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DIFFUSION OF DISSIDENCE  
IN ARAB PUBLIC OPINION

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## Abstract

We are investigating the contagion effect in dissidence in public opinion. In other words, the question is whether the behavior of dissidence in neighboring countries interacted through public opinion or not. We also investigate whether the diffusion dynamics changed after the start of the uprisings in the spring of 2011. We exploit data from Gallup polls conducted over seven waves during the period from 2009 to 2012 covering 22 Arab countries. Respondents were asked several questions ranging from their opinion on government role, employment, financial sector and role of women in society. We focus our study on three areas that are potential precursor to public dissidence. These are perception of corruption, economic inclusion, and physical wellbeing. Interestingly, our results suggest that there is indeed diffusion in public dissidence across Arab countries in the economic inclusion and wellbeing but not in perception of corruption. Additionally, the evolvement of the uprisings affected diffusion dynamics. Diffusion of dissidence was quite present prior to the start of the Arab uprisings and ceased to exist post the uprisings.

**JEL Classification:** P3

**Keywords:** Public opinion, Arab states

## ملخص

نقوم بالتحقيق في أثر العدوى في الانشقاق في الرأي العام. وبعبارة أخرى، فإن السؤال هو ما إذا كان سلوك الانشقاق في الدول المجاورة من خلال تفاعل الرأي العام أم لا. ونقوم أيضا بالتحقيق في ما إذا كانت ديناميات قد تغيرت بعد بداية الانتفاضات في ربيع عام 2011. ونقوم باستخدام البيانات من استطلاعات غالوب التي أجريت على مدى سبع موجات خلال الفترة 2009-2012 التي تغطي 22 دولة عربية. وطلب من المستطلعين العديد من الأسئلة التي تتراوح بين رأيهم حول دور الحكومة، والعمالة، والقطاع المالي ودور المرأة في المجتمع. ونحن نركز دراستنا على ثلاثة مجالات هي السلانف المحتملين للانشقاق العام. ومن المثير للاهتمام، تشير نتائجنا أن هناك في الواقع في الانشقاق العام في جميع أنحاء الدول العربية في الإدماج الاقتصادي والرفاهية ولكن ليس في مفهوم الفساد. بالإضافة إلى ذلك، تتأثر الانتفاضات بديناميات نشرها. وكان نشر الانشقاق الحالي تماما قبل بداية الثورات العربية وتوقف في الوجود بعد الانتفاضات.

## 1. Introduction

Mohamed Bouazizi emulated himself in a small city in Tunisia on December 17<sup>th</sup>, 2010. This seemed like a small event at the day. It, however, unleashed a series of major popular uprisings in several Arabic countries. The fall of long lasting autocratic rulers in a domino-like fashion was later referred to as the “Arab Spring”. The literature on democratization and its diffusion is rich with theoretical and empirical studies on different democracy waves and their underlying reasons. Political scientists have also suggested different scenarios on how these waves evolve from popular mobilizations to actual regime change (Hale 2013). Yet, there are several unanswered questions especially related to the Arab uprisings. One of these questions is whether these series of uprisings were result of a wave of democratization that diffused across the Arab world or whether each country’s uprising is an independent event from its surroundings. On the other hand, the literature is narrow in studies that use micro data in understanding political events that are geographically diffused. We attempt to answer these questions by studying dissidence in Arab public opinion before and after the wave of uprisings. Specifically, we are investigating the contagion effect in dissidence in public opinion. In other words, the question is whether the behavior of dissidence in neighboring countries interacted through public opinion or not. We also investigate whether the diffusion dynamics changed after the start of the uprisings in the spring of 2011. We exploit data from Gallup polls conducted over seven waves during the period from 2009 to 2012 covering 22 Arab countries. Respondents were asked several questions ranging from their opinion on government role, employment, financial sector and role of women in society. We focus our study on three areas that are potential precursor to public dissidence. These are perception of corruption, economic inclusion, and physical wellbeing. Interestingly, our results suggest that there is indeed diffusion in public dissidence across Arab countries in the economic inclusion and wellbeing but not in perception of corruption. Additionally, the evolvement of the uprisings affected diffusion dynamics. Diffusion of dissidence was quite present prior to the start of the Arab uprisings and ceased to exist post the uprisings.

To our knowledge, this is the first study in the literature on diffusion that empirically tests for diffusion using individual behavior and response. Our study contributes to the extensive and diverse body of literature on diffusion of democracy in three ways ((Starr and Most 1985);(Most and Starr 1990);(Mayer and Zignago 2011)). First, we link empirically individual (micro) behavior to national (macro) events. This is particularly important in the study of diffusion of dissidence and public opinion in times of major popular uprisings. Also, individual behavior and sentiment towards democratization is a necessary condition to political action and mobilization(Elkink 2011). The study, therefore, looks at the individual responses to questions that have the potential effect of generating dissidence towards the existing political regimes. We are particularly interested in questions that reflect the condition of dissatisfaction towards corruption, and satisfaction with standard of living with questions related to individual well-being. Second, we investigate the occurrence of diffusion using public opinion data rather the different traditional metrics of democracy. The common practice in prior empirical studies on diffusion of political events was to use democracy variables such as the Freedom House Index(Starr and Lindborg 2003) and Polity Index(Jaggers and Gurr 1995, Ray 1995, O’Loughlin, Ward et al. 1998, Gleditsch and Ward 2000, Mayer and Zignago 2011). Here, our measure is an average level of dissidence measured from public opinion data. Our hypothesis is that these measures are necessary condition to political change at large and to democratization specifically. They also do not suffer from the objective and abstract nature of the traditional democracy measures. Third, this is the first study that estimates the impact of diffusion of dissidence and political action in the Arab world before and after the Arab uprisings. There is obviously a rich literature that thoroughly studied prior democracy waves such as Eastern Europe and Latin America. Prior approaches to explain waves of democratizations fall short of capturing the full extent of the

Arab case. The traditional view is that a country surrounded by democratic neighbours will be more likely to democratize than a country that is surrounded by non-democracies (Gleditsch and Ward 2006). Alternatively, the pressure to democratize increases as the difference in the democracy level increases. In other words, there will be no drive to change the political system if the two countries have identical political systems whether democratic or authoritarian (Brinks and Coppedge 2006). Either way, this is obviously not the case in the Arab world. The political events that followed popular uprisings in the Arab world are still evolving. In some cases, clear and concrete steps towards democracy were taken; while in other cases drastic setbacks have hindered the process of political transformation. Our empirical study, given the richness of the public opinion data available, will contribute to a better understanding of the underlying reasons of the Arab uprisings. This will eventually explain the diversity in political outcomes following the mass protests in 2011.

There are two plausible hypotheses explaining the spread of uprisings across Arab countries. The first one is that the ousting of Ben Ali and subsequently Mubarak was an “innovation” that resulted in a cascade of numerous public mobilizations across the Arab world. This hypothesis is in line with the definition of diffusion suggested by Everett Rogers:

“a process by which an innovation is communicated through certain channels over time among the members of a social system”(Rogers 2010)

The key assumption in this hypothesis is that the only interaction is between public opinion in Egypt and Tunisia on one hand and the rest of the Arab world on the other hand. In other words, there is no feedback loop from the rest of the Arab world to Egypt and Tunisia.<sup>1</sup>

Alternatively, Arab uprisings were a case of social diffusion where there is an interaction among different countries behavior. Our hypothesis starting point is that there is interdependence among the different manifestation of dissidence in the different Arab countries. We view our analysis as an empirical study of the theory brought forward by (Elkink 2011) that links agents behavior and sentiments to waves of democratizations. According to this theory, democratization along with waves of democratization could be viewed as a bottom up process made up of seven elements. The first element is an existence of a political system whether democratic or not. Second element is the individual views about the political system. It is followed by the communication and interaction among citizens whether they are from the same country or from neighboring countries. The fourth and the fifth elements of the process entail the response of political regimes. Democratic regimes use “broadcasting” in order to influence democratization whereas non-democratic regimes revert to “isolation” to limit external influence. The sixth element is the element of dissidence and political action which is not necessarily limited to street protests. Finally, the last element is the element of regime change(Elkink 2011). This theoretical framework offers a sufficient framework for explaining the complicated process of diffusion of political change in general and dissidence specifically. We also viewed it as the most applicable framework to Arab uprisings.

## **2. Methodology**

An applicable definition of diffusion is that it is a process where the occurrence of an event changes the probability of its occurrence in another location.(Starr and Lindborg 2003). The dynamics through which this probability is altered may differ. One possibility is that the process of diffusion involves interaction among the different locations. Whereby an event in one location  $i$  affects another location  $j$  where another event takes place and in turn affects location  $i$ .

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<sup>1</sup> We investigate this hypothesis using the same data set in a separate paper.

We base our analysis on the hypothesis that there is an interaction between public opinion among Arab countries. This led to a diffusion of dissidence in public opinion across the Arab world. In other words, public opinion in country  $i$  affected public opinion in country  $j$ , which in turn affected back public opinion in country  $i$ . The degree to which one country affects the other depends on the degree they are “connected”. The spatial econometrics literature provides two approaches to test for special interaction among observed behavior. The degree of interaction among observation is through how connected variables are. An underlying assumption in these models is that the interdependence is known in advance thorough the choice of the “connectivity matrix”. The objective of such analysis is not to estimate this degree of connectivity. It is, rather, to estimate the impact of this connectivity on the interaction.

One approach is to use a “spatial lagged error” model(Gleditsch and Ward 2006). In this case, the interaction is through unobserved variables represented in the error term. Formally,

$$y_i = \alpha + x_i\beta + \lambda w_i\varepsilon + \varepsilon_i$$

Such that  $y_i$  is the observed variable in location  $i$  and  $w_i$  is the vector of weights  $w_{i,j}$  that represents the degree of connectivity between two locations  $i$  and  $j$  relative to the other locations. We do not adopt this approach for several reasons. Our starting point is that observed dissidence through opinion polls data did in fact interact. We are assuming that the interaction did occur through the observed variables. The other objective is to expand our understanding of how the Arab uprisings affected the process of diffusion. The spatial error model would not enable this type of analysis.

An alternative approach is the “spatial autoregressive” model. In this case, the connectivity is among the observed variable itself such that:

$$y_i = \alpha + x_i\beta + \lambda w_i y + \varepsilon_i$$

This is a more appropriate model to our analysis. It does not however include the possible temporal effect of observations. We, therefore, adopt a spatially lagged variable model similar to(Beck, Gleditsch et al. 2006) such that there are two channels of diffusion: spatial and temporal. The spatial diffusion is such that dissidence in one country affects dissidence in another country depending on how “close” they are. We will develop a connectivity matrix  $W$  which is a matrix of spatial weights between each two countries depending on their geographical distance. Each line in the matrix  $W$  contains distance weights  $w_{ij}$  between country  $i$  and each one of the other countries such that:  $\sum_{j=1}^n w_{ij} = 1$  for every country  $i$ . We adopt the common practice in calculating these weights based on geographical distance such that:<sup>2</sup>

$$w_{ij} = \frac{1/\sqrt{\text{distance}_{ij}}}{\sum_{j=1}^n 1/\sqrt{\text{distance}_{ij}}}$$

Additionally temporal diffusion is such that dissidence in one country affects dissidence in another country later. Here we adopt a one time period lag where the time period is the time span between each wave of public opinions. Formally, we are testing for diffusion using the following empirical specification:

$$y_{i,t} = \alpha + X_i\beta + \phi y_{i,t-1} + k w_i y_{i,t-1} + \varepsilon_{it} \quad (1)$$

Such that:

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<sup>2</sup>Another type of connectivity matrix uses trade linkages among countries. The connectivity weights represent the relative trade importance among countries using trade volumes (Beck et al. 2006).

- $y_{i,t}$  average response in country  $i$  in wave  $t$
- $\mathbf{X}_i$  socio-economic characteristics of country  $i$  such as income, population, and youth percentage of the population
- $y_{i,t-1}$  average of response in country  $i$  in wave  $t$
- $\mathbf{w}_i$  vector of distance weights for country  $i$
- $\mathbf{y}_{i,t-1}$  vector of average responses in wave  $t - 1$

The parameter  $\phi$  estimates the impact of dissidence in the same country at an earlier time period on current time period dissidence. While the parameter,  $k$ , which the parameter of interest, estimates the impact of diffusion of dissidence from the other countries weighted by the corresponding weights. There are two implied assumptions associated with this formulation. First, the interdependence among these observations is constant across observations and across time. Second, there are no completely isolated observations. In other words, there cannot be a row in which all weights values are zeros.

We estimate these parameters in three datasets. First we estimate using all responses whether before or after the Arab uprisings. Then, we estimate them before the uprisings and after the uprisings. We use bounded OLS since the values of the responses are bounded. We, therefore, assume that the error terms are temporally independent.

We also compare our results to the benchmark case where we assume that the absence of a diffusion process. In other words, the dissidence in one country affects the other without a feedback loop created by the connectivity matrix.

$$y_{i,t} = \alpha + \mathbf{X}_i\beta + \phi y_{i,t-1} + k\mathbf{y}_{i,t-1} + \varepsilon_{it} \quad (2)$$

The difference between the two empirical specifications is that the above equation includes the lagged spatial variable  $\mathbf{y}_{i,t-1}$  without the weights vector  $\mathbf{w}_i$ . Conceptually, the first regression tests for the diffusion of the phenomena in question; which is dissidence, whereas the second regression tests for possible correlation between the two variables representing the phenomena.

### 3. Data

Gallup conducted bi-annual waves of public opinions in Arab countries covering topic ranging from employment, credit, and satisfaction with government performance to role of women in society. We are using the data from seven waves conducted during the period from 2009 to 2012 (two waves in each year from 2009 to 2011 and one wave in 2012). The choice of questions for this study among the numerous questions is based on two criteria. First, we chose questions that address issues of perception of corruption, economic inclusion, and well-being. The second criterion was the availability of sufficient data points in all waves across all countries. Based on these criteria, we selected three questions for the empirical analysis (Table 1).

The answers to these questions were “yes” or “no”. We ordered the answers by 1 and 2 such that 2 is the favorable answer (“yes” for questions wp6763 and wp30 and no for question “wp68”). For the geographical distance, we use data from (Mayer and Zignago 2011) on geographical distances between major cities in kilometers. We also use control variables such as country income (GDP in constant 2005 dollar) and its population from the World Bank online database. We also control of the youth share of population from the Gallup dataset. Descriptive statistics are listed in Table 2.



#### 4. Results

Results of the two empirical specifications are shown in Table 3, Table 4 and Table 5 for corruption, economic inclusion and well-being respectively. Each table lists results of four regressions.

Regressions (1) do not test for diffusion as they contain the un-weighted spatial lagged variable. With the exception of the well-being question, the un-weighted spatial lag is not significant. Regression (1) in Table 4 shows a significant un-weighted spatial lag. It does, however, have an unexpected negative; suggesting that an increase in the average sentiment of physical pain in country  $j$  reduces the average sentiment of physical pain in country  $i$ . Weighting the spatial lag of this variable corrects this unexpected sign to a positive sign (regression (2) and (3) in Table 4).

Regressions (2) contain the weighted spatial lagged using all data from all waves. Regressions (3) and (4) use the data before and after the Arab uprising respectively.

Results provide support for diffusion in two dimensions: economic inclusion dimension and well-being dimensions. Indications of diffusion in dissidence in due to economic condition, precisely the question related to satisfaction with the standard of living, are shown in regressions (2) and (3) in (Table 4). The effect of diffusion disappears using when limiting data to post Arab uprisings as shown in regression (4) in the same table. Similarly, diffusion in well-being seems to follow the same pattern (Table 5). However, results suggest that there is no evidence of diffusion in perception of corruption represented by the question on government role in fighting corruption (Table 3).

All control variables in three types of dimensions have the expected sign and are generally significant. GDP per capita has a negative sign and is significant in the dimensions of economic satisfaction and well-being. Equally important is the robust and significant results of the youth variable. This is an expected result. It supports the notion that young people were the first who felt and expressed dissidence during Arab uprisings.

#### 5. Conclusion

This paper contributes to the literature on diffusion of political events by investigating possible diffusion of dissidence in public opinion in Arab countries before and after Arab uprisings in the beginning of 2011. We use an empirical model of diffusion using time lagged spatial variable. We find evidence that there is diffusion in economic satisfaction and well-being. This result is robust to the inclusion of data prior to the start of Arab uprisings. This supports the notion such factors mattered more in the spread of dissidence and political action rather than factors related to perception of corruption.

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**Table 1: Questions for Analysis**

	Question number	Question narrative
Perception of Corruption	wp6763	Do you think the government in your country is doing enough to fight corruption, or not?
Economic inclusion	wp30	Are you satisfied or dissatisfied with your standard of living, all the things you can buy and do?
Well-being	wp68	Did you experience the following feelings during a lot of the day yesterday? Physical pain.

**Table 2: Descriptive Statistics**

	N	Mean	Std. Dev.	Min	Max
Mean wp6763	1394	1.48	0.19	1.05	1.86
Mean wp30	1837	1.38	0.15	1.09	1.75
Mean wp68	1511	1.67	0.09	1.44	1.87
Ln population	1837	15.98	1.30	13.41	18.19
Youth (share of population)	1837	0.46	0.04	0.34	0.54
Ln GDP	1837	23.81	1.74	19.82	26.88
Distance (km)	1650	3052.09	1859.36	85.94	7695.79

**Table 3: Corruption**

	(1)	(2)	(3)	(4)
Unweighted Spatial Lag	-0.00779 (0.0129)			
Weighted Spatial Lag		-0.233 (0.555)	-0.0783 (0.669)	-0.657 (0.913)
Own Lag	0.916**** (0.0137)	0.889**** (0.0163)	0.904**** (0.0187)	0.812**** (0.0232)
Ln Population	0.000116 (0.00279)	0.0156**** (0.00420)	0.0118** (0.00480)	0.0167** (0.00648)
Youth	-0.0305 (0.0558)	-0.423**** (0.0859)	-0.299*** (0.102)	-0.474**** (0.112)
GDP	0.00820**** (0.00199)	-0.00267 (0.00285)	-0.00621* (0.00336)	0.00595 (0.00472)
Constant	-0.0315 (0.0550)	0.188*** (0.0675)	0.231*** (0.0853)	0.137 (0.0874)
N	955	879	495	384
Standard errors in parentheses				
* p<0.10	** p<0.05	*** p<0.01	**** p<0.001	

**Table 4: Economic Inclusion: Satisfaction With Standard of Living**

	(1)	(2)	(3)	(4)
Unweighted Spatial Lag	0.000685 (0.0105)			
Weighted Spatial Lag		0.690** (0.277)	1.180*** (0.384)	0.350 (0.401)
Own Lag	0.859*** (0.0134)	0.871*** (0.0145)	0.807*** (0.0155)	0.937*** (0.0249)
Ln Population	0.0135*** (0.00160)	0.0152*** (0.00176)	0.0109*** (0.00217)	0.0165*** (0.00320)
Youth	-0.00406 (0.0352)	-0.114** (0.0462)	-0.209*** (0.0485)	0.0719 (0.0960)
GDP	-0.00870*** (0.00161)	-0.0100*** (0.00176)	-0.00835*** (0.00209)	-0.0108*** (0.00293)
Constant	0.198*** (0.0462)	0.232*** (0.0511)	0.380*** (0.0571)	0.0638 (0.0843)
N	1704	1650	902	748
Standard errors in parentheses				
* p<0.10	** p<0.05	*** p<0.01	**** p<0.001	

**Table 5: Well-Being: Physical Pain**

	(1)	(2)	(3)	(4)
Unweighted Spatial Lag	-0.0548** (0.0230)			
Weighted Spatial Lag		1.130*** (0.404)	1.434*** (0.472)	-0.00341 (0.646)
Own Lag	0.673*** (0.0204)	0.659*** (0.0220)	0.583*** (0.0259)	0.802*** (0.0360)
Ln Population	0.0110*** (0.00229)	0.00529** (0.00232)	0.00585* (0.00328)	0.0118*** (0.00332)
Youth	0.0259 (0.0467)	0.269*** (0.0480)	0.245*** (0.0574)	0.169** (0.0808)
GDP	-0.00804*** (0.00137)	-0.00632*** (0.00142)	-0.00670*** (0.00187)	-0.00728*** (0.00206)
Constant	0.652*** (0.0636)	0.511*** (0.0542)	0.660*** (0.0720)	0.233*** (0.0691)
N	1144	1125	630	495
Standard errors in parentheses				
* p<0.10	** p<0.05	*** p<0.01	**** p<0.001	