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Fed tapering announcements

Impact on Middle Eastern and African financial markets

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Abstract

We study the impact of the announcements of “tapering” (exit from the unconventional monetary policies of the Federal Reserve) on a sample of 16 countries of the Middle East and Africa region. The events under study are the announcements of the Federal Open Market Committee in the context of meetings and minutes during the tapering period (2013/01-2015/04). We compare the impact on these countries with that on three emerging and advanced economies control groups. We find that the countries under study, despite a lower level of financial development, are also characterized by significant announcement effects. The dates of significant announcements are more similar to Western Europe than to the other emerging economies, which reflects major economic ties with Europe. Domestic inflation and FDI have the most significant direct and interaction effects. In particular, the direct effect of FDI is favorable, but their indirect effect is unfavorable, as in the literature on emerging countries where financial development frequently increases vulnerabilities to the impact of international monetary policy announcements. More generally, this result points to the macroeconomic issue of the absorptive capacity necessary to achieve the benefits of FDI (Durham, 2004).

Keywords: Africa, Middle East and Northern Africa, financial development, global monetary policies, Tapering

JEL: F62, F65

1. Introduction

Between 2008 and 2013, one of the distinguishing features of the Federal Reserve (FED) monetary policy is the forward guidance of expectations in the sense of persistently low rates and in general the lasting practice of highly accommodative conditions (Bernanke et al., 2004; Borio and Disyatat, 2010). This guidance, which responds to domestic objectives, also affects international capital flows. In particular, emerging economies with attractive yield differentials become a preferred destination of global savings. In this

context, it is inevitable that the announcement of tightening ("tapering") by the Federal Open Market Committee (FOMC) would result in shocks on emerging markets asset prices (Rajan, 2013). The magnitude and duration of these shocks vary according to idiosyncratic features, some announcements of FED decisions even having larger effects in the emerging countries than in the United States. The aim of this paper is to determine whether the equity markets of a sample of countries in the Middle East and Africa region, whose level of financial development is relatively low in comparison with Asian or Latin American emerging economies, are affected by these announcements. In addition it is also relevant to assess whether this impact is associated with the same dates than in the other emerging areas, and otherwise, to characterize the type of announcement that specifically results in adverse effects on the equity markets of the countries in the sample.

Our sample is composed of 16 countries in the Middle East and Africa region. The tests are carried out using panel data on national equity markets benchmark indices, with daily frequency. The monetary policy events tested are the announcements of the FOMC during its meetings and the release of the associated minutes, over the so-called tapering period (January 2013 to April 2015). We compare the impact on the countries of the Middle East and Africa region with those of two emerging markets regions: Eastern Europe on the one hand, and Asia and Latin America on the other hand; and a group of Western European economies taken as a benchmark. There are two steps in the empirical approach. The first step consists in testing each of the dates of meetings and minutes for each group of countries. The interpretation of these results involves studying the coverage of FOMC meetings by the economic and financial media of reference. In a second step, for the countries of the Middle East and Africa region, we compute an event dummy variable corresponding to the sole significant events in the tests of step one. Finally we test the direct and interaction effects of this variable on equity markets prices using a set of domestic characteristics.

Our contribution is threefold. First, on the basis of a specific section of extensive literature review, we propose a study of the announcement effects of tapering on countries in the Middle East and Africa region, whereas the reference literature focuses on emerging economies in Asia and Latin America. The other two contributions are the main results of the two steps of the empirical approach. The second contribution is that the individual regressions performed in the first stage of the empirical approach show that these countries, despite a relatively low level of financial development, are charac-

terized by significant announcement effects. These effects are not necessarily associated with the same dates and types of announcements as those that have a significant effect for the other emerging economies. In particular, we observe an interesting concordance of dates with Western Europe. This result is important both for public authorities, as it sheds light on the underlying mechanisms of vulnerabilities to the announcement effects of international monetary policies; and for investors, as the discordance of dates associated with these vulnerabilities constitutes a factor of decorrelation of returns and therefore an opportunity for diversification. The third contribution, which is the main result of the regressions performed in the second step of the empirical approach, is to show that the domestic environment can mitigate or, on the contrary, aggravate these announcement effects. In particular, inflation and FDI have a negative interaction effect, and public spending a positive interaction effect. In the later two cases, these effects are not trivial, and must be taken into account in the definition of the optimal economic policies of developing and emerging economies in the event of international monetary policy shocks. This result reinforces, in particular, the need to pay particular attention to institutional, financial, etc. development conducive to realizing the macroeconomic benefits of FDI. This is a particularly crucial issue in the context of the reorganization of global value chains following the COVID19 pandemic.

The content of this paper is as follows. Section 2 is devoted to a literature review on the announcement effects of global monetary policies in international capital markets, in particular the impact of tapering announcements on emerging economies, which is generally found significant. Section 3 is devoted to the first step of the empirical approach, i.e. the individual test and comparison of announcements associated with significant effects in the Middle East and Africa region vs. other emerging economic regions, and advanced European economies taken as a benchmark. Section 4 is devoted to the second step of the empirical approach, i.e. the regressions with interactions between announcement effects and economic and financial openness in the specific case of the Middle East and Africa region. Section 5 concludes.

2. Literature Review

The literature on banking systems and equity markets of emerging economies is most often focused on Asia and Latin America. The same is true for the literature on the international transmission of unconventional

monetary policies. In the case of the tapering events, as far as we know, Papadamou et al. (2019) is the only empirical study on the Middle Eastern and African economies, but its results are not directly comparable to the literature on emerging economies insofar as the authors use time-varying granger causality tests, which are not designed to understand announcement effects, in contrast to event studies. Our purpose is to contribute to fill this gap. In this context, our literature review is organized as follows: event studies on the international effects of unconventional monetary policies (methods, results with a focus on emerging economies); literature on the effects of tapering on emerging economies (methods, results, discussion of specific events); literature on the effects of tapering in specific emerging zones or countries, or with methods other than event studies.

As regards the impact of unconventional monetary policies in general, we mainly mobilize the groundbreaking paper of Ait-Sahalia et al. (2012) on the effect of unconventional monetary policies decisions on financial strains. The authors propose an original events database of monetary and macroeconomic policy announcements for four countries or zones, the United States, Eurozone, United Kingdom, and Japan, between June 2007 and March 2009. The events, selected by the study of the media coverage, in particular by the Financial Times, are classified into five groups: (i) fiscal policy (4% of all announcements); (ii) monetary policy (25%); (iii) liquidity injections (23%); (iv) financial sector interventions (33%); (v) *ad hoc* bank bailouts and negative events (11%). The study excludes the dates corresponding to announcements that are considered by consensus to be anticipated.

As regards the impact of unconventional monetary policies on emerging markets, the literature shows that the effects depend on domestic characteristics, and evolve over time. For example, Bowman et al. (2015) who study their impact on emerging assets prices; and Ahmed and Zlate (2014) who study their impact on capital flows take into account the full sequence of unconventional monetary policies, from the Global financial crisis (GFC) to the beginning of the monetary policy normalization. Bowman et al. (2015) show that in the emerging economies which have the most deteriorated environment, asset prices are more vulnerable. Ahmed and Zlate (2014) highlight a structural shift in the drivers of global capital flows post GFC: the impact of interest rates differentials is strengthened, which is in line with Ait-Sahalia et al. (2012) who find that the announcements of fiscal and monetary policies of the major central banks affect financial strains abroad with an increasing magnitude as the unconventional monetary policy sequence is further ad-

vanced.

From a methodological point of view, the literature on the effects of tapering announcements in emerging economies is generally focused on asset prices and capital flows¹, the role of the domestic macroeconomic and financial environment being taken into account by control variables. The regressions are generally conducted in the form of quasi-event studies, i.e. the inclusion of dummy event variables in dynamic panel regressions. Among studies that use this method, Eichengreen and Gupta (2015) assess the effects of Ben Bernanke's first tapering announcement (Bernanke, 2013) on emerging asset prices, between 2013/04 and 2013/08. Rai and Suchanek (2014) assess the effects of two types of announcements: Ben Bernanke announcements, and the FOMC announcements, on capital flows and asset prices, between 2013/01 and 2014/01. The event dummy variable is justified by methodological reasons. First, it allows to avoid the identification bias, since the sole asset prices react to announcements in the event window while the fundamentals remain unchanged. Secondly, it allows to avoid the endogeneity bias, since domestic fundamentals are disclosed on, at best, a monthly basis, whereas event dummies are daily. It is worth noting that the authors assume tapering announcements to be generally unexpected. Still in the case of assets prices, Aizenman et al. (2014) compare the effects of tapering announcements from different sources, before the actual implementation (2012/11 to 2013/10), with those of unconventional monetary policy announcements. The countries are classified in two groups: those with "fragile" economic environments, and those with "robust" environments. Finally, Mishra et al. (2014) propose an original method consisting in building aggregate event dummy variables composed of the events that have a significant negative individual effect on assets prices.

In general, these studies show that tapering announcements depreciate emerging asset prices. The effect of market size is unfavorable, which can be explained by the ability for foreign investors to sell more easily and with lower losses in more liquid markets (Eichengreen and Gupta, 2015). The depreciation of emerging currencies is stronger in the short term for "robust" countries, but in the medium term the countries with "fragile" domestic

¹Regarding the effects of tapering on asset prices in general, the literature studies a very wide range of market segments. Equity prices, government debt and exchange rates remain the most commonly studied, but some studies focus on more specific assets: for example, gold prices (Zhu et al., 2018).

fundamentals are the most affected (Aizenman et al., 2014). The effect of restrictive regulatory measures on domestic financial sectors (exchange rates or macro-prudential controls) is favorable (Aizenman et al., 2014; Mishra et al., 2014; Eichengreen and Gupta, 2015). In this literature, the effect of financial development is most often unfavorable, by contrast with macroeconomic development which reduces vulnerability.

With regard to tapering events, the FOMC meeting of June 2013 is generally found to have the most significant effect. In particular, it is found to be greater than the effect of the very first speech announcing on May 21, 2013 the beginning of the tapering (Rai and Suchanek, 2014). Actually this speech is the first mention of tapering, outside the context of the usual FOMC announcements. Moreover, Aizenman et al. (2014) show that the sole information from the Fed has a significant effect, excluding the information from its regional central banks. These results justify our choice to assess the dates of the FOMC events. The dates used to compute the event dummy in the present study are selected based on preliminary individual tests of all dates (Mishra et al., 2014; Eichengreen and Gupta, 2015), double-checked as a robustness test by the study of the media coverage (Ait-Sahalia et al., 2012).

Some studies on the effects of tapering on emerging economies focus on specific countries or areas, or use different methods. E.g., Chirila and Chirila (2018) assess the impact of the tapering on volatility in Eastern European stock markets. The authors find an increased volatility for some countries in the sample. Tamgac (2021) studies the exchange rate between Turkey and the USA during the tapering, with a study period very close to that of the present study. However, the method is specific, since the author does not use event dummies, but a GARCH model. He assesses the effects of political announcements and a broad range of economic news from Turkey and the USA. He shows that in the case of Turkey, domestic news have a greater impact than news coming from the USA; and that economic news have the strongest effect (in particular, regarding inflation, monetary policy...).

Finally, some studies include both the tapering period and the preceding unconventional monetary policies. For example, Chadwick (2019) studies the dependence between emerging assets of countries classified as "fragile" and the USA monetary policy. The USA monetary policy is captured through decisions (approximated by the Fed funds rate), and the uncertainty (ap-

proximated by the MOVE index²). The period of study runs from 1995 to 2017, for both currency rates and equity markets prices. The most interesting result of Chadwick (2019) is a growing co-movement during the late 1990s, with heterogeneity within emerging countries. The dependency seems to be decreasing after the beginning of the GFC for many countries in the sample, but remains at historically high levels.

Whatever the methodological approach, this literature review illustrates that the effects of tapering have been little studied from the perspective of developing countries, including the Middle-Eastern and African countries in our sample. To our knowledge, Papadamou et al. (2019) is the only existing study that focuses on these countries. The authors do not conduct an event (or quasi-event) study, but time-varying granger causality tests. Their period of study is broad: they assess several sub-periods pre, during (with sub-periods for each QE: i.e. QE1, QE2, QE3) and post-QE (tapering). They show a significant effect of the USA monetary policy during the QE3 and post-QE periods, which reinforces the interest of an extensive study of the events and characteristics that contribute to the sensitivity of Middle-Eastern and African economies during the tapering. To conduct this study, we choose to focus on equity markets, which, along with exchange rates and government debt, are the most frequently studied assets in the case of emerging economies. Indeed, the exchange rate regimes of some of the countries in the sample are managed regimes. In addition, the literature shows that equity markets are the most affected, in comparison with fixed income assets (e.g. see Chari et al., 2017).

3. Comparative study of the announcement effects of the FOMC, Middle East and Africa vs. other regions

3.1. Sample and empirical approach

This section is devoted to the first step of our empirical approach, i.e. the construction of an econometric model (section 3.1) allowing us to evaluate, for the countries of the Middle East and Africa but also for a group of emerging countries in Asia and Latin America and a control group of advanced economies, the individual effects of each of the events associated with the release of information by the FOMC (section 3.2). The results obtained

²Merrill Lynch Option Volatility Estimate index

from individual regressions are checked and discussed using the study of the media coverage (section 3.3). On this basis, section 3.4 is devoted to the construction of the aggregated event dummy used in the regressions of section 4. It should be noted that the results obtained in this section are themselves directly interpretable: in particular, the comparison of the number and nature of the events affecting the countries of the Middle East and Africa zone with those of the other zones makes it possible to highlight one of the main results of this study, i.e. that the countries studied are affected in a manner that is both comparable to that of the emerging economies in terms of the frequency of significant announcements, and specific in terms of the dates and nature of the associated events.

Our sample of Middle East and African economies includes 16 equity markets benchmark indices (Table 8) corresponding to a total of 23 countries. All are national indices except for the BRVMCI index, which is the index of the West African Regional Stock Exchange including 8 member states: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. Of the 16 indices, 6 are African economies and 10 Middle Eastern economies. The data, with daily frequency, are provided by Thomson Reuters. All indices are expressed in points. For the comparison of announcement effects with those recorded in other regions, we use three additional groups. The first two groups are respectively composed of emerging economies of Latin America (6 indices, Table 9) and Asia (11 indices, Table 10); and of Eastern European economies (10 indices, Table 11). Advanced Western European economies (16 indices, Table 12) are also considered, as a benchmark of advanced economies.

In a preliminary version, the same tests were conducted on the SP500 index (Table 13) in order to compare the national and international effects of the FOMC tapering announcements using a single methodology. These results, which are available upon request, confirm that the significance of the announcements in the four emerging regions is at least equivalent (in number of dates and significance thresholds) to that found on the US benchmark index, which is a common result in the literature. Finally, as a robustness check we also present some results for the restricted region of African and Mediterranean countries, excluding South Africa and Middle Eastern countries. In the remainder of the paper this definition of the sample is called "restricted African and Mediterranean region".

The event dates tested correspond to all meeting dates and the corresponding FOMC minutes releases between January 2013 and April 2015,

during the so-called tapering period, i.e. a total of 19 meetings and 18 minutes releases (Table 7). The difference in the number of meetings and minutes events is explained by the peculiarity of the meeting of 16 October 2013, which did not result in the release of minutes. Although it is not strictly an event of the same nature than the FOMC meetings and minutes, we also tested in previous versions the speech of 21 May 2013 to the U.S. Congress by Ben Bernanke, then Governor of the FED, which is considered in the literature to have a significant announcement effect. The results show no significant effects for the Middle East Africa zone³. This finding is presumably due to the fact that the information delivered in this speech does not go through the usual FOMC announcement channel since it is delivered to the Congress and not in the context of a planned FOMC meeting. However the lack of significance of this event whereas it remains significant in the case of the other emerging economies provides the first presumption, reinforced in the remainder of this study, that the countries of the Middle East and Africa zone are affected by global monetary policies in a specific way.

As regards the FOMC meetings and minutes, following Mishra et al. (2014), we test each of the individual dates as a separate dummy variable, for each region. So for each of the five regions, we run two sets of dynamic panel regressions: for all meetings dates, and for all minutes dates. In each case, the tests are carried out with the date of the event (one-day window and two-days window), and with the day after the date of the event. This makes a total of $5 \times (19 + 18) \times 3 = 555$ regressions.

After checking for the presence of individual effects in the data, the tests are performed using random effects. The equation tested is as follows for each country group and each dummy variable event window:

$$\begin{aligned} \Delta y_{i,t} &= \alpha + \beta D + \varepsilon_{i,t} \\ i &= 1, \dots, N, \quad t = 1, \dots, T \end{aligned} \tag{1}$$

Where Δy is the first difference of the i series of domestic equity market indices, and D a dummy variable corresponding to a given category of events (meetings or publications of minutes) with a given event window. $\varepsilon_{i,t} = \alpha_i + e_{i,t}$, $\alpha_i \sim i.i.d. (0, \sigma_\alpha^2)$ corresponds to the individual effects and $e_{i,t} \sim i.i.d. (0, \sigma_e^2)$ to a random disturbance.

³Because of the lack of significance of the various tests conducted on this event, the results are not presented. However, they are available upon request.

3.2. Results: announcement effects, Middle East and Africa vs. other regions

The summary tables of the 555 regressions are presented in tables 1 and 2. Due to the amount of information, we do not report exhaustive regression results, but a summary presentation with the signs and significance thresholds of the coefficients. In the case of meeting dates (Table 1), it is immediately apparent that the announcement effects associated with Middle East and Africa (9 significant results at the 10% threshold, including 5 at the 5% threshold and 1 at the 1% threshold) are comparable to those associated with Eastern Europe (8 significant results at the 10% threshold, including 1 at the 5% threshold) or the other emerging countries (6 significant results at the 10% threshold, including 4 at the 15% threshold), but lower in number and significance than those associated with Western Europe (26 significant results at the 10% threshold, including 24 at the 5% threshold and 8 at the 1% threshold).

	Med. Africa			Middle East Africa			East. Europe			Emerging			West. Europe		
	d1	dd	d2	d1	dd	d2	d1	dd	d2	d1	dd	d2	d1	dd	d2
mee1					+								++	+++	
mee2							+						++	+++	+++
mee3				-			(-)						--	--	
mee4								-	-						
mee5	-								+						
mee6		+			++								++	++	++
mee7															---
mee8												(-)			
mee9					(+)										
mee10	(+)								-			(-)			
mee11				(-)		-	-	--		++			--	(-)	
mee12				--	-					++			-	++	++
mee13					(-)		(-)							++	
mee14					(+)						++	++	++	++	
mee15															
mee16			--			---					+	(+)	---	---	--
mee17		(-)	-		--	(-)							-		
mee18												+		+++	+++
mee19		+			++					++				++	++

Model: GLS - random effects. - - - and +++ respectively corresponding to significant negative and positive effects at the threshold of 1%, - - and ++ at the threshold of 5%, - and + at the threshold of 10%, and (-) and (+) at the threshold of 15%.

d1 corresponds to the date of the event (1 day window), dd to the date of the event (2 day window), and d2 to the day after the event.

"Med. Africa" corresponds to the restricted African and Mediterranean region.

Table 1: Date-by-date test of announcement effects: meetings

It should also be noted that the countries of the Middle East and Africa share with Eastern Europe a predominance of unfavorable announcement effects (6 out of 9 and 6 out of 8 respectively). On the other hand, a majority of announcements have a favorable effect in the case of the other emerging economies (7 out of 9) and Western Europe (17 out of 28). In terms of dates, there is a coincidence of the dates of significant effects in the Middle East and Africa zone with Western Europe rather than Eastern Europe or the other emerging economies. In general, the significant dates differ by region. For example, meeting No. 11 of March 18/19, 2014 is the only event associated with a significant effect for all four zones (unfavorable everywhere except for the other emerging economies group). Janet Yellen had taken office as

Chair of the Board of Governors of the FED on February 3, 2014, and this meeting is particularly rich in information on the continuation of tapering, as emphasized below in the detailed analysis of media coverage of the meetings. Finally, if we consider the restricted sample of Mediterranean and African economies, the significant effects are generally associated with the same dates as for the Middle East and Africa zone as a whole, but with a lower incidence (5 significant results at the 10% threshold, 2 between the 10 and the 15% threshold).

	Med. Africa			Middle East Africa			East. Europe			Emerging			West. Europe		
	d1	dd	d2	d1	dd	d2	d1	dd	d2	d1	dd	d2	d1	dd	d2
min1 (mee1)										(-)	-	-			
min2 (mee2)				+				+					-	--	
min3 (mee3)	(-)							-			(+)				
min4 (mee4)				+											
min5 (mee5)															
min6 (mee6)	-								++				++	++	+
(mee7)															
min7 (mee8)										+	+		-	-	
min8 (mee9)												+			
min9 (mee10)								+							
min10 (mee11)									-	(-)					
min11 (mee12)		-			-			(+)			(+)	+	++		-
min12 (mee13)											+				
min13 (mee14)				(-)									(-)		
min14 (mee15)															
min15 (mee16)								+					-	-	
min16 (mee17)															
min17 (mee18)			-	(-)	(-)	(-)									--
min18 (mee19)								-						(-)	-

Model: GLS - random effects. - - - and +++ respectively corresponding to significant negative and positive effects at the threshold of 1%, - - and ++ at the threshold of 5%, - and + at the threshold of 10%, and (-) and (+) at the threshold of 15%.

d1 corresponds to the date of the event (1 day window), dd to the date of the event (2 day window), and d2 to the day after the event.

"Med. Africa" corresponds to the restricted African and Mediterranean region.

Table 2: Date-by-date test of announcement effects: minutes

In the case of minutes (Table 2), the effects are less significant, regardless of the region. This finding is expected since most of the information relating to the decisions is immediately known at the end of the meetings. As

previously, the significance for the Middle East and Africa region is comparable to Eastern Europe or the other emerging economies and low compared to Western Europe. If the effects of meetings and minutes are considered simultaneously, the following meetings have significant effects for the four zones: No. 3 (unfavorable except for the other emerging countries), No. 11 (unfavorable except for the other emerging countries), No. 16 (unfavorable for the Middle East Africa zone and Western Europe and favorable for Eastern Europe and the other emerging countries), No. 19 (unfavorable for Eastern Europe, favorable for the Middle East Africa zone and the other emerging countries, ambiguous for Western Europe). As detailed below in the analysis of the media coverage, these meetings generally correspond to key steps in the tapering process. These findings highlight, firstly, that the significance of tapering announcement effects, whatever the region, does not seem to decrease over time during the study period; and secondly, that the same announcement does not necessarily have identical effects in all regions as emphasized previously.

Regarding the Middle East and Africa, these initial results show that the region is facing announcement effects whose characteristics are rather comparable to Eastern Europe or the other emerging regions in terms of significance, and comparable to Western Europe in terms of dates and signs associated with the significant dates. This is one of the key findings of this study. The underlying mechanisms associated with these effects is likely to be mixed. The countries in the sample would then share with the emerging economies significant unfavorable announcement effects that can be described as direct effects, associated with global reallocations of savings when the equity market yield differentials in their favor narrow as a result of the tightening of FED monetary policy stance. On the other hand, they would also be confronted with significant announcement effects that can be qualified as indirect, associated with the expected impact of these decisions on the macroeconomic situation of advanced economies and the long-term trade and financial relations that the Middle East and Africa has with these advanced economies.

Asian and Latin American emerging economies could also be affected by indirect effects resulting from structural economic relationships, but the existing literature shows that the impact of the FED policy announcements in their case is widely related to the expected dynamics of yield differentials. To the contrary, the Middle East and Africa zone shows a mixed rationale in the interpretation of the significant announcement effects of global monetary policies on equity prices. The restricted sample confirms this finding, with a

relatively lower impact of the announcement effects.

3.3. Discussion of announcement effects based on the study of media coverage

The detailed study of the press releases and media coverage by the Financial Times website and paper edition of the FOMC meetings sheds additional light on these results. Since this method is used in part of the reference literature for the construction of event dummies (Ait-Sahalia et al., 2012), it also provides a robustness test of the dates obtained by the previous regressions. We focus on events having a negative impact on the Middle East and Africa region, which are the subject of section 4, i.e. meetings No. 3, 5, 11, 12, 16 and 17. In the case of Meetings 3 and 5, the interpretation of the unfavorable effect seems to be related mainly to the uncertainties inherent in the early stages of a major shift in the monetary policy sequence. At the end of meeting No. 3, the FED announced that they were moving to a neutral position and could further consider increasing or decreasing the QE as needed. This announcement therefore does not reduce the uncertainty either as to the timing or as to the nature of the following decisions. As expected, the related announcement effect is negative in the case of Middle East and Africa. It is also strongly negative for Western Europe, which supports the hypothesis of mixed effects partly affecting the Middle East and Africa region via its relationships with Western Europe. In the case of meeting No. 5, the interpretation is less straightforward. The FED announced that the quantitative easing would be maintained and that the policy rate rises would be postponed, better economic data being needed to consider it. This information has prompted financial market operators interviewed by the Financial Times to revise their expectations in the sense of a later start of tapering. This announcement has the expected positive effect on Eastern European equity markets. However, it also has an unfavorable effect on the restricted African and Mediterranean region. In a context of persistent uncertainty, this difference in signs likely indicates a substitutability of foreign investments, for example from Western Europe, in two geographically close areas.

Meetings 11, 12, 16 and 17 correspond to key steps in the exit from unconventional monetary policies. Meeting No. 11 corresponds to Janet Yellen's first speech and the third reduction of QE in the context of tapering. Furthermore, she announced the end of the single unemployment target and consequently that they were considering a rise in the policy rate in the future. The main announcement of meeting No. 12 is the continuation of the

tapering. It is also at this time that financial markets considered the rate increase to be close enough to start wondering when it actually would take place. The high significance of the announcement of meeting No. 16 is not surprising since it corresponds to the last reduction in the QE in the context of the tapering while the markets were expecting a penultimate decline. Finally, the impact of meeting No. 17 is mixed because market operators did not reach a consensus on what would be discussed during the meeting. The FED followed a cautious approach but maintained its objective of a future rate rise.

To sum up, the first two meetings whose announcement effects are negative for the countries of the Middle East Africa region are associated with decisions contingent on the economic situation, and therefore with a lack of significant reduction in uncertainty about the continuation of the process. In both cases the significance is low. The four other meetings with unfavorable announcement effects are associated with the crucial stages of exiting the QE and guiding expectations regarding the date of the first policy rate increase. The significance of these four announcements is higher. This finding suggests that in the earliest stages of the tapering the knowledge of the general pattern of the shift in the monetary policy sequence is not sufficient for it to be immediately incorporated into expectations related to the price formation in the equity markets of the Middle East and Africa. To the contrary, when markets can observe the timing of the QE exit and have more precise information on the timing of the rate increase, the effect on asset prices in the region becomes more noticeable. This result is quite similar to Ait-Sahalia et al. (2012) on the international effects of unconventional monetary policy announcements, growing as decisions accumulate.

3.4. Aggregated event dummy variables, Middle East and Africa

As in Mishra et al. (2014), the other purpose of the test of individual dates is to formulate aggregated event dummy variables associated with, respectively, the dates of meetings, and the dates of the publication of minutes having significant unfavorable effects. To this end, we use the following rule: for each date where at least one significant unfavorable effect is found, we use the event window associated with the most significant effect. For example, for meeting No. 12 where the effect of the $d1$ formulation (date of the event, one-day window) is significant at the 5% threshold and that of the dd variable (date of the event, two-days window) is significant at the 10% threshold, the $d1$ formulation is used. The aggregate dummy variable is obtained as the

sum of the vectors corresponding to the dates where at least one significant unfavorable effect is found, using the previously defined event window.

We obtain the following aggregated variables for the dates of meetings (Table 1). Meetings No. 3 (*d1*), 11 (*d2*), 12 (*d1*), 16 (*d2*) and 17 (*dd*) have unfavorable announcement effects and are used to compute the aggregated dummy variable. Taking into account significance up to the 15% threshold, meeting No. 13 (*dd*) would be added⁴. For the restricted African and Mediterranean region, meetings No. 5 (*d1*), 16 (*d2*) and 17 (*d2*) have unfavorable effects and are used to form the aggregated variable, the last two being common to the broad and the restricted sample. Meetings No. 11, 12 and 13 which are significant in the broad definition of the sample are not in the restricted definition.

As regards the dates of release of minutes (Table 2), the sole minutes No. 11 (*dd*) have an unfavorable effect. Considering significance up to the 15% threshold, minutes No. 13 (*d1*) and 17 (*d2*) would also be added. For the restricted African and Mediterranean region, at the 10% threshold the dummy variable of unfavorable events is composed of minutes No. 6 (*d1*), 12 (*dd*) and 18 (*d2*). There is a total of three significant events at the 10% threshold and one at the 15% threshold in the restricted sample whereas there are one and two respectively in the broad sample. This finding is interesting. Indeed the restricted sample, which is on average characterized by a lower financial development than the broad sample, is in general less affected by announcement effects. In particular, it is less affected by the first announcements within the framework of meetings than the full Middle East and Africa region. However, it is more unfavorably affected by the publication of the detailed informations within the framework of minutes. This finding presumably results from the different nature of investments in the restricted and the broad region, and thus the specific preferences of international investors in contexts where the development of securities markets is also different.

⁴None of the formulations tested for the speech of May 21, 2013 had a significant effect for the Middle East and Africa, as mentioned previously. For this reason, we do not formulate an alternative dummy variable which would take this event into account.

4. Interactions of announcement effects and domestic characteristics in the Middle East and Africa region

4.1. Empirical approach

In this section we assess and discuss the interaction between event variables and domestic characteristics in the transmission of tapering announcements. The empirical approach is presented in section 4.1. The results are presented and a first discussion with reference to the results of the existing literature is proposed in section 4.2 (restricted Mediterranean and African sample) and 4.3 (Middle East and Africa sample). In addition to the estimation on two different samples, in section 4.4 we propose additional robustness tests regarding the estimation method. Finally, we propose a more general discussion from the perspective of public authorities and investors in section 4.5.

The announcement effects dummy variable is constructed by aggregating the individual dummy variables as described in the previous section. In addition to the direct effects of the dummy variable, this second set of tests includes three types of exogenous variables: domestic fundamentals, their interaction with the aggregated dummy variable of announcement effects, and a set of international control variables (international financial environment, Middle East and African financial environment).

The domestic fundamentals are chosen as follows, as usual in the literature presented in Section 1. For macroeconomic fundamentals we use inflation, the government balance, the current account balance, domestic investment and domestic savings. For trade integration we take into account trade openness (sum of exports and imports to GDP); for financial integration the incoming portfolio investments (debt and equity securities), the incoming FDI, and the reserves to GDP ratio. The international financial environment variables are the European equity markets Eurostoxx 600 index and the effective FED funds rate. Finally, the financial environment of the Middle East and Africa zone is taken into account by the benchmark index of the Abu Dhabi market, which is the most strongly correlated to the equity market indices of the economies in the sample (for a summary table see Table 13). Pearson, Spearman, and Kendall correlation coefficients indicate some strong correlations between macroeconomic fundamentals which leads to the choice of the variables associated in the different versions of the econometric model. The Hausman test indicates that the null hypothesis of

independence between errors and explanatory variables cannot be rejected. Thus, the random-effects model is not biased.

The econometric model is as follows:

$$\Delta y_{i,t} = \alpha + \beta D_i + \delta D_i x_t + \gamma x_t + \theta z_t + \varepsilon_{i,t} \quad (2)$$

With $i = 1, \dots, N$; $t = 1, \dots, T$ and $\varepsilon_{i,t} = \alpha_i + e_{i,t}$. α_i takes into account some individual factors that are not part of the model and $\varepsilon_{i,t}$ is a random disturbance.

The endogenous variable $\Delta y_{i,t}$ corresponds to the first differences in equity market indices. The vector of exogenous variables includes the aggregated dummy variable $D_i x_t$ previously computed by summing the dates corresponding to significant unfavorable effects with the most significant event window, its interaction with domestic characteristics x_t and the direct effect of these domestic characteristics. Finally, z_t represents the vector of control variables of the international financial environment. The alternative contents of vector X are chosen based on Pearson, Spearman, and Kendall correlation coefficients.

4.2. Results: restricted Mediterranean and African region

In this section we present the results of the regressions of different combinations of event dummy and macroeconomic environment variables as described in equation 2. The most significant results regarding the domestic environment and its interaction with the event dummy variable are obtained with the restricted sample of Mediterranean and African economies. These results are presented first. The results obtained with the full sample of Middle East and African economies with the same definition of the event dummy variable are presented and discussed in section 4.3, in comparison with those of the restricted sample.

The results of the estimates of the interaction between domestic fundamentals and announcement dummy variables are presented in Tables 3 and 4 for the restricted sample. In Table 3, domestic fundamentals are tested individually: each column corresponds to the result obtained for the dummy variable, one of the macroeconomic variables, and its interaction with the dummy variable. The direct effect of the dummy variable is significant in half of the regressions. Four macroeconomic domestic variables out of six are found to have significant direct effects. In detail, we find a positive current account effect that is in line with expectations. Inflation has a significant

<i>dummy</i>	-8,003* (-1,7)	0,9609 (0,17)	-7,3894* (-1,68)	-1,2579 (-0,28)	-6,2292* (-1,67)	0,6731 (0,14)
<i>balance</i>	0,1183** (2,02)					
<i>inter. balance</i>	-0,3265 (-0,61)					
<i>debt</i>		-0,063 (-0,6)				
<i>inter. debt</i>		1,7823* (1,76)				
<i>openness</i>			0,0284 (0,78)			
<i>inter. open</i>			0,1664 (0,51)			
<i>inflation</i>				0,4027*** (2,81)		
<i>inter. inf</i>				-2,865** (-2,21)		
<i>portfolio</i>					1,69E-06 (7,29)***	
<i>inter. port</i>					-4,92E-06 (-0,27)	
<i>fdi</i>						6,42E-10** (2,38)
<i>inter. fdi</i>						-6,68E-09 (-2,58)
<i>-cons</i>	18,2507*** (2,98)	17,0509*** (2,79)	16,0967*** (2,59)	16,0403*** (2,62)	15,7313 (1,57)	16,7054*** (2,74)
<i>fedfunds</i>	-90,858*** (-3,09)	-91,8708*** (-3,13)	-91,4053*** (-3,11)	-93,8316*** (-3,19)	-92,1138*** (-1,6)	-91,6506*** (-3,12)
<i>eurostor</i>	0,0603 (1,24)	0,0624 (1,27)	0,0727 (1,47)	0,0638 (1,31)	0,0747 (1,54)	0,0612 (1,26)
<i>abudhabi</i>	-0,0033*** (-2,59)	-0,0033*** (-2,56)	-0,0033*** (-2,6)	-0,0032** (-2,47)	-0,0033*** (-1,64)	-0,0033** (-2,56)
overall	0,0022	0,0021	0,0018	0,0032	0,0021	0,0031
between	0,3222	0,0822	0,0366	0,8099	0,2498	0,4408
R-sq: within	0,0017	0,002	0,0017	0,002	0,0017	0,0025

Models: Random effects panel, heteroskedasticity correction (Huber-White). Standard deviations in brackets. *, ** and *** correspond to a significance of the variable at the respective thresholds of 10, 5 and 1%. Only those models where at least the dummy variable, the core variable or their interaction is significant at 10% or more are reported.

Balance: current account balance, debt: government debt, openness: trade openness, portfolio: incoming portfolio investments, FDI: incoming foreign direct investments.

Table 3: Interactions for each variable between the aggregate dummy variable and macroeconomic fundamentals (dummy variable obtained by the individual test method, unfavorable events: meetings at the 10% threshold of significance, restricted Mediterranean and African region)

	<i>balance</i>	<i>debt</i>	<i>openness</i>	<i>inflation</i>	<i>portfolio</i>	<i>fdi</i>
<i>dummy</i>	-7,8179* (-1,66)	1,0304 (0,18)	-7,3719* (-1,68)	-1,345 (-0,3)	-6,2024* (-1,69)	0,6999 (0,15)
<i>direct</i>	-0,5254 (-0,81)	-0,1378 (-0,69)	-0,0088 (-0,17)	0,067 (0,26)	2,65E-06 (1,58)	-4,97E-10 (0,96)
<i>interaction</i>	-0,31 (-0,58)	1,7837* (1,76)	0,1726 (0,53)	-2,8154** (-2,17)	-6,35E-07 (-0,29)	-1,17E-08 *** (-2,57)
<i>fdi</i>	0 (-0,83)	0 (0,83)	0 (0,84)	0 (0,82)	0 (1,13)	
<i>reserve</i>	-0,0429 (0)	-0,1898 (-0,02)	-0,0321 (0)	-0,1355 (-0,01)	-0,0276 (0)	-0,1708 (-0,02)
<i>portfolio</i>	0 (-1,22)	0 (1,25)	0 (1,24)	0 (1,2)		0 (1,22)
<i>savings</i>	0,5976 (-0,94)	0,5834 (0,91)	0,5937 (0,93)	0,5712 (0,9)	0,599 (0,66)	0,5618 (0,88)
<i>investment</i>	-0,6239 (-0,97)	-0,6093 (-0,95)	-0,6203 (-0,96)	-0,5967 (-0,93)	-0,6256 (-0,65)	-0,5872 (-0,91)
<i>inflation</i>	0,0283 (-0,11)	0,0277 (0,11)	0,0268 (0,11)		0,0265 (0,09)	0,0346 (0,14)
<i>openness</i>	-0,0062 (-0,12)	-0,0063 (-0,13)		-0,0066 (-0,13)	-0,0064 (-0,31)	-0,0065 (-0,13)
<i>debt</i>	-0,1185 (-0,59)		-0,1184 (-0,59)	-0,1147 (-0,58)	-0,1193 (-0,43)	-0,1155 (-0,58)
<i>balance</i>		-0,5149 (-0,8)	-0,5256 (-0,81)	-0,5018 (-0,78)	-0,5308 (-0,57)	-0,4929 (-0,76)
<i>eurostor</i>	0,0615 (-1,19)	0,062 (1,2)	0,0615 (1,19)	0,062 (1,2)	0,0616 (1,55)	0,0618 (1,2)
<i>abudhabi</i>	-0,0032** (-2,51)	-0,0032** (-2,52)	-0,0032** (-2,51)	-0,0032** (-2,51)	-0,0032* (-1,65)	-0,0032** (-2,51)
<i>_cons</i>	17,117*** (-2,61)	17,0701*** (2,61)	17,1412*** (2,62)	17,0951*** (2,61)	17,1008 (1,53)	17,0293*** (2,6)
overall	0,0032	0,0035	0,0031	0,0037	0,0031	0,004
between	0,839	0,8424	0,8387	0,8413	0,8392	0,8452
R-sq: within	0,0019	0,0023	0,0019	0,0025	0,0019	0,0027

Models: Random effects panel, heteroskedasticity correction (Huber-White). Standard deviations in brackets. *, ** and *** correspond to a significance of the variable at the respective thresholds of 10, 5 and 1%. Only those models where at least the dummy variable, the core variable or their interaction is significant at 10% or more are reported.

Balance: current account balance, debt: government debt, openness: trade openness, portfolio: incoming portfolio investments, FDI: incoming foreign direct investments.

Table 4: Interactions for the full set of variables between the aggregate dummy variable and macroeconomic fundamentals (dummy variable obtained by the individual test method, unfavorable events: meetings at the 10% threshold of significance, restricted Mediterranean and African region)

effect, the positive sign of which being at first sight counter-intuitive. This presumably results from the fact that a relatively high level of inflation may be associated with a dynamic economic environment, considering that none of the economies in the sample was otherwise characterized by an abnormal inflation rate during the study period. The direct effects of FDI and portfolio investment are positive as expected.

In Table 4, domestic fundamentals are tested collectively: each of the columns corresponds to the result obtained for the dummy variable, all the fundamental variables and the interaction of one of them to the dummy variable. The first finding is that the dummy variable (without interaction) is significant in half of the cases, always with a negative sign and a stable absolute value between 6.2 and 8, as in the previous set of regressions.

Considering Tables 3 and 4 together, in terms of interactions FDI has the most significant effect (at 1% in Table 4). In a long term perspective, this unfavorable effect may be related to equity markets operators doubts about the favorable externalities of FDIs on recipient economies. In a short term perspective, it may be related to the reversibility of these investments, or at least their loss of momentum in periods when the yield differential between developing and emerging economies, on the one hand, and advanced economies, on the other hand, is narrowing. It puts into perspective the previously mentioned significant positive direct effect associated with FDI and portfolio investment. As seen in the literature review, in emerging economies the interaction effect of financial development variables is often unfavorable during the tapering period. Inflation also has a highly significant effect (at 5% in both specifications), which exhibits the same pattern as FDI: the sign of the interaction is different from that of the direct effect. In the case of inflation, the positive direct effect is balanced by a negative interaction effect. Finally, public debt has a significant positive interaction effect in both sets of regressions, which seems to indicate that investors associate a favorable effect to public spending in a context of tighter international monetary policies.

With regard to the variables controlling the local financial environment (Abu Dhabi equity market index) and the international financial environment (Eurostoxx 600, Fed funds), the first is highly significant (from 1 to 10% in Table 3, always at 1% in Table 4). The Fed Funds rate is also highly significant, albeit slightly less (at 5 or 10%), suggesting that the equity markets of the sample are primarily strongly linked to regional emerging markets, and secondarily to the global financial environment as captured by the Fed Funds rate. The Eurostoxx 600 is not significant. The synchronization of significant

announcement dates for the countries under study with Western Europe may explain this weak significance in the tests related to interactions effects of tapering announcements with domestic variables. Indeed, economic relations with Europe would already be caught by the similarity of significant events.

Finally, during the tapering period, and despite their lower level of financial development, the equity markets of the countries of the restricted Mediterranean and African sample are indeed vulnerable to international monetary policy announcements, as the emerging countries usually covered in the literature. This vulnerability results both from the direct effects of the announcements and their interaction with domestic fundamentals. The most significant interactions concern inflation (unfavorable interaction effect), public debt (favorable interaction effect) and FDI (unfavorable interaction effect). The other domestic fundamentals have less significant effects.

4.3. Results: Middle East and Africa region

Table 5 replicates the tests of Table 3 (individual tests of domestic variables and interactions), with the broad Middle East and Africa sample. The methodology is identical in all respects, except that the Abu Dhabi equity market index is not used as a control variable since the country belongs to the full sample. There are therefore two control variables of the international financial environment: the Fed funds rate and the Eurostoxx 600. The results of the tests replicating Table 4 (simultaneous test of domestic variables, individual test of interactions) are available upon request but not reported, given the predominantly low significance of estimates.

The most obvious result with this broad definition of the sample is that the dummy variable is now highly significant in seven out of nine cases (five times at 1% and twice at 5%, compared to three significant results at 10% in Table 3). In addition to the difference in significance, the magnitude of the effect is also much larger. The absolute value of the coefficient ranges from 30 to 50, whereas it was previously 6 to 8. In other words, the bad news related to the tapering have a much larger direct effect when economies from the same sub-region with higher levels of financial development are added to the sample, which corresponds to intuition.

The diversity of macroeconomic environments in the Middle East and Africa region is confirmed by the difficulty to highlight significant effects of domestic macroeconomic variables. This finding may result from the fact that in the broad sample macroeconomic variables influence asset prices according to different underlying models. Notwithstanding this observation, the results

<i>dummy</i>	-34,1463*** (-4,65)	-33,9332*** (-4,55)	-39,5756*** (-4,76)	-0,6542 (-0,07)	-54,954** (-2,1)	-33,5432** (-2,36)	-34,7575*** (-4,71)	-36,3259*** (-4,72)	-7,9472 (-0,86)
<i>balance</i>	0,0336 (0,49)								
<i>dumbal</i>	0,0758 (0,14)								
<i>debt</i>	0,0562 (0,54)								
<i>dumdebt</i>	0,1099 (0,12)								
<i>openness</i>			-0,014 (-0,14)						
<i>dumopen</i>			1,0229 (1,4)						
<i>inflation</i>				0,7033* (1,85)					
<i>duminf</i>				-15,6915*** (-5,59)					
<i>investment</i>					-0,1023 (-0,79)				
<i>duminv</i>					0,9084 (0,83)				
<i>savings</i>						0,0078 (0,12)			
<i>dumsav</i>						-0,0231 (-0,04)			
<i>portfolio</i>							11,15E-06 (0,29)		
<i>dumport</i>							4,98E-05 (0,83)		
<i>reserve</i>								2,53E-12 (0,31)	
<i>dumres</i>								6,14E-11 (0,97)	
<i>fdi</i>									5,09E-10 * (1,8)
<i>dumfdi</i>									-1,02E-08*** (-4,58)
<i>_cons</i>	13,0305 (1,26)	12,5602 (1,2)	13,9822 (1,34)	10,7245 (1,03)	15,7099 (1,49)	13,4181 (1,28)	13,3372 (1,29)	13,5591 (1,32)	11,4132 (1,11)
<i>fedfunds</i>	-23,2965 (-0,57)	-23,1499 (-0,57)	-24,8342 (-0,61)	-25,5872 (-0,63)	-23,7775 (-0,58)	-24,2281 (-0,6)	-25,1627 (-0,62)	-24,2728 (-0,6)	-22,3843 (-0,55)
<i>eurostoxx</i>	-0,077 (-0,95)	-0,0723 (-0,87)	-0,0835 (-1,02)	-0,0691 (-0,85)	-0,0795 (-0,98)	-0,0813 (-1)	-0,0785 (-0,97)	-0,0817 (-1,01)	-0,0747 (-0,92)
<i>overall</i>	0,0017	0,0017	0,0018	0,0039	0,0017	0,0016	0,0017	0,0017	0,0032
<i>between</i>	0,0072	0,0018	0,0305	0,2797	0,0322	0	0,0163	0,0226	0,0708
<i>within</i>	0,0017	0,0017	0,0018	0,0038	0,0017	0,0016	0,0017	0,0017	0,0032

Models: Random effects panel, heteroskedasticity correction (Huber-White). Standard deviations in brackets. *, ** and *** correspond to a significance of the variable at the respective thresholds of 10, 5 and 1%. Only those models where at least the dummy variable, the core variable or their interaction is significant at 10% or more are reported.

Balance: current account balance, debt: government debt, openness: trade openness, portfolio: incoming portfolio investments, FDI: incoming foreign direct investments.

Table 5: Interactions between the aggregate dummy variable and macroeconomic fundamentals (dummy variable obtained by the individual test method, unfavorable events: meetings, Middle East and Africa)

obtained with the broad sample show the robustness of the previous findings, insofar as the two domestic variables that remain significant are inflation and FDI, which have the most significant effects with the restricted sample. The signs of the direct effects and interactions are robust. Inflation has a favorable direct effect and an unfavorable interaction effect; and FDI a favorable direct effect and an unfavorable indirect effect.

4.4. Robustness checks

In this section, we present the robustness tests for the estimation method. To check the robustness of the results to the random effects estimation model, all regressions relating to interaction effects were also run in fixed effects. The results, which confirm the robustness of the random effects results, are presented in Table 6 for the main regression (presented with random effects in Table 3), which concerns interactions and direct effects measured variable by variable for the restricted sample. Fixed effects test results for Tables 4 and 5 are available upon request. Overall, these tests show very similar results to those obtained in random effects, as illustrated below.

In detail, a comparison of the results obtained of Tables 3 (random effects) and 6 shows a particularly robust significance of the dummy variable in the regression with the interaction with portfolio investments. The sign and magnitude of the coefficient are identical. As for the direct and interaction effects of the other variables, we observe a particularly robust significance of the positive interaction exerted by inflation, and of the positive direct effect exerted by portfolio investment. The effects of FDI appear alternately with random effects (positive direct effect) and fixed effects (negative interaction effect). This result is interesting insofar as it illustrates the ambivalence of the effects of FDI. Overall, the significance, signs and magnitudes of the coefficients are stable.

4.5. Discussion: public authority perspectives and investors perspectives

The purpose of this subsection is to expand the discussion of the results. In addition to the general discussion of the results with reference to the literature proposed in particular in sections 3.3, 4.2, 4.3 and 4.4 we discuss their implications. Particular attention is paid to the points of view of public authorities on the one hand, and investors on the other hand.

Many of the countries in the sample are frontier markets (Balasubramanian et al., 2020), i.e. countries with relatively low incomes that have recently regained access to international capital markets. They are therefore

<i>Dummy</i>	13.6051	0.931 (0.17)	12.58881	-1.422 (-0.32)	-6.24 * (-1.67)	0.686 (0.15)
<i>Balance</i>	0.108 (0.47)					
<i>Inter.balance</i>	-0.327 (-0.61)					
<i>Debt</i>		0.227 (0.92)				
<i>Inter.debt</i>		1.779* (1.76)				
<i>Openness</i>			0.023 (0.49)			
<i>Inter.openness</i>			0.175 (0.54)			
<i>Inflation</i>				-0.273 (-0.66)		
<i>Inter.inflation</i>				-2.839*** (-2.19)		
<i>Portfolio</i>					1.61*** (6.29)	
<i>Inter.portfolio</i>					-6.34 (-0.29)	
<i>Fdi</i>						-4.44 (-0.32)
<i>Inter.fdi</i>						-6.69*** (-2.58)
<i>Fedfunds</i>	-90.905*** (-3.09)	-91.382 *** (-3.11)	-91.434*** (-3.11)	-90.752*** (-3.08)	-91.934 (-1.59)	-91.478*** (-3.11)
<i>Eurostoxx</i>	0.061 (1.23)	0.078 (1.55)	0.071 (1.42)	0.066 (1.36)	0.071 (1.43)	0.067 (1.37)
<i>Abudhabi</i>	-0.003*** (-2.59)	-0.003*** (-2.65)	-0.003*** (-2.59)	-0.003*** (-2.65)	0.00495	-0.003*** (-2.59)
<i>Cst</i>	18.148 *** (2.76)	16.915 *** (2.77)	16.26 *** (2.58)	17.838*** (2.88)	16.125* (1.68)	17.235*** (2.81)
Obs.	7631	7631	7631	7631	7631	7631
Overall	0.0022	0.0013	0.0018	0.0008	0.002	0.0013
Between	0.3222	0.0744	0.0358	0.8154	0.2498	0.4403
Within	0.0017	0.0022	0.0017	0.0024	0.0018	0.0025

Models: Fixed effects panel, heteroskedasticity correction (Huber-White). Standard deviations in brackets. *, ** and *** correspond to a significance of the variable at the respective thresholds of 10, 5 and 1%. Only those models where at least the dummy variable, the core variable or their interaction is significant at 10% or more are reported.

Table 6: Interactions for each variable between the aggregate dummy variable and macroeconomic fundamentals (dummy variable obtained by the individual test method, unfavorable events: meetings at the 10% threshold of significance, restricted Mediterranean and African region, fixed effects)

particularly concerned by the problems of capital account openness and the volatility of capital flows. In the case of sub-Saharan Africa, over the last two decades, net capital flows have become sizeably positive, mainly due to portfolio investment and bank credit, with FDI continuing to dominate. In the case of the more financially open North Africa and the Middle East, especially in the case of oil exporters and higher-income countries, there has also been a shift in the composition of flows over the past decade. FDI has been supplanted by bank credit for oil importers and portfolio investment for exporters. The source of capital flows is also changing: China and intra-regional flows are increasing, for example from Morocco to East Africa, or between oil exporters and importers in the Middle East.

In this context, two results of our study are of particular interest. First, the discrepancy in dates between the events affecting the countries studied and the emerging countries of Asia and Latin America. For public authorities and investors alike, this discrepancy could be seen as a drawback, insofar as it constitutes unpredictability: the effects of international monetary policy announcements on emerging economies are by far the best documented in the literature. The results we propose put this unpredictability into perspective, insofar as we identify a concordance of dates with the advanced European economies. From an investor's point of view, it should also be noted that this mismatch in dates with emerging economies causes a decorrelation of returns and therefore constitutes an advantage in terms of risk diversification.

The second result that we mainly discuss is the direct and indirect effect of FDI. The discussion we propose is part of a broader framework of increasing concerns of both public authorities and international institutions about the dynamics of FDI; but also, and more and more, about its benefits, not in the sense of returns on FDI as an asset, but in the sense of macroeconomic benefits in terms of sustainable growth. These concerns are reflected in the regular publication of reports by international institutions (for example, Balasubramanian et al., 2020; OECD, 2020; OCDE, 2021).

These are relatively recent concerns. The way in which FDI is understood has evolved over time. With the shift in the composition of capital flows to developing and emerging economies towards less bank credit and more market finance after the 1982 crisis, and then the observation that FDI was more resilient during the crises of the late 1990s, many countries considered it to be the source of external financing to be considered (Loungani and Assaf, 2001). It then became clear that the effects of FDI on growth, like those of international bank credit, are only favorable in the presence of an absorptive

capacity defined in particular by sufficient levels of institutional and financial development (Durham, 2004).

For countries in the Middle East-Africa region, the question of FDI benefits is even more acute as the amounts of FDI have remained relatively low compared to emerging economies in Asia and Latin America, with benefits generally considered low due to barriers to competition, low levels of human capital, infrastructure, governance, etc.; but also due to the concentration of FDI in a small number of capital-intensive sectors, including extractive industries. The context of the COVID19 health crisis, which adds to existing socioeconomic tensions (OCDE, 2021) and is also causing a drop in FDI particularly affecting African and Middle Eastern economies, reinforces these concerns. The evidence in this study of both favorable and unfavorable direct effects of FDI illustrates this ambivalence of their macroeconomic effects: FDI has a positive effect on equity markets, but increases their sensitivity to the international environment.

On the basis of this result, two recommendations related to FDI seem essential among those made by international institutions in the context of the COVID crisis (e.g., OECD, 2020). The first of these recommendations concerns the role of national investment promotion agencies, whose primary function is to inform investors. In order to increase the benefits of FDI, it is necessary to strengthen the governance not only of public authorities and the private sector in general, but also of these agencies in particular, as well as the coordination of their actions with those of other public organizations. The second key recommendation concerns the need to diversify the sectors benefiting from FDI, particularly in the context of the COVID19 health crisis and the reorganization of global value chains that it is causing. These recommendations should make it possible not only to increase the benefits of FDI, but also and consequently to limit its adverse indirect effects in terms of the vulnerability of domestic asset prices.

5. Conclusion

In the context of a literature focusing on emerging economies of South-East Asia and Latin America, as the extensive literature review proposed at the beginning of this study reveals, the purpose of this paper is to assess the extent to which equity markets in the Middle East and Africa zone are also affected by global tapering announcements. We show that these effects are significant, and that the region has specific characteristics. On the one hand,

the study of the individual significance of the individual dates of meetings and minute releases shows that the significant dates present the greatest similarity with Western Europe, and not emerging Asia and Latin America for example. These results are supported by several robustness tests: at each stage of the empirical strategy, we use different methods (regressions and media coverage study), and different samples (Mediterranean-Africa restricted area, Middle East-Africa area). We also propose robustness tests for the estimation method.

We hypothesize a mixed rationale explaining these effects of tapering announcements: on the one hand, as in other emerging zones, a direct effect resulting from the anticipation of a tightening of yield differentials with advanced economies and especially the United States; and on the other hand, a specific effect linked to the anticipation of an unfavorable economic impact on Europe, with which the Middle East and Africa countries have strong economic relations. This is a particularly interesting result insofar as it sheds light on the underlying mechanisms of the vulnerability of the countries studied, which is otherwise poorly documented, and thus helps to reduce uncertainty about the effects of international shocks on assets prices in these countries.

Our second set of results concerns interaction effects of tapering announcements with the macroeconomic domestic environment. Two main findings are highlighted. First, the significance and magnitude of the adverse announcement effects is stronger when considering the broad Middle East and Africa region, in comparison to the restricted Mediterranean and African sample. To the contrary, the effect of domestic variables and their interaction with announcements is more significant when considering the restricted sample. These results highlight the differences in financial development and more generally economic development paths between the restricted sample and the remainder of the sample. Notwithstanding these differences in significance, the results are robust to differences in the composition of the sample. The most significant domestic variables are always inflation and FDI. It is particularly interesting to note that the positive direct effect and negative indirect effect of FDI is robust to all specifications. This result is clearly linked to the issue of the macroeconomic benefits of FDI, i.e. the ability of countries to attract and direct FDI in a way that fuels sustainable growth. The acuteness of this issue is reinforced in the context of the COVID19 pandemic, both because the countries in the sample are experiencing a particularly large decline in FDI and because the reorganization of global value chains constitutes

an opportunity to focus FDI.

Ultimately, these results point to the need for further study of the mechanisms by which global monetary policy shocks affect the countries of the Middle East and Africa region. Given the low level of financial development of a majority of them and their limited access to international capital markets, there is still too little literature. However, the complexity of the underlying mechanisms justifies the development of empirical and theoretical studies of the articulation between the domestic financing systems and international capital markets of the countries of the region.

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Appendix

Meeting n°		Minutes n°	
1	29/30 January 2013	1	20 February 2013
2	19/20 March 2013	2	10 April 2013
3	30/1er April/May 2013	3	22 May 2013
4	18/19 June 2013	4	10 juillet 2013
5	30/31 July 2013	5	21 August 2013
6	17/18 September 2013	6	9 octobre 2013
7	16 October 2013		
8	29/30 October 2013	7	20 novembre 2013
9	17/18 Decemberr 2013	8	8 janvier 2014
10	28/29 January 2014	9	19 février 2014
11	18/19 March 2014	10	9 April 2014
12	29/30 April 2014	11	21 May 2014
13	17/18 June 2014	12	9 July 2014
14	29/30 July 2014	13	20 August 2014
15	16/17 September 2014	14	8 October 2014
16	28/29 october 2014	15	19 November 2014
17	16/17 December 2014	16	7 January 2015
18	27/28 January 2015	17	18 February 2015
19	17/18 March 2015	18	8 April 2015

Table 7: Calendar of FOMC meetings and minutes

RIC ticker	Country	Index
.BRVMCI	COMPOSITE INDEX	West Africa
.JTOPI	TOP40 -TRADEAB	South Africa
.DCIBT	DC INDEX	Botswana
.TUNINDEX20	TUNINDEX 20	Tunisia
.BAX	BB ALL SHARE I	Bahrain
.EGX30	EGX 30 IDX	Egypt
.ISX60	ISX MAIN IDX	Iraq
.AMGNRLX	AMM FR FLT IDX	Jordan
.KW15	KW 15 INDEX	Koweit
.BLSI	BLOM STK IDX	Lebanon
.MASI	CASA ALL SHARES	Morocco
.MSI	MSM MAIN 30 ID	Oman
.QSI	QE MAIN 20 IDX	Qatar
.TASI	TDW MAIN IDX	Saudi Arabia
.ADI	ADX MAIN INDEX	Abou Dabi
.DFMGI	DFM MAIN INDEX	Dubai
	Total	16 indices

Table 8: Equity markets indices, emerging economies: Middle East and Africa

RIC ticker	Country	Index
.BVSP	BVSP BOVESPA IND	Brazil
.MXX	MXSE IPC GRAL IN	Mexico
.IGBC	Colombia SE	Colombia
.MERV	BUSE MERVAL IN/d	Argentina
.ADRIAN	BEC ADRIAN	Chile
.IBC	IBC INDEX	Venezuela
	Total	6 indices

Table 9: Equity markets indices, emerging economies: Latin America

RIC ticker	Country	index
.SSEC	SSE COMPOSITE	Shanghai
.HSI	HANG SENG INDEX	Hong Kong
.KS11	KOSPI	South korea
.STI	STRAITS TIMES	Singapore
.TWII	TAIWAN WEIGHTED	Taiwan
.NSEI	NIFTY 50	India
.JKSE	IDX COMPOSITE	Indonesia
.SETI	SET Index	Thailand
.MXX	MXSE IPC GRAL IN	Mexico
.PSI	PHILIPPINE-PSEi	Philippines
.KSE	KARACHI 100 INDX	Pakistan
.VNI	VN Index/d	Viet-Nam
	Total	11 indices

Table 10: Equity markets indices, emerging economies: Asia

RIC ticker	Indice	Pays
.WIG20	WIG20	Poland
.BUX	BUDAPEST SE INDX	Hungary
.BETI	BUCHAREST BETI	Romania
.PFTSI	PFTS Index	Ukraine
.SAX	SAX INDEX	Slovakia
.CRBEX	CROBEX INDEX	Croatia
.SBITOP	SBITOP	Slovenia
.OMXVGI	OMXV GENERAL	Lithuania
.OMXRG	OMXR GENERAL	Latvia
.PX	PX-PRAGUE SE IND	Czech Rep.
	Total	10 indices

Table 11: Equity markets indices, emerging economies: Eastern europe
Source of equity markets indices data: Thomson Reuters

RIC ticker	Country	Index
.GDAXI	XETRA DAX PF	Germany
.FCHI	CAC 40 INDEX	France
.FTSE	FTSE 100 INDEX	United Kingdom
.FTMIB	FTSE MIB	Italy
.IBEX	IBEX 35 INDEX	Spain
.AEX	AEX-Index	Netherlands
.SSMI	SMI PR	Switzerland
.OMXS30	OMXS30 INDEX	Sweden
.BFX	BEL20	Belgium
.OBX	OSLO OBX INDEX	Norway
.ATX	ATX-INDEX VIENNA	Austria
.OMXC20	OMXC 20	Denmark
.ATG	AT COM SHR PR ID	Greece
.OMXHPI	OMXH GEN PI	Finland
.PSI20	PSI 20 INDEX	Portugal
.OMXIPI	OMX ICX PI	Iceland
	Total	16 indices

Table 12: Other variables: Equity market indices, Western Europe

RIC ticker	Country	Index
.SPX	S&P 500 INDEX	S&P 500
.STOXX	STXE 600 PR	Stoxx Europe 600
	Total	2 indices

Table 13: Other variables: Other equity market indices

Source of equity markets indices data: Thomson Reuters

Current account balance
Government budget balance
Gross Domestic Product
Inflation (Consumer Price Index) (%)
Exports of goods and services
Imports of goods and services
Total reserves (including gold)
Reserves / GDP (%)
Gross portfolio investment (stocks, inflows) / GDP (%)
Gross portfolio investment (stock, outflows) / GDP (%)
Foreign Direct Investment (stock, inflows) / GDP (%)
Foreign Direct Investment (stock, outflows) / GDP (%)

Table 14: Other variables: Control variables
Source of macroeconomic data: IMF, in current dollars.

Fed tapering announcements

Impact on Middle Eastern and African financial markets

Methods



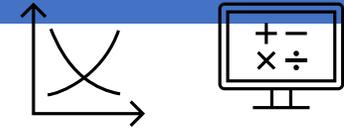
1. Extensive literature review

- Event studies on the international effects of unconventional monetary policies
- Effects of tapering in emerging economies
- Effects of tapering in specific emerging zones or countries, or with other methods than event studies



2. Comparative study of announcement effects

- Regressions (GLS, random effects)
- Sample of 16 Middle Eastern and African countries, vs. control groups (other emerging, East. Europe, West. Europe)
- Robustness and discussion : media coverage



3. Interactions of announcements and the macroeconomic environment

- Regressions (random effects, heteroscedasticity correction)
- Robustness : alternative event variables, alternative sub-samples, alternative estimation methods
- Discussion : public authorities and investors perspective

Results



9 significant events at the 10% threshold
Including 5 at 5%
and 1 at 1%
Out of 19 FED FOMC meetings



80% of concordance of unfavorable announcements with West. Europe



Most significant direct and interaction effects exerted by domestic inflation and FDI



Unfavorable indirect effect of FDI pointing to the need of further studies of possible weakening effects of financial development AND the absorptive capacity necessary to achieve the benefits of FDI