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Social media and political instability: some empirical evidence

Benjamin Fomba Kamga
University of Yaounde 2 Soa

Dieu Ne Dort Talla Kokam
University of Dschang

Tii N. Nchofoung
University of Dschang

Abstract

We used a pooled cross-sectional time-series model with generalized least squares random-effects estimator to show that social media have a positive effect on political instability. The effect of social media on political instability is stronger and statistically significant for developing countries compared to developed countries where this effect is weak and statistically non-significant.

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Contact: Benjamin Fomba Kamga - fomba1@yahoo.fr, Dieu Ne Dort Talla Kokam - dtallafokam@yahoo.fr, Tii N. Nchofoung - ntii12@yahoo.com.
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Introduction

There is a growing debate about the effect of social media on political instability. This increased interest can be justified by the simultaneous rise of political instability in several countries and the growing revolution of information and communication technologies, including social media, which has broken down geographical barriers of communication and information exchange between people. Several recent studies argue that social media have the potential to influence political stability (Abdalla 2016, Joseph 2012, Wolfsfeld et al. 2013). But the question of whether social media can promote political stability remains relevant and divides researchers. On one hand, some researchers express optimism about the ability of social media to create revolutions (Shiry 2011). Advocates of this ideology argue that social media are capable of providing protesters with powerful, rapid, and relatively inexpensive tools for recruitment, fundraising, information dissemination, collective discussion, and mobilization for collective action (Bimber et al 2012, Earl and Kimport 2011). On the other hand, skeptics downplay the importance of social media (Byun and Hollander 2015, Gladwell 2010). Defenders of this view argue that the use of the Internet and new information and communication technologies gives people a false sense of political participation and prevents them from physically protesting (He and Worren 2011, Morozov 2011). These divergent views indicate that the effect of social media on political instability may depend on other factors such as the level of democracy and the quality of governance.

The intention of this study is to remove ambiguities about the effect of social media on political instability. Therefore, the contribution of this study is twofold. Firstly, previous analyses have assessed the effect of social media on political instability with data on a specific countries such as Brazil (Evangelista and Bruno 2019), Tunisia (Breuer et al. 2015) or on groups of countries belonging to a specific area such as the Arab States (Wolfsfeld et al. 2013, Hoffman and Jamal 2012, Howard et al. 2011). This study empirically examines the effect of social media on political instability with a sample of more than 107 countries. Secondly, a large literature suggests that social media have the potential to generate and sustain instability (Bimber et al. 2012, Earl and Kimport 2011, Shiry 2011). However, it is important to mention that their effects are not necessarily homogeneous in different regions of the world. It is therefore possible that social media may affect political instability differently depending on whether the country is developed or developing. This possibility arises because developing countries are generally characterized by weak democracies and relatively poorer governance (Jha and Kodila-Tedika 2020). For this reason, a comparative analysis is carried out to see if the effect of social media on political instability is stronger in developing countries than in developed countries.

Social media can impact political stability/instability in a variety of ways. Firstly, new information and communication technologies influence citizens' ability to communicate with their country's government (Margetts 2013); this is susceptible to have a favorable impact on political stability when the government is sensitive to citizens' aspirations and complaints. Secondly, social media can improve the responsiveness of authorities by making government more transparent and accountable, as they allow for the reporting and exposure of wrongdoing and thus, potentially reduce the incidence of human rights violations (Diamond 2010). Thirdly, social media are more difficult to control compared to traditional media such as newspapers, radio, and television. As a result, they are susceptible to misinformation and distortion of facts (Carmi et al. 2020). Fourthly, social media can be used by some protesters to reach a wide audience and promote mass mobilization against government actions or decisions that may undermine democratic freedoms

and citizens' rights. In this context, Abdalla (2016) argues that social media played an important role in the Egyptian youth movement at the end of Mubarak's regime, which consisted of forcing the ousting of Prime Minister Shafir and fixing a specific date for a transfer of power. In the same trend, Hoffman and Jamal (2012) and Howard et al (2011) note the greater use of social media for mass mobilization during the Arab Spring. Based on the above arguments, this study examines whether there is a significant association between social media and political instability in different countries. The main results obtained using the pooled cross-sectional time-series model estimator show that social media have a positive effect on political instability. But this result is not homogeneous in all regions of the world.

The remainder of the paper is organized as follows: Section 2 presents the methodology and data used for the empirical analysis. Section 3 focuses on the presentation and discussion of the results. Section 4 concludes the paper.

2. Empirical model and Data

2.1. Empirical model

This study examines a sample of 107 countries over the period 2009 – 2016. Following the studies of Al-Shammari and Willoughby (2019) and Blanco and Grier (2009), the econometric model of political instability is formulated as follows:

$$PI_{it} = \beta_0 + \beta_1 SM_{it} + \beta_2 Inf_{it} + \beta_3 GDP\_G_{it} + \beta_4 PopG_{it} + \beta_5 Trade_{it} + \beta_6 School_{it} + \beta_7 YU_{it} + \beta_8 democracy_{it} + \beta_9 RD_{it} + \varepsilon_{it} \quad (1)$$

PI_{it} is the measure of political instability in country i and year t. Previous studies offer several measures of political instability. These are: change of government by constitutional or non-constitutional means (Alesina et al. 1996, Aisen and Veiga 2013), coups d'état (Fosu 2001). Other authors use composite index[1]. Gakpa (2019) constructed an aggregate indicator of political instability using a principal component analysis (PCA) on six (06) political risk indicators of International Country Risk Guide (ICRG) database. [2]These political risk indicators are scored on variable scales, with a high score indicating a better political climate. In order to use these political risk indicators, we reversed and standardized each of them on a scale from 0 to 100, where 0 indicate the better political climate. The Gakpa (2019) method is used to construct the political risk indicator used in this study (see appendix 3).

SM is the measure of social media. The number of Facebook users per 100 people in the country (*facebook*), is used as a social media indicator.

The other additional variables of the model are chosen with reference to the existing literature. They are: inflation (*inf*), GDP per capita growth (*GDP_G*), population growth rate (*PoPG*), trade openness (*Trade*), education (School), youth unemployment (*YU*), level of democracy (*democracy*) and regime durability (*durability*). Al-Shammari and Willoughby (2019) analyze the determinants of political instability in the MENA sub-region and find that the food price shock, youth unemployment, and regime sustainability are the main factors explaining political instability in the sub-region. Blanco and Grier (2009), using a panel of Latin American countries, indicates

[1] See Campos and Nugent (2002; 2003) and Jong-A-Pin (2009)

[2] These political risk indicators are: internal conflicts, government stability, religious tensions, external conflicts, ethnic tensions and military implication in politics.

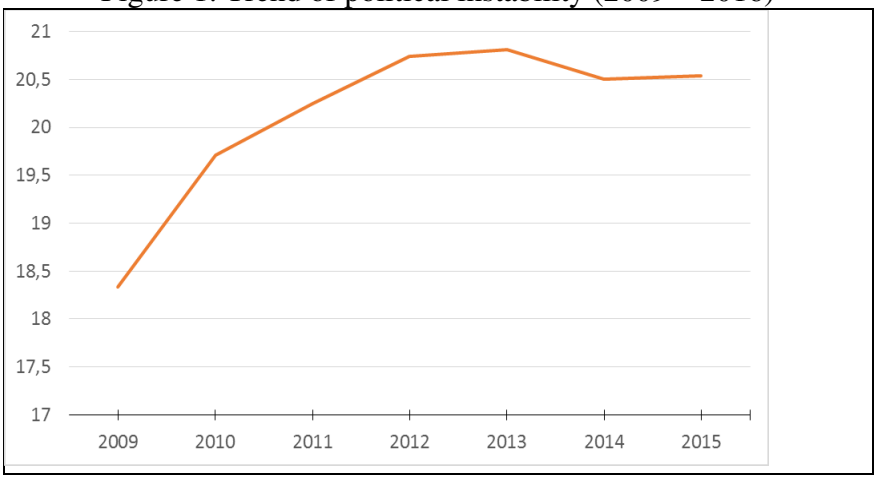
that countries with "more democratic polities" are less vulnerable to political instability. Azeng and Yogo (2013) find in their study that youth unemployment positively affects political instability. Urdal (2006) indicates that the size of youth in the population has a positive effect on political instability. Other studies have analyzed the effect of education on political instability (Alesina and Perotti 1996, Compante and Chor 2012, Murphy 2012). However, empirical analyses are not consistent on the nature of the effect of education on political instability. Other authors have focused on macroeconomic factors and have shown that economic growth (Alesina et al. 1996, Grossman 1991) and trade openness (Golstone et al. 2005, Donovan et al. 2005) promote political stability. Finally, several authors have pointed out that inflation stimulates political instability (Aisen and Veiga 2006, Blanco and Grier 2009, Cukierman et al. 1992).

ε_{it} is a residual term with three components which are the individual component (u_i), the time component (v_t) and a white noise (w_{it}).

2.2 Data and descriptive statistics

The data used in this study covers a sample of 107 countries over the period 2000-2016. These data are taken from the following databases: International Country Risk Guide, World Development Indicators, Freedom House, Statcounter Global Stats and Polity IV Dataset. The number of countries and the period are determined by the availability of data on all variables. The list of countries and data source are presented in Appendices 1 and 2 respectively.
Figures 1 and 2 illustrate the evolution of the key variables in this study. The first figure shows that political instability has increased significantly around the world, from a value of 17.96[3] in 2009 to 20.54 in 2016. This increase in political instability is explained by the rise in conflicts in several countries over the last decade.

Figure 1: Trend of political instability (2009 – 2016)

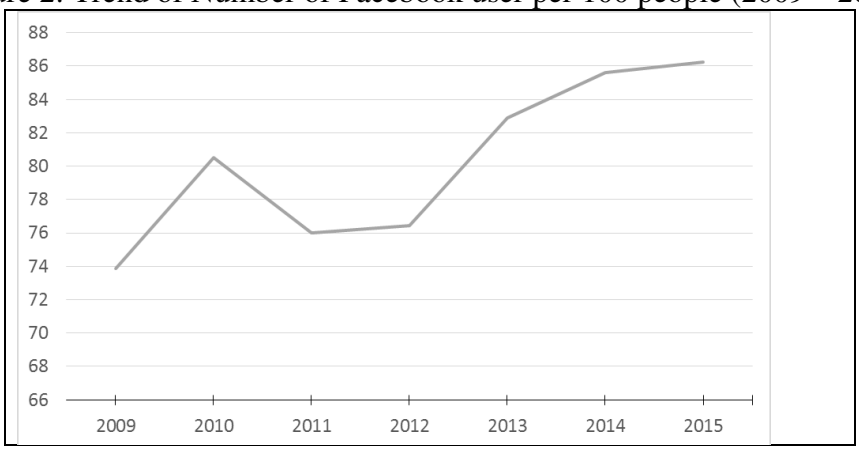


Source:Authors

Figure 2 shows the evolution of the number of Facebook users per 100 people. It can be seen that the use of Facebook has a growing trend despite some fluctuations. With an average of 62.32 users per 100 people in 2009, the proportion of Facebook users increased to 86.24 in 2016, corresponding to 350 million and 1.6 billion users respectively.

[3] The values of political instability are scored on a scale from 0 to 100 with 0 reflecting perfect political stability.

Figure 2: Trend of Number of Facebook user per 100 people (2009 – 2016)



Source: Authors

The descriptive statistics on the variables are summarized in Table I. It can be seen that the mean value of political instability over the period 2009-2016 is 19.56 with a standard deviation of 7.4 (standard deviation between is 7.19). This dispersion reflects a wide disparity in the level of political instability between the countries in the sample. Moreover, the average value of political instability is higher in developing countries (22.75) compared to the average level in developed countries (14.82). The sample data indicates that on average, the number of Facebook users per 100 people is 77.98 over the 2009-2016 period. Developing countries have the highest average proportion (81.79) compared to developed countries (71.34. The average youth unemployment rate is 16.71 percent. Developing countries have a low youth unemployment rate (13.82 percent) compared to developed countries (21.76 percent). Indeed, the literature points out that developing countries tend to have the lowest unemployment rates because of their high rates of underemployment and precarious jobs (International Labour Organization, 2018). The average level of democracy is 56.4 on a scale of 0 to 100, where 100 is good democracy. Developing countries have on average a lower level of democracy (43.9) than developed countries (78.14).

Table I: descriptive statistics

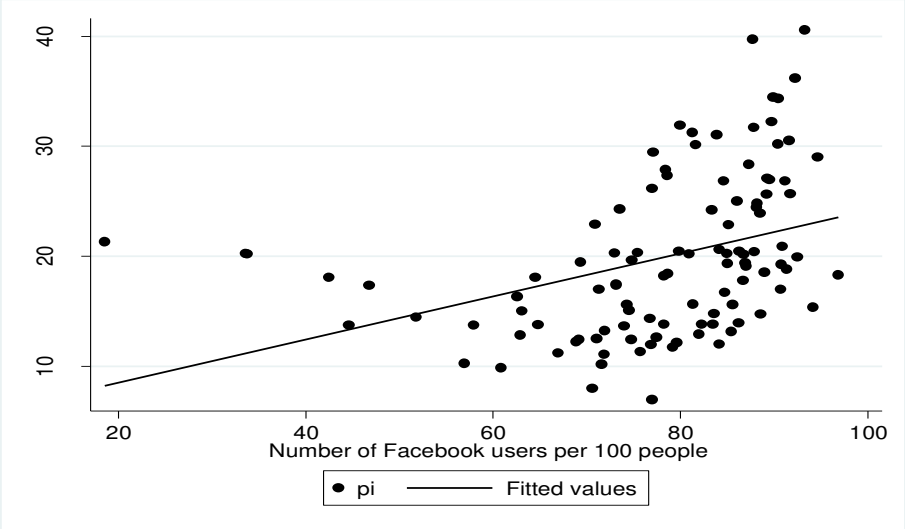
	Overall sample			Developed countries			Developing countries		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
GDP_G	856	1.672989	3.689845	312	.6428821	3.651563	544	2.263785	3.583519
Inflation	856	5.141068	11.45788	312	2.57261	5.905768	544	6.614154	13.44528
PopG	856	1.442655	1.501066	312	.3152894	.8165996	544	2.089233	1.42015
School	856	102.7711	11.06255	312	101.3749	4.094577	544	103.5719	13.46599
Trade	856	84.95256	45.67068	312	103.6704	57.72844	544	74.21734	32.53935
YU	856	16.71153	11.17669	312	21.75956	10.92987	544	13.81633	10.25837
PI	856	19.85758	7.403093	312	14.81643	4.638239	544	22.74883	7.14129
Democracy	856	56.40855	26.25187	312	78.13645	16.97206	544	43.94695	22.21087
Facebook	856	77.98877	18.16843	312	71.34971	19.25205	544	81.79647	16.35921
Durability	856	33.27336	36.18562	312	54.5	46.63679	544	21.09926	20.21572

Source: authors

The correlation matrix shows that the correlation between Facebook usage and political instability is positive and equal to 30.6% (appendix 4). The coefficients between explanatory variables are weak (less than 50% in all cases). This shows that the risk of multicollinearity is weak.

In addition, Figure 3 presents the relationship between Facebook use and political instability. It suggests a positive link between Facebook use and the level of political instability. A priori, it can be deduced that a high use of social media is associated with an increase in political instability. But it is important to do econometric analyses to examine the effect of social media on political instability at the global level and following a comparative approach.

Figure 3: A scatter plot of political instability and Facebook use



Source: Authors

3. Results and discussions

The regression of equation 1 requires a priori the choice of the appropriate estimator between the estimator of fixed and random effects. The Hausman specification test is applied for such a choice. The p-value associated with the Hausman test allows us to reject the null hypothesis that there is no systemic difference between the coefficients obtained with the fixed effects estimator and the random effects estimator. Indeed, the p-values are below the 1 percent threshold for the overall sample and for the two sub-samples. This result suggests that the fixed effects estimator is most appropriate for the regression.

The issue of autocorrelation and heteroskedasticity are also verified. The Wooldridge test shows that the errors are autocorrelated. The Wald test for groupwise heteroskedasticity also indicates the presence of heteroskedasticity. The presence of these two problems makes the results obtained with the fixed effects estimator biased and inconsistent. The regression results with fixed effects estimator are presented in Appendix 5. To correct this problem we used the pooled cross-sectional time-series model with generalized least squares random-effects estimator. This estimation procedure has several advantages. Firstly, it is appropriate when the individual dimension (number of countries) dominates the time dimension. In the case of this study, the number of countries (107) is far greater than the number of years (08). Secondly, it provides estimates of parameters that are not contaminated by the effects of autocorrelation and heteroskedasticity.

The regression results of equation 1 show that the use of Facebook has a positive effect on political instability. A percentage increase in the proportion of Facebook users increases political instability by 0.02 percent (Table II). However, this result is not homogeneous in all regions of the world. We observe that the effect of Facebook use on political instability is positive but statistically non-significant in the cotext of developed countries, while its effect is positive and significant at the 1 percent threshold in developing countries. In developing countries, a 1 percent increase in the proportion of Facebook users increases instability by 0.039 percent. As a whole, these results indicate that the use of social media stimulates political instability, but the magnitude of its effect depends on the level of development of the country, with developing countries being more vulnerable. These results are consistent with existing literature. Evangelista and Bruno (2019) in the case of Brazil pointed out that social media increase political instability. The similar result is obtained by Abdalla (2016) and by Hoffman and Jamal (2012).

Table II: Regression results for the equation 1

Variables	Overall sample	Developed countries	Developing countries
Facebook	0.0207***	0.00235	0.0388***
	(0.00556)	(0.00726)	(0.00748)
Gdp per capita growth	-0.00269	-0.00118	-0.00126
	(0.0165)	(0.0236)	(0.0235)
Inflation	0.0202**	0.0724***	0.0108
	(0.00843)	(0.0222)	(0.00751)
School enrollment (primary)	-0.0464***	0.0160	-0.0652***
	(0.0156)	(0.0339)	(0.0161)
Trade openness	-0.0110***	-0.00453	-0.0441***
	(0.00411)	(0.00432)	(0.00686)
Youth unemployment	0.00773	0.0813***	0.0501**
	(0.0169)	(0.0197)	(0.0229)
Democracy level	-0.0870***	-0.0864***	-0.105***
	(0.00969)	(0.0158)	(0.0115)
Regime durability	0.0410***	0.00979**	0.0893***
	(0.00634)	(0.00420)	(0.0120)
Population growth	0.519***	0.829***	0.472**
	(0.170)	(0.272)	(0.191)
Constant	29.55***	18.40***	38.89***
	(2.308)	(3.590)	(2.018)
Regional dummies	Yes	Yes	Yes
Observations	856	312	544
Number of countries	107	39	68
Wald chi2	713.3***	574.5***	462.5***

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Youth unemployment has a positive effect on political instability. A 1 percent increase in the youth unemployment rate leads to an increase in political instability of 0.08 percent in developed countries and 0.05 percent in developing countries (Table II). As suggested by Al-Shammari and Willoughby (2019) and Urdal and Hoelsher (2012), unemployment and particularly youth unemployment is one of the main causes of political instability.

The results also show that increased trade openness promotes political stability. These results are consistent with those obtained by Al-Shammari and Willoughby (2019), Blanco and Grier (2009) and Goldstone et al (2010). These authors argue that countries with high trade openness are less likely to experience political instability. Donovan et al (2005) point out that trade openness is associated with more political stability when trade openness leads to higher growth.

The results also show that inflation is positively associated with political instability. This result is consistent with those obtained by Aisen and Veiga (2006) and Blanco and Grier (2009). The results also suggest that increasing the level of democracy contributes to the promotion of political stability. A 1 percent increase in the level of democracy leads to a decrease in political instability of 0.1 percent. This result is consistent with Al-Shammari and Willoughby (2019) who indicated that the level of democracy is negatively associated with political instability in the MENA region. The coefficient on regime durability is positive and significant. The longer a political regime persists, the greater the risk of political instability. Al-Shammari and Willoughby (2019) and Blanco and Grier (2009) find similar results in their studies. The results of this study show that GDP growth has a negative but not significant effect on political instability. This result, although statistically non-significant, is consistent with those obtained by Alesina et al. (1996).

When equation 1 is regressed without the SM variable, the sign and significance of the other variables are maintained (appendix 6). This shows that social media is the "gasoline", but not the "match" for political instability[4]. For instance, when individuals manifest their grievances against a particular regime or particularly economic situation, they tend to coordinate easily their actions through the social media. This tends to amplify the effect of that particular situation on political instability.

Conclusion

The issue of political instability is receiving increasing attention in the development policies of several countries. Several countries continue to experience situations of political instability characterized in particular by armed conflicts, coups d'états and civil unrest. Stopping such phenomena requires an in-depth diagnosis of its causes. Several authors have examined this issue and several political, economic and socio-cultural factors have been identified. The revolution of information and communication technologies in recent decades has drawn attention to the effect of these technologies on political instability. But the debate is far from over. This study has focused on the effect of social media on political instability by taking a comprehensive and comparative approach.

The empirical analysis covered a sample of 107 countries over the period 2009 - 2016. The analytical approach consisted on one hand, of an overall analysis and on the other hand, of a comparison of the results between developed and developing countries. The main results obtained using the pooled cross-sectional time-series model with generalized least squares random-effects estimator show that social media have a positive effect on political instability. But this result is not homogeneous in all regions of the world. The effect of social media on political instability is stronger and statistically significant for developing countries compared to developed countries where this effect is weak and statistically non-significant.

[4] We thank the anonymous referee for bringing this to our notice

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Appendix

A. 1: list of countries

Developed countries: Albania, Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States.

Developing countries: Algeria, Armenia, Azerbaijan, Bahrain, Bolivia, Botswana, Brazil, Burkina Faso, Cameroon, Chile, China, Colombia, Congo. D. R., Congo. Rep., Costa Rica, Cote d'Ivoire, Dominican Republic, Ecuador, Egypt. Arab Rep., El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Guyana, Honduras, India, Indonesia, Iran. Islamic Rep., Jordan, Kazakhstan, Kenya, South Korea, Kuwait, Liberia, Madagascar, Malawi, Malaysia, Mali, Mexico, Mongolia, Morocco, Mozambique, Niger, Nigeria, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Qatar, Saudi Arabia, Senegal, Sierra Leone, South Africa, Sri Lanka, Sudan, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Uruguay, Venezuela. RB, Vietnam, Zambia.

A. 2: Variable and data source

Variables	Definition	Source
GDP per capita growth	Annual percentage growth rate of gross domestic product per capita	World Development Indicators (WDI)
Inflation	Inflation as measured by the consumer price index	WDI
Population growth	Annual population growth rate for year	WDI
School	School enrollment, primary (% gross)	
Trade	sum of exports and imports of goods and services measured as a share of gross domestic product	WDI
Youth unemployment	Unemployment, youth total (% of total labor force ages 15-24) (modeled ILO estimate)	WDI, ILO
Political instability	Composite indicator based on the six (06) political risk indicators of Internal country risk guide (internal conflicts, government stability, religious tensions, external conflicts, ethnic tensions and military implication in politics	ICRG
Democracy	Average of political rights and civil liberties indexes	Freedom House
Facebook	Number of Facebook users per 100 people in the country	Statcounter Global Stats
Regime durability	Number of years a country has had a particular regime	Polity IV Dataset

A. 3: Principal component analysis

Table 3a: KMO index and Bartlett test

KMO index and Bartlett test	
Precision measurement of Kaiser-Meyer-Olkin sampling	0.760
Bartlett sphericity test :	
Approximate Chi-square	1494.151
Ddl	15
Significance of Bartlett	0.000

Note: The Kaiser-Mayer-Olkin (KMO) index indicates good sampling quality with a value of 0.76. In addition, the Bartlett sphericity test is significant at 1 percent threshold.

Table 3b: Total variance explained

Component	Eigenvalues		
	Total	% of variance	% accumulated
1	2.846	47.435	47.435
2	1.037	17.291	64.726
3	0.803	13.390	78.116
4	0.571	9.520	87.636
5	0.470	7.829	95.465
6	0.272	4.535	100.00

Note: We retain the first two principal components in order to obtain the weightings used to calculate the political instability index. These two components account for 64.73 percent of the total variance.

A. 4: Correlation matrix

	I	II	III	IV	V	VI	VII	VIII	IX	X
PI (I)	1									
Facebook (I)	0.306	1								
GDP_G (III)	-0.138	0.154	1							
inflation (IV)	0.258	-0.018	-0.028	1						
school (V)	-0.165	-0.054	0.022	0.021	1					
trade (VI)	-0.372	-0.019	0.002	-0.133	-0.049	1				
YU (VII)	0.204	0.043	-0.162	-0.029	-0.036	0.031	1			
democracy (VIII)	-0.582	-0.075	-0.094	-0.235	0.074	0.191	0.241	1		
durable (IX)	0.506	-0.277	-0.089	-0.180	0.081	0.061	0.052	0.406	1	
pop_g (X)	0.283	0.224	-0.027	-0.003	-0.043	-0.099	-0.415	-0.484	-0.109	1

A. 5: Regression results with the fixed effects estimator

Variables	Overall sample	Developed countries	Developing countries
Facebook	0.0247***	0.0247***	0.0247***
	(0.00592)	(0.00592)	(0.00592)
Gdp per capita growth	-0.0476**	-0.0476**	-0.0476**
	(0.0222)	(0.0222)	(0.0222)
Inflation	0.0213***	0.0213***	0.0213***
	(0.00797)	(0.00797)	(0.00797)
School enrollment (primary)	-0.00835	-0.00835	-0.00835
	(0.0196)	(0.0196)	(0.0196)
Trade openness	0.0323***	0.0323***	0.0323***
	(0.00713)	(0.00713)	(0.00713)
Youth unemployment	0.0998***	0.0998***	0.0998***
	(0.0222)	(0.0222)	(0.0222)
Democracy level	0.00198	0.00198	0.00198
	(0.0152)	(0.0152)	(0.0152)
Regime durability	0.0242	0.0242	0.0242
	(0.0182)	(0.0182)	(0.0182)
Population growth	-0.267*	-0.267*	-0.267*
	(0.146)	(0.146)	(0.146)
Constant	13.82***	13.82***	13.82***
	(2.368)	(2.368)	(2.368)
Observations	856	856	856
R-squared	0.112	0.112	0.112
Number of countries	107	107	107
Fisher	10.33	10.33	10.33

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

A. 6: Regression results for the equation 1 without SM variable

Variables	Overall sample	Developed countries	Developing countries
Gdp per capita growth	-0.00862	-0.00161	-0.0138
	(0.0158)	(0.0221)	(0.0226)
Inflation	0.0205**	0.0722***	0.0118*
	(0.00811)	(0.0219)	(0.00690)
School enrollment (primary)	-0.0490***	0.0147	-0.0708***
	(0.0163)	(0.0339)	(0.0176)
Trade openness	-0.00863**	-0.00472	-0.0359***
	(0.00415)	(0.00428)	(0.00717)
Youth unemployment	0.0162	0.0825***	-0.0452*
	(0.0173)	(0.0194)	(0.0258)
Democracy level	-0.0850***	-0.0847***	-0.0975***
	(0.00987)	(0.0151)	(0.0122)
Regime durability	0.0382***	0.00988**	0.0835***

	(0.00646)	(0.00411)	(0.0130)
Population growth	0.534***	0.824***	0.517***
	(0.170)	(0.271)	(0.195)
Constant	30.19***	18.54***	41.83***
	(2.387)	(3.568)	(2.028)
Regional dummies	Yes	Yes	Yes
Observations	856	312	544
Number of countries	107	39	68
Wald chi2	649.8***	591.7***	335.8***

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1