocracies, with democracies having a significantly lower probability of experiencing intrastate fighting and warfare.

Furthermore, Vreeland¹⁰ questions the way the “regime type” is specified in the earlier studies of the intermediate regimes hypothesis, and points out that two of the studies in the *American Political Science Review*¹¹ have used the Polity score in showing an inverted U-shaped relationship between regime type and civil wars, while the Polity score is problematic for specifying this relationship. He maintains that the Polity score is an aggregate index, combining the five component variables from the Polity dataset, two of which (PARREG and PARCOMP) include a factional category where political competition is “intense, hostile, and frequently violent. Extreme factionalism may be manifested in the establishment of rival governments and in civil war”.¹² Vreeland maintains that these two components exhibit a strong relationship with civil war and, by removing them from the Polity index, he shows that the “original [inverted U-shape] finding is not driven by the relationship between political institutions and civil war but rather by a less provocative relationship between political violence and civil war”.¹³

We should note here that the relationship between political freedom and potential for protest activities in a country is not very straightforward. On the one hand, lack of political rights and freedoms may cause grievances among the citizens and make them protest for more rights and freedoms. On the other hand, more rights and freedoms can also provide a more open political space and better opportunities for citizens to express their other sources of grievances and discontent and, hence, lead to more protests. The same argument can go with “regime repressiveness”: repression could, to some extent, inhibit and control the possibility of large-scale protests; but, at the same time, it might lead to more violent reactions from the citizens, leading to more intense and frequent protests.¹⁴ So the effect of political rights and freedoms on the possibility of protest activity might not be straightforward and linear. This provides the context for our use of the intermediate regimes hypothesis to capture the possible nonlinearities between regime type, and the stage of democratic transition a MENA country is in, with the onset and intensity of both violent and non-violent Arab Spring protests.

Our study contributes to the two main strands of the literature. Firstly, it tries to find the main determinants of the Arab Spring by empirically examining the intermediate regimes hypothesis along with other economic and political factors. To the best of our knowledge, there are not many existing studies that empirically and critically examine the regime hypothesis in order to understand the Arab Spring along with its other socio-economic determinants. Our study aims to do this and, hence, contributes to the area studies of the MENA region and the Arab Spring. Secondly, on a more theoretical level, our study contributes to the literature around the intermediate regimes hypothesis itself. We critically examine the intermediate regimes hypothesis on a real-world case study (Arab Spring) and check empirically whether the inverted U-shaped relationship hypothesized in the regime hypothesis holds in the context of the Arab Spring or not. We do this using two distinct variables from two different

datasets: a modified Political Rights variable using the Freedom House Index dataset, and our own index created from the Polity IV dataset.

We should also note here that in addition to what caused the “Arab Spring”, we are also similarly clueless on why the initial optimism around the Arab Spring fizzled out a few years later, leaving a trail of disillusionment.¹⁵ We also find that plenty of authoritarian and repressive regimes survive around the world today without facing any challenging popular protests, though there are occasional, seemingly random sparks of popular protests. While we do not attempt to directly address these issues in the current study, we believe that a robust empirical investigation of what caused the Arab Spring protests is crucial for understanding these puzzling issues in future research in this area.

The broad structure of the article is as follows. We begin, in section 2, with a discussion of the variables in light of the existing literature, followed by the econometric model and datasets. Section 3 describes the methodology and estimation strategy. Section 4 discusses the results and findings of the study. Finally, section 5 provides us with the conclusions of the article.

2. Variables and model

First we start with how we empirically test for the regime hypothesis in terms of the different variables and dataset we use, followed by a discussion of other economic and political variables in light of the existing literature.

2.1. Political variables

Our strategy to empirically examine the intermediate regimes hypothesis is by accounting for possible nonlinearities between the stage of democratic transition a country is in and the number of protests. This concept of nonlinearity is motivated by the inverted U-shaped relationship in the intermediate regimes hypothesis which postulates that intermediate regimes are more prone to political destabilizations than consolidated autocracies or democracies. To this end, we use two distinct variables from two different datasets to capture the level of democracy (regime type) in a country. Our first variable is a modified Political Rights (PR1) variable from the original Political Rights (PR) variable of the Freedom House Index dataset. Our second variable is a new index we create from the Polity IV dataset. Following Vreeland,¹⁶ we create the X_Polity index by summing up the three components (XCONST, XRCOMP and XROPEN) used in the Polity score, leaving out the other two problematic components, PARCOMP and PARREG. The three component variables for our X_Polity index are xrcomp (Executive recruitment competitiveness); xropen (Executive recruitment openness); and exconst (Constraint on top executives). This index gives a more comprehensive and in-depth picture of the level of democracy in a country than the mere Polity score.

Further, civil liberties is another important variable to account for on the freedom and social justice roots of the Arab Spring protests. Some of the regimes in the MENA region are religiously conservative and might impose restrictions on some of the civil and social liberties. So one plausible anticipation would be that a curb on civil liberties should increase the probability of more protests. We also use the Political Terror Scale (PTS) variable to account for the level of

repressiveness of a regime. However, the effect of repression on protests is not so straightforward: on the one hand, repression could, to some extent, inhibit the possibility of large-scale protests; but, at the same time, it might cause backlashes, leading to more intense and frequent protests.¹⁷

Table 1 provides a short summary of the discussion above regarding the political variables used in our model to capture the freedom and social justice dimensions of the Arab Spring protests.

2.2. Economic variables

Next we account for economic and social factors which might have led to Arab Spring protests. We begin by making a list of economic variables which, the existing literature suggests, should lead to more grievances and, hence, a high number of protests in a country. The following variables are expected to have a positive relationship with the level of protests, and it is believed that they might have contributed to Arab Spring protests: (1) Unemployment¹⁸; (2) Spikes in food prices and the Consumer Price Index (CPI).¹⁹ On the other hand, the existing literature suggests that improvements in the following economic variables should lead to less grievances and, hence, a lower number of protests in a country, leading to a negative relationship between these variables and the level of protests: (1) Subsidies and public spending²⁰; (2) Oil-rents: in the context of the “authoritarian bargain” of the MENA region, oil-rents might give a government more co-optative resources to buy-off legitimacy and also more coercive resources to repress and control dissent, which should lead to fewer protests²¹; (3) Domestic food production: one possibility could be that, with the high price of imported food, due to the global food crisis, some countries might shift to domestically produced food items and could spare an inflation in the price of food consumption.

However, the effect of some other economic variables on the protest levels is not so obvious from the literature. For instance, one cannot expect an obvious relationship between the following variables and the number of protests.

- 1) GDP per capita: in the literature the opinion is mixed regarding the relationship between GDP per capita growth and levels, and level of conflict and

Table 1. A short summary of the political variables used in our models along with the expected signs.

Political variables	Expected sign	Remarks
Political Rights (PR1)	(Non-linear)	More political rights may relieve the political grievances and hence lead to fewer protests, but, at the same time, can also provide a more open space for protests and expressing the discontents.
X_Polity index	(Non-linear)	We create this index from the Polity IV dataset to specify the regime type and stage of democracy in a country. As postulated in the original intermediate regimes hypothesis a non-linear relationship could be expected with level of protests.
Civil Liberties (CL1)	–	Most regimes in the MENA region are religiously conservative and impose restrictions on some of the civil and social liberties. It could be expected that relaxing the tough restrictions on civil liberties would decrease the probability of protests.
Political Terror Scale (PTS)	+/-	Repression could to some extent curb the protests, but at the same time could also cause severe backlashes, leading to more protests.

possibility of democratization. Some studies show that there is a negative relationship between GDP per capita growth and level, and degree of destabilization and conflict in a society.²² On the other hand, there is a section of the literature following Lipset's modernization theory²³ which claims that under certain conditions economic development can increase socio-political instability. Mansour et al.²⁴ find that high-income individuals are more likely to report higher emancipative values and empowerment emerging from participation in a revolution. So we need to test it empirically to find the relationship in the Arab Spring case.

- 2) Human Development Index (HDI): similarly, the exact relationship between HDI levels and number of protests cannot exactly be anticipated. On the one hand, underdevelopment could cause grievances and should lead to more protests. But, on the other hand, the act of political awareness and participating in societal collective actions itself might necessitate some prior high levels of HDI, for example, education, on the part of the individual. Hence, it is difficult to predict either a positive or negative relationship between HDI levels and levels of protests. Due to a possible multicollinearity problem between the standard HDI index and GDP per capita, we make a new index of HDI, which is created by taking the geometric mean of the two components corresponding to "Education and Health", after excluding the GNI component. This new index solves the issues of multicollinearity between the standard HDI index and GDP per capita. We also control for some socio-demographic variables such as mobile use. There are studies that have documented the extensive use of the internet, mobile cellphones, and social media in Egypt during the Kafaya movement (2004–2005) and again during the 2010–2011 Arab Spring protests.²⁵ So a positive relationship between mobile use and number of protest activities should be expected. Table 2 summarizes the economic variables along with their expected signs in light of the existing literature, some of which are discussed above.

Table 2. A short summary of the socio-economic variables used in our model along with their expected signs in light of the existing literature.

Economic variables	Expected sign	Remarks
Unemployment	+	Through increasing grievances on the citizens' side
CPI	+	Through increasing grievances on the citizens' side
Subsidies and public spending	–	Easing the grievances through redistributions by the regime in the form of an "authoritarian bargain"
Oil-rents	–	Easing the grievances through redistributions by the regime in the form of an "authoritarian bargain"
Domestic food production	–	Domestically produced food items could spare inflation in the food price, due to the global food crisis
GDP per capita & GDP per capita growth	+/-	Empirical literature mixed (modernization theory postulates a positive effect, while grievance-based theories propose a negative effect)
HDI_EduHealth (excluding the GNI component)	+/-	Underdevelopment could cause grievances and lead to protests; but at the same time improvements on the human development indices such as education may trigger more protests through political awareness and political participation
Mobile	+	More networking and internet usage could help in the coordination of protests among the protesters

2.3. Econometric model

From the preceding discussion, we use the above variables to formulate econometric models, consisting of sets of regression equations to estimate the determinants of both violent and non-violent protests. The regression equations for the static model are as follows:

$$\begin{aligned} Dem_{NonViol} = & \beta_0 + \beta_1 Dem_{NonV}_{EgpSyr} + \beta_2 PR1 + \beta_3 PR1_{sqr} + \beta_4 \log GDPpc \\ & + \beta_5 GDPpcg + \beta_6 CPI + \beta_7 HDI_{EduHealth} + \beta_8 Domgovhealthexp \\ & + \beta_9 Mobile + \beta_{10} Oil_{Rents} + \beta_{11} X_{Polity} + \beta_{12} Unemp_{total} + \beta_{13} Foodprodu \\ & + \beta_{14} CL1 + \beta_{15} PTS_S \end{aligned}$$

$$\begin{aligned} Dem_{Viol} = & \beta_0 + \beta_1 Dem_{V}_{EgpSyr} + \beta_2 PR1 + \beta_3 PR1_{sqr} + \beta_4 \log GDPpc + \beta_5 GDPpcg \\ & + \beta_6 CPI + \beta_7 HDI_{EduHealth} + \beta_8 Domgovhealthexp + \beta_9 Mobile + \beta_{10} Oil_{Rents} \\ & + \beta_{11} X_{Polity} + \beta_{12} Unemp_{total} + \beta_{13} Foodprodu + \beta_{14} CL1 + \beta_{15} PTS_S \end{aligned}$$

Similarly, the regression equations for the dynamic Generalized Method of Moments (GMM) model are as follows:

$$\begin{aligned} Dem_{NonViol} = & \beta_0 + \delta Dem_{NonViol_{t-1}} + \beta_1 Dem_{NonV}_{EgpSyr} + \beta_2 PR1 + \beta_3 PR1_{sqr} \\ & + \beta_4 \log GDPpc + \beta_5 GDPpcg + \beta_6 CPI + \beta_7 HDI_{EduHealth} + \beta_8 Domgovhealthexp \\ & + \beta_9 Mobile + \beta_{10} Oil_{Rents} + \beta_{11} X_{Polity} + \beta_{12} Unemp_{total} + \beta_{13} Foodprodu + \beta_{14} CL1 \\ & + \beta_{15} PTS_S \end{aligned}$$

$$\begin{aligned} Dem_{Viol} = & \beta_0 + \delta Dem_{Viol_{t-1}} + \beta_1 Dem_{V}_{EgpSyr} + \beta_2 PR1 + \beta_3 PR1_{sqr} + \beta_4 \log GDPp \\ & + \beta_5 GDPpcg + \beta_6 CPI + \beta_7 HDI_{EduHealth} + \beta_8 Domgovhealthexp + \beta_9 Mobile \\ & + \beta_{10} Oil_{Rents} + \beta_{11} X_{Polity} + \beta_{12} Unemp_{total} + \beta_{13} Foodprodu + \beta_{14} CL1 + \beta_{15} PTS_S \end{aligned}$$

2.4. Data

The dataset used in this empirical study consists of 14 MENA countries for the period 2006–2017, including the four Arab Spring countries of Tunisia, Egypt, Libya and Syria which experienced either a regime change or a civil war as a result of those events. The countries included in the dataset are the MENA countries with the majority of their population speaking in Arabic and generally tending to identify with the Arab culture. These countries are: Algeria, Bahrain, Egypt Arab Republic, Jordan, Kuwait, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen. Countries like Palestine and Lebanon were not included in the sample due to their unique historical record of conflicts with Israel. Similarly, Iraq was not included because it is not representative of the sample due to its unique situation because of the invasion by the USA in 2003. Also, Iran was not included due to its difference in culture and language from the Arabic-speaking countries of MENA.

For the dependent variable we use the “Global Dataset on Events, Location, and Tone” (GDELT) to construct our protest variables. Some prominent studies have used the GDELT dataset to study the Arab Spring events.²⁶ GDELT is a machine-

coded events dataset that codes political events, including protests and riots, from publicly available international, regional and local news sources. This dataset records nearly a quarter of a billion political events which have occurred across the world since 1979. GDELT codes 20 main categories of events. We use the data from the “Protest” category (Event code (14)), which is further divided into sub-categories: 140 (engage in political dissent, not specified otherwise), 141 (demonstrate or rally), 142 (conduct hunger strike), 143 (conduct strike or boycott), 144 (obstruct passage, block), and 145 (protest violently, riot). From the above categorization, we construct two broad categories of protests, that is, “non-violent protests” and “violent protests”. Our non-violent protests variable is constructed by summing the number of protests in categories 140–144, while the category 145 (protest violently, riot) constitutes our violent protests variable. Further, as the GDELT protests data are at the day level and other economic and political explanatory variables are at the level of the year, we have aggregated the number of protest events at the year level too. So our dependent variable is the number of non-violent and violent demonstrations in a country-year. For a full description of each category and their division into sub-categories, see the codebook for the Conflict and Mediation Event Observations (CAMEO) dataset.²⁷

Table A1 in the appendix gives a description of all the acronyms for the independent variables used in this article, along with their data sources.

Further, for illuminating the trends in the Arab Spring protests, we have provided some descriptive figures in the online appendix of figures. Figure 1 in the appendix shows the individual country trends for both non-violent and violent Arab Spring protests. Figure 2 and Figure 3 show the non-violent and violent protest trends among the MENA countries, respectively. Figure 4 compares the mean protests for the so-called Arab Spring countries which either experienced a change of regime or violent destruction and civil war, and the rest of the MENA countries.

3. Estimation strategy

We use both static and dynamic econometric models on our data. For the selection of the proper static model we run a number of diagnostic tests. The details of these tests are provided in the appendix. First, we choose between pooled-OLS, random effects (RE) and fixed effects (FE) models for our data. Our results from the Breusch–Pagan Lagrange multiplier (LM) test in Table A3 show that the pooled-OLS is more appropriate than the RE model for our data. Further, testing for the statistical significance of individual country dummies, our results from Table A4 show that the FE model is appropriate compared to the pooled-OLS. Next, we test for the time trends and existence of heteroskedasticity in the data. Our results in Table A6 show that year dummies are not significant in the case of the non-violent protests model, but are significant in the case of violent protests. Further, our results from Table A5 show the existence of heteroskedasticity in the data. In this case, the usual standard errors are biased and we cannot use a standard Hausman test in choosing between the RE and FE models. Hence, we use the Mundlak test,²⁸ where the standard errors are robust to heteroskedasticity. Our results of the Mundlak test in Table A7 show that the FE model is the final appropriate model for our data.

We follow this with a dynamic GMM model to capture the dynamic and intertemporal dimensions of protests as well. In a dynamic equation, including the lagged

dependent variable in the regression equation causes the problem of endogeneity, as the first lag of the dependent variable in the list of explanatory variables will be correlated with the current error term which causes Nickell bias²⁹ and cannot be tackled with a static regression model like OLS, FE or RE. A GMM model tackles this endogeneity problem by instrumenting the lagged dependent variable with its further lagged values, as the second and further lags of the dependent variable are not correlated with the current error term. Additionally, the GMM model by design can take care of problems of measurement error and omitted variable bias, along with the endogeneity problem.³⁰ We follow Arellano and Bover³¹ and Blundell and Bond,³² and present one-step GMM estimates for both non-violent and violent protests.³³ The Arellano and Bover³⁴ and Blundell and Bond³⁵ estimates, under the mild stationarity assumption, circumvent the finite sample bias which is present under the difference GMM of Arellano and Bond.³⁶ However, the asymptotic efficiency gains of the system GMM estimator come with the cost that the number of instruments will be increasing exponentially with the number of time periods. This leads to finite sample bias, which increases the likelihood of false positive results, and might lead to suspiciously high pass rates for the specification tests like the Hansen J-test.³⁷ To tackle the issue of instrument proliferation, we follow Roodman³⁸ and present results with a collapsed instrument matrix, and use second and third lags, for both our models. We also use Windmeijer³⁹ finite sample corrected standard errors.⁴⁰

4. Results and analysis

Our empirical results show that an FE model with robust standard errors, with time dummies for violent protests and without time dummies for non-violent protests, is the final appropriate static model to use for our dataset. Table A8 and Table A9 in the appendix report the estimates from FE and System GMM models, respectively. We start with a discussion of our main findings with regard to the intermediate regimes hypothesis, followed by a discussion of other political and socio-economic variables.

4.1. Political factors: “Intermediate regimes hypothesis”

An important and novel finding of our study is the refutation of the intermediate regimes hypothesis in the context of Arab Spring protests. Our findings from Table A8 and Table A9 estimates show that, contrary to the intermediate regimes hypothesis, the relationship between political rights and violent protests is U-shaped. We find that the PR1_square term (representing the square of the converted political rights index) has a positive relationship with both non-violent and violent protests across all specifications of FE and GMM models, whereas PR_1 (converted political rights index) has a negative relationship across all the FE and GMM models. This translates to a U-shaped relationship between political rights and violent protests, which contradicts the hypothesized “inverted U-shaped” relationship in the original intermediate regimes hypothesis. Our U-shaped finding implies that any marginal increase in political rights and freedoms leads to a higher number of protests after the country is beyond a threshold level of political rights. When the level of political rights in a country is very low (say, in a strict dictatorship), the marginal effect of increases in political rights on protest will be negative but decreasing. In other words, in very strict

authoritarian regimes, increases in political rights lead to lower protest rates (at a decreasing rate) while in relatively less authoritarian regimes increases in political rights lead to greater protest rates (at an increasing rate). However, we need to keep in mind that the sample for the current empirical exercise is limited to only a set of MENA countries, none of which have a very high political rights score relative to the global average. This limits our ability to check the possibilities for another turn-around in the relationship between political rights and protests, with a fall in the number of protests when the political rights score crosses a certain threshold (that is, in countries with functioning democracies). So, these results should not be interpreted to mean that an increase in political rights is always destabilizing.

Besides accounting for the intermediate regimes hypothesis, we also want to capture more nuanced and broader dimensions of democracy by using our own X_Polity index. Following Vreeland,⁴¹ we created the X_Polity index out of the three variables from the Polity IV dataset: “executive recruitment competitiveness” (xrcomp), “executive recruitment openness” (xropen), and “executive constraints” (exconst). As the results from Table A8 and Table A9 show, the coefficient for the X_Polity variable is negative and highly significant in determining both non-violent and violent protests, which is consistent across all specifications of FE and GMM models. This implies that higher scores on the X_Polity index, which reflects democratic dimensions such as competitiveness of chief executive recruitment, institutional constraints on chief executives and openness in the executive recruitment processes, will lead to a lower number of protests in a country. In other words, the more democratic the political institutions of a country are, the lower will be the number of protests.

Taken together, our findings support the view that (a) the demands for democracy and political rights were significant determinants of the Arab Spring protests, and (b) beyond a threshold, any further democratization and expansion of political rights, to be effective in reducing protests, must be accompanied by deeper democratic reforms in the form of institutional checks on the ruler.

4.1.1. Robustness check for our intermediate regimes hypothesis result using different datasets and variable specifications

As a robustness check of our finding of the refutation of the intermediate regimes hypothesis, we use an alternative measure of “regime type” (level of democracy) from a different dataset than the Freedom House dataset in our previous exercise. We do this robustness check using our own index X_Polity (from the PolityIV dataset) in the quadratic form, replicating our previous practice with the Political Rights (PR1) variable of the Freedom House dataset. Vreeland⁴² uses the same three-component index of Polity score for a critical examination of regime hypothesis, after excluding the two problematic components from the “overall” Polity score. Our results from Table A10 and Table A11, in the appendix, show that the X_Polity coefficient is negative and significant while the coefficient for X_Polity_sqr is positive and significant from both FE and GMM models for both non-violent and violent protests. This resembles our finding with the PR1 variable and provides another layer of robustness support for our finding of the U-shaped relationship between the stage of democratic transition (regime type) and being exposed to instability (protests) in a country.

Further, we go one more step further in the direction of the robustness check of our finding on the intermediate regimes hypothesis by specifying an alternative measure

for “regime type” using the dummy variable method instead of using a quadratic term. Our use of dummy variable specification also supports the U-shaped relationship between intermediate regimes and number of protests. In a separate model, reported in Table A10 and Table A11 in the appendix (for FE and GMM models, respectively), we run our empirical model using a dummy variable for PR1, where we define intermediate regimes as coinciding with the middle values of PR1 (range: 3–5) and democracies coinciding with the two highest values (that is, 6 and 7). The reference group for the PR1 dummy variable is autocracies, defined as encompassing the two lowest values of 1 and 2. The dummy variables “INTERM_PR1” and “DEM_PR1” in Table A10 and Table A11 represent two categories of intermediate regimes and democracies, respectively. Our results from Table A10 and Table A11 show that the coefficient for INTERM_PR1 is negative but insignificant and the coefficient for democracy DEM_PR1 is positive and significant from all the specifications of both FE and GMM models. The findings from dummy variable specification of regime type suggest that the number of protests in intermediate regimes was lower than both autocracies (reference groups) as well as democracies (with regard to reference group). This finding is in line with our U-shaped relationship in our baseline model in Table A8 and Table A9 where the regime type is defined in the form of a quadratic term of PR1, rather than a dummy variable.

Table 3 shows these results.

4.2. Findings on socio-economic factors

Going beyond the refutation of the intermediate regimes hypothesis in the context of the Arab Spring, our study provides further interesting insights into some of the issues discussed in the literature. The estimates of both static FE and dynamic GMM models show that spillovers from Egypt and Syria, the two Arab Spring countries with the highest number of protests, is positive and significant for both non-violent and violent protests. On the other hand, results from the GMM model in Table A9 show that the coefficient for the lagged dependent variable is positive and significant for non-violent protests, but insignificant for violent protests. This signifies that both spatial and intertemporal spillovers are important for non-violent protests, while in the case of violent protests spatial spillovers are more important than intertemporal ones. In other words, violent protests tend to spread across regions at a point in time, but do not tend to grow at a place over time. Non-violent protests, on the other hand, tend to both spread across regions as well as grow over time.

Table 3. Results on “intermediate regimes hypothesis” and other political factors.

Political variables	Expected results	Our findings
Political Rights (PR1) (as used in testing the intermediate regimes hypothesis)	Non-linear (Inverted-U shape)	Non-linear (U shape)
X_Polity index (as used in testing the intermediate regimes hypothesis)	Non-linear (Inverted-U shape)	Non-linear (U shape)
Civil Liberties (CL1)	-	Statistically insignificant across all specifications of the models
Political Terror Scale (PTS)	+/-	Statistically insignificant across all specifications of the models

With regard to economic factors, our study gives empirical support for insights in the literature that other studies had already in part provided. Our estimates from different specifications of both the FE and the GMM models in Table A8 and Table A9 show that the coefficient of GDP per capita growth (GDPpcg) is negative and significant in determining non-violent protests, while it is not a significant determinant of violent protests. Also, the GMM estimates show that the coefficient for LnGDPpc is negative and significant for both non-violent and violent protests. This implies that higher economic growth reduces the number of non-violent protests, while higher levels of GDP per capita and standards of living reduce the number of both non-violent and violent protests in a country. Further, from GMM estimates, the next significant economic variable is HDI_EduHealth which is positive and significant across all model specifications for both non-violent and violent protests. One reason for this interesting result could be that in countries with higher HDI_EduHealth levels citizens are well-educated, and engaging in political protests might give them more emancipative value associated with democracy than countries with lower levels of HDI_EduHealth. Furthermore, it is pointed out in the literature that education fosters the “culture of democracy” and commitment to civil liberties,⁴³ which may prompt citizens to protest and raise their voices against an autocratic ruler.

Furthermore, the other economic factor which is posited as a cause of the Arab Spring, in studies of weakening in the “social contract” of MENA, is cuts in subsidies and public spending by the MENA regimes.⁴⁴ Due to lack of sufficient data on subsidies and public spending, we have used share of domestic government spending on health expenditure (as a % of GDP) as a proxy for subsidies and overall public spending. As the GMM model estimates from Table A9 show, the coefficient for government health expenditure is negative and significant for both non-violent and violent protests across all model specifications. This could imply that cuts in government public spending, especially after reforms in the form of economic liberalization in the 1980s, could be an important cause of the Arab Spring protests.

The other economic factor which is significant in reducing both non-violent protests and violent protests (from both GMM and FE models) is food production. This may imply that higher domestic food production might have mitigated the impact of the global commodity price increases of the 2000s which might otherwise have transmitted to domestic markets, leading to more protests.⁴⁵ This implies that domestic capacity for food production is important in preventing protests, by acting as a cushion for the domestic economy against the global commodity price shock of the 2000s in the decade prior to the Arab Spring. This is important as for countries like Algeria and Egypt food imports constitute around 20% of their merchandise imports, while this figure for Yemen had been between 25% and 30% in the years prior to the Arab Spring.

Furthermore, results from the FE model in Table A8 show that the coefficient for oil-rents is negative and significant in determining non-violent protests only. This implies that countries with higher shares of oil-rents (% of GDP) have experienced lower numbers of non-violent protests, which might be due to the abundance of financial resources at the disposal of the ruler, allowing them to buy-off protests against the provision of public services or private rents. This supports the so-called “authoritarian bargain” in the case of MENA countries. Further, the insignificance of oil-rents for violent protests could signify that other grievances related to political

Table 4. Results on socio-economic factors.

Economic variables	Expected sign	Our findings				
		Non-violent protests		Violent protests		
		Fixed Effects model	GMM model	Fixed Effects model	GMM model	
Intertemporal spillover effects	+	NA	+	NA	+	(statistically insignificant)
Spatial spillover effects	+	+	+	+	+	
GDP per capita growth	+/-	-	-	-	(statistically insignificant)	(statistically insignificant)
GDP per capita	+/-	- (statistically insignificant)	-	-	(statistically insignificant)	-
HDI_EduHealth (excluding the GNI component)	+/-	+	+	+	+	+
Subsidies and public spending	-	-	-	-	-	-
Domestic food production	-	-	-	-	-	-
Oil-rents	-	-	- (statistically insignificant)	- (statistically insignificant)	- (statistically insignificant)	- (statistically insignificant)

rights and freedoms could be more important in determining the violent protests which the ruler might not be able to buy-off by using oil-rents.

Furthermore, we find no empirical support for the statistical significance of variables such as CPI, unemployment and mobile use as possible determinants of the Arab Spring protests which are posited as such in some studies in the literature.

Table 4 highlights our findings with regard to socio-economic factors in light of the existing literature.

5. Conclusion

The main objective of this study was to identify the structural determinants of the Arab Spring, and also critically examine the “intermediate regimes hypothesis” in this context. One of the main and novel findings of our study is finding a “U-shaped” relationship between the stage of democratic transition and instability, which runs opposite to the “inverted U-shaped” relationship in the original intermediate regimes hypothesis. This U-shaped finding signifies that, contrary to the implication of the original regime hypothesis, the intermediate regimes of MENA are more stable than the fully autocratic or more democratic regimes of the region. One implication of this could be that initially the fragility and vulnerability of the very strict authoritarian regimes is reduced by widening the stake in the existing regime. However, beyond a certain threshold, the mere expansion of political rights seems to be ineffective and destabilizing without progress in other aspects of democratization. This is supported by our finding that more nuanced dimensions of democracy – from our own PolityIV index reflecting the institutional checks on the authoritarian regime – have a positive impact on stability and reducing the protests. This novel finding of our study with regard to the intermediate regimes hypothesis highlights the importance of multi-dimensional reforms towards democratization. For absolutely dictatorial regimes, an increase in political freedom might be stabilizing in the beginning, but after the initial phase of democratization, a more

multi-faceted phase of democratization involving institutional reforms to curb rent-seeking by the state is required.

Further, our study gives empirical support for insights in the literature that other studies had already in part provided. Among the economic factors, higher economic growth and higher levels of GDP per capita lead to lower protest rates. Further, oil-rents could mitigate some of the discontent, possibly by making transfers. Also, higher transfers in the form of domestic health expenditure reduce the grievances and protests. Populations with higher levels of education and health protested more, possibly due to the higher emancipative value associated with politics which they get from democracy. The empirical results also show evidence of the spatial spillover effect of Arab Spring protests from Egypt and Syria, the major sites of protests against the regimes, to other areas in the MENA region. There are also intertemporal spillovers for non-violent protests. Both economic as well as political factors were responsible for the generation of popular discontent in the MENA countries, leading to both non-violent and violent Arab Spring protests. However, we find no empirical evidence that factors like mobile use or social networks played any significant role in the Arab Spring.

Taken together, we may interpret these results to imply a breakdown of the larger social contract which sustained the authoritarian and semi-authoritarian regimes in the MENA region. This breakdown of the social contract played a key role in the emergence of the Arab Spring. Prior to the 2000s, a combination of oil-rents and geopolitics might have kept the authoritarian regimes stable through a combination of repression as well as redistribution of a part of the oil-rents in the form of transfers, which could control the discontent as an “authoritarian bargain”. This arrangement broke down in the 2000s, partly due to the change in the geopolitical situation with the end of the Cold War, as well as a combination of economic factors and lack of political rights and democracy. The instability caused by these changes made these authoritarian regimes vulnerable to popular resistance.⁴⁶ The emergence of protests in some countries of the region, in this sense, was the final trigger to an already unstable situation leading to the spread of protests across the region.

A key lesson for the regimes and the policymakers from this study is the importance of taking up large-scale political as well as institutional reforms towards democratization in order to prevent large-scale protests and a possible revolution. The old “authoritarian bargain”, which sustained many of the dictatorial and semi-dictatorial regimes in this region in the past, is unlikely to work for too long. Changes in geopolitics have increasingly made the global powers take progressively less interest in supporting these regimes; similarly, the steady flow of oil-rents (which might be used to finance either transfers or repression) are increasingly subject to shocks due to changes in global politics, technological progress, as well as concerns with climate change.

We should also add that the results hold a lesson for not just the political regime in power, but also for the political opposition who are organizing protests. Quite often, the objectives and demands of a protest movement by the political opposition are set by the immediate context (for instance, the stepping down of a political leader, an increase in civil liberties, a revival of the old social contract, and so on). We, however, contend that protests with a more multi-dimensional set of objectives, combining political openness with institutional reforms which restrict rent-seeking, might lead to more positive outcomes. The Tahrir Square slogan of “Bread, Freedom and

Social Justice” made this very clear – merely holding an election or removing an authoritarian politician is not enough by itself, unless this political process eventually also delivers on its economic promises.⁴⁷ Either bread or freedom is unlikely to deliver much, if not accompanied with institutional reforms required to deliver social justice. The eventual failure of the Arab Spring in delivering its promises (as pointed out by several recent studies) might be examined in this context in future research on this topic.

We should, however, point out that the results from this exercise are limited to only a specific set of events, which took place in a specific geographical area at a specific stage in history. We might require a wider set of econometric studies to investigate the extent to which these results can be generalized to other countries. In other words, we should be careful in extending these results to form a general theory of determinants of protests against an incumbent regime. In addition, we should also note that certain structural factors which were not part of this study might have played a role in determining the extent of protests. One such factor might be external influences, which might have lent their support either to the regime or its opponents in various countries. Similarly, the dynamic interaction between the regime and the opposition might have also influenced the evolution of the extent and mode of protests. In many cases, the ability of the regime to repress, as well the ability of the protesters and the political opposition to sustain protests in the face of repression, have both evolved over time through a dynamic game of interaction. All these issues are subjects of future research work. In this sense, this study should be looked upon as a preliminary empirical investigation into certain important determinants of protests in MENA countries during the Arab Spring which contributes to the literature by filling an important gap.

Notes

1. Lenin, *For Bread and Peace*.
2. Bromley, “The Confusions of Democracy.”
3. Iqbal and Kiendrebeogo, “The Determinants of Child Mortality Reduction.”
4. Ianchovichina, Mottaghi and Devarajan, *Middle East and North Africa Economic Monitor*.
5. Goodwin, “Why we Were Surprised (Again).”
6. Davies, “Toward a Theory of Revolution”; Gurr, “Persistence and Change in Political Systems.”
7. Mansfield and Snyder, *Electing to Fight*; Ellingsen, “Colorful Community”; Hegre et al., “Towards a Democratic Civil Peace?”; Gates et al., “Institutional Consistency and Political Instability”; Regan and Norton, “Greed, Grievance.”
8. Slinko et al., “Regime Type and Political Destabilization.”
9. Stockemer, “Regime Type and Civil War.”
10. Vreeland, “The Effect of Political Regime on Civil War.”
11. Hegre et al., “Towards a Democratic Civil Peace?”; Fearon and Laitin, “Ethnicity, Insurgency, and Civil War.”
12. Gurr, Jagers and Moore, *Polity II: Political Structures*.
13. Vreeland, “The Effect of Political Regime on Civil War,” 1.
14. For a more detailed discussion of the regime types, level of oppression and survival strategies in the Arab Spring see, for instance, Edel and Josua, “How Authoritarian Rulers”; Josua and Edel, “The Arab Uprisings and the Return of Repression”; Hess, “From the Arab Spring”; Bellin, “The Robustness of Authoritarianism”; Bellin, “Reconsidering the Robustness of Authoritarianism”; Gause, “Why Middle East Studies Missed.”
15. See, for instance, Fakh and Ghazalian, “Did the Arab Spring Lead”; Bromley, “The Confusions of Democracy.”
16. Vreeland, “The Effect of Political Regime on Civil War.”

17. See note 14 above.
18. Campante and Chor, "Why was the Arab World?"; Arampatzis et al., "Unhappy Development."
19. Korotayev and Zinkina, "A Demographic Structural Analysis"; Chenoweth and Ulfelder, "Can Structural Conditions Explain."
20. Bellin, "The Robustness of Authoritarianism"; Bromley, "The 'Arab Spring' Stress Test"; Cammett and Diwan, *The Political Economy of the Arab Uprisings*.
21. Cordella and Onder, "Sharing Oil Rents and Political Violence"; Costello, Jenkins and Aly, "Bread, Justice, or Opportunity?"
22. Miguel, Satyanath and Sergenti, "Economic Shocks and Civil Conflict"; MacCulloch, "The Impact of Income on the Taste for Revolt"; and MacCulloch and Pezzini, "The Role of Freedom, Growth and Religion."
23. Lipset, "Some Social Requisites of Democracy"; Olson, "Rapid Growth."
24. Mansour, Leonce and Mixon, "Who Revolts?"
25. Aouragh and Alexander, "The Egyptian Experience"; Lim, "Clicks, Cabs and Coffee Houses."
26. Acemoglu, Hassan and Tahoun, "The Power of the Street"; Levin, Ali and Crandall, "Utilizing Remote Sensing"; and Steinert-Threlkeld et al., "Online Social Networks."
27. Gerner et al., "The Creation of CAMEO."
28. Mundlak, "On the Pooling."
29. Nickell, "Biases in Dynamic Models."
30. For a more detailed discussion of dynamic panel data estimators, see Baum, "Dynamic Panel Data Estimators."
31. Arellano and Bover, "Another Look at the Instrumental Variable."
32. Blundell and Bond, "Initial Conditions and Moment Restrictions."
33. For a more detailed discussion of Arellano-Bond dynamic panel GMM estimators in Stata, see Mileva, "Using Arellano-Bond Dynamic Panel."
34. Arellano and Bover, "Another Look at the Instrumental Variable."
35. Blundell and Bond, "Initial Conditions and Moment Restrictions."
36. Arellano and Bond, "Some Tests of Specification."
37. See Roodman, "A Note on the Theme of too Many Instruments." Hansen, L. P. "Large Sample Properties of Generalized Methods of Moments Estimators."
38. See Roodman, "A Note on the Theme of too Many Instruments."
39. Windmeijer, "A Finite Sample Correction."
40. We use Xtabond2 command in Stata to run the GMM regressions. For a more detailed discussion of Xtabond2 command see Roodman, D. "How to do Xtabond2".
41. Vreeland, "The Effect of Political Regime on Civil War."
42. Ibid.
43. Hyman and Wright, *Education's Lasting Influence*; Kohn, *Class and Conformity*; and McCloskey and Brill, *Dimensions of Tolerance*.
44. Hinnebusch, "The Rise and Decline"; Rougier, "Fire in Cairo."
45. Korotayev and Zinkina, "A Demographic Structural Analysis"; Ianchovichina, Loening and Wood, *How Vulnerable are Arab Countries*.
46. For a discussion of the limited reach of authoritarian powers such as in Russia and China in promoting authoritarianism in the MENA, and the democracy promoting influence of the West, in the post-Cold War era, see, Brownlee, "The Limited Reach of Authoritarian Powers"; Ghalioun, "The Persistence of Arab Authoritarianism"; Yom, "Civil Society and Democratization"; Yom, "The Dilemmas of American Democracy Promotion."
47. For similar studies in the literature, see, for instance, Teti, Abbott and Cavatorta, "Beyond Elections"; Achcar, *The People Want*.

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