Financial Development and Economic Growth under Uprisings

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Abstract

This paper aims to examine the causal impact of the Arab Spring and government institutions on the finance-growth nexus. The empirical analysis is implemented for extensive firm-level panel data combined with national data covering macroeconomic and institutional factors for the period 2005-2014, starting six years before and continuing after the Arab Spring. Using Difference-in-Difference (DID) method, we analyze the effect of the Arab Spring. Evidence points to financial development as a strong positive contributor to growth. The analysis also indicates that the Arab Spring dampens growth. These results seem to suggest that political instability adversely affects growth; nevertheless a well-functioning financial system is a necessary but not a sufficient condition to enhance growth. Therefore, policies aiming at improving the efficiency and the operation of institutions such as a country's legal system, citizen's participation in selecting government, freedom of expression and the stage of financial development should persist over an extended period of time, in order to bear fruition and achieve a significant success in boosting economic growth and reducing poverty.

Keywords: growth, financial development, institutions, MENA region, Arab Spring, panel data

JEL classifications: G2, O16, P48, N25

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1. Introduction

Following colonial independence newly formed and intensely divided Arab states betrothed in state planning and nationalization through centralized bureaucratic systems that led to the Arab "Social Contract", a tradeoff between dictatorship and life preservation (Amin et al., 2012). Nonetheless delivering healthy per capita annual GDP growth (3.7% during 1960-1985, second only to the 4.3% East Asia and Pacific region, see Yousef, 2004, p.96), this social contract culminated in a rentier state, heavily dependent on perpetual extraneous profit from oil revenue, remittances from abroad or foreign aid. It became plagued by anemic ownership rights, corruption, limited openness, segmented labor markets, a static and weak private sector, and in many cases a large informal sector (Malik and Awadallah, 2013). Economic crises were an inevitable consequence of this system, manifesting in low commodity prices and real per capita GDP growth and high unemployment rates. Beginning with uprisings in the late 2010, five distinctly affected Middle East and North Africa (MENA) countries, namely, Egypt, Tunisia, Libya, Syria and Yemen witnessed a significant disturbance of economic activity. The effect of this movement impacted all countries in the region, ranging from timid legal and economic reforms, to self-styled cooperation between people and the state, to radical regime changes. Four countries have seen popular overthrow of governments, specifically, Tunisia, Egypt, Libya and Yemen, while the revolt and civil strife are still ongoing in Libya, Syria and Yemen and to some extent in Bahrain. Whether the Arab state institutions, amid their reliance on unearned flow of revenues, were supported by the Arab Spring begs for rebuttal. Was the institution of finance used to consolidate the state power through promoting growth? What role will be planned for finance post-Arab Spring? Such inquiries call for new evidence to grasp the structural context and the relationship between finance and growth within the Arab state.

In 2011, two changes affected the position of the region: the political and social unrest targeting the old ruling regimes in the region, preceded by the surge in global oil and food prices.

Although the long-term benefits of the Arab Spring are undeniable, the region has since witnessed increased economic pressures and repercussions, driven by internal and external sources. Notwithstanding the indirect cost on people's welfare, tourism, foreign direct investment (FDI), savings and consumption, stock prices, foreign trade as well as national income and growth took direct hits. Generally, the MENA region has realized lower annual growth rates in output, compared to many other developing regions in the world (World Bank, 2014). Such political movements distressed the already low economic growth, and its fragile relationship with the financial development.

In the purpose of giving an indicative example, in 2012, Amman, Egypt and Tunisia stock markets dropped dramatically to record low turnover ratio, as well the ratio of the values of traded shares to the market capitalization (World Development Indicators, 2012). This was caused by global investors having significantly reduced their stakes in MENA region holdings since December 2010, resulting in significant declines in region-linked stock indexes. The low turnover ratio of stock exchanges coupled with slow bank lending reflect a rise in uncertainties and a serious liquidity problem, especially in the severely affected Arab Spring stock markets. Arab Spring events led to a weakening of the region's currencies, particularly a strong depreciation of the Tunisian and Egyptian currencies that exerted a substantial toll on foreign reserves in these countries, lower tourism revenues, weak exports, and reduced FDI (Masetti et al., 2013). In contrast, many oil producing countries may be perceived as more secure investment destinations relative to other countries in the region which experienced disorder associated with the Arab Spring. Therefore, the substitution effect may have benefited some countries at the expense of directly affected economies, although the contagion effect (negative externality) could be simultaneously present.

In this paper, we focus on the relationship between institutions and economic growth in the MENA region for the countries that have witnessed the Arab Spring and the ones that did not. Several studies considered financial development as a proxy for efficiency gain; others interpreted it as an institutional development which enables economic entities to increase production. This paper investigates political instability in light of the Arab Spring and the role of financial development in economic growth in MENA countries. Hence the first objective of the paper is to investigate the shape and constraints of the finance-growth nexus by taking into account the role of the Arab Spring. Therefore, this would help us understand some roots of these popular uprisings. A second objective is to assess the effect of the Arab Spring on the regional economies. Some recommend increased investment in infrastructure as the second most important hedging factor after political stability and good governance coupled with a strengthened private sector to positively impact the regional economy. This paper claims that developed financial sectors, like those of developed economies, can significantly raise savings and investment rates and, ultimately lead to economic growth (Becsi and Wang, 1997). Following this presumption, we examine how MENA economies have expanded their financial structures to develop their financial sector and stimulate growth in the context of the new challenging scenario.

The empirical specification is represented through a Difference-in-Difference (DID) model using a firm-level panel data sourced from Orbis (administered by Bureau Van Dijk). This database covers a comprehensive and comparable source of firm-level data containing annual report data of public and private companies worldwide. This dataset is combined with yearly data sourced from the World Bank databases covering different national indicators on macroeconomic, financial, and institutions. It covers a sample of 16 MENA countries for the period 2005-2014. The remainder of this paper is organized as follows. In section 2, we describe the contextual setting. Section 3 describes the data and provides summary statistics of the variables used in the analysis. In section 4,

we present the empirical strategy and discuss the research hypotheses. Section 5 discusses the empirical results. In section 6, we provide concluding remarks.

2. Contextual setting

2.1. Circumstantial background

The series of protests and demonstrations across the MENA region that commenced in the end of 2010 has become known as the Arab Spring. It is widely believed to have been instigated by dissatisfaction with the rule of local governments, particularly by youth and unions, though some have speculated that corruption, weak property rights, unequal access to economic opportunities (based on intimacy with the ruling party) and wide income level gaps may have had a hand as well. More broadly, increasing food prices and famine rates associated with weather change may have acted as stressors that contributed to unrest in the region. The fall of some governments has provoked the remaining regimes to compel protesters in a protectionist move. Possibly the toppling of regimes in these countries marks the beginning of new uncertainties, mainly regarding the problem of succession in the region and the political ramifications on the world stocks of oil as well as the price of oil which increased by about 12% from 17th of December 2010 (protests start in Tunisia) to the same month in the following year, higher than originally forecast (New York Stock Exchange, 2015). Confirming the probability of this risk, the International Monetary Fund (IMF) had warned the world community against this event in 2011.

Deposing an authoritarian ruler is just the beginning of the change. The challenge lies in establishing a functioning and sustainable democracy. Somehow, the Arab world always enjoys having a leader with charisma, regardless of what he does or does not do for them. Unfortunately, the post-Arab Spring era has been characterized by a lack of leadership, with no respected or admired figure fit to carry over the democratization process. An equally important consequence of these political upheavals has been the role of social media and digital technologies in mobilizing

citizens within areas affected by the Arab uprisings as a means for collective activism to circumvent state-operated media channels (Acemoglu et al., 2014). Through social media, the ideals of rebel groups, as well as the current situations in each country received international attention. Despite the complexity of the Arab countries, they will continue to suffer very unstable conditions unless they eradicate corruption and promote social equality. Some people believe that the quest for democracy during the Arab Spring was dead on arrival because the Arabs are not yet ready for democracy and dictatorship is the norm (Wiarda, 2012).

2.2. Conflicts and costs

The MENA region witnessed the most frequency of wars (nine in 2014, an increase from six in 2013) including three wars in Syria, two in Yemen, Iraq, Israel, and Libya. Most prominent were the wars in Iraq and Syria (inter-opposition violence). The latter, along with the conflict in Yemen, escalated from violent crises to wars. In comparison, Sub-Saharan Africa saw a slight decrease from eleven to nine wars in 2014. One war was observed in each of the Americas, Asia and Oceania, and Europe, respectively during that year (Heidelberg Institute for International Conflict Research (HIIK), 2014). The number of highly violent conflicts in 2014 in the MENA and Europe accounted for fourteen and three, respectively, corresponding with eighteen in Sub-Saharan Africa, six in Asia and Oceania, and five in the Americas (HIIK, 2014).

These conflicts come at a sizable direct economic cost (Frey et al., 2007). For example, Libya's GDP contraction in 2011 was estimated to as much as 60% (Masetti et al., 2013). In order to grasp the effect of Arab Spring events on domestic aspects of the economy, we look at some of the costs associated with terrorism, a similar incident. Enders and Sandler (1995) study the relationship between international terrorism and tourism in Spain, and find that a typical terrorist act in Spain scares away over 140,000 tourists; terrorism affects the inflow of tourists, but not the reverse. Fleischer and Buccola (2002) estimate a supply and demand model of the Israeli hotel

industry to measure the effect of armed conflicts. For example, in 1996, the earnings loss amounted to 2.55%, which is claimed that hotels, because of inelastic demand, could not readily reverse by discounting room rates. Two interdependencies between different countries' tourism industries and their terrorist campaigns are modeled in Drakos and Kutan (2003). First, the hindrance effect on tourists in a given country may benefit tourism in neighboring destinations. Conversely, tourists may fear that terrorism could spill over into neighboring countries and, therefore, refrain from visiting them. They find empirical evidence for the contagion effect: about 11% of the aggregate loss in market shares accrues to other destinations within the neighboring countries under consideration, and 89% flows outside the region.

The effect on FDI is also considerable, given that foreigners have a wide choice of investment destinations. Therefore, even benign terrorist activities tend to significantly decrease the inflow of capital remarkably to a terror-afflicted land (see Abadie and Gardeazabal, 2005). A one standard deviation change in terrorism risk, approximately an increase in that risk from the equivalent of Italy to the equivalent of the USA, prompts a fall of net FDI of about 5% of GDP, not accounting for any spillover effects of that lost FDI on the rest of the economy.

Political disorder might increase anticipated risks identified with savings, either because legal claims to assets are fettered or because consumers are blocked from spending their savings. Conversely, terrorism may encourage consumers to place their money in safe shelters. The two effects point in different courses: Fielding (2003) estimates a consumption function for Israel for 1989–1999 with quarterly data including political instability. If there were a complete cessation of the conflict in Israel proper, consumption would fall by over 7%, and the savings rate would almost double.

The effect of armed conflicts on bilateral trade has been estimated to be significant. Costs of doing business are elevated by a deterioration of security caused by terrorism. Also, heightened

security in response to a terrorist incident increase transaction costs. Third, the risk of a direct damage of traded goods emerges. Using a gravity model with 177 countries during 1968–1999, Blomberg and Hess (2006) endorse the negative effect of terrorism on trade. They find that a country that suffers from a conflict endures a 5.1% decrease in bilateral trade. These concerns raise questions about how the governments are covering these costs.

2.3. Government responses

Despite, and in response to, the deep conflicts in the region outlined above, the following countries in transition have struggled to maintain broad macroeconomic stability, as shown in Table 1. This is manifested in single digit inflation with the exception of Egypt, shrinking budget deficits starting in 2014, external current account deficits narrowing down and increased reserves. These public efforts show fiscal responsibility and an attempt to move in the right direction; however, governments need to maintain this position in the face of currently heightened uncertainty.

[Table 1 near here]

Table 2, shows the impact on some economic indicators for selected economies affected by the Arab Spring. Reforms have started taking place as exemplified by Egypt lifting the energy subsidies and laws on investment, licensing a credit bureau, and public-private partnerships in Jordan, though financial inclusion remains at an early stage with mainly underdeveloped financial institutions and a low banking rate (IMF, 2014b). Current account deficits have slightly worsened for Egypt, and more so for Libya. Certain aspects of public debt have worsened, however most of these countries have internal debt with the exception of Tunisia, and to a lesser degree Morocco. Therefore, governments need to continue with the pace of economic reforms that are intended at narrowing fiscal financing needs, in cooperation with international creditors and organizations.

[Table 2 near here]

2.4. Institutions

The governments in the region have lagged behind other geo-economic regions in terms of voice accountability and government effectiveness. Figure 1 shows a comparison between MENA region and other regions in the world. The stylized facts in subsection 2.1 above explain the tendency of the public sector in MENA region to be less accountable and for corruption and bureaucracy to reign in.

[Figure 1 near here]

The literature abounds with studies on the importance of institutions including financial development and growth. Hassan et al. (2011) find a positive relationship between financial development and economic growth in developing countries. Katircioglu et al. (2007) and Awojobi, (2013) show that a robust financial structure can promote economic growth proving support to the 'supply-leading' hypothesis. On the other hand, additional research has found a negative relationship between finance and growth in developed countries (Aghion et al., 1999). However, conclusions based on cross-country analysis are sensitive to the sample of countries, the estimation methods, the frequency of the data, the functional form being estimated, and the proxy measures selected in the study. Since all of these concerns raise reservations about the reliability of cross-country regression analysis (see Khan and Senhadji, 2003), we opt to benefit from the panel data approach in this paper.

While Levine (1997) believes that financial intermediaries enhance economic efficiency, and ultimately growth, by helping allocate capital to its best uses, Lucas (1988) asserts that the role of the financial sector in economic growth is "over-stressed". The role of financial institutions in transition countries, like in the post-Spring era, is complicated by the necessary reforms that have been recently introduced; hence a deeper financial sector may or may not add to growth over this changeover period. Notwithstanding the controversy, modern theoretical literature on the finance–

growth nexus combines the endogenous growth theory and microeconomics of financial systems (Romer, 1986; Lucas, 1988; Grossman and Helpman, 1991; Rebelo, 1991; Pagano, 1993; Khan, 2001; among others). This paper mirrors the findings of Faria and McAdam (2015) in that early gains of some regional economies are later reversed in the post-Spring phase, especially after some reforms were introduced.

3. Data and proxy measures

In this paper, we combine (i) yearly, firm-level data from Orbis that is provided by Bureau Van Dijk; and (ii) yearly, country-level data covering variables on macroeconomic, financial, institutions and an indicator of Arab Spring derived from different sources. Our dataset extends over the period 2005-2014 and includes firms located in 16 Arab countries: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestinian Territories, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, and United Arab Emirates. Thus, our dataset allows us to have a panel of 10 years in order to examine the finance-growth nexus in light of the Arab Spring events that have started in 2011. Our final sample comprises 5,770 firms after excluding observations with missing values for some covariates

Table 3 shows the definition, source and the summary statistics of variables used in the analysis. The dependent variable is the real annual growth rate of gross domestic product per capita (GDPC), using year 2010 as the base year. Specifically, growth variable is defined as the difference in the log of GDPC between periods t and $t-1$ in country i ($i=1, 2,...,N$) (see e.g. Mankiw, 1995; Hasan et al., 2009; Hassan et al., 2011). Interestingly, the average of the growth rate of the GDPC is negative raising alarming questions about the determinants of growth in this region of the world in a period of fundamental political and economic changes.

[Table 3 near here]

Firm-related variables cover a comprehensive and comparable source of firm-level data containing annual information of public and private companies worldwide. It should be noted that one of the many advantages of using Orbis survey, is that the questions are identical through firms across all countries. Firm variables (controls) include information on firm's current assets to its current liabilities, total amount of expenses on research and development activities, number of raising recommendations (30 days), and an indicator variable for firm size.

The explanatory variables also include macroeconomic variables sourced from the World Bank's World Development Indicators (WDI) 2014 database. These variables include inflation rate, unemployment rate, trade balance, and fixed telephone subscriptions. It is interesting to observe that the averages of inflation and unemployment rates are quite high and are equal to 4.17% (with a standard deviation of 4.33%) and 27.46% (with a standard deviation of 15.44%), respectively. The trade balance standard deviation is particularly high, reflecting the raised uncertainty due to political turmoil that affected the volatility of export levels of MENA countries.

Financial variables are also taken from the World Development Indicators database. There is a variety of measures that have been used in the literature as proxies for the level of financial development. In this paper, we use four direct proxies widely used in the growth literature that include information on financial intermediaries in addition to banks. The first proxy is the domestic credit provided by financial sector (% of GDP). Higher domestic credit indicates a higher degree of dependence upon the financial sector for financing (Hassan et al., 2011). The second proxy is the domestic credit to private sector (% of GDP) where a high ratio of domestic credit to private sector indicates a higher level of domestic investment reflecting a higher development of the financial system (Bangake and Eggoh 2011; Hassan et al., 2011). According to De Gregorio and Guidotti (1995), credits provided by the financial sector measures more precisely the real amount of funds available for the economy. Indeed, financial institutions that provide more credit to private sector

are more likely to manage credit risk and operations and thus require a better financial development. The third proxy is the money and quasi money (M2) as % of GDP. Higher M2/GDP indicates an expansion in the financial intermediary sector relative to the rest of the economy and it captures the degree of monetization in the economy (King and Levine, 1993). Thus, if the financial sector develops more than the real sector of the economy, this ratio will increase over time. The fourth proxy for financial development is the bank capital to assets ratio (%). This indicator includes funds contributed by owners, retained earnings, general and special reserves, provisions, and valuation adjustments. It helps to determine if the banking sector has enough capital in accordance with the Basel requirements. Higher bank capital to total assets measures the soundness of banks and the capacity of the banking sector to expand its financial operations in the economy (Arayssi, 2015). These indicators measure financial depth of a country and have been widely used in the literature on the relationship between economic growth and financial deepening (see for example Calderón and Liu, 2003; Wolde-Rufael, 2009; Bangake and Eggoh, 2011; Marques et al., 2013). Additionally, they overcome some shortcomings of alternative measures (De Gregorio and Guidotti 1995).

Institutional variables, i.e. public governance variables, include: *Polity4* indicator, derived from Polity IV Project, is an index of democracy and limits of executive power (Jaggers and Marshall, 2000). It is called the combined polity score, calculated by taking the democracy score minus the autocracy score. The democracy and autocracy scores are derived from the six authority characteristics (regulation, competitiveness and openness of executive recruitment; operational independence of chief executive or executive constraints; and regulation and competition of participation). Polity4 ranges from −10 to 10 with higher values representing more democratic regimes. Second, we use the *rule of law* indicator, derived from the publicly available World Bank's Worldwide Governance Indicators 2014 database, that reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract

enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. It ranges from 0 (lowest) to 100 (highest). Third, *voice and accountability* indicator, derived from the same database, is an index that reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. It ranges from 0 (lowest) to 100 (highest). Finally, we use *Burden of customs* indicator, derived from the World Development Indicators, is an index of business executives' perceptions of their country's efficiency of customs procedures (1=extremely inefficient to 7=extremely efficient). Interestingly, the averages of these indicators are -5.66, 57.11, 21.27, 4.46, respectively, indicating the low classification of Arab countries with institutions and public governance on the democracy scale.

Our conflict variable related to the Arab Spring events is an indicator which is equal to the product of the treatment group (a dummy variable = 1 if the observation from Arab countries that witnessed conflicts, else zero) multiplied by the time indicator (a dummy variable = 1 if the observation from the Arab Spring years, else zero). We use information from World Bank (2014), Wikipedia (2015) and Ghosh (2015) to classify countries that are affected by the Arab Spring as shown in Table 4. Some countries were severely affected by the Arab spring such as Egypt and Tunisia and the events ended by having a new regime while other countries are still in a civil disorder and conflicts such as Syria and Libya.

[Table 4 near here]

Table 5 breaks down some key variables by country. Egypt, Libya and Syria are shown to possess the highest average of inflation rate over the sample period. Interestingly, Gulf countries, i.e. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates have the worst democracy index as measured by *Polity4* indicator compared with other countries that are affected severely by the Arab Spring. However, Gulf countries have relatively low inflation rates. Table 6

presents the correlation matrix between some key variables. As the table indicates, financial development variables are positively correlated with growth. Overall, the simple correlations with GDPC growth are moderate.

[Table 5 near here]

[Table 6 near here]

4. Empirical strategy

The primary objective of this paper is to examine the finance-growth nexus in light of changes and transformations that have been happened in the Arab countries since 2011, using the natural experiments of the Arab Spring. The structure of the panel data allows us to follow firm j $(j=1,\ldots,J)$ located in country c $(c=1,\ldots,\mathrm{C})$ across time t $(t=1,\ldots,T)$. To study the effects of variables defined in previous sections including the effects Arab Spring (AS) on growth, we use Difference-in-Differences (DID) method where we consider estimating treatment effects using "before and after" data. Therefore, our regression model is:

$$\mathrm{GROWTH}_{ct}=\alpha_0+\alpha_1 X_{jt}+\alpha_2 \mathrm{M}_{ct}+\alpha_3 \mathrm{F}_{ct}+\alpha_4 I_{ct}+\alpha_5 \mathrm{AS}_{ct}+\varepsilon_{ct} \quad (1)$$

where $\mathrm{GROWTH}_{ct}=\log(GDPC_{ct})-\log(GDPC_{ct-1})$. X_{jt} represents a vector of variables depicting firm characteristics, M_{ct} represents a vector of variables depicting the macroeconomic characteristics of country c in which firm j is located, F_{ct} represents a vector of financial development variables, I_{ct} represents a vector of institutional variables, and AS_{ct} is the measure of political events that have happened in some Arab countries. This is the DID estimator which is equal to the treatment group (a dummy variable = 1 if the observation from Arab countries that witnessed conflicts, else zero) multiplied by the time indicator (a dummy variable = 1 if the observation belongs to the Arab Spring years, else zero). ε_{ct} is the stochastic error term. In all our

regressions, we include firm-specific fixed effects to take into account the unobservable firm characteristics.

The first hypothesis that we test is the role of the financial development in growth. It indicates that financial variables lead to more financial deepening, which in turn promotes growth (Calderón and Liu, 2003; Wolde-Rufael, 2009; Bangake and Eggoh, 2011; Marques et al., 2013) also for the MENA region (Abu-Bader and Abu-Qarn, 2008; Abosedra and Fakih, 2014). The second hypothesis connects the implications of the Arab Spring on growth. Despite the scarce literature on the economic effects of the Arab Spring, Ghosh (2015) finds that the Arab Spring decreases bank profitability and raises bank risk. Khandelwal and Roitman (2013) find that political instability associated with the Arab Spring resulted in substantial output losses, with prolonged after-effects. Thus, we test whether the impact of Arab Spring on growth is negative, since a number of tourists were diverted away from countries directly affected by the Arab Spring and several foreign firms left the region during this turmoil (World Bank, 2014; IMF, 2014a; Faria and McAdam, 2015).

Moving to the third hypothesis related to macroeconomic variables, we test if inflation and unemployment are negatively correlated with growth, and if trade balance and fixed telephone line subscriptions are positively correlated with growth. Indeed, high inflation level is expected to have negative consequences on growth. In fact, higher inflation and unemployment introduce economic uncertainty and are expected to narrow growth. Boyd et al. (2001) used data on 65 countries and realize a negative relationship between inflation and the development level of the banking sector. Bittencourt (2011) finds that inflation rates have deleterious effects on financial development in Brazil. He argues that low and stable inflation rate is a precondition to achieve a better development in the financial sector. The last hypothesis is related to the role of institutional variables. We test whether there is a positive relationship between these variables and growth. We propose that

political pluralism and public governance have beneficial effects on businesses and overall economic activity in developing and emerging countries (Poghosyan, 2013; Arayssi and Fakih, 2015).

5. Empirical results

The empirical analysis examines the determinants of growth in the Arab Region. The dependent variable is the GDPC annual growth. In our regressions, the independent variables are divided among the firm-level (controls), macroeconomic, financial, and institutional variables in addition to an indicator for the Arab Spring that is estimated using the DID technique. The controls also include the firm fixed effects. Table 7 presents the results with domestic credit provided by financial sector (% of GDP) as the financial development variable. In Tables 8, 9, and 10 we conduct a number of robustness checks using different measures of financial development. We cluster the error term by country and year. Clustering allows the error terms to be correlated within countries but not between countries and thus provide more accurate standard errors (Petersen, 2009; Cameron et al., 2011; Ghosh, 2015).

5.1. Initial estimates

Table 7 reports the estimated coefficients of the fixed effects model presented in equation (1). Column (1) presents the results from an empirical specification that includes financial development variable and Arab Spring DID estimator. The results show that there is a negative relationship between domestic credit provided by financial sector and growth. Additionally, we find that the impact of Arab Spring estimator is negatively correlated with growth. These negative relationships remain when we add firms' controls in Column (2). It should be noted that Columns (1) and (2) controls for country×year fixed effects to take into account country unobservable factors such as

internal conflicts history, corruption levels, quality of public administration, etc. which are (nuisances) captured by including this effect.

[Table 7 near here]

In Column (3), the baseline regression, we add the macroeconomic factors including newly introduced reforms and find that the finance-growth relationship becomes positive in line with previous empirical studies. Interestingly, the explanatory power increases significantly in Column (3). It goes from around 27% in Columns (1) and (2) to around 94% in Column (3) indicating the importance of macroeconomic determinants of growth, thus providing a reasonable framework for analyzing growth in the MENA region. However, the impact of the Arab Spring remains negative even when adding macroeconomic variables. Therefore, we accept the first and second hypotheses, confirming the positive effect of financial development, in the presence of economic reforms, on growth and the negative effect of Arab Spring violence on growth, respectively. The macro variables show the expected signs. Specifically, we find that inflation and unemployment rates exert negative implications on growth, while trade and fixed telephone line subscriptions are positively associated with growth. These findings lend support in favor of accepting the third hypothesis. The convergence effect measured by log of initial GDPC is negative, in line with the result obtained in Hasan et al. (2009).

Columns (4) to (7) add the institutional variables, i.e. *Polity4*, *rule of law*, *voice and accountability*, and *burden of customs* variables, separately. First, the results reaffirm that the financial development variable is still positively correlated with growth, while the Arab Spring remains negatively correlated with growth. Second, the signs of macroeconomic determinates remain the same. Third, the results reveal that *Polity4* and *voice and accountability* variables are negatively correlated with growth suggesting that possibly Arab countries are still going through an irregular path and thus more democracy is not associated with higher growth at this point in time.

This is supported by observations from Tunisia and Egypt where new regimes were established however economic activities did not improve since the Arab Spring (IMF, 2014b). However, institutional variables on rule of law and burden of customs are positively correlated with growth.

In column (8), the full model, which includes all variables, is estimated. The estimates provide strong support to the positive relationship between financial development and growth. That is, these results can be related to the well-established literature that examines the effects of financial health of the country on growth (e.g., Levine and Zervos, 1998; Quartey and Prah, 2008; Abu-Bader and Abu-Qarn, 2008; Huang and Lin, 2009) and are in line with some pre-Arab Spring empirical findings from the MENA region (Darrat and Al-Sowaidi, 2010; Kar et al. 2011; Abosedra and Fakih, 2014; Arayssi and Fakih, 2015). They underline the role of national financial development levels in promoting growth where financial development is a necessary pre-condition for economic growth (e.g., Katircioglu et al., 2007; Awojobi, 2013). This is in line with the 'supply-leading' hypothesis stating that a sound and efficient financial system can improve the overall level of economic activities and improve economic outcome in the country.

The results of the full model also support the negative effects of the Arab Spring on growth reconfirming our second hypothesis that the Arab Spring dampens growth. These findings are consistent with some previous evidence which suggest that political instability and uncertainty adversely affects the performance of the economy (Micco et al., 2007; Baum et al., 2010). A number of papers from this literature examine the association between economic growth and armed conflicts (e.g. Collier, 1999; Murdoch and Sandler, 2002; Koubi, 2005). For example, Baker and Bloom (2013) use various natural experiments and find that political uncertainty has an adverse effect on the volatility of GDP growth.

Macroeconomic variables in the full model are also in line with previous results except for inflation that become positive. Surprisingly, institutional variables show some variations. We notice

that *Polity4* is now positive in the full model while the *rule of law* variable is now negative. This suggests that Arab countries that witnessed the transformations will perhaps end up having positive effects of the democracy on growth in the long-run. Also, these results seem to suggest that enforcing the rule of law and public governance mechanisms may not play an effective role in supporting economic growth in the context of conflicts. This result can be also explained by the fact that the enforcement of law in financially less developed countries does not promote economic growth. That is, countries with benevolent dictators result in a better yield of financial development on economic growth (Arayssi and Fakih, 2015) in line with research by Mulligan et al. (2004) and Yang (2011).

5.2. Robustness checks

The purpose of this section is to further explore whether the positive relationship between financial development and growth holds when using alternative measures of financial development. Specifically, we use three alternative measures (e.g. De Gregorio and Guidotti, 1995): (i) domestic credit to private sector (% of GDP), (ii) money and quasi money (M2) as % of GDP, and (iii) bank capital and reserves to total assets ratio (%). The results are presented in Tables (8), (9), and (10), respectively. The empirical analysis uses the same specifications and variables as defined in previous section.

[Table 8 near here]

[Table 9 near here]

[Table 10 near here]

The results are generally found to be in conformity with those derived from the benchmark analysis presented in Table (7). They confirm mainly the first hypothesis, concerning the positive role of financial institutions in enhancing growth. Also, they confirm the second hypothesis, in

regard to the dampening effects of the Arab Spring on growth. The results show that financial development variables are positively correlated with growth in the three tables. It seems that the finance-growth nexus is still important in the Arab countries despite conflicts and instability in some countries. The effect of Arab Spring is still negative and significant on growth with the exception of a couple of specifications when using money and quasi money (M2) as % of GDP and bank capital and reserves to total assets ratio as proxies for financial development. However, the negative association holds in the full model in Column (8) in all three tables.

When examining the role of the macroeconomic factors (i.e., the third hypothesis), we find strong support that fixed telephone line subscriptions and trade balance contribute positively to growth. As a result of increased political risk, banks increased their bank capital, as can be seen in the significantly positive coefficient of this variable in Table 10. Banks facing increased political uncertainty hedge against bad loans and additional losses from investments associated with a transitional phase similar to the Arab Spring by raising additional capital. Finally, the fourth hypothesis regarding the institutional determinants of growth are also in line with previous results presented in Table (7) indicating the overall importance of good and transparent institutions in improving growth in the Arab region. This is in line with some recent evidence from the MENA region that political reforms in the region aiming to decrease authoritarianism and limiting executive power is crucial to allow firms in MENA countries to boost economic growth (Arayssi and Fakih, 2015).

6. Concluding remarks

Previous literature researched on the relationship between financial development and growth in the MENA region ignored the recent political changes that began in 2011 and weakly researched the role of institutional factors. Using information on an extended sample of MENA firms during the period 2005-2014 that incorporate the Arab Spring, we investigate how political transition affected

the finance-growth relationship. It focuses on the role of organizational setting and its interaction with the financial development using a panel dataset covering firm characteristics and national financial, macroeconomic and institutional factors. The paper adopts a Difference-in-Difference methodology and uses a number of alternative measures of financial development. The results of this paper provide directions to policy makers aiming at improving the efficiency and the operation of the financial institutions in the light of the new challenging scenario in the Arab countries.

The results provide strong evidence that financial development still is an important contributor to growth. The analysis also provides evidence on the significant dampening effects of the Arab Spring events on growth. Our results are consistent with evidence which highlights the effect of raised political uncertainty on beefing-up bank equity, improving political plurality, and planning to reduce budget deficits and encourage investments. These results seem to suggest that a well-functioning financial system is necessary but not sufficient to attain a steady economic growth rate in MENA countries. The analysis further highlights that institutional determinants of growth, such as the level of democracy and the rule of law, play an important role in growth.

The above results naturally suggest that specific institutional reform policies are important for policy makers in attempting to accelerate economic growth. The new regimes established following the Arab Spring urge for transparent reforms in institutions. The focus should be multifaceted on first protecting and liberalizing financial markets, and second consolidating the role of institutions to reinforce the businesses' and the public's trust in the MENA economies.

One can conclude that policy makers and international organizations should consider a country's legal system, political stability and the stage of financial development when designing policies to boost economic growth and reduce poverty. Our final remark on the Arab Spring reinforces the results of Faria and McAdam (2015) that recent events may well face a rise in

political instability if MENA economies fail to sustain a pace of growth that leads to improve different economic outcomes.

A further extension of this research includes studying how the impact of Arab Spring differed between oil exporting and oil importing nations, noting the very different government finances in both groups and the potential spillover effects on growth. By the same token, it would be interesting if future research were to examine how the duration of the Arab Spring (some countries had a shorter Arab Spring episode than others) impacts the finance-growth relationship.

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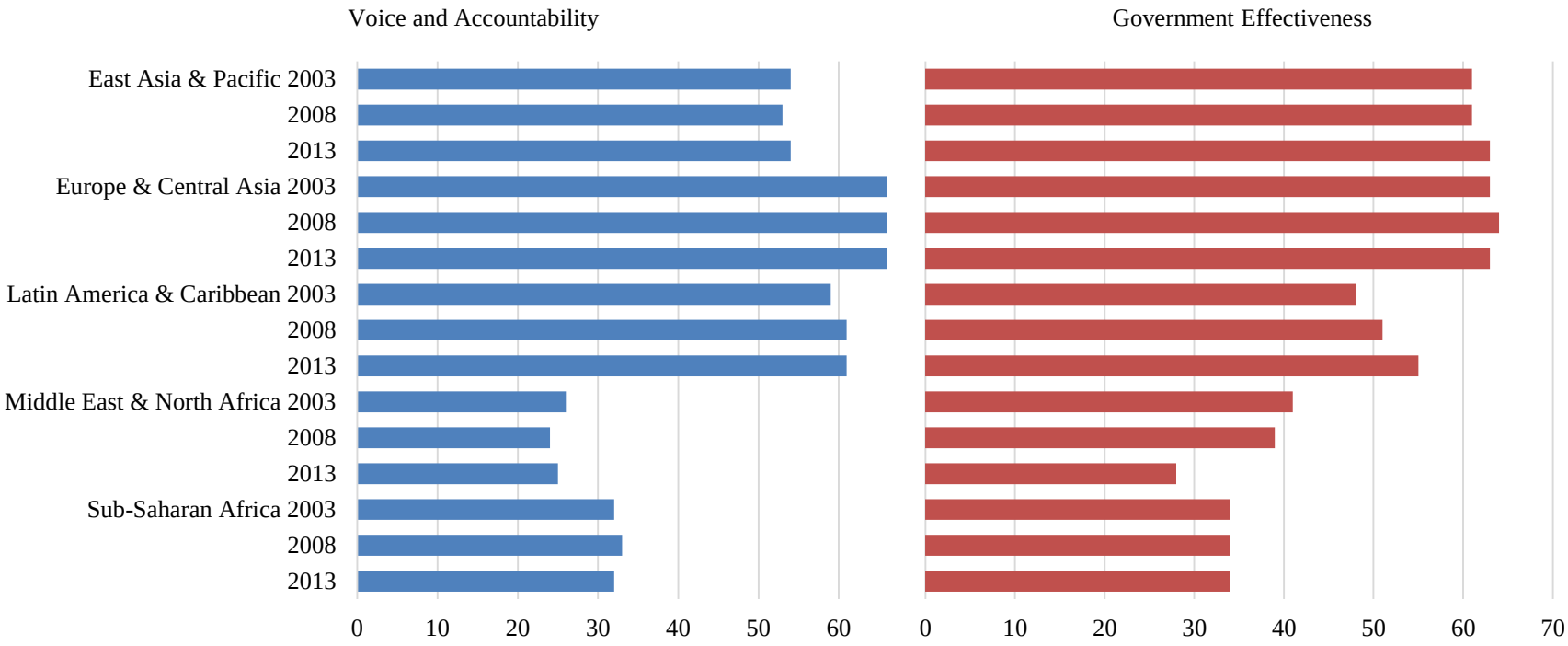
Figure 1: The quality of governance by geo-economic region



Sources: World Bank's Worldwide Governance Indicators 2014 database.

Table 1: Arab Countries in transition: financing needs (Billions of U.S. Dollars, Egypt, Jordan, Morocco, Tunisia, and Yemen)

	Actual	Actual	Estimate	Projections	
	2011	2012	2013	2014	2015
Current account deficit (excluding official transfers)	26.1	33.4	28.4	34	33
External amortization	14.3	14.3	15.5	21.5	34.4
External gross financing needs	40.3	47.7	43.9	55.5	67.4
Budget deficit (excluding grants)	37.1	47	56.2	61.6	57.6
Public external amortization	5.4	5.3	5.5	6.2	9.4
Fiscal financing needs	42.5	52.3	61.7	67.8	66.9

Sources: National authorities; and IMF staff calculations. (IMF, 2014b). External gross financing needs is defined as current account deficit, excluding grants, plus amortization. Fiscal financing needs is defined as the budget deficit, excluding official grants, plus public external amortization.

Table 2: Selected economic indicators 2010-2015 (Percent of GDP)

	Actual	Actual	Estimate	Projections	
	2010/11	2011/12	2012/13	2013/14	2014/15
Current account balance, excluding grants					
Egypt	-2.9	-4.1	-3.0	-5.1	-5.0
Jordan	-19.0	-20.2	-16.5	-14.2	-10.7
Libya	8.4	30.1	13.7	-27	-20.8
Morocco	-8.4	-10	-8.3	-8.1	-6.8
Tunisia	-7.4	-8.2	-8.3	-7.9	-6.3
Yemen	-5.4	-7.9	-4.0	-2.7	-2.1
Public Debt					
Egypt	76.6	78.9	89.2	93.8	94.5
Jordan	70.7	80.2	85.8	90	91.1
Libya	-	-	-	-	-
Morocco	54.4	60.4	63.9	65.5	65.7
Tunisia	44.5	44.5	44.8	51	55.3
Yemen	45.7	47.3	48.2	50.2	50.2
External Debt					
Egypt	14.8	14.9	16	18.4	18.7
Jordan	21.9	23.6	26.4	30	30
Libya	16.1	6.8	8.5	11.3	8.8
Morocco	25.1	29.8	31.1	32.9	33.2
Tunisia	48	53.8	54	55.4	61.2
Yemen	18.6	17.9	16.7	17	17
Reserves in months of imports					
Egypt	4.7	2.7	2.5	2.7	2.9
Jordan	5.9	3.6	5.1	5.8	6.1
Libya	41.1	44.2	48.3	34.3	25.8
Morocco	5	4.2	4.3	4.5	4.5
Tunisia	3.4	3.9	3.4	3.6	4.3
Yemen	3.9	5.6	4.6	3.6	4.6

Sources: National authorities; and IMF staff calculations. (IMF, 2014). Morocco external debt includes external publicly guaranteed debt.

Table 3: Variable definition and sources

Variables	Definition	Source	Mean (SD)
GDPC	GDP per capita (constant 2010 US$)	Orbis	20979.39 (19929.50)
Growth	Log of GDPC between periods *t* and *t-1*	Orbis	-0.00 (0.22)
Current ratio	Firm's current assets to its current liabilities	Orbis	687.73 (537.96)
R&D expenses	Total amount of expenses on research and development activities	Orbis	61.97 (74.80)
Number of raising	Number of raising recommendations (30 days)	Orbis	4.38 (2.09)
Large firms	Indicator variable = 1 for large firms, else zero	Orbis	2.92 (0.38)
Initial GDPC	Log of initial GDP per capita real	Orbis	12627.52 (15402.89)
Inflation	Inflation rate, consumer prices (annual %)	WDI	4.17 (4.33)
Unemployment	Unemployment rate, total (% of total labor force)	WDI	27.46 (15.44)
Trade balance	Country's exports minus its imports	WDI	9.87 (27.68)
Fixed telephone	Fixed telephone subscriptions (per 100 people)	WDI	14.32 (5.39)
Domestic credit/financial	Domestic credit provided by financial sector (% of GDP)	WDI	63.58 (40.11)
Domestic credit/private	Domestic credit to private sector (% of GDP)	WDI	52.74 (21.58)
M2	Money and quasi money (M2) as % of GDP	WDI	75.71 (38.15)
Bank capital assets	Bank capital and reserves to total assets ratio (%)	WDI	11.10 (3.15)
Polity4	Index of democracy and limits of executive power. It ranges from –10 to 10 with higher values representing more democratic regimes	Polity IV Project	-5.66 (3.68)
Rule of law	Index reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. It ranges from 0 (lowest) to 100 (highest)	Worldwide Governance Indicators	57.11 (14.38)
Voice and accountability	Index reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. It ranges from 0 (lowest) to 100 (highest)	Worldwide Governance Indicators	21.27 (9.18)
Burden of customs	Index of business executives' perceptions of their country's efficiency of customs procedures (1=extremely inefficient to 7=extremely efficient)	WDI	4.46 (0.68)

Table 4: Summary of conflicts by country

Country	Years	Remark
Algeria		Major protests
Bahrain	2011–2012	Civil disorder and governmental changes
Egypt	2011–2012	Civil disorder and governmental changes
Iraq	2011–2014	Civil disorder and governmental changes
Jordan	2011	Major protests and governmental changes
Kuwait	2011–2012	Major protests and governmental changes
Lebanon	2011	Major protests and governmental changes
Libya	2011-ongoing	Civil disorder and governmental changes
Morocco	2011	Major protests and governmental changes
Oman		Minor protests
Palestinian Territories		Minor protests
Qatar		No major impact
Saudi Arabia		Minor protests
Syrian Arab Republic	2011-ongoing	Civil disorder and governmental changes
Tunisia	2011–2012	Government overthrown
United Arab Emirates		No major impact

Sources: World Bank (2014), Wikipedia (2015), and Ghosh (2015).

Table 5: Summary statistics of macroeconomic, financial, and institutional variables by country

Country	*N*	GDPC	Inflation	Unemployment	Domestic credit/financial	Domestic credit/private	M2	Bank capital asset	Polity4	Rule of law	Voice and accountability	Burden of customs
Algeria	70	5119.20	4.70	13	-0.66	14.70	60.85	7.40	2.00	27.97	20.91	2.75
Bahrain	630	24233.20	2.06	47	62.29	61.49	71.72	12.80	-7.80	64.40	19.08	5.18
Egypt	1,700	4221.80	9.56	21.2	82.87	37.33	85.23	5.90	-3.10	46.34	17.62	3.89
Iraq	340	3603.80	3.65	47	-4.64	4.30	29.62		3.00	1.94	14.17	
Jordan	1,840	4417.80	4.25	12.6	108.76	79.01	129.71	12.14	-2.80	62.25	27.58	4.50
Kuwait	1,810	38994.00	3.77	29.2	64.11	66.08	63.69	12.14	-7.00	66.15	30.82	3.74
Lebanon	200	9237.60	4.44	47	180.05	83.41	242.19	7.90	6.00	30.06	34.62	3.38
Libya	40	10572.80	7.15	47	-60.93	12.05	62.48		-4.20	16.72	8.30	3.16
Morocco	440	2592.40	1.10	43	100.05	63.58	107.16	7.83	-5.20	48.64	28.00	4.31
Oman	1,070	19841.80	2.65	47	34.23	39.44	36.65	13.17	-8.00	66.09	19.05	4.94
Palestinian Territories	340	566.60	2.57	28.2	7.62	6.49	18.17	10.01		38.58	24.92	
Qatar	440	88045.40	1.51	2.2	63.77	40.83	54.60		-10.00	76.87	24.97	4.79
Saudi Arabia	1,490	23898.40	3.66	9	4.26	38.47	53.06	13.45	-10.00	59.05	4.34	4.60
Syrian Arab Republic	80	3779.60	33.09	31.2	35.02	14.92	69.13			25.04	4.72	2.97
Tunisia	540	4866.80	4.75	21.2	72.07	65.79	61.19	7.50	-0.20	54.98	24.07	4.28
United Arab Emirates	1,060	47560.00	1.17	47	75.55	63.61	64.68	14.20	-8.00	64.90	21.81	5.78
MENA region	5,770	21113.53	4.28	27.46	63.58	52.74	75.71	11.10	-5.66	57.11	21.27	4.46

Table 6: Correlation matrix of macroeconomic, financial, and institutional variables

	Growth	Inflation	Unemployment	Domestic credit/financial	Domestic credit/private	M2	Bank capital asset	Polity4	Rule of law	Voice and accountability	Burden of customs
Growth	1										
Inflation	-0.124***	1									
Unemployment	0.634***	-0.380***	1								
Domestic credit/financial	0.618***	0.083***	0.175***	1							
Domestic credit/private	0.479***	-0.577***	0.216***	0.565***	1						
M2	0.150***	0.058**	-0.213***	0.778***	0.542***	1					
Bank capital asset	-0.040	-0.747***	0.122***	-0.269***	0.391***	-0.156***	1				
Polity4	0.273***	0.433***	-0.193***	0.666***	0.181***	0.624***	-0.618***	1			
Rule of law	0.161***	-0.675***	0.248***	-0.224***	0.509***	-0.206***	0.828***	-0.541***	1		
Voice and accountability	0.734***	-0.059**	0.193***	0.695***	0.593***	0.451***	-0.160***	0.612***	-0.013	1	
Burden of customs	0.057**	-0.557***	0.468***	-0.079***	0.223***	-0.211***	0.635***	-0.462***	0.594***	-0.328***	1

Notes: Correlation coefficients with Bonferroni-adjusted significance levels. *=10%; **=5%; ***=1%

Table 7: DID regressions of real per capita GDP growth (domestic credit provided by financial sector (% of GDP) is the proxy of financial development)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Arab Spring	-1.067***	-1.076***	-0.114***	-0.418***	-0.276***	-0.281***	-0.680***	-0.728***
	(0.075)	(0.075)	(0.028)	(0.026)	(0.027)	(0.027)	(0.023)	(0.022)
Domestic credit/financial	-0.002***	-0.002***	0.012***	0.003***	0.010***	0.014***	0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Current ratio		0.000	0.000	0.000	0.000***	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D expenses		0.002***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of raising		0.012	0.016***	0.021***	0.007***	0.014***	0.019***	0.025***
		(0.008)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Large firms		-0.015	-0.026*	-0.027**	-0.036**	-0.015	-0.051***	-0.057***
		(0.047)	(0.015)	(0.013)	(0.014)	(0.014)	(0.011)	(0.010)
Initial GDPC			-0.000***	0.000***	-0.000***	-0.000***	0.000***	0.000***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation			-0.038***	-0.020***	-0.016***	-0.040***	0.017***	0.014***
			(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
Unemployment			-0.013***	-0.005***	-0.008***	-0.010***	-0.004***	-0.007***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed telephone			0.044***	0.059***	0.041***	0.029***	0.048***	0.038***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade balance			0.040***	0.019***	0.037***	0.039***	0.019***	0.025***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Polity4				-0.031***				0.047***
				(0.001)				(0.002)
Rule of law					0.012***			-0.006***
					(0.000)			(0.001)
Voice and accountability						-0.020***		-0.006***
						(0.001)		(0.001)
Burden of customs							0.240***	0.360***
							(0.007)	(0.013)
Constant	9.061***	8.976***	8.286***	8.215***	7.639***	8.627***	7.494***	7.783***
	(0.041)	(0.145)	(0.052)	(0.046)	(0.054)	(0.050)	(0.048)	(0.061)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	No	No	No	No	No	No
N	5,770	5,770	4,804	4,668	4,804	4,804	4,474	4,474
Countries	16	16	16	16	16	16	16	16
Adjusted R^2	0.261	0.268	0.939	0.946	0.948	0.948	0.963	0.968

Notes: Arab Spring is the DID estimator which is equal to the treatment group (a dummy variable = 1 if the observation from Arab countries that witnessed conflicts, else zero) × time indicator (a dummy variable = 1 if the observation belongs to the Arab Spring years, else zero). Standard errors (clustered by country and year) are within parentheses.

Table 8: DID regressions of real per capita GDP growth (Domestic credit to private sector (% of GDP) is the proxy of financial development)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Arab Spring	-0.912***	-0.914***	-0.172***	-0.405***	-0.354***	-0.447***	-0.640***	-0.684***
	(0.075)	(0.076)	(0.031)	(0.024)	(0.030)	(0.026)	(0.021)	(0.022)
Domestic credit/private	0.008***	0.008***	0.013***	0.005***	0.010***	0.022***	0.002***	0.005***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Current ratio		0.000	0.000	0.000	0.000***	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D expenses		0.001***	0.000***	0.000***	0.000***	0.000*	0.000***	0.000*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of raising		0.018**	0.012***	0.020***	0.003	0.008***	0.017***	0.024***
		(0.007)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Large firms		-0.03	-0.050***	-0.035***	-0.053***	-0.046***	-0.054***	-0.060***
		(0.046)	(0.017)	(0.013)	(0.016)	(0.013)	(0.011)	(0.010)
Initial GDPC			0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation			0.002	-0.009***	0.017***	0.012***	0.022***	0.024***
			(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Unemployment			-0.007***	-0.004***	-0.003***	-0.001***	-0.005***	-0.007***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed telephone			0.046***	0.056***	0.044***	0.009***	0.045***	0.028***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Trade balance			0.028***	0.017***	0.026***	0.023***	0.020***	0.025***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Polity4				-0.037***				0.042***
				(0.001)				(0.002)
Rule of law					0.012***			-0.012***
					(0.000)			(0.001)
Voice and accountability						-0.042***		-0.010***
						(0.001)		(0.001)
Burden of customs							0.260***	0.413***
							(0.007)	(0.014)
Constant	8.447***	8.361***	7.961***	8.062***	7.365***	8.433***	7.317***	7.786***
	(0.048)	(0.145)	(0.058)	(0.046)	(0.060)	(0.048)	(0.053)	(0.059)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	No	No	No	No	No	No
N	5,770	5,770	4,804	4,668	4,804	4,804	4,474	4,474
Countries	16	16	16	16	16	16	16	16
Adjusted R^2	0.275	0.282	0.925	0.948	0.934	0.951	0.964	0.969

Notes: Arab Spring is the DID estimator which is equal to the treatment group (a dummy variable = 1 if the observation from Arab countries that witnessed conflicts, else zero) × time indicator (a dummy variable = 1 if the observation belongs to the Arab Spring years, else zero). Standard errors (clustered by country and year) are within parentheses.

Table 9: DID regressions of real per capita GDP growth (Money and quasi money (M2) as % of GDP)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Arab Spring	-1.143***	-1.182***	0.231***	-0.331***	0.014	0.145***	-0.253***	-0.434***
	(0.074)	(0.074)	(0.033)	(0.031)	(0.027)	(0.031)	(0.025)	(0.028)
M2	-0.006***	-0.006***	0.010***	0.003***	0.009***	0.012***	0.007***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Current ratio		0.000	0.000	0.000	0.000***	-0.000**	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D expenses		0.002***	0.000**	0.000***	0.000***	0.000	0.000***	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of raising		-0.002	0.025***	0.023***	0.012***	0.026***	0.017***	0.021***
		(0.007)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Large firms		-0.04	0.006	-0.018	-0.013	0.024	-0.030***	-0.039***
		(0.046)	(0.016)	(0.013)	(0.013)	(0.015)	(0.010)	(0.010)
Initial GDPC			0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation			-0.069***	-0.027***	-0.040***	-0.080***	0.000	0.002
			(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Unemployment			-0.007***	-0.003***	-0.001***	-0.003***	-0.005***	-0.006***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed telephone			0.037***	0.055***	0.029***	0.019***	0.021***	0.024***
			(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Trade balance			0.034***	0.018***	0.033***	0.033***	0.030***	0.030***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Polity4				-0.039***				0.032***
				(0.002)				(0.002)
Rule of law					0.019***			-0.002**
					(0.000)			(0.001)
Voice and accountability						-0.022***		-0.006***
						(0.001)		(0.001)
Burden of customs							0.393***	0.406***
							(0.008)	(0.013)
Constant	9.492***	9.575***	7.963***	8.091***	6.943***	8.250***	6.470***	6.981***
	(0.049)	(0.148)	(0.057)	(0.048)	(0.051)	(0.055)	(0.060)	(0.072)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	No	No	No	No	No	No
N	5,770	5,770	4,804	4,668	4,804	4,804	4,474	4,474
Countries	16	16	16	16	16	16	16	16
Adjusted R^2	0.283	0.293	0.927	0.945	0.953	0.937	0.968	0.969

Notes: Arab Spring is the DID estimator which is equal to the treatment group (a dummy variable = 1 if the observation from Arab countries that witnessed conflicts, else zero) × time indicator (a dummy variable = 1 if the observation belongs to the Arab Spring years, else zero). Standard errors (clustered by country and year) are within parentheses.

Table 10: DID regressions of real per capita GDP growth (Bank capital to assets ratio (%))

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Arab Spring	0.717***	0.695***	0.119***	-0.133***	-0.130***	0.209***	0.109***	-0.025*
	(0.082)	(0.081)	(0.033)	(0.013)	(0.033)	(0.032)	(0.016)	(0.014)
Bank capital assets	0.299***	0.308***	0.167***	0.146***	0.125***	0.193***	0.182***	0.189***
	(0.008)	(0.008)	(0.003)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)
Current ratio		0.000	0.000	0.000	0.000	0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D expenses		0.001*	0.000	0.000**	0.000	0.000*	0.000**	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of raising		-0.040***	-0.026***	0.004***	-0.028***	-0.021***	0.002	0.002*
		(0.007)	(0.003)	(0.001)	(0.003)	(0.003)	(0.001)	(0.001)
Large firms		0.021	0.007	-0.028***	-0.001	-0.004	-0.013**	-0.018***
		(0.043)	(0.016)	(0.006)	(0.015)	(0.015)	(0.007)	(0.006)
Initial GDPC			0.000***	0.000***	0.000***	-0.000***	0.000***	0.000***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inflation			0.061***	0.045***	0.071***	0.090***	0.031***	0.027***
			(0.004)	(0.001)	(0.003)	(0.004)	(0.002)	(0.001)
Unemployment			0.002***	0.003***	0.003***	0.004***	0.007***	0.009***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed telephone			0.034***	0.049***	0.046***	0.051***	0.051***	0.050***
			(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Trade balance			0.022***	0.021***	0.020***	0.025***	0.017***	0.018***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Polity4				0.035***				0.048***
				(0.001)				(0.001)
Rule of law					0.020***			0.006***
					(0.001)			(0.001)
Voice and accountability						0.020***		-0.014***
						(0.001)		(0.001)
Burden of customs							-0.227***	-0.292***
							(0.009)	(0.011)
Constant	5.703***	5.714***	6.267***	6.718***	5.490***	5.325***	7.009***	7.413***
	(0.093)	(0.156)	(0.068)	(0.028)	(0.075)	(0.083)	(0.030)	(0.040)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	No	No	No	No	No	No
N	5,528	5,528	4,436	4,300	4,436	4,436	4,246	4,246
Countries	16	16	16	16	16	16	16	16
Adjusted R^2	0.399	0.408	0.937	0.987	0.943	0.941	0.986	0.99

Notes: Arab Spring is the DID estimator which is equal to the treatment group (a dummy variable = 1 if the observation from Arab countries that witnessed conflicts, else zero) × time indicator (a dummy variable = 1 if the observation belongs to the Arab Spring years, else zero). Standard errors (clustered by country and year) are within parentheses.