

Emerging Markets Finance and Trade

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/mree20

The Stock and CDS Market Consequences of Political Uncertainty: The Arab Spring

Başak Tanyeri, Tanseli Savaser & Naime Usul

To cite this article: Başak Tanyeri, Tanseli Savaser & Naime Usul (2022) The Stock and CDS Market Consequences of Political Uncertainty: The Arab Spring, Emerging Markets Finance and Trade, 58:7, 1821-1837, DOI: 10.1080/1540496X.2021.1937116

To link to this article: https://doi.org/10.1080/1540496X.2021.1937116

Published online: 02 Aug 2021.

Submit your article to this journal

Article views: 220

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=mree20

EMERGING MARKETS FINANCE AND TRADE
2022, VOL. 58, NO. 7, 1821–1837
https://doi.org/10.1080/1540496X.2021.1937116

Routledge
Taylor & Francis Group

ARTICLE

Check for updates

The Stock and CDS Market Consequences of Political Uncertainty: The Arab Spring

Başak Tanyeri[a], Tanseli Savaser[b], and Naime Usul[c]

[a]Bilkent University, Faculty of Business Administration, Ankara, Turkey; [b]Vassar College, Economics Department, Poughkeepsie, New York, USA; [c]Çankaya University, Banking and Insurance Program, Ankara, Turkey

ABSTRACT

We investigate how political unrest affects asset prices in the context of the Arab Spring. Abnormal returns in the major stock-market indices of Arab Spring countries average −1.1% on key days of Arab Spring and abnormal changes in credit default spreads average 1.4%. There is significant reaction to region wide as well as local protests indicating a spillover with protests in neighboring countries affecting investors' perception of local political instability and the pricing of assets. Once protests start locally, investors start paying more attention to what is happening at home than in the region. The significant stock market reaction to region-wide protests in Arab Spring countries indicates a spill-over where investors price an increase in the probability of political turmoil in one country when there are protests in neighboring countries. The decline in stock market indices coupled with the increase in credit default spreads indicates that investors anticipate and ex-ante price how current political uncertainty will affect firm value.

JEL
G23; G34

KEYWORDS
Political uncertainty; arab spring; regional spillovers; middle east and north africa

1. Introduction

The Arab Spring of mass protests and demonstrations for democracy swept across the Middle East and North African (MENA) countries in 2011. The demonstrations called for political freedom and an improvement in the standards of living. The demonstrations were so influential that in some countries the ruler was deposed (Zine El Abidine Ben Ali, Muammar Gaddafi, Hosni Mubarak, and Ali Abdullah Saleh) and in other major uprisings and social violence occurred including riots, civil wars, or insurgencies. We investigate the financial consequences of the Arab Spring that generated significant uncertainty about the political regimes and incumbent decision-makers. Politicians operating within the boundaries set by the regime legislate the rules that govern how firms operate. Investors price firms based on their beliefs about the financial health of the firm as well as its economic and regulatory environment. Consequently, uncertainty about the sustainability of the political regime or a change in the incumbent decision-makers influences how investors price all assets in the economy.

Political uncertainty increases the real option value of waiting and thus leads investors to postpone their investments (Bernanke 1983; Bloom, Bond, and Van Reenen 2007). Anticipating a decrease in investment, financiers would reprice asset values and risk. In addition, as investors demand higher returns for taking on higher risk, greater uncertainty also leads to increasing risk premia, which raises the cost of finance for firms. This results in lower economic growth both at the firm and at the aggregate level (Arellano, Bai, and Kehoe 2010; Christiano, Motto, and Rostagno 2014). The Arab Spring provides a unique setting to analyze the financial consequences of political uncertainty for several reasons. The mass civil protests culminated in very different political outcomes, ranging from reforms to changes in the regime and incumbent decision-makers to civil war, which tend to have different economic implications. Yet, at the beginning of the Arab Spring protests, it was unclear how

CONTACT Başak Tanyeri basak@bilkent.edu.tr Bilkent University, Faculty of Business Administration, Ankara, 06800, Turkey
© 2021 Taylor & Francis Group, LLC

the protests would shape the political and economic environments. This uncertainty about political outcomes is important since Jong-A-Pin (2009) shows that the instability of the political regime has a robust negative effect on economic growth. Furthermore, Belkhir, Boubakri, and Grira (2017) find that political risk and in particular conflict risk increases the cost of capital in MENA countries. As such, it is important to measure how investors ex-ante valued the effect of political uncertainty.

The Arab Spring is also unique in that it was one of the first instances of mass protests in which new social media outlets (such as Facebook and Twitter) enabled protestors to communicate with each other and the world instantly. This new mode of communication triggered protest spillovers between countries. Political unrest started on December 17, 2010 to protest the autocratic Tunisian government. Mass protests followed in Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Morocco, Saudi Arabia, Syria, Tunisia, and Yemen. Ultimately, the Arab Spring generated waves of social, political, and economic change that went beyond the borders of the countries which experienced these events. Thus, the Arab Spring provides an ideal setting to examine regional spillovers in addition to the political uncertainty experienced within each country.

Financial spillovers are important for the countries in the region because emerging markets are particularly vulnerable to sudden shifts in portfolio allocation (Dornbusch, Park, and Claessens 2000). Capital outflows triggered by news of political uncertainty can sharply reduce funding for businesses and governments alike. Negative shocks tend to be transmitted across international markets through fire sales of emerging market portfolios by investors domiciled in developed markets (Jotikasthira, *et al*., 2012). Hence, regional spillover is an important concern not just for the affected countries but also for international investors looking to diversify portfolio risk.

We focus on the investor reaction in the stock and credit default swap (CDS) markets in the region to investigate the effect of regional spillovers and the financial consequences of the Arab Spring. We benchmark realized returns in the major stock indices and the government bond CDS spreads against the average returns and spreads in the one year before the start of the Arab Spring. We determine our event sample by using the timelines prepared by Al-Jazeera and The Guardian newspapers (Al-Jazeera -Guardian forthwith) and focus on the 12 dates on which an Arab Spring country's name was mentioned in the timeline for the first time. To identify other potentially important events that may not be captured by the newspaper timelines, we conduct an Arab Spring related news search using the Global Database on Events, Language, and Tone (GDELT). GDELT monitors the world's broadcast, print, and web news in over 100 languages and identifies important events. A GDELT search on "Protests" in Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria, and Tunisia yields an index for local protest intensity at the daily level. We construct a regional protest intensity variable that averages the local protest intensity across our sample countries. We pick the 10 days with the highest regional protest intensity as additional significant event dates and supplement the 12 event dates we obtain from the newspaper timelines. Since there are two overlapping days in Al-Jazeera-Guardian and GDELT, our final sample has a total of 20 significant event dates.

Our analysis suggests that the abnormal returns in stock market indices average −1.1% during the event days and are significant at the 5-% level. Egypt is the most affected country, where abnormal returns of stock indices average out to −5.9% and Bahrain is the least affected country where abnormal returns average out to 5 basis points. The stock-market reaction to local protests (−2.6%) is more pronounced when compared to the market reaction to the protests in neighboring MENA countries (−0.9%). The significant stock market reaction to regional protests indicates a spill-over effect where investors price an increase in the probability of political turmoil in a country when there are protests in the neighboring countries. We also investigate how investors' perceptions of risk, which we measure using CDS spreads, change during this period. An increase in the spreads of 5-year USD denominated CDS contracts on sovereign debt of sample countries indicate that investors' perception of sovereign default risk increases. We find that the abnormal changes in CDS spreads average 1.4%, with Saudi Arabia experiencing the most significant spike in spreads at 2.9%. The positive abnormal CDS spreads imply an increase in the financing cost of all firms since their funding cost is benchmarked on the financing cost of sovereign debt.

Middle East and North African (MENA) countries experienced strong correlations in protests during the Arab Spring, which may translate to spillovers in financial markets. To determine whether there were significant regional spillovers, we regressed the abnormal returns in stock indices and abnormal changes in CDS spread on local and regional protest intensity over the 2 years following the first Arab Spring event on December 17, 2010. Our results indicate that the abnormal index returns are decreasing in local and regional protest intensity. Furthermore, we find that abnormal returns of indices and changes in CDS spreads are more sensitive to regional protests before any local protests take place. Once protests start locally, investors start paying more attention to what is happening at home than in the region. However, before any local unrest, political uncertainty in the region seems to alarm investors and affect the risk and return of assets in the local economy. Bunda, Hamann, and Lall (2009) also found increasing correlations between emerging market bond returns during volatile periods, such as the Russian and Argentinian crises in 1998 and 2001, respectively. Our findings indicate that there exist spillovers between financial markets in times of political uncertainty as well as in times of economic crisis.

The significant decline in stock indices and the jump in CDS spreads we document are in line with the literature on the financial consequences of political turmoil. Acemoglu *et al.* (2018), Chen and Siems (2004), Chesney, Reshetar, and Karaman (2011), Eldor and Melnick (2004) find negative stock market reaction to political uncertainty in Egypt, USA, Europe, and Israel, respectively. Furthermore, Francis, Hasan, and Zhu (2014), Herrala and Turk-Ariss (2016), and Pastor and Veronesi (2013) find that political uncertainty increases the cost of financing and the availability of credit. Boubakri, Ghoul, and Saffar (2015) found that stable political institutions operating under a system of checks and balances spur firm growth. Baker and Bloom (2013) used terrorist events and political shocks as instruments for uncertainty and showed that such unanticipated events help predict stock market volatility and GDP growth. They found that increased uncertainty related to these events explains about half of the variation in growth across countries.

We contribute to the literature by investigating how investors anticipate and ex-ante price the effect of current political uncertainty on future firm value. We document the magnitude of the stock and CDS market reaction to major Arab Spring events, which instigated substantial political turmoil in the MENA region. Using an event study method and a wide range of news, we also provide evidence for the significant spillover effects that resulted from local and regional events. We distinguish between the channels through which spillovers in CDS and equity markets occur. Our results show that the CDS markets tend to be more sensitive to regional events, whereas stock market reactions tend to be more sensitive to local events on average. Our results support the findings of Giesing and Music (2019) who find that households more exposed to violence in the Arab Spring changed their savings and spending behavior. We find that investors as well as households changed their evaluation of economic prospects in the Arab Spring countries.

The relationship between growth and social conflict is endogenous (Ray and Esteban 2017; Besley and Persson 2014). Reverse causality is also plausible in the Arab Spring context. While economic growth may lead to a more democratic environment and hence more public protests, the Arab Spring events themselves may also shape the future growth performance of these economies. These feedback effects tend to take place over long horizons, which makes it hard to distinguish how social conflict and economic growth affect one another. Focusing specifically on the markets' immediate reaction to political unrest, we avoid such endogeneity concerns and contribute to this literature by examining how investors ex-ante price their growth expectations in asset markets before they have a chance to see how the feedback effects play out and affect the real economy.

2. Testable Hypotheses and the Related Literature

The literature on the economic consequences of political instability focuses on how political turmoil affects the real economy, asset prices, and risk. An important channel through which political uncertainty can impede investment is the real option channel. Bernanke (1983) and Bloom, Bond,

and Van Reenen (2007) found that higher uncertainty increases the value of waiting and thus leads agents to postpone their investments. Bekaert et al. (2014) introduced a political risk measure and found that a 1% reduction in the political-risk spread was associated with a 10% increase in net inflows of foreign direct investment. Barro (1991) uses the number of revolutions, coups, and political assassinations as a measure of political instability in 98 countries and documents that investment is inversely related to political uncertainty. Similarly, Julio and Yook (2012) focused on political uncertainty around elections and found that corporate investment expenditures decreased in election years relative to non-election years.

Another important branch of the literature highlights how political uncertainty affects firms' access to funding. Francis, Hasan, and Zhu (2014) and Pastor and Veronesi (2013) found that political uncertainty leads to higher risk premia and raises the cost of financing for U.S. firms. Herrala and Turk-Ariss (2016) show that political tensions reduce the availability of credit to firms in MENA countries. Smaoui, Boubakri, and Cosset (2017) found that unconstrained presidential systems and political fragmentation increase sovereign credit spreads. Dinc (2005) shows that government banks increased lending during election years in emerging markets. These studies together suggest that political concerns and uncertainty affect not only the cost of financing but also the availability of credit.

The third channel through which political uncertainty affects the economy is asset prices. Kyaw, Manley, and Shetty (2011) show that political risk decreases the value of multinational corporations. Abadie and Gardeazabal (2003) found that stocks of Basque firms performed better than those of non-Basque firms when the truce between ETA and the Spanish government became credible in 1998. Kelly, Pastor, and Veronesi (2016) show that option prices during major political events tend to be higher suggesting that political risk is priced in the options markets. Mauro, Sussman, and Yafeh (2006) find that wars and violence increase sovereign bond spreads in 18 emerging countries. Chen and Siems (2004), Eldor and Melnick (2004), and Chesney, Reshetar, and Karaman (2011) show how terrorist attacks adversely affect both US and global stock markets.

Another important mechanism is the extent to which political turmoil curtails the rents captured by the politically connected firms. Analyzing Egypt's experience during the Arab Spring, Acemoglu *et al.* (2018) documented that increased street protests during the period led to lower stock market valuations, especially for firms that were connected to the incumbent ruling party. GARCH models of volatility in major MENA stock markets also show an increase in the volatility of Islamic stock market indices during the Arab Spring period (Chau, Deesomsak, and Wang 2014) We differ from Chau, Deesomsak, and Wang (2014) as we study investor reaction in both the stock and the CDS markets in the region during the Arab Spring period. We also use the event study method and focus on abnormal stock returns instead of volatility. Giesing and Music (2019) study how households who are affected more by Arab Spring (measured as proximity to Arab Spring casualties) change their saving and spending behavior. Likewise, we investigate how investors rather than households evaluate the consequences of the Arab Spring. Our article provides complementary evidence that the Arab Spring did indeed change the outlook for households and investors and affected their decision-making. Costello, Jensking, and Aly (2015) and Rougier (2016) analyzed the structural determinants of the Arab Spring.

The strong political and economic ties between the MENA region countries and the financial integration that took place over the recent decades may induce reactions to political uncertainty not only in the local markets but also in neighboring economies. Mnasri and Nechi (2016) examine the financial spillover effects associated with the 2005 terrorist attack that targeted the former Prime Minister of Lebanon, Rafik Hariri. Mousavi and Ouenniche (2014) identified four Arab Spring events and examined their effect on 53 stock markets using GARCH models of stock return volatility. Our event sample is larger and the news we analyze share an important common element in that they are the first events within each country that are associated with the Arab Spring. This feature helps facilitate a comparison across countries' reactions to their local events relative to regional events and enables us to study the return implications specific to each economy in our sample.

We propose and test two hypotheses. Our first hypothesis suggests that the investment-reducing effects of political turmoil influence how investors price financial assets, and consequently generates abnormal returns in the stock and CDS markets.

Hypothesis 1: Political turmoil affects how investors price assets in the economy.

Our next hypothesis suggests that unrest in neighboring countries can affect asset prices in local stock and CDS markets. This outcome is possible if instability in neighboring countries leads investors to update their beliefs about the probability of unrest in their local economies, which would in turn impact the returns in the local markets. In addition, unrest in neighboring countries can disrupt supply chain relationships, trade, and financial flows between regional economies. According to the gravity model (Anderson 1979; Tinbergen 1962), bilateral trade flows are positively related to the size of the respective economies and negatively related to the distance between them. To the extent that political unrest leads to reduced consumption or production in an economy, that country's trade partners will also be adversely affected by the disruption in business activity through their trade and financial ties. Thus, when there is political unrest in one country, the asset market valuation in regional economies can also be negatively impacted even if those countries do not directly experience political instability themselves.

Hypothesis 2: Unrest in neighboring countries affect asset prices in local stock and CDS markets.

3. Measuring Investor Reaction to the Key Events of the Arab Spring

To analyze whether and how investors price the anticipated consequences of political turmoil, we use the event study method (Brown and Warner 1985). First, we identify key events in the Arab Spring. Second, we analyze investor reactions in the stock and CDS markets. Political uncertainty affects investment decisions both at the micro (firm) and macro (country) level. Stock market indices are a gauge of how investors price firms in a country. Political uncertainty also affects the CDS spreads, which is a measure of sovereign debt default risk.

3.1. Arab Spring Timeline

The Arab Spring started when a Tunisian fruit vendor, Mohammed Bouazizi, set himself on fire on December 17, 2010. Protesters sparked by outrage over his death and lack of economic opportunities, organized mass demonstrations in Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Morocco, Saudi Arabia, Syria, Tunisia, and Yemen. We rely on the Arab Spring timelines that are prepared by Al-Jazeera and The Guardian newspapers[1] and the Global Database on Events, Language, and Tone (GDELT)[2] to identify the key events of the Arab Spring.

There are 168 event dates in the Al-Jazeera and The Guardian timelines. We mark the 12 dates on which each country in the timeline is mentioned for the first time as experiencing a significant Arab Spring event. We supplement these 12 dates with significant events that we identify using the GDELT database, which monitors the world's broadcast, print, and web news and identifies important events. The GDELT Timeline Visualizer includes 20 categories for events and their location. We input "Protest (14)" in Event Code and our country list in Event Location in the Visualizer.[3] GDELT provides the number of daily protest records on each day for each country normalized by the total volume of all events for that day, which makes our local protest variable. We calculate the regional protest variable as the mean of local protests on each day across our country. Thus, local and regional protest variables measure the intensity of political unrest at the country and the regional level, respectively.

Figure 1 plots local and regional protest intensities from December 16, 2009 to December 31, 2012. Both local and regional protest intensities pick up following the first Tunisian event (highlighted with a straight line in the Figure) and spikes in the first three months of 2011. We mark the 10 days with maximum regional protest intensity as additional significant event dates. Two days are significant in both Al-Jazeera-Guardian and GDELT resulting in a total of 20 significant event dates (see Appendix Figure A1). Table 1A reports the descriptive statistics for local and regional protests in the full sample, in the estimation window, in the event window, and on the 20 significant days. The local and regional protest intensity in the 20 days prove significantly higher than the mean local and regional protest intensity in both the estimation (t-statistic of 21.06 and 82.63) and the event window (t-statistic of 14.99 and 47.61).

Panel A – Local protest intensity

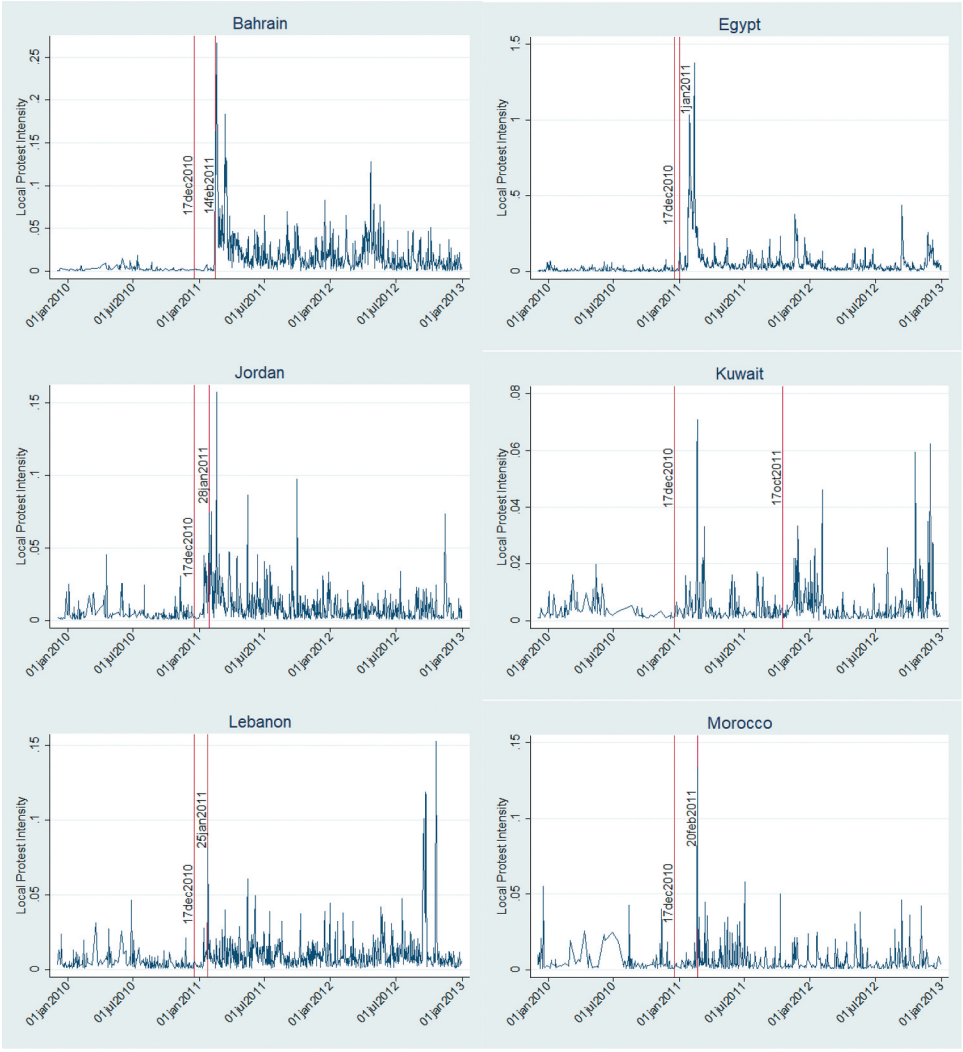
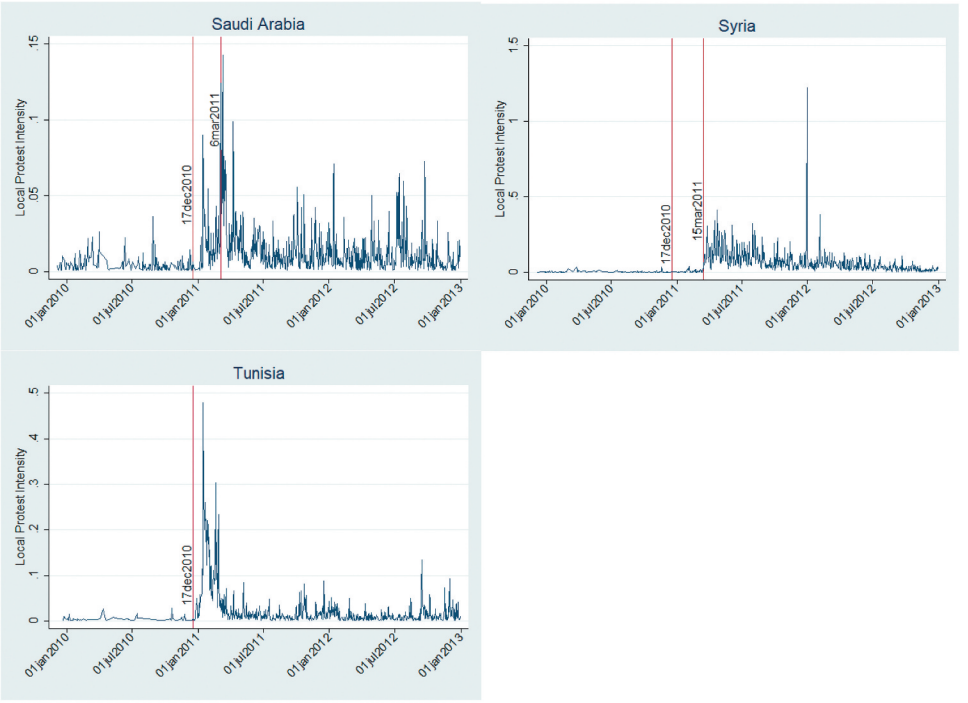


Figure 1. Regional and local protest intensity during Arab Spring. Panel A and B plot, respectively, the local and regional protest intensity for sample countries between December 16, 2009 and December 31, 2012. Red lines denote the first event date of the Arab Spring, December 17, 2010, and the first event date for each country as identified in the Guardian and Al-Jazeera event lines. **Panel A – Local protest intensity Panel B – Regional protest intensity**



Panel B – Regional protest intensity

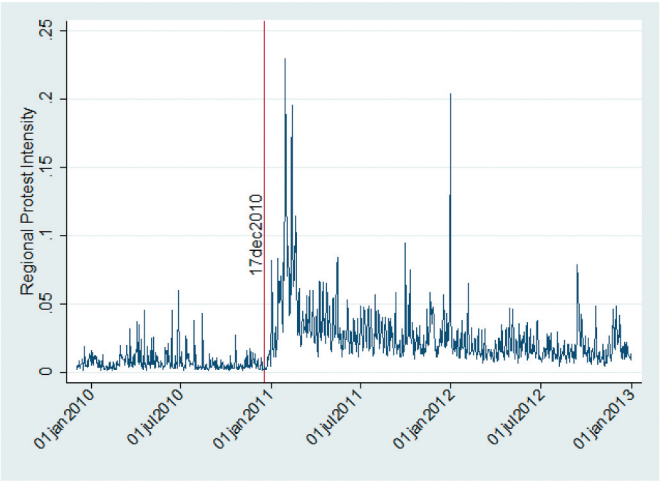


Figure 1. (Continued).

3.2. Measuring Investor Reactions in Stock and CDS Markets

We download the major stock-market index prices for Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria, and Tunisia from Bloomberg (see Appendix Table A1 for index information). We calculate, $ret(index)_{i,t}$ as the daily percentage change in the index in country i on day t. We also download the 5-year USD denominated CDS spreads for Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria, and Tunisia from Bloomberg. We calculate

Table 1. Abnormal index returns and changes in CDS spreads on significant days of the Arab Spring. Panel A reports descriptive statistics on local protests and regional protests in the estimation window, event window, and the 20 significant days identified using GDELT, Al-Jazeera and Guardian newspapers. Panel B reports descriptive statistics on abnormal index returns (*AR(index) in %*) and abnormal changes in CDS spreads (*AR(CDS) in %*) in the event window, on the 10 days of top protest intensity (from GDELT), on the 12 days of first mention in the Al-Jazeera-Guardian timeline, and the 20 combined days. Panel C reports abnormal index returns and changes in CDS spreads on each of the 20 combined days.

Panel A – Descriptive statistics on local protest and regional protest

	Local Protest			Regional Protest		
	Mean	Std. dev.	N	Mean	Std. dev.	N
Full sample	0.02	0.05	9307	0.02	0.02	9954
Estimation window	0.00	0.01	2836	0.00	0.01	3258
Event window	0.02	0.05	6471	0.02	0.02	6696
20 days of GDELT-Al-Jazeera-Guardian	0.08	0.20	172	0.08	0.05	180

$ret(CDS)_{i,t}$ as the daily percentage change in CDS prices in country i on day t.[4] Bloomberg provides no stock market index data for Algeria, Libya, and Yemen and no CDS data for Algeria, Libya, Yemen, Jordan, and Kuwait. Hence, our final sample includes nine countries for the stock market analysis and six countries for the CDS market analysis.

Figure 2 plots the stock market indices and CDS spreads of each country from December 16, 2009 to December 31, 2012. Stock market indices dropped and CDS spreads increased in all countries except Saudi Arabia. The stock index dropped the most in Egypt (56%) and CDS spreads increased the most in Tunisia (196%) from the start of the Arab Spring on December 17, 2010 to the end of 2012. The decrease in stock indices and the jump in CDS spreads indicate that investor perceptions of risk and return changed significantly during the politically uncertain times of the Arab Spring.[5]

We use the event study method (Brown and Warner 1985) to investigate the statistical significance of the change in stock market indices and CDS spreads. Brown and Warner (1985) investigated characteristics of daily stock returns and how these characteristics affect the power of event study methods to detect the impact of firm-specific events on share prices. We adopt the Brown and Warner (1985) method and use changes in national stock market indices and changes in CDS spreads to investigate how the political uncertainty induced by the events of the Arab Spring affect the overall stock market (measured using the national stock market indices) and the benchmark risk in the economy (measured using the CDS spreads).[6]

Event study method benchmarks realized returns around significant events against "expected or normal" returns. The realized returns are the percentage changes in stock-market indices ($ret(Index)_{i,t}$) in country i on day t and the percentage change in CDS spreads ($ret(CDS)_{i,t}$) in country i on day t (where i can be Bahrain, Egypt, Jordan, Lebanon, Kuwait, Morocco, Syria, Saudi Arabia, Tunisia). We use the mean-adjusted returns and calculate "normal" returns as the average of CDS and stock index returns in the 1 year before the first event that sparked the Arab Spring (Mohammed Bouazizi set himself on fire on December 17, 2020). The 365 calendar days from December 16, 2009 to December 16, 2010 are set as the estimation window in which we calculate the "normal" change in stock indices and CDS spreads. The 745 calendar days from December 17, 2010 to December 31, 2012 constitute the event window (see Appendix Figure A2 for event-estimation window timeline). There are many events in this period. We consider the first event, as we think the trigger of the events in each country is important. We augment these first event dates with the highest news dates identified by GDELT. While our focus is on the first event in each country, our claim is not that the market reaction is only affected by the first event. Abnormal returns capture not only the first event but also the ex-ante anticipation of subsequent political turmoil triggered by the first event.

The first event date that Al-Jazeera and Guardian identify for each country is different. Thus, we fix the estimation window to the same 365 calendar days before the first event on which the Tunisian fruit vendor set himself on fire. By setting the estimation window to a period before any Arab Spring event takes place and using the same one-year estimation period in all countries, we keep the estimation

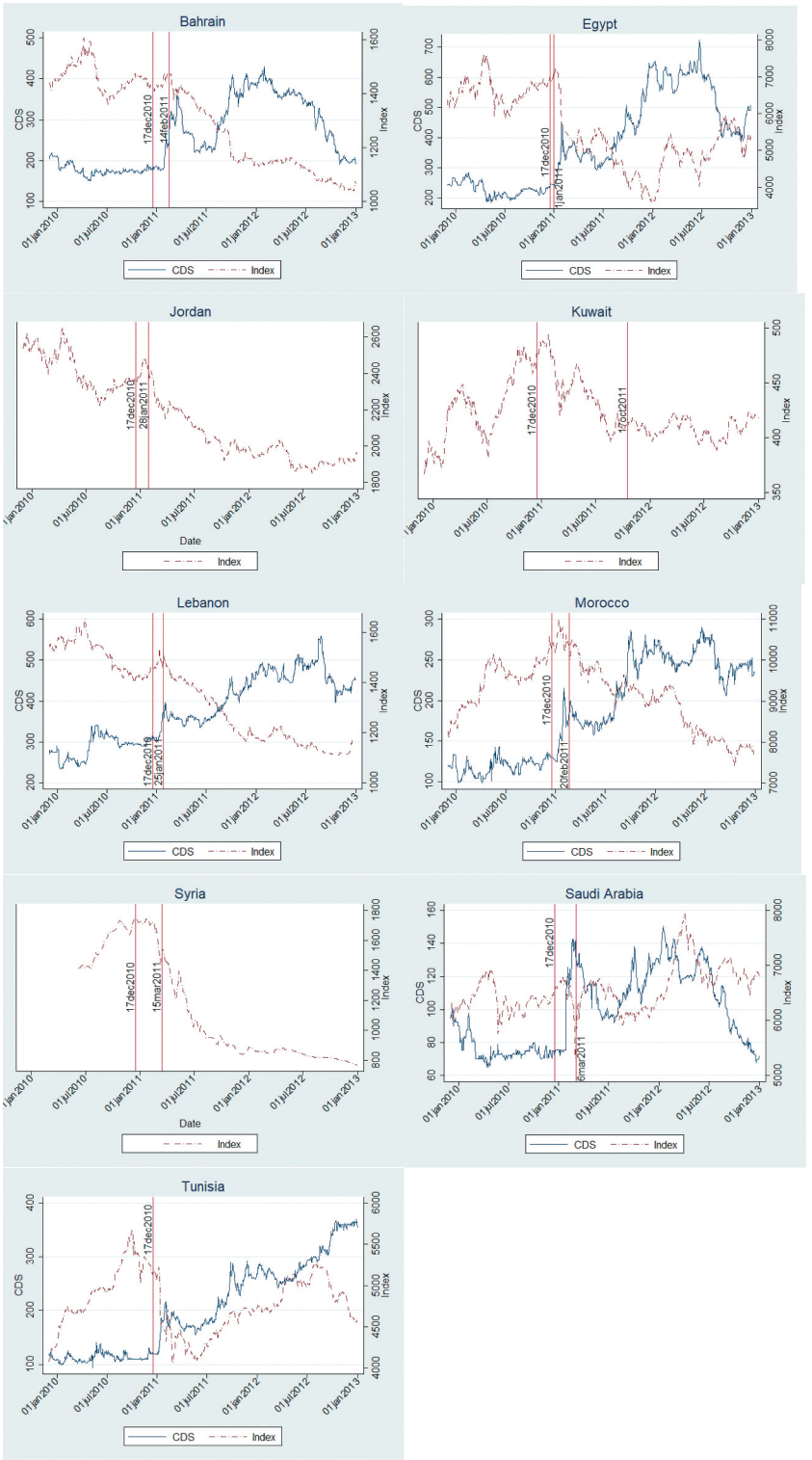


Figure 2. Stock market indices and credit default swaps during Arab Spring. Figures plot the major stock index and CDS spreads of sample countries between December 16, 2009 and December 31, 2012. Red lines denote the first event date of the Arab Spring, December 17, 2010, and the first event date for each country.

window clean of any spill-over effects. We then investigate whether there are spillovers across countries in the event window. We calculate abnormal changes in stock indices (AR (Index)), CDS spreads (AR (CDS)), and tests for the significance of abnormal returns.[7]

4. Investor Reaction in the Stock and CDS Markets

Political uncertainty increases the value of waiting and thus leads entrepreneurs, firms, and financiers to postpone investments and decreases physical and human capital accumulation (Aisen and Jose Veiga 2013; Barro 1991; Bekaert et al. 2014; Bernanke 1983; Bloom, Bond, and Van Reenen 2007; Julio and Yook 2012). A decrease in investment at the micro and macro levels would affect asset prices and stock returns. In addition, if political risk affects financiers' investment decisions, access to credit and funding costs would also be affected (Francis, Hasan, and Zhu 2014; Herrala and Turk-Ariss 2016; Pastor and Veronesi 2013). Consequently, political uncertainty is likely to affect asset prices through multiple channels. However, the magnitude and the strength of this effect is an empirical matter and depends on the country and the period in question. In this section, we investigate whether and to what extent investors price the effect of political uncertainty in stock and CDS markets of the Arab Spring countries.

Table 1B tests whether abnormal returns in stock market indices and CDS spreads were significant during the Arab Spring. Abnormal returns average 10 basis points but prove insignificant in the event window that covers the 745 days from December 17, 2010 to the end of 2012 across the nine sample countries. When we focus on the 10 days with the highest protest intensity in the region, abnormal stock index returns average −1.5% and are statistically significant. The 12 days identified as key event dates in the Al-Jazeera-Guardian timelines yield an average abnormal return of −1.1% and prove statistically significant. These results suggest that investors perceive the mass protests and increased political uncertainty as disruptive to investment and business. We also disaggregate the stock market reaction across the 20 key dates identified according to regional protest intensity and Al-Jazeera-Guardian timeline in Table 1C. Twelve of the 20 dates are clustered between January 25 and February 20. Thirteen out of the 20 events prove significant and abnormal index returns range from a low of −3% on January 30, 2010 to a high of 0.2% on December 31, 2011.

Abnormal changes in the CDS spreads average nine basis points in the 745 days of the event window. When we focus on the significant event days, abnormal changes in CDS spreads average 1.7% in the 10 days identified according to protest intensity and 2.3% in the 12 days classified according to Al-Jazeera-Guardian timelines. The change in abnormal CDS spreads indicate an increase in the default risk of sample countries' sovereign debt. However, this increase is statistically insignificant over our sample period. Next, we investigate cross-country differences in the stock market and CDS market reactions in Table 2. The stock market reaction is most pronounced (and significant) in Egypt, Kuwait, and Tunisia with abnormal index returns averaging −5.9, −1, and −0.8%. If the stock market is closed on the key dates identified using regional protest intensity and Al-Jazeera-Guardian timelines, we match the day with the next closest trading day abnormal returns. Twelve out of the 20 key event dates fall on a non-trading day in at least some sample countries. Egyptian and Tunisian markets were closed due to protests from January 28 to March 23 and from January 15 to 30, respectively. When we exclude the matching of non-trading days resulting from protest closure in Egypt and Tunisia, results remain qualitatively unchanged. As in the full sample, abnormal change in CDS spreads is positive but insignificant across all sample countries.

5. Potential Mechanisms Underlying Investors' Reaction to Political Uncertainty

We show that the political uncertainty instigated by the Arab Spring events has a significant impact on asset prices over our sample period. In this section, we explore the potential mechanisms that may underlie this finding. We consider whether the magnitude of the markets' reaction to Arab Spring protests varies by factors such as the (i) economic conditions, (ii) access to communication

Table 2. Cross-country variations in abnormal index returns and changes in CDS spreads. Table reports abnormal index returns (*AR(index) in percent*) and abnormal change in CDS spreads (*AR(CDS) in percent*) across the nine sample countries on the 20 key days that we identify using GDELT and Al-Jazeera-Guardian.

Country	AR(Index)	t-stat	AR(CDS)	t-stat
Bahrain	0.05	0.11	2.21	1.24
Egypt	−5.94	−12.62	1.02	0.57
Jordan	−0.45	−0.95		
Kuwait	−0.99	−2.11		
Lebanon	−0.24	−0.51	0.45	0.25
Morocco	−0.63	−1.35	1.52	0.86
Saudi Arabia	−0.60	−1.27	2.92	1.64
Syria	−0.58	−1.22		
Tunisia	−0.79	−1.69	0.26	0.15

technologies, (iii) religion, and ethnicity, and (iv) the governance quality of the countries within our sample. To investigate these potential channels, we conduct sub-sample tests where we divide the countries into two groups according to these characteristics and compare their abnormal return reaction to the Arab Spring protests. We report the results in Table 3A and the descriptive statistics for the classification variables in Appendix Table A2.

Focusing on the role of economic conditions first, we find that poorer countries (whose 2009 GDP per capita is equal to or below the sample median) experience a larger decline in stock market returns in response to increased political instability. Poorer countries tend to lack the necessary resources to deal with the fallout from political turmoil. Thus, asset valuations in such countries may be more sensitive to protests compared to richer economies.

Second, a unique feature of the Arab Spring period was that the social media outlets played an important role in the organization of the mass protests and enabled protestors to communicate with each other and the world instantly. To examine whether access to these networking technologies had implications for the markets' response to Arab Spring events, we use data on access to electricity, cell phone, Internet, and virtual social networks use.[8] We find that the countries with limited access to such services (i.e., whose access is below the sample median) experience a larger drop in stock market returns. This finding may seem counterintuitive as better access to communication networks could facilitate free information flow and lead to a larger negative market response to political instability. However, access to these services may also be capturing the effect of the economic conditions as discussed above. Thus, the cross-sectional differences we document here should be taken as suggestive evidence and interpreted with caution. A more thorough analysis that disentangles the effect of economic conditions from communication technologies requires a longer time-series and a larger cross-sectional variation. Since our sample consists of nine countries for which we only have snapshot information on the use of communication technologies, such a detailed analysis is beyond the scope of our paper.

Third, we consider whether the market response to Arab Spring events varies with religious or ethnic composition. To capture ethnicity (religious diversity), we create an indicator that takes the value one if more than 90% of the population is Arab (Muslim) and zero otherwise.[9] We find that the predominantly Arab countries experienced a larger decline in stock market returns compared to countries with more diverse ethnic populations. Predominantly Muslim countries experienced a more muted decline in stock market returns compared to countries with religious diversity. Next, we consider a set of variables that measure the ex-ante governance quality in a country (i.e., using World Bank governance data from 2009). We find that countries with more democratic institutions and freedom of press (with relevant indexes ranking equal to or above the sample median) experience a larger drop in stock market returns in response to political instability. A potential mechanism underlying this result could be the communication channel: Negative consequences of political turmoil are impounded into asset prices more quickly in democratic environments where news can flow freely without interruption. In addition, countries with higher perceived corruption rates (i.e.,

Table 3. Variations in abnormal index returns and changes in CDS spreads in subsamples. Table reports abnormal index returns (*AR(index) in percent*) in Panel A and abnormal changes in CDS spreads (*AR(CDS) in percent*) in Panel B on the 20 key days that we identify using GDELT and Al-Jazeera-Guardian in subsamples divided according to characteristics of the nine sample countries. The t-statistic is used for the difference in mean in the subsample and uses the cross-sectional standard deviation.

	No	Yes	t-stat
Panel A – Abnormal returns			
GDP, equal to or higher than median	−1.68	−0.44	−3.20
Freedom of Press, equal to or higher than median	−0.51	−1.90	3.64
Corruption Perception, equal to or higher than median	−0.56	−1.85	3.35
Democracy Index, equal to or higher than median	−0.58	−1.81	3.19
Internet users, equal to or higher than median	−1.60	−0.54	−2.72
Access to electricity, equal to or higher than median	−1.68	−0.44	−3.20
Population predominantly Arab	−0.51	−1.44	2.27
Population predominantly Muslim	−1.54	−0.62	−2.36
Social network usage, equal to or higher than median	−1.67	−0.46	−3.14
Mobile phone subscriptions, equal to or higher than median	−1.64	−0.50	−2.94
Panel B – Abnormal change in CDS spreads			
GDP, equal to or higher than median	0.93	1.86	−0.82
Freedom of Press, equal to or higher than median	1.73	0.73	0.83
Corruption Perception, equal to or higher than median	1.80	1.00	0.71
Democracy Index, equal to or higher than median	1.80	1.00	0.71
Internet users, equal to or higher than median	0.58	2.22	−1.45
Access to electricity, equal to or higher than median	0.93	1.86	−0.82
Population predominantly Arab	2.21	1.23	0.64
Population predominantly Muslim	1.23	1.57	−0.30
Social network usage, equal to or higher than median	1.46	1.33	0.12
Mobile phone subscriptions, equal to or higher than median	0.81	2.57	−1.47

with index values equal to or above the sample median) exhibit a larger drop in abnormal stock returns in response to instability. Political uncertainty may amplify the cost of conducting business in corrupt environments if established networks of cronyism and bribery are challenged by the instability. If investors perceive such adjustment costs to be especially relevant to the bottom line of businesses in corrupt environments, then market valuations in such countries may exhibit a larger response to political instability as compared to less corrupt economies.

Finally, we also examine the implications of these potential mechanisms in the CDS markets (Table 3B). Our analysis shows that the magnitude of the CDS markets' reaction to Arab Spring protests does not significantly vary by economic conditions, access to technologies, religion, and ethnicity. While this finding may be due to the limited financial depth of the CDS markets in the region, our test results should be interpreted with caution as our sample includes only nine countries. A more in-depth analysis of the underlying mechanisms and how they are related to the spillover effects also require a longer time series and cross-section of countries. Since our sample is limited in these dimensions, such a detailed analysis is beyond the scope of our paper. Hence, we leave it for future research.

6. Spill-over Effects

Figure 1 plots local and regional protest intensity and indicates significant spillovers in protests across sample countries. We investigate whether and to what extent investors react to local protests and to what extent regional protests in other countries. We classify a day as "local event day" if the day is one of the 10 days with the highest local protest intensity and "regional event day" otherwise. Table 4 reports the descriptive statistics for abnormal index returns and abnormal changes in CDS spreads. Abnormal index returns are negative and significant for both local and regional events. Furthermore, the stock market reaction proves significantly higher for local events. Abnormal changes in CDS spreads is positive albeit insignificant in local and regional events. We also investigate how local and regional protest intensities affects abnormal changes in stock indices and CDS spreads during the entirety of the Arab Spring period.

Table 4. Reaction to regional and local events. Table reports abnormal index returns (*AR(index) in percent*) and abnormal changes in CDS spreads (*AR(CDS) in percent*) on the 20 key days and in subsamples of local and regional event days. We classify a day as "local event day" if the day is one of the 10 days with the highest local protest intensity and "regional event day" otherwise.

	AR(Index)	t-stat	N	AR(CDS)	t-stat	N
All significant event days	−1.13	−2.40	180	1.40	0.79	120
Local event day	−2.62	−5.56	20	1.59	0.90	14
Regional event day	−0.94	−2.01	160	1.37	0.77	106

We regress abnormal index returns on local and regional protest intensity in the event window and report the results in Table 5. The dependent variable is an abnormal index returns in the first three specifications and abnormal changes in the CDS spreads in the last three specifications. The first specification shows that abnormal index returns are decreasing in both regional and local protest intensity. The fourth specification on the other hand shows that abnormal change in CDS spreads is increasing in regional and local protest intensity. Thus, investors react to political uncertainty, which affects both the stock and the CDS markets.

The negative and significant coefficients of *regional protest* shows that investors react to political uncertainty in neighboring countries due to potential spillover effects that may be a harbinger of political unrest at home. We also test whether and to what extent regional unrest affects investor perceptions before any protest happens locally. We partition the regional protest variable into two new variables with

Table 5. Regressions of abnormal index returns and changes in the CDS spreads on protest intensity. Table reports OLS regressions of abnormal index returns (first three specifications) and abnormal change in CDS spreads (last three specifications) on local and regional protest intensity. Standard errors are clustered at the country level. Absolute value of t statistics is in parentheses. ***, **, and * denote significant at 1, 5, and 10%, respectively.

	Index (1)	Index (2)	Index (3)	CDS (1)	CDS (2)	CDS (3)
Local protest	−4.95	−5.41	−5.39	1.82	3.98	4.07
	[4.93]***	[5.31]***	[2.85]**	[1.11]	[2.06]*	[1.81]
Regional protest	−2.58			11.73		
	[1.56]			[1.60]		
Prior regional protest		−4.83	−4.25		31.27	31.65
		[3.06]**	[2.57]**		[3.29]**	[3.26]**
Post regional protest		−0.30	−1.05		−1.76	−2.10
		[0.16]	[0.57]		[0.50]	[0.54]
Bahrain			0.11			−0.17
			[2.32]**			[1.74]
Egypt			0.23			−0.16
			[2.68]**			[1.07]
Jordan			0.11			
			[2.62]**			
Kuwait			0.00			
			[0.07]			
Lebanon			0.09			−0.13
			[2.12]*			[1.16]
Morocco			−0.05			−0.16
			[1.30]			[1.62]
Saudi Arabia			0.13			−0.16
			[2.91]**			[1.67]
Syria			−0.22			
			[2.53]**			
Tunisia			0.04			0.00
			[0.84]			[0.01]
Year = 2010	0.05	0.06		−0.07	−0.13	
	[0.68]	[0.80]		[0.67]	[1.32]	
Year = 2011	0.00	−0.02	−0.06	−0.09	0.10	0.24
	[0.10]	[0.35]	[1.23]	[0.53]	[0.97]	[1.42]
Year = 2012	0.05	0.03	−0.02	−0.29	−0.13	−0.00
	[0.92]	[0.45]	[0.43]	[2.47]*	[1.84]	[0.00]
Adjusted R2	4.19%	4.41%	5.61%	1.30%	2.73%	2.63%
N	4,155	4,155	4,155	3,192	3,192	3,192

respect to the timing of the first local protest event identified in the Al-Jazeera and Guardian newspapers. The first variable, named *prior regional protest* takes on the values of the *regional protest* variable before the first protest date identified in the Al-Jazeera and Guardian newspapers for each country and takes on the value zero after that date. The second variable, named *post-regional protest* takes on the values of the *regional protest* variable after the first protest date for each country and takes on the value zero before that date. The significant coefficients of the *prior regional protest* variable in the second and fifth specifications show that political unrest at the regional level is especially important before any local protests take place. Results indicate a significant sell-off in the stock market and an increased interest in insuring against sovereign debt default in the CDS markets in reaction to regional turmoil before any local protests. The insignificance of the *post-regional protest* variable indicates that once local protests start, investors pay attention to local, not regional, political uncertainty. Regional protests seem to serve as a red flag for political uncertainty that may enfold in the local economies. The results are robust to including fixed effects that control for country-level differences.

Political uncertainty proves economically and statistically significant. For one standard deviation in local and regional protest intensities, abnormal index returns decrease by 14 and 3 basis points (daily), respectively, in the first specification. These results suggest that investors price the political turmoil in their local economy as well as the turmoil in the region. We also find that abnormal changes in CDS spreads increase with local and regional protest intensity. For a standard deviation increase in local and regional protest intensity, abnormal change in CDS spreads increases by as much as 9 and 12 basis points (daily), respectively, in the fourth specification. Taken together, these results suggest that there are significant spillover effects that result from Arab Spring events. For CDS markets, these regional effects are stronger compared to local events, whereas stock markets seem to react more strongly to local events.

7. Conclusion

We investigate whether and to what extent political uncertainty unleashed by the Arab Spring affects asset returns and risk in the MENA region. Our focus is on the stock and CDS markets of the region's economies. We find that the abnormal returns in major stock-market indexes of the Arab Spring countries average around −1% and prove significant on key event days. Egypt is the most affected country with abnormal-index returns averaging −6%. On key event dates, CDS spreads increase as well, indicating increased default risk, but the effect is more modest compared to the reaction in stock markets. We show that stock and CDS markets react significantly to both local and the regional protest intensity, indicating significant spill-over effects.

Our study contributes to the existing literature on the impact of the Arab Spring in financial markets in several ways. First, we investigate the effect of the dramatic events of the period using a larger set of news event dates. The news we analyze share an important common element in that they are the first events within each country that are associated with the Arab Spring. This feature facilitates a more direct comparison of investors' reactions to their local events. Second, unlike prior studies, we consider the reaction to the period's events in both the stock and the CDS markets and show that both markets react strongly to political turmoil. Finally, our empirical approach contributes to the literature by showing that unrest in neighboring countries also affects asset prices in local stock and CDS markets.

Financial spillover is important for emerging economies since they are particularly vulnerable to sudden capital outflows. Political uncertainty can sharply reduce funding for businesses and governments, affecting access to financing at both the micro and the macro level. Our results highlight that, to achieve financial growth, MENA countries should promote policies that maintain political stability and peace domestically and regionally.

Notes

1. News articles available at http://www.aljazeera.com/indepth/interactive/2013/12/timeline-arab-spring-20131217114018534352.html and ttps://www.theguardian.com/world/interactive/2011/mar/22/middle-eastprotest-interactive-timeline.
2. We also checked the "World Uncertainty Index" developed by Ahir, Bloom, and Furceri (2018) for the level of uncertainty in the sampled countries before and during Arab Spring period (https://www.policyuncertainty.com/wui_quarterly.html). The Index includes quarterly data on all countries except for Bahrain and Syria. We observe a spike especially in Egypt and Tunisia during the Arab Spring period.
3. We choose the "Protest" category (category 14) which includes the sub-categories of "Engage in political dissent" (sub-category 140 and its sub-categories), "Demonstrate or rally" (sub-category 141 and its sub-categories), "Conduct hunger strike" (sub-category 142 and its sub-categories), "Conduct strike, or boycott" (sub-category 143 and its sub-categories), "Obstruct passage" (subcategory 144 and its sub-categories), "Protest violently" (subcategory 145 and its sub-categories). For more detailed information, see http://data.gdeltproject.org/documentation/CAMEO.Manual.1.1b3.pdf.
4. In calculating daily returns, the previous day is the last trading day. Sample countries have different trading days: Lebanon, Morocco, Tunisia trade Monday through Friday; Bahrain, Egypt, Jordan, Kuwait trade Sunday through Thursday; Saudi Arabia trades Sunday through Wednesday; and Syria trades Monday through Thursday. Furthermore, last trading day may also change due to differing holidays and forced market closures in each country. For example, Egyptian stock market closed due to protests from January 28 to March 23, 2011. The 24th March Egyptian daily return is the percentage change in the Index value from January 27 to March 23.
5. The volumes for CDS markets are low, where Egypt is the country with the highest CDS volume (a weekly average of $73.5 million between 2010 and 2014, Depository Trust, and Clearing Corporation, "Index Roll Report: Average Weekly Data by Reference Entity"). The stock market volumes of sampled countries are higher than CDS volumes where Kuwait, Saudi Arabia, and Egypt have the highest volume with daily averages of 1164, 52 and 13 million dollars, respectively, between 2010 and 2014 (Bloomberg, n.d.).
6. This article investigates how the political uncertainty caused by Arab Spring events affect the stock markets and the CDS markets in aggregate. We chose to use the change in the national stock market index and not the individual stock returns since we are interested in how the political uncertainty caused by the events of Arab Spring affected the broad spectrum of firms. A future research direction would be to investigate the effect of political uncertainty induced by Arab Spring on individual stocks and how firm characteristics affect the extent to which firms are affected by political uncertainty.
7. Abnormal changes in stock indices (AR (Index)), CDS spreads (AR (CDS)), and the test for the significance of abnormal returns (as described in Brown and Warner 1985) is $\mathrm{AR(Index)}_{i,t} = \mathrm{ret(Index)}_{i,t} - \frac{\sum_{est=26Dec2009}^{est=16Dec2010} \mathrm{ret(Index)}_{i,e}}{365}$, $\mathrm{AR(CDS)}_{i,t} = \mathrm{ret(CDS)}_{i,t} - \frac{\sum_{est=16Dec2009}^{t=16Dec2010} \mathrm{ret(CDS)}_{i,e}}{365}$, - $t - stat = \frac{\overline{AR_t}}{\hat{s}\left(\overline{AR_t}\right)}$, where $\overline{AR_t} = \sum_{i=1}^{N} AR_{i,t}, \hat{s}\left(\overline{AR_t}\right) = \sqrt{\sum_{e=16Dec2009}^{16Dec2009} \left(\overline{AR_e} - \overline{\overline{AR}}\right)^2 / (365)}$, - $\overline{AR_e} = \sum_{i=1}^{N} AR_{i,e}, \overline{\overline{AR}} = \sum_{e=16Dec2009}^{16Dec2010} \overline{AR_e}$, and e: denotes days in the estimation window, t: denotes days in the event window, and i = Bahrain, Egypt, Jordan, Lebanon, Kuwait, Morocco, Syria, Saudi Arabia, Tunisia.
8. Available at https://www.tcdata360.worldbank.org
9. CIA World Factbook (https://www.cia.gov/the-world-factbook/) reports the most recent estimates of religious and ethnic composition. Due to lack of historical data on religious and ethnic composition of the countries in our sample, we rely on the snapshot information provided by the CIA World Factbook database for our analysis.

ORCID

Naime Usul http://orcid.org/0000-0002-8475-9887

References

Abadie, A., and J. Gardeazabal. 2003. The economic costs of conflict: a case study of the Basque Country. *American Economic Review* 93 (1):113–32. doi:10.1257/000282803321455188.

Acemoglu, D., T. A. Hassan, and A. Tahoun. 2018. The power of the street: evidence from Egypt's Arab spring. *The Review of Financial Studies* 31 (1):1–42. doi:10.1093/rfs/hhx086.

Ahir, H., N. Bloom, and D. Furceri. 2018. The world uncertainty index. https://ssrn.com/abstract=3275033

Aisen, A., and F. Jose Veiga. 2013. How does political instability affect economic growth? *European Journal of Political Economy* 29:151–67. doi:10.1016/j.ejpoleco.2012.11.001.
Anderson, J. E. 1979. A theoretical foundation for the gravity equation. *American Economic Review* 69 (1):106–16.
Arellano, C., Y. Bai, and P. Kehoe. 2010. Financial markets and fluctuations in uncertainty. Federal Reserve Bank of Minnesota Research Department Staff Report.
Baker, S. R., and N. Bloom. 2013. "Does uncertainty reduce growth? Using disasters as natural experiments." No. w19475. National Bureau of Economic Research.
Barro, R. J. 1991. Economic growth in a cross section of countries. *Quarterly Journal of Economics* 106 (2):407–43. doi:10.2307/2937943.
Bekaert, G., C. R. Harvey, C. T. Lundblad, and S. Siegel. 2014. Political risk spreads. *Journal of International Business Studies* 45 (4):471–93. doi:10.1057/jibs.2014.4.
Belkhir, M., N. Boubakri, and J. Grira. 2017. Political risk and the cost of capital in the MENA region. *Emerging Markets Review* 33:155–72. doi:10.1016/j.ememar.2017.08.002.
Bernanke, B. S. 1983. Irreversibility, uncertainty, and cyclical investment. *Quarterly Journal of Economics* 98 (1):85–106. doi:10.2307/1885568.
Besley, T., and T. Persson. 2014. The causes and consequences of development clusters: state capacity, peace and income. *Annual Review of Economics* 6:927–49. doi:10.1146/annurev-economics-080213-041128.
Bloom, N., S. Bond, and J. Van Reenen. 2007. Uncertainty and investment dynamics. *Review of Economic Studies* 74:391–415. Bloomberg L.P. 2017. Stock market volume from 1/1/10to 12/31/13. Retrieved July 12, 2019 from Bloomberg terminal. doi:10.1111/j.1467-937X.2007.00426.x.
Bloomberg L.P. n.d. {Stock index volume data for Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Saudi Arabia, Syria, and Tunisia, 1.1.2008–12.31.2013} Retrieved July, 2019 from Bilkent Bloomberg Terminal.
Boubakri, N., S. E. Ghoul, and W. Saffar. 2015. Firm growth and political institutions. *Journal of Multinational Financial Management* 31:104–25. doi:10.1016/j.mulfin.2015.05.003.
Brown, S., and J. Warner. 1985. Using daily stock returns: the case of event etudies. *Journal of Financial Economics* 14 (1):3–31. doi:10.1016/0304-405X(85)90042-X.
Bunda, I., J. Hamann, and S. Lall. 2009. Correlations in emerging market bonds: the role of local and global factors. *Emerging Markets Review* 10 (2):67–96. doi:10.1016/j.ememar.2009.02.003.
Chau, F., R. Deesomsak, and J. Wang. 2014. Political uncertainty and stock market volatility in the Middle East and North African (MENA) Countries. *Journal of International Financial Markets, Institutions and Money* 28:1–19. doi:10.1016/j.intfin.2013.10.008.
Chen, A. H., and T. F. Siems. 2004. The effects of terrorism on global capital markets. *European Journal of Political Economy* 20:349–66. doi:10.1016/j.ejpoleco.2003.12.005.
Chesney, M., G. Reshetar, and M. Karaman. 2011. The impact of terrorism on financial markets: an empirical study. *Journal of Banking and Finance* 35:253–67. doi:10.1016/j.jbankfin.2010.07.026.
Christiano, L. J., R. Motto, and M. Rostagno. 2014. Risk shocks. *American Economic Review* 104 (1):27–65. doi:10.1257/aer.104.1.27.
Costello, M. J., C. Jensking, and H. Aly. 2015. Bread, justice, or opportunity? The determinants of arab awakening protests. *World Development* 67:90–100. doi:10.1016/j.worlddev.2014.10.002.
Dinc, S. 2005. Politicians and banks: Political influences on government-owned banks in emerging markets. *Journal of Financial Economics* 77:459–79. doi:10.1016/j.jfineco.2004.06.011.
Dornbusch, R., Y. C. Park, and S. Claessens. 2000. Contagion: Understanding how it spreads. *The World Bank Research Observer* 15 (2):177–97. Depository Trust and Clearing Corporation, "Index Roll Report: Average Weekly Data by Reference Entity". doi:10.1093/wbro/15.2.177.
Eldor, R., and R. Melnick. 2004. Financial markets and terrorism. *European Journal of Political Economy* 20:367–86. doi:10.1016/j.ejpoleco.2004.03.002.
Francis, B. B., I. Hasan, and Y. Zhu. 2014. Political uncertainty and bank loan contracting. *Journal of Empirical Finance* 29:281–86. doi:10.1016/j.jempfin.2014.08.004.
Giesing, Y., and A. Music. 2019. Household behaviour in times of political change: Evidence from Egypt. *World Development* 113:259–76. doi:10.1016/j.worlddev.2018.09.001.
Herrala, R., and R. Turk-Ariss. 2016. Capital accumulation in a politically unstable region. *Journal of International Money and Finance* 64:1–15. doi:10.1016/j.jimonfin.2016.01.008.
Jong-A-Pin, R. 2009. On the measurement of political instability and its impact on economic growth. *European Journal of Political Economy* 25:15–29. doi:10.1016/j.ejpoleco.2008.09.010.
Jotikasthira, C., C.Lundblad, and T. Ramadorai. 2012. Asset Fire Sales and Purchases and the International Transmission of Funding Shocks. *The Journal of Finance* 67 (6):2015–2050. doi:10.1111/j.1540-6261.2012.01780.x.
Julio, B., and Y. Yook. 2012. Political uncertainty and corporate investment cycles. *The Journal of Finance* 67 (1):45–83. doi:10.1111/j.1540-6261.2011.01707.x.
Kelly, B., L. Pastor, and P. Veronesi. 2016. The price of political uncertainty: Theory and evidence from the option market. *The Journal of Finance* 71:2417–79. doi:10.1111/jofi.12406.

Kyaw, N. A., J. Manley, and A. Shetty. 2011. Factors in Multinational Valuations: Transparency, political risk and diversification. *Journal of Multinational Financial Management* 21:55–67. doi:10.1016/j.mulfin.2010.12.007.
Mauro, P., N. Sussman, and Y. Yafeh. 2006. Bloodshed or reforms? The determinants of sovereign bond spreads in 1870-1913 and today. CEPR Discussion Paper.
Mnasri, A., and S. Nechi. 2016. Impact of terrorist attacks on stock market volatility in emerging markets. *Emerging Markets Review* 28:184–202. doi:10.1016/j.ememar.2016.08.002.
Mousavi, M. M., and J. Ouenniche. 2014. The impact of MENA conflicts (The Arab Spring) on global financial markets. *The Journal of Developing Areas* 48:21–40. doi:10.1353/jda.2014.0064.
Pastor, L., and P. Veronesi. 2013. Political uncertainty and risk premia. *Journal of Financial Economics* 110:520–45. doi:10.1016/j.jfineco.2013.08.007.
Ray, D., and J. Esteban. 2017. Conflict and development. *Annual Review of Economics* 9:263–93. doi:10.1146/annurev-economics-061109-080205.
Rougier, E. 2016. Fire in Cairo: Authoritarian-redistributive social contracts, structural change and the arab spring. *World Development* 78:148–71. doi:10.1016/j.worlddev.2015.10.005.
Smaoui, H., N. Boubakri, and J.-C. Cosset. 2017. The politics of sovereign credit spreads. *Emerging Markets Finance and Trade* 53:1894–922. doi:10.1080/1540496X.2016.1201760.
Tinbergen, J. 1962 "Shaping the world economy; suggestions for an international economic policy."