A decade of competition laws in Arab economies: a de jure and de facto assessment

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Abstract: The main objective of this paper is to provide an assessment of competition policy in a group of Arab countries. First, we construct indices for both competition policy rules and implementation assessing three categories: enforcement, advocacy, and institutional effectiveness. Second, it assesses the impact of competition policy rules (*de jure*) and implementation (*de facto*) on competition outcomes (fact-based and perception-based) using our constructed indices and the World Bank Enterprise Surveys. Findings show that our group of Arab countries has an average score related to the overall assessment of their competition legislations. Moreover, the *de facto* advocacy and the de jure institutional effectiveness have a significant effect on both fact-based and perception-based outcomes. Finally, the overall *de jure* competition index negatively affects market power, pointing out the importance of the deterrence effect that competition legislations can play.

Keywords: competition policy; Arab countries; *de jure* vs. *de facto*.

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1 Introduction

Despite its beneficial development implications, competition policy seems to lack the attention it deserves in terms of both public interest and research in Arab countries. In terms of definition, competition policy can be perceived as a broader concept than competition law where in addition to the latter, it includes the set of measures and instruments used by the governments to determine the conditions of competition in markets (Hoekman and Holmes, 1999). However, a narrower definition is more suitable for the purpose of this paper as the one suggested by Ilzkovitz and Dierx (2015): 'competition legislation covering the prohibition of cartels and abuse of dominant position and the control of mergers'.

An effective competition policy is essential because it has several development advantages. First, it helps allocate resources at the microeconomic level to the most productive firms and induces the exit of the least efficient firms (Sulistiawan and Rudiawarni, 2019). In addition, competition allows markets to efficiently improve for the benefit of consumers including by reducing prices and promoting better quality goods. Second, this enhanced allocative efficiency often helps improve macroeconomic outcomes including higher aggregate productivity and employment, lower inflation, and higher economic growth (Carlin et al., 2001). Third, competition policy could also improve the business environment for the private sector to operate and thrive, which in turn would further stimulate further economic growth. Finally, competition could help eradicate poverty by controlling inflation, corruption, social inequalities as well as by reducing barriers to entry, especially to small entrepreneurs. As a result, competition will be beneficial for both consumers and small businesses through price reductions and expansion of employment opportunities (Godfrey, 2008; OECD, 2014).

Despite these benefits, anticompetitive practices persist and are particularly harmful in developing countries because an effective enforcement of competition rules is often lacking. For instance, several obstacles may impede competition in these countries, including informality, barriers to entry, lack of competition culture, state monopoly in key sectors, corruption and challenging political economy context (UNCTAD, 2010). Developing countries also suffer from institutional and structural weaknesses that make them more vulnerable to anticompetitive practices (Fox, 2012; Stiglitz, 2015). Arab

countries are no exception. Most of them adopted economic reform programs in the 1990s aiming at reducing the role of the state and expanding the role of the private sector. Surprisingly, these programs implied an orientation towards a market economy structure (including through privatisation, elimination of price controls and reducing state monopolies) without an explicit adoption of competition laws. The latter mostly appeared in the following wave of reforms in the 2000s with the objective of regulating business environment. However, the adoption of law, even though necessary, was not sufficient without an effective implementation and enforcement.

Against this background, this paper aims to provide an assessment of competition policy in a sub-group of Arab countries and its impact on competition outcomes (in terms of market power and how firms perceive competition). To our knowledge, this is one of the few papers addressing this issue in general and possibly the first paper doing so in the context of Arab countries. More specifically, the paper has two complementary goals. First, following Dutz and Vagliasindi (2000a and 2000b) methodology, we construct indices assessing competition policy rules (*de jure*) and implementation (*de facto*) in three aspects: enforcement, advocacy, and institutional effectiveness. The rules assessment (*de jure*) captures information from competition laws and their subsequent amendments whereas the implementation assessment (*de facto*) is based on the publicly available information in competition authorities' annual reports (the actual enforcement and advocacy activities) and other anecdotal evidence from press as a complementary source whenever needed. Our own constructed de jure and de facto indices aim at assessing competition policy at the economy wide level (i.e., on the macro level and not on markets or sectors level). Second, the paper assesses the impact of rules (*de jure*) and implementation (*de facto*) on competition outcomes (fact-based and perception-based) at the sectoral level. In order to do so, we undertake an empirical exercise to assess the impact of the effectiveness of competition policy, proxied by our own constructed indices on competition outcomes among firms including market power and perception of competition (fact-based and perception-based respectively) using data from the World Bank Enterprise Survey dataset (WBES). The empirical work assesses the impact of the effectiveness of both rules (*de jure*) and implementation (*de facto*) of competition policy. The sample for the analysis is restricted to the following countries for which harmonised WBES data is available: Djibouti, Egypt, Jordan, Lebanon, Morocco, Palestine, Tunisia, and Yemen where Lebanon and Palestine did not yet introduce a competition law yet and hence serve as a control group to add more variability to the analysis.

Our main findings indicate that the overall assessment of competition legislations our group of Arab countries is broadly average in comparison to the maximum scores of our constructed indices. There are some variations with respect to the overall *de jure* and *de facto* indices among the group with some countries (Egypt and Tunisia) having better scores in their 2012 implementation index compared to their corresponding rules index, while others (Jordan and Morocco) showing the opposite pattern. Moreover, the Djiboutian and the Yemeni legislations are the weakest among the group. As per competition outcomes, the *de facto* advocacy and the de jure institutional effectiveness have a significant effect on both fact-based and perception-based outcomes. Finally, the overall *de jure* competition index negatively affects market power, pointing out to a potential deterrence effect that competition legislations lead to[1].

The paper is organised as follows. Section 2 reviews the literature. Section 3 is dedicated to the index methodology and results. Section 4 analyses competition and market outcomes through the econometric approach and Section 5 concludes.

2 Literature review

The literature on competition policy assessment could be divided into two main strands. The first set of studies examined competition at the economy wide level while the second set focused on competition at the sectoral level and firms' performance.

Under the first avenue of research, Dutz and Vagliasindi (2000a) assessed the effectiveness of competition policy in 18 Eastern Europe transition economies. They constructed two competition indices accounting for the following three categories: law enforcement, advocacy, and institutional effectiveness. In addition, the authors used the EBRD business environment and enterprise performance survey (BEEPS) to gauge the impact of competition policy on enterprise mobility. The results point to a positive robust relationship between the two variables (see also Bradford et al., 2019 for a more recent competition laws and enforcement coding). Constructing their own competition policy indices (CPI), Buccirossi et al. (2013) found a positive and significant impact of competition policy on total factor productivity growth for 22 industries in 12 OECD countries over the period 1995–2005. Voigt (2009) also constructed four indicators capturing the aspects related to competition laws and agencies, which were used to estimate the impact of competition policy on total factor productivity in a sample of 57 countries. He found that the impact of these indicators is not robust to the inclusion of indicators for the general quality of institutions.

Under the second avenue of research, a large literature examined the impact of competition on firms' performance, with most findings pointing to a positive effect of competition on growth of sales and labour productivity (Carlin et al., 2001 and Djankov and Murell, 2002). Likewise, Friesenbichler et al. (2014) reviewed the literature tackling competition in Eastern Europe countries. The authors mentioned that this strand of the literature evolved over time with earlier research studying the relationship between competition and productivity while subsequent work assessing the competition effect on the innovation and technology in line with the technological advances in these countries. Meanwhile, much of the research on competition in the MENA region and Arab countries was mostly sector specific. For instance, there are four interrelated studies on the impact of liberalisation and competition in the Arab airlines industry, in Egypt (Omar and Sekkat, 2012), Jordan (Barakat, 2012), Morocco (Morchid and Sekkat, 2012; Hakam et al, 2014) and UAE (Squalli, 2012). The four studies adopted the structure-conduct-performance framework arguing that the structure of an industry determines firm conduct, which, in turn, determines performance. There are also studies on competition performance and outcomes in the telecommunications sector (Hakim and Neaime, 2011; Ezzat, 2014) and the banking sector (Fatine et al., 2015) in the MENA region.

From the above review, we could, thus, conclude that there is evidence showing that competition policies have positive impact within sectors as well as across economies. Yet, the empirical literature assessing the macroeconomic impact of competition policy is very limited for Arab countries.

3 Index approach: competition rules and implementation assessment

Competition policy received growing attention in the 1990s against a global context of globalisation and trade liberalisation. During the same period, most of our group of Arab countries undertook structural adjustment programs with the International Monetary Fund

(IMF) and the World Bank resulting in an orientation towards free markets and privatisation but without an explicit adoption of competition laws. In fact, all these countries, except Tunisia, faced some difficulties while adopting competition laws. These difficulties were mostly of political or institutional nature, including conflict of interest with other stakeholders, delays in establishing a competition authority and in some cases political instability. It is also important to note that although four of our countries (namely Egypt, Jordan, Morocco, and Tunisia) are members of the Agadir agreement that aims to boost trade and hence competition policies, the latter did not explicitly address competition. Indeed, the agreement only states that governments should coordinate overall and sectoral economic and trade policies in order to ensure conditions for objective competition and to promote European investments.

Tunisia was the first Arab country to adopt a competition law. After Tunisia, a second wave of laws was observed in Egypt and Jordan. Both countries underwent several attempts at drafting competition laws due to resistance from relevant stakeholders like the government, the parliament, and the private sector. A third wave of competition legislations followed in Morocco and Yemen but both faced difficulties in effectively implementing their competition law and establishing a competition authority (implementation assessment Section 3.2.2). Our analysis also comprises two countries, which do not yet have a competition law to date, namely Lebanon and Palestine. On the empirical front, these two countries serve as comparators to those with existing competition laws. As for Djibouti, it enacted a competition law in 2008 but unfortunately, we were not able to find further information on the context of law adoption.

3.1   *Index methodology*

Following Dutz and Vagliasindi (2000a and 2000b), we assess competition policy rules (*de jure*) and implementation (*de facto*) effectiveness in Arab countries.[2] We introduce several improvements to their methodology as follows. First, we modify the definitions of some variables to capture objective (fact based) information instead of capturing subjective (survey based) perceptions. Second, we include four additional criteria from Voigt (2009) to measure the independence of the competition authority. Dutz and Vagliasindi methodology only captures one aspect of independence (the head's appointment) which we view as somewhat incomplete, given the specificity of the political economy dynamics in Arab countries. Hence, we selected aspects that are measurable from both rules and implementation perspectives (*de jure and de facto*).

For both rules and implementation, the analysis is based on three categories: enforcement, advocacy, and institutional effectiveness. Under these categories, eight dimensions are analysed. Table 1 provides a brief description for these categories and dimensions. *First*, the enforcement category consists of three dimensions that aim at assessing the legal approach and the enforcement techniques towards anticompetitive practices by enterprises (abuse of dominance, hard-core cartels, other agreements, and mergers) and state executive bodies, in addition to the relevant fines. These dimensions represent essential features for an effective enforcement. A specific emphasis is placed on economic criteria in the enforcement of rules since they should be explicitly spelled out in the legislations, especially in developing countries. Meanwhile, the enforcement implementation assessment is based on the percentage of violations out of total decisions and the actual fines.

Table 1 Competition rules and implementation assessment criteria

	Rules	*Implementation*
	1. Enforcement against anti-competitive acts	
• Enterprises	Composite index formed by adding 0.25 for 1. Abuse of dominance: 0.25 if definition of dominance includes economic criteria regarding relevant market beyond market share- and abuse of dominance rather than dominance alone is prohibited 2. Hard-core cartels: 0.25 if exemptions explicitly exclude practices that significantly restrain competition 3. Other agreements: 0.25 if horizontal and vertical agreements are prohibited only if they limit competition 4. Mergers: 0.25 if only those leading to significant limitation of competition are illegal	Composite index formed by adding 0.25 1. Abuse of dominance: 0.25 if violations constitute at least 10% of decisions 2. Hard-core cartels: 0.25 if violations constitute at least 10% of decisions 3. Other agreements: 0.25 if violations constitute at least 10% of decisions 4. Mergers: 0.25 if at least 10% of cases examined are modified in some forms
State executive bodies*	1 if anti-competitive activities by regional or local state executive and governing bodies are prohibited	1 if violations at least 10% of decisions (half if at least 1 violation)
Fines	1 if penalties are not unduly limited	1 if one of the 3 largest fines levied per year is in the 'hard core cartel' category
	2. Advocacy	
• Infrastructure*	1if the authority has the power either to change rules or to introduce new laws to promote competition (including infrastructure regulation)	1 if the authority had comments on infrastructure regulations (half if at least 1 comment)
• Education*	1 if the authority has mandate or obligation to disseminate annual reports/periodic information to Parliament and/or the public at large	1 if at least one speech or seminar directed to consumers (half if at small business)
	3. Institutional effectiveness	
• Independence	Composite index formed by adding 0.2 for 1. 1 Head appointment: 0.2 if the head of the competition authority is formally independent (appointed/answerable to parliament) 2. Head dismissal: 0.2 if the head cannot be removed from office except by legal procedures 3. Head reelection: 0.2 if the head terms are not renewable 4. Government supervision: 0.2 if members of the government do not have the right to give instructions to the competition authority 5. Budget: 0.2 if the laws grants minimal independence in budget.	Composite index formed by adding 0.2 for 1. Head appointment: 0.2 if the head of the competition authority is not politically connected to the government/ruling party/ruling family 2. Head dismissal: 0.2 if actual term length and the one expected by the law do not deviate 3. Head reelection: 0.2 if actual head terms were not renewable 4. Government supervision 0.2 if members of the government do not effectively give instructions to the competition authority 5. Budget: 0.2 if the budget of the authority remained at least constant.
• Appeal	1 if the law ensures right of appeal to an independent entity	1 if appeals are judged based on economic content rather than on due process and fairness
• Transparency	1 if all decisions are required to be published or publicly available	1 if all authority's decisions are effectively published

Note: * Dutz and Vagliasindi (2000a and 2000b) consider these dimensions in particular as tailored criteria for countries in transition.

Source: Dutz and Vagliasindi (2000a and 2000b) and Voigt (2009)

Second, the advocacy category includes two dimensions related to the ability to change rules concerning regulation of infrastructure and the awareness activities offered by the authority. Indeed, advocacy is of particular importance to developing countries where the mandate of competition authorities should extend beyond the enforcement of the law. Instead, they are supposed to have a prominent role in advocating for competition principles to the general public, to businesses and in the application of government policies, especially those that may adversely affect competition and market structures (Clark, 2005; UNCTAD, 2010).

Finally, the institutional effectiveness category measures the degree of independence of the authority, its transparency, and the effectiveness of the appeals process. In particular, the independence of the authority is assessed based on the following aspects: the appointment of the head of the authority, the dismissal and re-election procedures of the head of the authority, the degree of government intervention or influence in the authorities' decision-making process and the budget of the authority. It is important to mention that the institutional features of competition authorities affect their decision-making process and thereby the effectiveness of the competition regime. This decision-making process is supposed to be neutral (or not politicised) and transparent (UNCTAD, 2010).

These eight main dimensions are considered with equal weights. Each dimension is assessed on binary basis, i.e., taking the value one if the criterion exist and zero otherwise. This binary approach limits the number of assumptions when scoring the observations and thus, reduces the measurement bias errors[3].

The specifications related to the rules' assessment are the following. First, the assessment exclusively focuses on the competition law in each country (the law in its enactment year and subsequent amendments). Hence, competition rules mentioned elsewhere in the legislative body for each country (i.e., in any other law other than competition law) are not accounted for. Second, the overall rules index (*de jure*) ranges from 0 (being the lowest rank) to 8 (being the highest rank).

Using competition authorities' annual reports, we assess the implementation of competition law based on the actual count of the anticompetitive cases, studies and advisory opinions. In addition, anecdotal evidence from press is used as a complementary source whenever needed. Hence, the availability of these annual reports hindered our assessment. The specifications related to this assessment are the following: first, some sub-indices account for the authority's decisions in terms of percentage of violations. Thus, our count of cases is based on the year where the authority has taken a decision and not the year where the authority has received the case. Second, unlike Dutz and Vagliasindi, (2000a and 2000b) and Voigt (2009), we relied on a group of variables that are based on objective definitions and not subjective ones in order to reduce the measurement bias errors. Third, the overall implementation indicator (*de facto*) ranges from zero (the lowest rank) to eight (the highest rank).

This methodology has two advantages. First, it depends neither on the country size nor on the count of the anticompetitive cases. Hence, smaller countries with fewer cases are not penalised relative to larger ones. Second, these criteria are tailored for developing countries, and thereby relevant to our group of Arab countries. In this regard, Dutz and Vagliasindi (2000a and 2000b) argued that this assessment methodology focuses on the economic criteria, which is necessary for countries where business and government actors have less experience with well-functioning markets.

Table 2 Competition rules and implementation assessment results (*de jure* and *de facto* indices)

	Djibouti	Egypt				Jordan			Morocco			Tunisia			Yemen
	De jure	*De jure*			*De facto*	*De jure*		*De facto*	*De jure*		*De facto*	*De jure*		*De facto*	*De jure*
	2008	2005	2008	2014	2012	2004	2011	2012	2000	2014	2012	1991	2015	2012	1999
Overall index	1.25	2.95	2.95	4.15	3.65	3	3	2.25	2.75	2.75	2.4	1.7	4.9	3.35	0.5
1 Enforcement against anticompetitive acts	1.25	0.75	0.75	1.75	0.25	2	2	0.25	1.75	1.75	0	0.5	1.5	0.75	0.5
Enterprises	0.25	0.75	0.75	0.75	0.25	1	1	0.25	0.75	0.75	0	0.5	0.5	0.75	0.5
Abuse of dominance	0	0.25	0.25	0.25	0	0.25	0.25	0.25	0.25	0.25	0	0	0	0.25	0
Hard-core cartels	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0.25	0.25	0	0.25	0.25	0.25	0.25
Other agreements	0	0.25	0.25	0.25	0	0.25	0.25	0	0	0	0	0	0	0.25	0
Mergers	0	0	0	0	0	0.25	0.25	na	0.25	0.25	0	0.25	0.25	0	0.25
State executive bodies	1	0	0	1	0	0	1	0	0	1	na	0	0	0	0
Fines	0	1	1	1	2	0	0	2	1	1	1	0	1	1	0
2 Advocacy	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
Infrastructure	0	1	1	1	1	0	0	1	0	0	1	0	1	1	0
Education	0	1	1	1	1	0	0	1	0	0	1	0	1	0	0
3 Institutional effectiveness	0	1.2	1.2	1.4	1.4	1	1	0	1	1	1.4	1.2	2.4	1.6	0
Independence	0	0.2	0.2	0.4	0.4	0	0	0	0	0	0.4	0.2	0.4	0.6	0
Appointment of the head	na	0	0	0	na	0	0	na	0	0	na	0	0	na	0
Dismissal of the head	na	0	0	0.2	0.2	0	0	0	0	0	0.2	0	0	0.2	0
Reelection of the head	na	0	0	0	0.2	0	0	1	0	0	0.2	0	0.2	0.2	0
Government supervision	na	0	0	0	0	0	0	na	0	0	0	0.2	0.2	na	0
Budget	0	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0.2	0
Appeal	0	0	0	0	na	1	1	na	1	1	na	1	1	na	0
Transparency	0	1	1	1	1	0	0	0	0	0	1	0	1	1	0

Notes: In addition to the 1991 and 2015 versions of the Tunisian Law, it has been amended several times until the 2015 version. Results of the *de jure* assessment for these amendments are not displayed in this table. Yet, the empirical exercise accounts for the 2012 index. Jordan competition authority annual reports cover only selected part of the authority activities. Hence, our assessment is based on the available information and thereby should be treated with caution.

Source: The rules assessment is based on the following competition legislations: Djibouti: Law No. 28 of the year 2008; Egypt: Law no. 3 of 2005; amendment 2008: law no. 190 of 2008; amendment 2014: Law no. 56 of 2014; amendment 2011: The Law Amending Competition Law No. 18 of 2011; Morocco: Law No. 6-99 of 2000; Law no. 104-12 of 2014; Tunisia: Law No. 64 of 1991; Law no. 36 of 2015; Yemen: Law No. 19 of 1999. The implementation assessment is based on 2012 competition authorities' annual reports and anecdotal evidence from press whenever needed. Egypt data corresponds to FY2012

3.2   Index approach results

3.2.1   Competition rules assessment in Arab countries (de jure index)

We present in this section findings based on the *de jure* indices of the latest version of competition law for each country. Table 2 presents our rules assessment for different versions of the laws (in enactment years and subsequent amendments) and the implementation assessment for 2012. The rules assessment of the earlier versions of laws is used in the empirical exercise, as elaborated later.

3.2.1.1 Enforcement against anticompetitive acts

First, with respect to the enforcement against enterprises anti-competitive practices, our group of countries has broadly well-elaborated legislations (Table 2). However, we noticed some weaknesses as follows. First, despite several amendments, the latest version of the Tunisian competition law (Law No. 36 of 2015) does not mention any economic criteria to define *dominance* in the relevant market. However, the law elaborated abuse of dominance actions (article 5). This is also the case of the Djiboutian legislation (Consumer and Competition Law No. 28 of 2008, article 4) and the Yemeni one (Law No. 19 of 1999, article 7). Second, all but two legislations, the Egyptian and the Jordanian, fare poorly concerning *other horizontal and vertical agreements*. In particular, the Egyptian and Jordanian legislations include an explicit rule regulating these agreements. Third, Djibouti and Egypt's legislations are the weakest compared to peers in relation to *merger controls*. To this effect, the Djiboutian legislation did not mention mergers in any of its clauses. In Egypt, the legislation specifies that companies should only notify the Egyptian Competition Authority (ECA) post mergers and acquisitions actions (Law No. 3 of 2005 amended by Law No. 56 of 2014, article 19). Hence, the ECA does not have the authority to approve or prohibit such operations. It is worth mentioning that the 2008 amendment introduced new fines for the failure of ECA notification in mergers and acquisitions (article 22, Law No. 190 of 2008). To date, the Egyptian legislation and its subsequent amendments have never introduced a merger control. We believe this represents a major bottleneck to an effective competition policy in Egypt.

Second, on the enforcement on the *state executive bodies*, the Djiboutian legislation fares better compared to its peers since it covers production, distribution and service activities including those by '*corporations governed by public law*' (Law No. 28 of 2008, article 2). The latter was defined by the French law as: the state, regional authorities and public institutions[4]. Legislations in remaining countries do not explicitly address competitive activities of the state executive bodies.

Third, regarding *the fines*, all legislations, except those of Djibouti and Yemen, stipulated a variety of fines, which are sufficient to deter the most harmful violations. The Egyptian legislation imposed two sets of fines with the highest imposed on cartel cases. For these two sets of fines, the law specified minimum and maximum thresholds, defined in percentages of the firm's revenues from the product subject to the anticompetitive practice. The earlier drafts of the law only specified nominal ceilings for the fines. This is similar to the Jordanian law that has well elaborated two sets of fines with different thresholds. As for the Yemeni and the Djiboutian legislations, they only specified nominal ceilings for the fines. Our sub-index captures the fines' magnitude and variability regardless of the imposing entity (whether the authority itself or an economic

court). Despite the fact that the Egyptian law stipulated a variety of fines, it does not grant ECA the authority to impose fines. The latter are determined by the economic court. In contrast, the Competition Council in Tunisia has the authority to impose fines.

3.2.1.2 Advocacy

Our advocacy index suggests that the Egyptian and the Tunisian laws fare better compared to their peers with regards to the advocacy rules (Table 2). For the *infrastructure*, legislations in our group of countries did not grant the right to introduce relevant new laws. The Djiboutian and the Yemeni legislations are the weakest compared to the rest of the group since they did not mention this aspect in any of their clauses. Yet, Egypt, Jordan, Morocco and Tunisia's legislations granted their respective authorities the right to give their opinion on that front (Egypt: article 11, Law No. 3 of 2005; Jordan: article 14, Law No. 3 of 2004; Morocco: article 15, Law No. 6-99 of 2000; Tunisia: article 11, Law No. 36 of 2015).

Regarding the *education* (i.e., the dissemination), the Egyptian and the Tunisian laws fare better compared to their peers. The Egyptian Law stipulates that ECA should prepare an annual report on its activities and plans and submit it to the Competent Minister, the Parliament and the Consultative Council. The law also states that ECA must issue periodicals containing decisions and measures adopted by the Authority. Similarly, the Tunisian Law specified that the Authority has to prepare an annual report and to present to the Parliament and the Prime Minister (article 14). In addition, all the Authority's decisions and opinions have to be published on the Authority's website.

3.2.1.3 Institutional effectiveness

The institutional effectiveness index indicates some variation among the different legislations, with the Tunisian legislation being the strongest and Djiboutian and Yemeni being the weakest among the group (Table 2). Regarding independence, the Jordanian Competition Directorate and the Yemeni Competition Authority are considered the least independent given their affiliation to the Ministry of Industry. In addition, the relevant Minister is the Chairperson of the Board/the head of the authority in both cases. This setup undermines the independence of the authority which must be isolated from political interference and stakeholders' influence (Khemani, 2007). This way, the authority would have total discretion to apply the law on all sectors and entities in any economic activity. Against this background, setup of the competition authorities in Jordan and Yemen results in low scores in all sub-components related to the independence assessment.

Regarding *the head appointment*, in the Egyptian case, ECA is managed by a Board of Directors according to a Ministerial decree (Law No. 3 of 2005, amended by Law No. 56 of 2014, article 12). This Board includes representatives of various ministries, independent experts and representatives of trade unions and industry associations. The Chairperson of the Board (who is the head of the Authority) is chosen by the Competent Minister. This is similar to the Tunisian case where the Chairman of the Board, the two vice-presidents, the Board members are appointed with a Ministerial decree (Article 13, Law No. 36 of 2015). In Morocco, the earlier version of the law (Law No. 06-99 of 2000) specified that the President of the Competition Council should be appointed by the Prime Minister (article 19). The latest version of the law (Law No. 104-12 of 2014) did not specify any rules about the appointment of the President. Therefore, we assumed that the

rule in the earlier version of the law still holds. Finally, the Djiboutian legislation is somehow ambiguous in this regard. There are no clear clauses on the head of the authority neither his/her appointment process. Yet, the Minister of Commerce is mentioned in several clauses, but his/her role is not clearly specified. Accordingly, this has affected all the relevant independence criteria scoring.

As for *the dismissal procedures of the head of the authority*, the Egyptian law fares better compared to its peers. It is the only legislation among the group specifying that the term of the Board membership (including the head of the authority) only ends by resignation or when a board member is involved in a criminal judgment. Hence, a legal procedure exists for dismissal of the head of the authority.

On *the head reelection*, the Tunisian legislation fares better compared to the rest of the group since it is the only one limiting the term of appointment of the head of the authority to non-renewable five years (Law No. 36 of 2015, article 13). The Moroccan law No. 6-99 of 2000 also sets a five-year term limit for Board members of the competition council but allows one renewal.[5] Moreover, the legislation mentions that the head of the Council is appointed by the Prime Minister but remains silent on the duration of appointment or dismissal procedures. In the Egyptian case, the law specified a term of four years subject to one renewal for all Board members including by definition the head of the authority.

Regarding *the Government supervision of the authority*, the Jordanian and the Yemeni authorities are the weakest given their structure being already part of the Government. As for the rest of the legislations, we assessed whether they stipulate that their respective authorities' boards should include government's representatives who are involved in the decision-making process. Tunisia's legislation fares better than the remaining countries because it is the only one that does not require the inclusion of government representatives in the authority's board (article 13).

Finally, for the *budget*, the Egyptian legislation is the only one among the group mentioning that ECA should have an independent budget (article 14). In turn, the Tunisian legislation mentioned in one of its earlier versions (2005 amendment) that the council's budget is attached to the Ministry of Trade. The remaining legislations do not mention the budget in any of their clauses.

Regarding the *appeal*, the Egyptian, the Djiboutian and the Yemeni legislations seem to be weaker compared to their peers and did not specify a rule in this regard.

Regarding *transparency*, the Egyptian legislation has elaborated several aspects in this regard. Article 11 stipulates that ECA should prepare an annual report on its activities and plans and submit it to the competent minister, the parliament and the consultative council. ECA should also issue periodicals containing decisions and measures adopted by the Authority. Similarly, the Tunisian Law specified that the Authority has to prepare an annual report and to present to the parliament, the Prime Minister (article 14). In addition, all the Authority's decisions and opinions have to be published on the Authority's website. As for the rest of the group laws, they did not specify any clauses to that effect.

The overall index for the rules (*de jure*) ranges from 0 (lowest rank) to 8 (highest rank). Based on our assessment we make a number of conclusions. First, Arab countries have an average score related to the overall assessment of their competition legislations (*de jure*) relative to the maximum score of our constructed index (Figure 1). The Djiboutian and the Yemeni legislations have the lowest scores among their peers, suggesting that there are several areas for legislative reforms. Second, the six countries

competition legislations score better in relation to the enforcement against anticompetitive acts relative to the advocacy and the institutional effectiveness. The only exception to this is Tunisia in 2015, which had a better score in institutional effectiveness compared to other dimensions. This is an interesting finding since Dutz and Vagliasindi (2000a and 2000b) considered advocacy particularly important to countries in transition. Yet, it seems that this is not the case in our group of countries legislations. Third, even though four countries among our group, namely Egypt, Jordan, Morocco and Tunisia, introduced amendments to their laws aiming to improve several aspects, only the scores of Tunisia and Egypt improved following the amendments.

Figure 1 Overall rules assessment in Arab countries (see online version for colours)
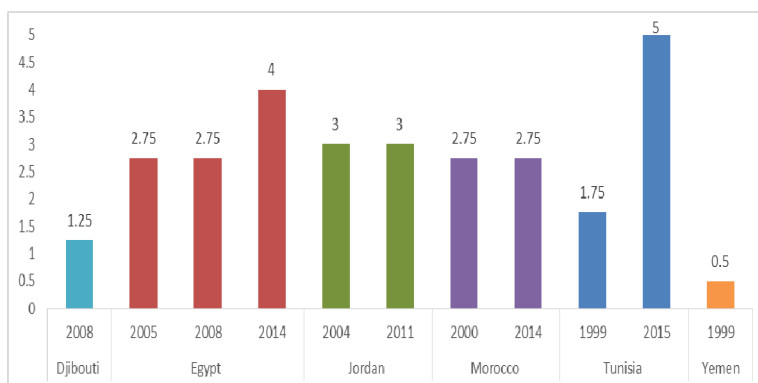
Notes: This overall rules' assessment index (de jure index) ranges from 0 (being the lowest rank) to 8 (being the highest rank).

Source: Calculated by the authors based on the countries following competition legislations:
Djibouti: Law No. 28 of 2008.
Egypt: Law no. 3 of 2005; amendment 2008: Law no. 190 of 2008; amendment 2014: Law no. 56 of 2014.
Jordan: Law No. 33 of 2004; amendment 2011: The Law Amending Competition Law No. 18 of 2011.
Morocco: Law No. 6-99 of r 2000; Law no. 104-12 of 2014.
Tunisia: Law No. 64 of 1991; Law no. 36 of 2015.
Yemen: Law No. 19 of 1999

3.2.2 Competition implementation assessment in Arab countries in 2012 (de facto index)

This section complements the previous one and provides the implementation assessment results for Egypt, Jordan, Morocco, and Tunisia in 2012 (see Table 2 for a summary). The year 2012 is intentionally chosen because indices will be used in the empirical exercise. The below analysis does not cover Yemen and Djibouti due to the absence of public reports on their annual activities. This lack of transparency could be due to the absence of legislative requirements for publication or public disclosure of their decisions (Section 3.2.1).

3.2.2.1 *Enforcement against anticompetitive acts*

Regarding *the enterprises' enforcement*, our assessment is based on the actual decisions of competition authorities. Two main conclusions can be drawn. First, the Moroccan Competition Council has remained broadly passive since it never proved any violations in all studied cases. However, the council conducted several studies in specific sectors during the period 2009–2013 and provided recommendations to improve competition in several cases. This is due to its limited consultative role (Section 3.2.1). Second, Tunisia was able to prove numerous diversified violations, and thus fares better than its Arabic peers. As for the *state executive bodies*, all countries seem to be inactive in 2012, which is an expected finding since our rules' assessment revealed that all legislations did not account for that aspect (except Djibouti). Regarding *the fines*, the relevant information was not available in countries' annual reports, which made it difficult to assess this aspect.

3.2.2.2 *Advocacy*

Our assessment suggests that Egypt and Jordan are more active compared to Morocco and Tunisia with regards to *advocacy* (Table 2). As for *infrastructure*, Egypt might not have been active during early implementation years. Yet, it was active with other advocacy activities. For instance, ministries and other public authorities solicited ECA's advice several times regarding SOEs performance. FY2012 was important for ECA in terms of infrastructure initiatives. [6] Regarding the *education*, there was no mention of any public seminar in Tunisia in 2012. This could be because the Tunisian authority is the oldest relative to its peers and could no longer need to promote competition policy.

### 3.2.2.3 *Institutional effectiveness*

Overall, our *de facto* institutional effectiveness index suggests that Tunisia fares better on that front compared to the rest of the group while Egypt and Morocco achieved similar score. The assessment of the *independence* aspect was limited by the extent of available information. The Jordanian council's affiliation to the Ministry of Trade affected its scoring in this aspect. Five aspects were assessed regarding independence as follows: the head appointment, dismissal, and reelection, the government supervision and the budget.

First, on the *heads' appointment*, the criterion assesses whether the head of the authority is not politically connected to the government/ruling party/ruling family. Unfortunately, there was no available information to assess this aspect. Second, regarding the heads' dismissal and reelection, only Morocco witnessed a head reelection in 2014. Yet, the council's activities were frozen starting that date. Newspapers were the only source to discern the dismissal story behind each head. We understand this is just an anecdotal evidence, yet it still provides important insights. This anecdotal evidence points out one incident where the head of the competition council in Tunisia was removed without a legal procedure (in February 2011). This might be related to the political turmoil in Tunisia in that particular timeframe.

On *the government supervision*, we assumed that the fact that Egypt and Morocco agencies have government representatives in their board and Jordan's council being a department of the Ministry of Trade make them subject to government supervision on the implementation front. As for Tunisia, there was no available information to assess the extent of government supervision to their decisions from a de facto perspective.

Finally, regarding *the agencies' budgets*, our entire group of agencies reported their respective budget in their annual reports, except the Jordanian competition council. We believe that the latter particular structure, being part of the Ministry of Industry, could be a reason behind the non-disclosure of the specific council's budget. [7] For the rest of the group, using the available data, we analysed the competition authorities' budgets as percentage of GDP (Figure 2). Tunisia seems to be the only country in our group that committed to consistently increase its competition council budget.

Figure 2 Competition authorities' budgets, (budgeted figures, in percentage of GDP) (see online version for colours)
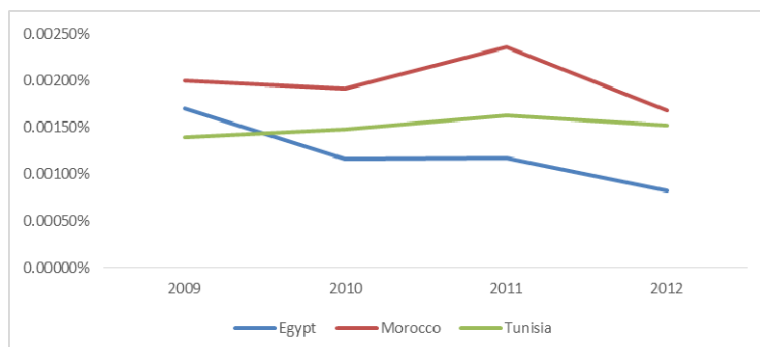
Note: data for Egypt is on fiscal year basis.
*Source:* Competition authorities annual reports

The literature on competition assessment pointed out that the number of staff, their qualifications, the modern equipment availability, and the size of the library affect the competition agency performance and hence the implementation of the law (Buccirossi et al., 2011). However, this literature mentioned that this information is usually not available. Therefore, Voigt (2009) suggested accounting for these aspects through the budget of the competition authority. Hence, we followed Voigt (2009) approach since this information was not publicly available for our group of countries.

As for *the appeal*, we were not able to assess it since information on appealed cases was not available. For *the transparency*, we assessed whether the authorities published their decisions or not. All authorities provided a regular coverage of their enforcement cases, advocacy efforts and other activities in their annual reports, except for Jordan. The latter covered only the most important complaints, studies, advisory opinions, and activities. We noticed that the Moroccan competition legislation did not stipulate that the authority' decisions should be publicly available. Yet, on the implementation side, the authority published on its website an annual report summarising all activities and decisions.

As per Figure 3, in 2012, Egypt and Tunisia had better scores in their implementation index (*de facto*) compared to their corresponding rules index (*de jure*, 2008 for Egypt and 2005 for Tunisia). On the contrary, Jordan and Morocco had a higher overall rules index (de jure) compared to their overall implementation index (*de facto*). From a policy perspective, this confirms that a law enactment is insufficient and does not guarantee an effective implementation.

Comparing the enforcement from the two perspectives, all countries had better scores on the rules front compared to the implementation, except Tunisia. On the contrary, advocacy scores were better on the implementation front compared to the rules front. Finally, on the institutional effectiveness, our group of countries had better scores on the implementation front compared to the rules front, except Jordan. The latter particular structure had affected its institutional effectiveness score on the two sides.

Figure 3   Rules (*de jure*) versus implementation (*de facto*) in our group of countries (see online version for colours)
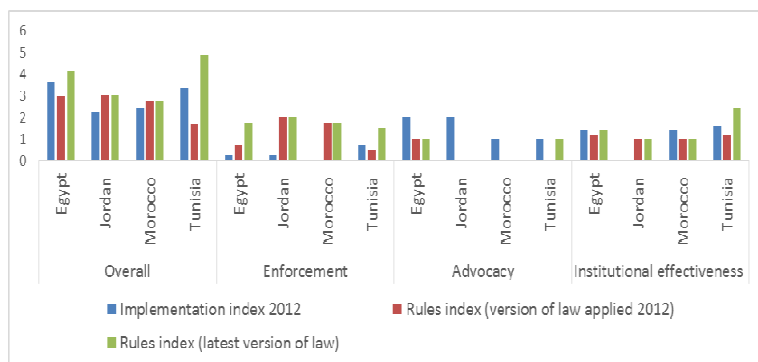
Notes: Rules index version of the law applied in 2012 corresponds to 2008 for Egypt, 2011 for Jordan, 2000 for Morocco and 2005 for Tunisia de jure indices. Rules index latest version of the law corresponds to 2014 for Egypt, 2011 for Jordan, 2014 for Morocco and 2015 for Tunisia.

   Source: The implementation (*de facto*) assessment is based on 2012 competition authorities annual reports and anecdotal evidence whenever needed. The rules assessment is based on the following competition legislations: Egypt: Law no. 3 of 2005; amendment 2008: Law no. 190 of 2008; amendment 2014: Law no. 56 of 2014. Jordan: Law No. 33 of 2004; amendment 2011: The Law Amending Competition Law No. 18 of 2011. Morocco: Law No. 6-99 of 2000; Law no. 104-12 of 2014. Tunisia: Law No. 64 of 1991; 2005 amendment and Law no. 36 of 2015

4   Impact of rules and implementation (*de jure* and *de facto*) on market power and perception of competition

4.1   *Methodology*

This section empirically assesses the impact of both rules (*de jure*) and implementation (*de facto*) of competition policy on competition outcomes in terms of market power and perception of competition (fact-based and perception-based respectively) at the sectoral level. This empirical exercise uses our constructed indices and the publicly available firm-level data from WBES in 2013 for all available Arab countries, namely Djibouti, Egypt, Jordan, Lebanon, Morocco, Palestine, Tunisia and Yemen. We selected this dataset specifically because it is harmonised for all countries making all the variables comparable. To ensure time consistency between competition indices and WBES data, indices used in the analysis captures information from 2012. The empirical exercise thus

assumes that competition policy rules and implementation in a specific year would affect firms' performance in the following year. Regarding the rules (*de jure*) indices, we used the indices corresponding to the version of each law adopted in 2012. Since we are merging macroeconomic data with firm-level data, we collapsed the latter to obtain data at the sector-region-country level (around 180 sectors and 59 regions in 8 countries, the list of sectors is available upon request).

First, regarding the fact-based measure of competition, we estimate a set of regressions where our dependent variable is the average share of sales of firms relative to the total sales by region and by sector for firms operating in a given sector in a given region in a given country. This variable captures market power.

Our regression can be expressed by the following equation:

$$Y_{jkc} = \beta_0 + \beta_1 X_{jkc} + \beta_2 Num_{jkc} + \beta_3 Size_{jkc} + \beta_4 dejure_c + \beta_5 defacto_c$$
$$+ \beta_6 Sector_{jkc} + e_{jkc}$$

where j is the sector, k is the region and c is the country; Y_{jkc} is the dependent variable (the fact-based measure of competition); X_{jkc} is the vector of control variables; Num_{jkc} is the direct measure of competition at the regional level (the normalised number of firms by region and sector in each country); $Size_{jkc}$ is the average size of the firms by region and sector in each country without the size of the firm in question; $dejure_c$ is the overall or individual competition rules index; $defactor_c$ is the overall or individual competition implementation index; $Sector_{jc}$ are sectoral dummies; and is the discrepancy term.

As for our explanatory variables, we include the following variables: a vector of control variables at the average sector level by country and region including the average share of government ownership, foreign ownership, average age of the firm, average access to finance, the share of firms owned by females, the share of exporting firms, and the share of formally registered firms when they were established. At the regional level, the normalised number of firms by region and sector in each country (as it is a direct measure of competition). In particular, the number of firms has been normalised to a scale (0–1) in order to compare between countries of different market size. We took the difference between the number of firms of a particular region in a particular sector and the minimum number (by region and sector) then we divided this by the difference between the maximum and the minimum numbers of firms (by region and sector). The average size of firms by region and sector in each country without the size of the firm in question to avoid endogeneity (The size is measured with full time employment). Our variables of interest: the overall or the individual indices (enforcement, advocacy, and institutional effectiveness) competition rules (*de jure*), and the overall or the individual index for competition implementation (*de facto*) resulting from the index investigation. While these indices vary across countries, they are equal zero for the countries that did not introduce a competition law in this respective assessment timeline, namely Lebanon and Palestine. We undertake a set of regressions with the rules and implementation indices for each aspect in the same specifications in order to analyse their combined effect altogether (since we argue that rules and implementation are supposed to be complementary in their effect on competition outcomes) and another set with each index separately in order to disentangle the particular effect of each dimension. Sectoral dummies are added to control for sector unobservables.

Second, a similar set of regressions is run where the dependent variable accounts for a perception-based measure of competition which is the share of firms by sector and

country facing any type of pressure from domestic or foreign competitors[8] and we include the same set of explanatory variables as the previous regression as follows:

$$Pres_{jkc} = \lambda_0 + \lambda_1 X_{jkc} + \lambda_2 Num_{jkc} + \lambda_3 Size_{jkc}$$
$$+ \lambda_4 dejure_c + \lambda_5 defacto_c + \lambda_6 Sector_{jkc} + \varepsilon_{jkc}$$

where $Pres_{jkc}$ is the dependent variable (the perception-based measure of competition); ε_{jkc} is the discrepancy term and the rest of the variables are similar to the previous equation.

These two regressions help compare how our *de facto* and *de jure* indices affect fact-based and perception-based competition outcomes on the sectoral level. It is worthy to note that since we are merging macroeconomic data with individual data, we had to cluster errors by country. Moreover, though interesting, we find it impossible to run the regressions by sector due to the insufficient number of observations per sector.

4.2 *Results and policy outcomes*

Tables 3 to 6 present our empirical findings: Tables 3 and 4 are the results of the regressions of the fact-based measure of competition whereas Tables 5 and 6 are the results of the regressions of the perception-based measure of competition. First, for our control variables, government ownership has a weakly significant but positive effect on market share suggesting that state-owned enterprises (SOEs) tend to have larger market shares. SOEs can benefit from privileged positions, which can accordingly distort competition outcomes and the level playing field with other private enterprises in the same sector (OECD, 2010).[9] Among other characteristics, being an exporter is significantly and positively associated to a larger market share in most of our empirical specifications, which is in line with the literature on heterogeneous firm (exporters are bigger, more productive and have higher sales, see Melitz (2003) and Mayer and Ottaviano (2008). In addition, access to finance tends to increase the market share but this effect is weakly significant in some specifications. The literature suggests that access to finance is closely related to firms' performance (Brixiová et al., 2020; Ayyagari et al., 2011, 2010). Access to finance is important for firms to expand their operations and invest in production facilities and staff (Fowowe, 2017). This allows firms to increase their market share. At the regional level, the normalised number of firms by sector and region has a negative and statistically significant effect on the market share (Badr et al., 2019) used number of firms as a measure of competition and found that it increases productivity for Egyptian firms). This result indeed confirms our main hypothesis that a more competitive environment with a higher number of firms yields better market outcomes and limits market power. Similarly, another pronounced competition effect stems from the average size of other firms by sector and region. The latter exerts a negative and statistically significant effect on market share (the higher the average size of other firms, the lower the market share) (Tables 5 and 6). It is important to note that this variable was computed by calculating the average size of firms by region and sector and subtracting the size of the firm in question to avoid endogeneity.

Table 3 Results of competition policies rules (*de jure*) vs. implementation (*de facto*) on market power

	Market share	*Market share*	*Market share*	*Market share*
Ln(Gov.)	0.0996**	0.0858*	0.100**	0.0969**
	(0.0356)	(0.0380)	(0.0343)	(0.0366)
Ln(For.)	−0.0270	−0.0421	−0.0354	−0.0305
	(0.0242)	(0.0268)	(0.0215)	(0.0224)
Ln(Age)	−0.0171	−0.0190	−0.0304	−0.0196
	(0.0250)	(0.0250)	(0.0221)	(0.0226)
Share of female	0.0324	0.0542	−0.0110	0.0380
	(0.0690)	(0.0614)	(0.0559)	(0.0674)
Share of exporters	0.135**	0.225**	0.0742*	0.161**
	(0.0353)	(0.0684)	(0.0367)	(0.0461)
Number of firms	−2.311***	−2.114***	−2.292***	−2.251***
	(0.547)	(0.518)	(0.535)	(0.542)
Formal regis	0.133	0.0721	0.0707	0.130
	(0.135)	(0.137)	(0.122)	(0.136)
Avg. size	−0.00287***	−0.00299***	−0.00268***	−0.00292***
	(0.000628)	(0.000627)	(0.000512)	(0.000613)
Access to finance	0.0149	0.0320*	−0.0131	0.0232
	(0.0175)	(0.0142)	(0.0231)	(0.0141)

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Errors are clustered by country.

Table 3   Results of competition policies rules (*de jure*) vs. implementation (*de facto*) on market power (continued)

	Market share	Market share	Market share	Market share
Overall *de jure*	−0.0244			
	(0.0872)			
Overall *de facto*	−0.0729			
	(0.0700)			
Enfo. *de jure*		0.0133		
		(0.0517)		
Enfo. *de facto*		−0.0961		
		(0.224)		
Adv. *de jure*			−0.299***	
			(0.0569)	
Adv. *de facto*			−0.0904	
			(0.0550)	
Inst. *de jure*				−0.251
				(0.144)
Inst. *de facto*				0.0423
				(0.111)
Constant	4,322***	4,075***	4,471***	4,253***
	(0.296)	(0.195)	(0.249)	(0.260)
Observations	1,701	1,701	1,701	1,701
R-squared	0.336	0.328	0.348	0.333
sector dum	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Errors are clustered by country.

Table 4 Results of competition policies rules (*de jure*) vs. implementation (*de facto*) individual indices on market power

	Market Shr	Market Shr	Market Shr	Market Shr	Market Shr	Market Shr	Market Shr	Market Shr
Ln(Gov.)	0.0663*	0.100**	0.0624*	0.0862*	0.0668*	0.103**	0.0699*	0.0855*
	(0.0339)	(0.0352)	(0.0297)	(0.0382)	(0.0314)	(0.0344)	(0.0338)	(0.0362)
Ln(For.)	−0.0246	−0.0274	−0.0389	−0.0412	−0.0330	−0.0307	−0.0231	−0.0365
	(0.0252)	(0.0237)	(0.0288)	(0.0285)	(0.0237)	(0.0244)	(0.0247)	(0.0238)
Ln(Age)	−0.0367	−0.0160	−0.0321	−0.0191	−0.0434	−0.0295	−0.0328	−0.0136
	(0.0234)	(0.0267)	(0.0235)	(0.0247)	(0.0270)	(0.0202)	(0.0260)	(0.0238)
Share of female	0.0127	0.0353	0.0262	0.0537	−0.0197	0.00795	0.0246	0.0535
	(0.0739)	(0.0732)	(0.0645)	(0.0617)	(0.0570)	(0.0596)	(0.0775)	(0.0649)
Share of exporters	0.0454	0.142**	0.123	0.222**	0.0103	0.109**	0.0729	0.198**
	(0.0694)	(0.0431)	(0.0872)	(0.0649)	(0.0630)	(0.0387)	(0.0745)	(0.0534)
Number of firms	−1,831***	−2,300***	−1,674***	−2,124**	−1,836***	−2,276***	−1,886***	−2,208**
	(0.426)	(0.544)	(0.382)	(0.534)	(0.418)	(0.524)	(0.408)	(0.575)
Formal regis.	0.118	0.129	0.0351	0.0782	0.0416	0.130	0.126	0.0853
	(0.112)	(0.135)	(0.117)	(0.138)	(0.102)	(0.131)	(0.116)	(0.123)
Avg. size	−0.00299***	−0.00288***	−0.00313***	−0.00299***	−0.00280***	−0.00280***	−0.00303***	−0.00296***
	(0.000714)	(0.000622)	(0.000716)	(0.000624)	(0.000615)	(0.000576)	(0.000712)	(0.000635)
Access to finance	0.0297	0.0147	0.0366*	0.0325*	−0.00256	0.00812	0.0301*	0.0281
	(0.0175)	(0.0180)	(0.0189)	(0.0131)	(0.0244)	(0.0204)	(0.0153)	(0.0151)

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by country.

Table 4   Results of competition policies rules (*de jure*) vs. implementation (*de facto*) individual indices on market power (continued)

	Market Shr	*Market Shr*	*Market Shr*	*Market Shr*	*Market Shr*	*Market Shr*	*Market Shr*	*Market Shr*
Overall *de jure*	−0.0917*							
	(0.0473)							
Overall *de facto*		−0.0890*						
		(0.0421)						
Enfo. *de jure*			0.0287					
			(0.0698)					
Enfo. *de facto*				−0.100				
				(0.231)				
Adv. *de jure*					−0.392***			
					(0.0467)			
Adv. *de facto*						−0.195*		
						(0.0802)		
Inst. *de jure*							−0.219*	
							(0.104)	
Inst. *de facto*								−0.0765
								(0.0725)
Constant	4.290***	4.307***	4.082***	4.084***	4.384***	4.394***	4.266***	4.139***
	(0.224)	(0.299)	(0.166)	(0.206)	(0.208)	(0.282)	(0.233)	(0.250)
Observations	1,876	1,701	1,876	1,701	1,876	1,701	1,876	1,701
R-squared	0.321	0.336	0.314	0.328	0.334	0.340	0.321	0.329
Sector dum.	YES	YES	YES	YES	YES	YES	YES	YES

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by country.

Concerning our variables of interest, several conclusions can be drawn as follows. When competition rules and implementation indices (overall, enforcement, advocacy, and institutional effectiveness) are combined, only the advocacy *de jure* exerts a negative and statistically significant effect on market share. This result highlights the importance of advocacy that is supposed to be a core activity for young competition authorities (like Arab countries authorities). Advocacy enhances voluntary compliance and improves policy coordination which would accordingly improve market outcomes (UNCTAD, 2010). As for the enforcement *de jure* and *de facto* combined effect, it was insignificant since most of our group of countries had lower sores in their enforcement *de facto* index in 2012 compared to their relevant *de jure* index, except for Tunisia. This indeed confirms our initial assumption that rules and implementation have to be efficient altogether and complementary in order to improve market outcomes.

It is also important to disentangle the individual component of each index. In comparison to other individual indices, the *de jure* advocacy exerts the most pronounced effect on market share. Moreover, the negative and significant de jure indices (the overall, the advocacy, and the institutional effectiveness) point out the importance of the deterrence effect that competition legislations can play to limit market power. On the implementation front, the *de facto* advocacy has a negative and statistically significant effect on market share. This confirms our previous finding from the index approach where Arab countries experienced significant advances in the *de facto* advocacy component of competition (and especially at the education level such as Morocco and Jordan) when compared to the *de jure* advocacy. As per institutional effectiveness, whereas the de jure index exerts a negative and statistically significant effect on market share, the *de facto* one is insignificant. This *de jure* effect is chiefly related to the improvement of appeal procedures (except for Egypt) and transparency and budget independence (especially in Egypt). As for the *de facto*, it suggests that further reforms should be implemented on that front in order to influence market outcomes. It seems that our group of countries did not achieve their full potential regarding this *de facto* institutional effectiveness aspect: first, our countries relevant index results are broadly average indicating the possibility of further improvement. Second, regarding the case of Jordan, it achieved a *de facto* index score lower than its *de jure* score. The latter authority institutional setup, being part of the Ministry of Industry, affected its performance on that front. Finally, the non-availability of information on appealed cases represents a limitation to our results.

Moving to firms' perceptions, Tables 5 and 6 show that government ownership has a negative and statistically significant effect on the perception of competition. This result indeed shed the light on the concerns related to SOEs limited productivity. Furthermore, age exerts a weak positive and significant effect in some of our specifications. Age can be important to survival chances of firms which make them aware of competitive pressures in their markets (Coad et al., 2018). Although counterintuitive, formal registration reduces perception on competition in some specifications. This can be related to the fact that our group of countries, being developing countries, suffer from informality. Results of our indices show that the *de jure* enforcement increases the likelihood of perceiving more competition (since firms become more aware of the benefits of a competitive environment). In addition, the combined competition *de jure* and *de facto* indices seem to exert a more important effect on this perception-based outcome in comparison to fact-based outcome (market shares). This suggests that it might be relatively easier for

competition policy to affect firms' perceptions compared to actual outcomes. Our other findings are relatively similar to the fact-based ones.

Table 5   Results of competition policies rules (*de jure*) vs. implementation (*de facto*) on perception of competition

	Face comp.	*Face comp.*	*Face comp.*	*Face comp.*
Ln(Gov.)	-0.0712*	-0.0664*	-0.0740**	-0.0721*
	(0.0286)	(0.0297)	(0.0277)	(0.0294)
Ln(For.)	-0.0124	-0.00876	-0.0103	-0.0116
	(0.0161)	(0.0165)	(0.0175)	(0.0166)
Ln(Age)	0.00850	0.00805	0.0114*	0.00868
	(0.00473)	(0.00516)	(0.00475)	(0.00453)
Share of female	0.0280	0.0191	0.0356	0.0243
	(0.0299)	(0.0287)	(0.0275)	(0.0259)
Share of exporters	0.0625*	0.0337	0.0692**	0.0497*
	(0.0243)	(0.0199)	(0.0235)	(0.0200)
Number of firms	0.0954	0.0374	0.0761	0.0637
	(0.0563)	(0.0676)	(0.0655)	(0.0702)
Formal regis.	-0.0367*	-0.0222	-0.0246	-0.0351*
	(0.0177)	(0.0160)	(0.0150)	(0.0166)
Avg. size	0.000101*	0.000150**	6.60e-05	0.000122*
	(3.92e-05)	(4.10e-05)	(3.32e-05)	(5.49e-05)
Access to finance	0.00592	-0.00138	0.0124	0.00410
	(0.00782)	(0.00612)	(0.00763)	(0.00782)

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by country.

Table 5 Results of competition policies rules (*de jure*) vs. implementation (*de facto*) on perception of competition (continued)

	Face comp.	*Face comp.*	*Face comp.*	*Face comp.*
Overall *de jure*	0.0423*			
	(0.0187)			
Overall *de facto*	0.00258			
	(0.0178)			
Enfo. *de jure*		0.0341*		
		(0.0137)		
Enfo. *de facto*		0.0136		
		(0.0596)		
Adv. *de jure*			0.0428***	
			(0.00649)	
Adv. *de facto*			0.0562***	
			(0.0123)	
Inst. *de jure*				0.121***
				(0.0235)
Inst. *de facto*				−0.0309
				(0.0218)
Constant	0.424***	0.506***	0.405***	0.453***
	(0.0519)	(0.0302)	(0.0420)	(0.0488)
Observations	1,791	1,791	1,791	1,791
R-squared	0.622	0.615	0.624	0.619
Sector Dum.	YES	YES	YES	YES

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by country.

Table 6   Results of competition policies rules (*de jure*) vs. implementation (*de facto*) individual indices on perception of competition

	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.
Ln(Gov.)	-0.0745**	-0.0721*	-0.0716**	-0.0658*	-0.0745**	-0.0738**	-0.0749**	-0.0671*
	(0.0284)	(0.0283)	(0.0289)	(0.0288)	(0.0269)	(0.0283)	(0.0286)	(0.0299)
Ln(For.)	-0.0146	-0.0120	-0.0114	-0.00662	-0.0105	-0.0110	-0.0141	-0.00901
	(0.0145)	(0.0169)	(0.0152)	(0.0164)	(0.0150)	(0.0173)	(0.0146)	(0.0160)
Ln(Age)	0.00763	0.00679	0.00608	0.00774	0.00796**	0.0113*	0.00606	0.00576
	(0.00442)	(0.00511)	(0.00441)	(0.00417)	(0.00329)	(0.00553)	(0.00487)	(0.00418)
Share of female	0.0313	0.0227	0.0268	0.0172	0.0350	0.0333	0.0260	0.0165
	(0.0266)	(0.0246)	(0.0257)	(0.0260)	(0.0231)	(0.0275)	(0.0236)	(0.0250)
Share of exporters	0.0579**	0.0518*	0.0396*	0.0255	0.0527**	0.0646**	0.0431*	0.0338*
	(0.0191)	(0.0212)	(0.0177)	(0.0234)	(0.0217)	(0.0222)	(0.0190)	(0.0167)
Number of firms	0.0488	0.0770	-0.00569	0.0127	0.0225	0.0722	0.0522	0.0455
	(0.0468)	(0.0764)	(0.0515)	(0.0859)	(0.0608)	(0.0531)	(0.0535)	(0.0922)
Formal regis.	-0.0559**	-0.0287	-0.0384	-0.00667	-0.0263	-0.0323	-0.0512*	-0.0130
	(0.0228)	(0.0147)	(0.0213)	(0.0143)	(0.0237)	(0.0164)	(0.0217)	(0.0159)
Avg. size	9.77e-05***	0.000116	0.000151***	0.000152**	8.33e-05*	8.27e-05*	0.000121*	0.000145*
	(3.39e-05)	(6.47e-05)	(3.72e-05)	(4.70e-05)	(3.83e-05)	(3.77e-05)	(5.65e-05)	(5.98e-05)
Access to finance	0.00320	0.00644	-0.00199	-5.41e-05	0.00883	0.00928	0.00222	0.00182
	(0.00675)	(0.00907)	(0.00504)	(0.00616)	(0.00642)	(0.00708)	(0.00706)	(0.00751)

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by country.

Table 6 Results of competition policies rules (*de jure*) vs. implementation (*de facto*) individual indices on perception of competition (continued)

	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.	Face comp.
Overall *de jure*	0.0389***							
	(0.00910)							
Overall *de facto*		0.0309*						
		(0.0124)						
Enfo. *de jure*			0.0330*					
			(0.0143)					
Enfo. *de facto*				0.00357				
				(0.0717)				
Adv. *de jure*					0.0880***			
					(0.0152)			
Adv. *de facto*						0.0714***		
						(0.0161)		
Inst. *de jure*							0.0722**	
							(0.0284)	
Inst. *de facto*								0.0272
								(0.0290)
Constant	0.460***	0.449***	0.521***	0.529***	0.479***	0.415***	0.485***	0.505***
	(0.0467)	(0.0574)	(0.0315)	(0.0324)	(0.0381)	(0.0417)	(0.0523)	(0.0392)
Observations	1,981	1,791	1,981	1,791	1,981	1,791	1,981	1,791
R-squared	0.628	0.619	0.623	0.614	0.626	0.623	0.625	0.615
Sector dum.	YES	YES	YES	YES	YES	YES	YES	YES

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by country.

5   Conclusions

The main objective of this paper is to provide an assessment of competition policy in a group of Arab countries. First, we construct indices for both competition policy rules and implementation assessing three categories: enforcement, advocacy, and institutional effectiveness. Second, it assesses the impact of competition policy rules (*de jure*) and implementation (*de facto*) on competition outcomes (fact-based and perception-based) using our constructed indices and WBES. Findings show that our group of Arab countries have an average score related to the overall assessment of their competition legislations. Moreover, the *de facto* advocacy and the *de jure* institutional effectiveness have a significant effect on both fact-based and perception-based outcomes. Finally, the overall de jure competition index negatively affects market power, pointing out the importance of the deterrence effect that competition legislations can play.

From a policy perspective, the lack of contestability has been a longstanding structural challenge in Arab countries. Competition policy is crucial to strengthen the role of the private sector as the main driver of growth and to enforce the principle of competitive neutrality among all actors in markets. We believe that the adoption of a competition law is not sufficient and what really matters is its effective implementation. In addition to enforcement activities against anticompetitive practices, competition authorities have a prominent role in advocating for competition principles to the general public, to businesses and in the application of other government policies. The institutional features of competition authorities also affect their decision-making process. The more the authority is independent and transparent, the more effective will be the competition regime. Overall, an improvement in competition policy (on both the *de jure* and the *de facto* fronts) will increase the competition authority credibility, which will accordingly improve competition outcomes (as shown in our analysis). Moreover, in challenging contexts, such as the post-uprisings context or the COVID-19 outbreak, some observers would claim that policy makers should prioritise responding to the more pressing social demands over the short term or focus on macro managing a transition period. Yet, we argue that competition enforcement, being a crucial structural policy, can be relevant more than ever in these situations. It is an easy and efficient way to respond to those demands since more competition would boost a private sector-led growth and create employment opportunities.

As for the areas of further research, we propose the following. First, it would be useful to account for the leniency programs and settlements. Second, it is important to gather information on the fines. Third, it could be useful to broaden the definition of advocacy to account for other activities. Fourth, on the institutional effectiveness, it could be useful to assess the authority's staff (skills and number of employees). Finally, on the firm level, the linkages that might arise between a firm's political connections and its involvement in anticompetitive practice could be assessed.

Acknowledgements

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Notes

1   The deterrence effect consists of preventing agents from undertaking illegal behavior by threatening violators with adequately heavy and prompt fines (Buccirossi et al., 2011).

2   Eastern Europe countries shifted from planned economies to market economies and adopted competition laws in the 1990s. Dutz and Vagliasindi (2000a) assessed competition policy in these countries almost ten years after adopting these laws. Hence, ten years of competition law implementation is a sufficient period to undertake this assessment. Applying on our Arab countries, they mostly adopted competition laws in the 2000s or earlier (Tunisia and Yemen). Therefore, we believe that this methodology is relevant to them.

3   The same binary rationale applies for the components of these two composite sub-indices, enterprises enforcement (under enforcement) and independence (under institutional effectiveness) as follows: if the criterion exists, scores of 0.25 and 0.2 are assigned for enterprises' enforcement and independence, respectively.

4   We were not able to find this definition in the Djiboutian law. Since the Djiboutian legal system was primarily based on the French Civil Code, we assumed it is safe to use the French law definition for that term.

5   This was not specified in the latest version of the law, but we assume clauses from the earlier version hold.

6   The initiatives are: First, ECA sent letters to all Government agencies to comply with the Competition Law. Second, ECA became a member in a committee with the Electricity Regulator and the Consumer Protection Agency in order to make sure that decisions and laws do not contradict with the Competition Law. Third, ECA cooperates with the Environment Regulator to ensure their protocols do not contradict with the Competition Law. Fourth, ECA addressed the Ministry of Education to modify two decrees regarding school uniforms. The Ministry accordingly modified the decree based on ECA's suggestions. Finally, ECA signed cooperation protocols with several governmental entities.

7   We were able to find an item in Jordan's budget on competition for a specific program 'spreading competition culture', but we cannot assume this is the competition council overall budget. We traced these budget allocations over 2008–2017. These allocations were cut by half over this period, moving from 140 thousand Dinars to 70 thousand Dinars.

8   Since we aggregate the data from the firm to the sector/region level, perceived competition is the share of firms by sector, region and country facing any type of pressure from domestic or foreign competition. The two questions based on which we calculate this variable fall under the topic of degree of competition in the survey and they are opinion-based questions.

9   We undertook the Hausman test to assess if the government ownership suffers from endogeneity. The test result suggests this latter variable is exogenous (The null hypothesis is that there is no correlation between the regressor and the error term, i.e., the regressor is exogenous. The result suggests that we do not reject the null hypothesis of the test and therefore the government ownership is exogenous).