Did the Arab Spring Promote Competition? Evidence from Tunisia

MHAMED BEN SALAH* MASSIMILIANO CALI† BOB RIJKERS‡

Abstract

Did the Arab Spring promote competition? This paper leverages the ousting of former Tunisian president Ben Ali and the subsequent confiscation of firms owned by him and his family to address this question. Although Ben Ali firms were more likely to exit, large ones proved resilient. Firms owned by his business partners, which were not confiscated, did not suffer a performance penalty after the revolution. They were more likely to survive, particularly in sectors previously dominated by Ben Ali firms, and even improved their performance after the revolution. During Ben Ali's tenure, sectors dominated by firms owned by his clan were significantly more concentrated compared to non-connected sectors, including the same sectors in other countries. After the revolution, concentration in these previously Ben Ali-dominated sectors decreased and competition improved.A potential partial explanation is improved enforcement of competition laws: Ben Ali firms were more likely to be sanctioned for anti-competitive conduct after the revolution but were never sanctioned during his tenure. However, overall economic dynamism remains limited.

JEL classifications: L22; L25; L50; O25; D72

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*Mhamed Ben Salah. World Bank. Email: mbensalah2@worldbank.org.
†Massimiliano Cali. World Bank. Email: mcali@worldbank.org.
‡Bob Rijkers. World Bank. Email: brijkers@worldbank.org.

1 Introduction

Democratization is conducive to growth in part because it levels the playing field by limiting privileges bestowed upon incumbent firms, reduces corruption, and promotes competition (Acemoglu, 2008; Acemoglu, Naidu, Restrepo, and Robinson, 2019; Adsera, Boix, and Payne, 2003; Rose-Ackerman, 1999). However, democracies are not immune from elite capture (Rajan and Zingales, 2004), which can stem from entrenched practices established during previous autocratic regimes (Martinez-Bravo, Mukherjee, and Stegmann, 2017). Understanding to what extent democratization constrains elite capture and improves competition is crucial to assessing its impact on economic performance, yet there is limited empirical evidence addressing this issue (González and Prem, 2020; Treisman, 2000).

We examine how Tunisia's transition to democracy impacted economic competition, leveraging variation in the presence of firms owned by former president Ben Ali and his business partners across sectors. Ben Ali and his family had established a large business empire, in part by evading taxes and abusing entry regulations to stifle competition (Rijkers, Freund, and Nucifora, 2017). The Arab Spring uprisings that erupted at the end of 2010 and led to Ben Ali's ousting in mid January 2011 were at least in part a rebuke to the monopolization of economic opportunities by the ruling elite (Diwan, Malik, and Atiyas, 2019). After the 2011 revolution, the Tunisian government seized firms owned by Ben Ali, thus ending his family's stronghold on the economy. However, elites who had collaborated with the Ben Ali family were not sanctioned.

To assess whether the Arab Spring promoted economic competition in Tunisia, we evaluate whether competition improved disproportionately after Ben Ali's ousting in sectors where Ben Ali firms and his business partners had extensive business interests. We analyze the impact of regime change on both firm- and sector-level outcomes, including the enforcement of anti-competition laws. To do so, we combine firm-level data from Tunisia's firm census (the Repertoire National des Entreprises), in which previously Ben Ali-owned firms are identified, with novel data on firms owned by business partners of the Ben Ali family.

This new dataset enables us to test the hypothesis that the Arab Spring and the attendant disruption in political connections to Ben Ali had a pro-competitive impact on the Tunisian economy. If regime change led to a reduction in anticompetitive practices conferring advantages on formerly Ben Ali-owned firms and his business partners, we would expect them to lose their privileges and witness a significant reduction in their output and employment. Similarly, we would expect greater competition and more vibrant firm dynamics in sectors where Ben Ali-owned firms and their business partners accounted for a higher market share, and state capture is more likely to have occurred. An alternative hypothesis is that connected elites managed to resist greater competitive pressure brought about by regime change, and they might even benefit from the vacuum left by the demise of formerly Ben Ali-owned enterprises.

Empirically, the main challenge is to isolate the impact of Ben Ali's fall from confounding changes caused by contemporaneous events and confiscation of connected firms. Ben Ali's

fall was sudden, largely unexpected, and not precipitated by an economic crisis, which aids identification.

Our preliminary findings suggest that previously Ben Ali owned firms remained large and important players. Yet, they simultaneously attest to a pro-competitive impact of Ben Ali's ousting on sectors in which his family had extensive business interests. Overall economic dynamism remains limited.

The paper builds on, and aims to contribute to, several streams of literature. To start with, together with González and Prem (2020), this paper speaks to the persistence of power across political transitions Acemoglu and Robinson (2008), and is consistent with the notion that elites can be an obstacle towards reaping the benefits of democratization Ferraz, Finan, and Martinez-Bravo (2024), or even undermine democratization itself (Naidu, Robinson, and Young, 2021).

Second, we contribute to the literature on politically collected firms Faccio, Masulis, and McConnell (2006), Fisman (2001) by showing that they benefited from selective enforcement of competition policy. In addition, by showing that they are associated with elevated concentration rates and reduced churning we contribute to the literature showing a causal connection between the success of politically connected firms and sclerotic firm dynamics Akcigit, Baslandze, and Lotti (2023).

2 Data

The study combines data from various sources:

2.1 Ben Ali firms

Information on Ben Ali owned firms confiscated in the aftermath of the Arab Spring comes from the Ministry of Finance (2021).[1] The confiscation process was ordained by the interim government that succeeded Ben Ali by means of a decree (notably Décret-loi n° 2011-13). The process involved 114 individuals, including Ben Ali himself, his relatives and his in-laws, and concerned the period from 1987 until the outbreak of the revolution.

While the Tunisian government was quick to ordain confiscation of the Ben Ali family's assets, the confiscation process took a while to materialize and some confiscation decisions were (successfully) challenged in court. For the purpose of this paper we use data on confiscation from the Ministry of Finance (2021), the latest available list of confiscated firms.[2] Some of the confiscated firms have already been sold, but in other cases their current legal status is not clear. Large firms that were majority Ben Ali owned were managed by the state via Al Karama holding, a conglomerate owned by the Tunisian state and supervised by the

[1] http://www.finances.gov.tn/sites/default/files/users/user95/01.pdf

[2] This list is slightly different from the list used by Rijkers, Baghdadi, and Raballand (2017), but the results are robust to using their list.

Tunisian Ministry of Finance, specifically founded to manage confiscated firms. In cases where Ben Ali ownership was small, the state did not insist on altering the management.

2.2 Ben Ali partners

Along with the list of confiscated firms, the Ministry of Finance also published a list of shareholders of those firms. This list was used to identify all the legally verifiable business partners of the Ben Ali clan. The total number of natural and legal persons who co-owned a firm with a member of the Ben Ali clan is 386, and among them were 49 co-owners of more than one Ben Ali firm.[3] Seven of the 49 co-owners of at least 2 Ben Ali firms are themselves firms or holding companies. We identify as Ben Ali partners only those 49 co-owners of 2 or more firms. This helps minimize the risk that we are identifying as partners of the Ben Ali family business people who were extorted and/or had "accidental" connections to the Ben Ali family. Moreover, co-owners of at least 2 firms are more likely to be members of the economic elite.

To identify firms owned by Ben Ali's business partners that are not concerned by the confiscation process, we use several different procedures. To start with, we search the *"Journal Officiel de la Republique Tunisienne"* (hereafter JORT) for their 49 names, leveraging the fact that firms often publish (changes in) their ownership and management in this journal. Second, in case the business partner of the Ben Ali firm is itself a firm or holding company, we consult their websites, information from the Financial Market Council, and where feasible, their annual reports, to identify the names of other firms they may own.

Out of the 49 co-owners of 2 or more Ben Ali firms 31 co-owners owned 237 (non Ben Ali) firms that we identify as partner firms.

One major advantage of our procedure is that it is based on publicly available data. A drawback is that our strategy is biased towards identifying connected firms that are relatively large because such firms are more likely to disclose information and because of the requirement that a Ben Ali business partner has to own at least 2 Ben Ali firms.

A potential concern is that some partners may have been coerced rather than willing participants. However, we find that firms owned by partners experienced significant performance gains after their owners first established business relationships with the Ben Ali family, suggesting these were voluntary, mutually beneficial connections (see Section see Section 5 for formal analysis).

2.3 Administrative Firm Data

Data on firms come from Tunisian administrative data, the Repertoire National des Entreprises. The database includes records for every registered firm, integrating data from various government sources. It provides three key indicators of firm activity —tax data from the

[3] Among them 27 co-owned two firms, 11 three firms, 5 four firms, 5 in five firms and 1 family group of firms was shareholder in six firms of the Ben Ali clan

ministry of finance, employment data from the social security administration, and trade data from customs—which enable us to measure performance and track firm survival and exits. The data includes information on firms' economic activity (by 4-digit NAT sector), location, age, legal form, founding date, firm origin, and trade regime.[4] The data quality is high and underreporting of labor quite limited (Rijkers, Arouri, Freund, and Nucifora (2014)). Nonetheless a third of all firms do not report turnover and profits.

The full data is available since 2000, which we use as the first year of the analysis. As reporting for 2019 appears to be affected by the COVID-19 pandemic, our analysis runs until 2018.

2.4 Regulation Data

Data on entry regulation were constructed by a reputable law firm (Cabinet Donnia Hedda Ellouze) which codified entry regulation in the Tunisian Investment Incentives Code - hereafter referred to as the investment code -, which governs investment in all sectors of the economy with the exception of finance, mining, energy and domestic commerce. The current investment code dates back to December 27, 1993 (Law 93-120 of 27 December 1993) and its coverage and key provisions concerning entry were subsequently amended by more than 20 presidential decrees, all of which were included in the database.[5] The data contains indicators of which sectors are subject to authorization requirements, FDI restrictions, and so-called "cahier de charges" (see the appendix with variable definitions for more information).

2.5 Competition in other countries

To measure competition in other countries we use data from the Competition Dynamics Database (Pierola, Dauda, , and Begazo, 2024). This dataset contains indicators of competition for 6 middle income countries - Croatia, Ecuador, Georgia, India, Serbia, Vietnam - at the 4-digit ISIC sectoral level derived from census data and representative firm level surveys listed in Appendix Table A.1.

2.6 Violations of competition law

We codified all 466 allegations of anticompetitive conduct submitted to the Competition Council during the period 2001-2020, in collaboration with Non-Governmental Organization *l'Association de Lutte contre l'Économie de Rente en Tunisie (A.L.E.R.T.)*. The data contain information both on (i) the type of (alleged) anti-competitive conduct (ii) the plaintiff(s) and (iii) the defendant, whether (iv) the competition council performed an investigation[6] and (v)

[4] We conducted analysis using this data at the office of the National Institute of Statistics (INS).

[5] This is the same law firm that created the investment regulation data used in Rijkers et al. (2017) The dataset in this paper has been updated and expanded to cover more years and to also include information on so-called "Cahiers de Charges". Moreover, it adopts a new sectoral classification (the NAT09 sector classification) in order to make sure that the regulation data are compatible with the latest classification system used in the RNE.

[6] Sometimes allegations were not investigated because they were not considered within the remit of responsibility of the Competition Council, in other cases there was not sufficient proof to open an investigation.

the verdict and, if applicable, (vi) the amount of fines issues. These resulted in 468 allegations and 312 actual investigations by the council, leading to 101 sanctions among which 44 led to a fine (Table A.8).

2.7 Non-Tariff Measures

We construct a 4-digit NAT sector panel of non-tariff measures (hereafter NTMs) weighted by share of imports, over the entire 2000-2018 period. We used a data set containing all the NTMs (87 in total) by commodity group (using the HS2012 6 digit code) and year. We match each 6 digit commodity group (HS2012) to our 4 digit NAT sectors using a constructed concordance table from HS2012 to ISIC to NACE to NAT classifications. Then we used imports data from the World Integrated Trade Solution (WITS) from 2012 to 2018 (no data available prior to 2012) to construct the share of imports each 6 digit commodity group represents in its corresponding 4 digit NAT sector for the entire 2012-2018 period. For each commodity group and year, we multiply this share by the 87 NTMs dummies, taking a value of one if the commodity group is concerned by the given NTM in a given year. Finally, we sum all these "*NTM dummy* $\times$ *Share of imports*" by 4 digit NAT sector and year. Our final data set is a panel by sector and year, with a variable for each type of NTM taking a value between 0 and 1, 0 meaning that none of the commodities imported for a given sector was subject to the given NTM. The higher the value, the higher the share of imports in a sector affected by the given NTM in a given year.

3 Characteristics and evolution of politically connected firms

Of the 312 Ben Ali owned firms we identify in the data, 244 were economically active in 2010, accounting for 0.30% of all active firms as is shown in Table 1 which documents the aggregate contributions of Ben Ali firms in 2010 and 2018.[7] Despite their small number, these firms collectively contributed 1.95% of wage employment, 4.94% of private sector output and 13.4% of profits in 2010, the last full calendar year of Ben Ali's reign. By 2018 only 142 Ben Ali firms were still active, with over 41.8% having exited. (for comparision XX% of other firms exited over this same period). Yet, they collectively continued to account for 1.58% of employment and 4.77% of total output, with their share of total net profits even increasing. Thus Ben Ali firms continued to be macroeconomically relevant.

Though less profitable partner firms accounted for a similar share of aggregate output and employment as Ben Ali firms at the eve of the revolution, and their importance has increased since. Of the total of 237 partner firms we identify, 136 were economically active in 2010, accounting for 0.17% of all firms. These firms employed 1.59% of all salaried workers in Tunisia, and produced 4.31% of economy-wide output in 2010. They accounted for a smaller share of economy-wide net profits than Ben Ali firms, notably 1.70%. Their output share remained stable (4.38% in 2018 vs. 4.31% in 2010), and their employment share increased to

[7] We consider a firm as economically active when it reports workers, some output or some imports/export.

Table 1: Aggregate contributions of politically connected firms in 2010 and 2018.

	2010		2018	
	Total	% of economy	Total	% of economy
Panel A: Ben Ali firms				
Active firms	244	0.30%	142	0.14%
Y	2'148	4.94%	2'479	4.77%
L	19'560	1.95%	19'508	1.58%
Net profits	264.3	13.4%	123.2	25.6%
Gross profits	373.4	9.58%	335.9	8.47%
Gross losses	109.1	5.68%	212.7	6.10%
Panel B: Partner firms				
Active firms	136	0.17%	147	0.15%
Y	1'873	4.31%	2'279	4.38%
L	15'853	1.59%	21'134	1.95%
Net profits	33.6	1.70%	85.3	17.7%
Gross profits	105.8	2.71%	162.9	4.11%
Gross losses	72.2	3.76%	77.6	2.23%

Notes: Active firms= number of active (positive output or workers) firms, Y= real output, L= wage workers, Net profits= real pre-tax profits declared to the tax authorities (all firms), gross profits= real pre-tax profits declared to the tax-authorities only for firms for whom this is positive. Gross losses= real tax profits declared to the tax authorities only for firms for whom this is negative. All values are expressed in million USD with a fixed USD:TND exchange rate that prevailed in 2018 (1 USD:2.6469 TND) for both 2010 and 2018, GDP deflator (base 2015) is 79.742 for 2010 and 118.392 for 2018

1.9% in 2018. Their net profits share rose to 1.7%, mainly due to a decline in net profits in the economy overall.

The outsized contribution of Ben Ali and partner firms reflects their much larger size than other firms, as is shown in Table 2, which documents the average characteristics of Ben Ali, partner and other firms, and compares their difference during Ben Ali's tenure (2001-2010) (panel A), and after his departure (2011-2018) (panel B). Both Ben Ali and partner firms produce significantly more output, employ significantly more workers, are more likely to export and much more likely to import than regular firms, but are less likely to be foreign owned. During the Ben Ali era the average market share (within 4-digit NAT sectors) of active Ben Ali firms was 6.17% , and for partner firms 7.43%. Both those shares are significantly higher than the market share of regular firms (0.83%).

These differences in firm characteristics and performance persisted after the Arab Spring: both Ben Ali and partner firms continued to produce substantially more output and employ more people on average than regular firms. Paradoxically, if anything, performance differences between surviving Ben Ali firms and non-connected firms widened due to selective attrition: the smallest Ben Ali firms were most likely to exit as will be shown in the next section. However, when firm exit is taken into consideration, as is done in Appendix Table A.2 the average market share of Ben Ali firms was 1.24% points lower than it had been before the revolution. By contrast, surviving partner firms suffered an insignificant reduction in market share. Taking into consideration firm exit, the average market share of partner firms dropped by -0.26%.

Table 2: Descriptive Statistics for firms active in 2010.

	Ben Ali		Partners		Others		Δ BA -	Δ Part -
	Mean	SD	Mean	SD	Mean	SD	Other	Other
Panel A: Ben Ali era (2001-2010)								
Log Y	14.59	2.55	15.54	2.32	11.87	2.02	2.73***	3.69***
Log L	2.76	1.93	3.49	1.92	1.12	1.48	1.64***	2.36***
Profit margin	-0.01	0.28	-0.00	0.24	0.10	0.26	-0.11***	-0.11***
Market share	6.17	16.5	7.43	13.7	0.83	5.26	5.34***	6.60***
Exporter	0.19	0.39	0.26	0.44	0.06	0.25	0.13***	0.20***
Importer	0.43	0.49	0.52	0.50	0.13	0.34	0.29***	0.39***
Age	9.7	10.9	15.4	10.2	12.0	9.7	-2.2***	3.47***
Offshore	0.08	0.27	0.04	0.21	0.06	0.24	0.02***	-0.02**
Foreign	0.01	0.09	0.02	0.12	0.03	0.16	-0.02***	-0.01***
Panel B: Post Ben Ali era (2011-2018)								
Log Y	15.23	2.58	15.69	2.17	11.83	2.01	3.40***	3.88***
Log L	3.27	1.94	3.59	1.89	1.11	1.43	2.17***	2.48***
Profit margin	0.00	0.31	0.01	0.24	0.16	0.31	-0.16***	-0.15***
Market share	6.69	16.7	6.74	12.2	0.68	4.72	6.01***	6.06***
Exporter	0.15	0.35	0.25	0.44	0.06	0.23	0.09***	0.20***
Importer	0.35	0.48	0.50	0.50	0.12	0.33	0.23***	0.38***
Age	15.1	11.7	20.9	11.5	17.1	10.5	-2.02***	3.84***
Offshore	0.08	0.27	0.05	0.22	0.07	0.25	0.01*	0.02**
Foreign	0.13	0.11	0.02	0.15	0.03	0.18	-0.02***	-0.01
Panel C: Difference After-Before								
Log Y	0.64***		0.15		-0.04***		0.68***	0.19**
Log L	0.51***		0.10***		-0.02***		0.53***	0.12*
Profit margin	0.01		0.01		0.06***		-0.05***	-0.05***
Market share	0.52		-0.69		-0.15***		0.67***	-0.54**
Exporter	0.05***		0.01		-0.01***		-0.04***	0.00
Importer	-0.08***		-0.03		-0.01***		-0.08***	-0.02
Age	5.33***		5.50***		5.12***		0.17	0.38
Offshore	0.00		0.01		0.01***		-0.01	-0.00
Foreign	0.01*		0.01		0.01***		0.00	0.00

Notes: Only firms active in 2010. Y = real output (in TND), L = wage workers, Profit margin = net profits over sales, Market share = share of output of a firm by year and 4-digits NAT sector, Exporter/Importer= dummy equal to 1 if firm is exporting/importing in a given year, Age= age of firms, Offshore= dummy equal to one if offshore firm, Foreign= dummy equal to one if firm has foreign shareholders.

In summary, the macroeconomic relevance of politically connected firms, both Ben Ali and partner firms, has not diminished. Despite many Ben Ali firms exiting, collectively they remain as macroeconomic relevant as a decade ago.

4 Characteristics and Evolution of Politically Connected Industries

The prevalence and market share of politically connected firms varied substantially across sectors, as is shown from Table A.11 to A.16 which documents the prevalence and aggregate market shares of both Ben Ali and partner firms by 4 digit NAT sector in 2010, alongside the premium on being connected during the Ben Ali era and after the revolution. On the eve of the revolution Ben Ali firms were active in 83 different industries and collectively accounted for over the majority of the market share in air transport (both of passengers and people), manufacturing of dietary food products, holding companies, cleaning services, manufacturing of beer, production of films, and imports of cars and light motor vehicles. Ben Ali firms were also important players in the telecommunications sectors, banking, pharmaceuticals, publishing of newspapers, advertising, and even education. On average, they accounted for 14.0% of the market share in sectors in which they were active. By 2018, their average market share across sectors had dropped to 9.6% on average. The aggregate market share of formerly Ben Ali owned firms went down in 66 of the 83 sectors in which they had been active, with the biggest reductions in their market share among holding companies, cleaning activities (other), passenger air transportation, treatment and coating of metals and production of movies. They exited altogether from 20 sectors, but were less likely to exit from sectors with high levels of output.

Partner firms were active in 72 NAT09 sectors in 2010, 30 of which also featured Ben Ali firms. The average aggregate market share of partner firms across all sectors in which they operate was 13.1% in 2010 and 12.9% in 2018. At the eve of the revolution they accounted for more than half of all output in the leasing industry, transformation and preservation of vegetables, manufacturing of motorcycles, tubes and pipes, production of dairy and cheese, and manufacturing of crude oils and fats.

The sorting of politically connected firms across sectors is not random. Table 3 describes the correlation between the aggregate market share of Ben Ali firms in 2010, the last full year of his tenure, with industry characteristics during the Ben Ali era (in column 1), industry characteristics after the Ben Ali era (in column 2) and the change in that correlation (in column 3). The correlations clearly show that Ben Ali firms sort into sectors that are more concentrated. The Ben Ali market share in 2010 is negatively correlated with the number of firms, and positively correlated with the Herfindahl index as well as the market share accounted for by the top 4 firms. It is also negatively correlated with churning at the top of the firm size distribution, exports, and positively correlated with the presence of authorization requirements.

After the revolution, these correlations generally persisted but weakened significantly, as column 3 shows. The only exception is churning of the top 3 firms; this was significantly

negatively correlated with the aggregate market share of Ben Ali firms in 2010 before the revolution, but this association weakened and became insignificant after his demise. Relative to the Ben Ali era, industries in which Ben Ali firms had been present experienced a significant increase in the number of firms, a reduction in concentration, and increases in entry as well as churning among the top 3 firms. These findings are consistent with a pro-competitive impact of the revolution on competition in sector where Ben Ali firms accounted for a larger share of output.

Table 3: Correlation Between Political Connectedness and Industry Characteristics

	Aggregate Market Share Connected firms in 2010			**Aggregate Market Share Partner firms in 2010**		
	Ben Ali era 2000-2010	**Post Ben Ali Era 2011-2018**	**Differential**	**Ben Ali era 2000-2010**	**Post Ben Ali Era 2011-2018**	**Differential**
Firms (log)	-202.78***	-165.89***	36.90**	-0.76	-0.77	0.01
HHI	417,097.24***	313,926.49***	-103,170.75*	-439.75	-1,272.17	-794.36**
CR4	2,832.54***	2,309.75***	-522.79**	14.87	3.34	-10.40**
Entry	0.79	4.54	3.75***	-0.01	-0.01	-0.01
Exit	-1.47	-0.95	0.51	-0.03***	-0.02*	0.01
Churning (top 3)	-14.08**	-4.66	9.42***	-0.20***	-0.13	0.15**
Profit margin	63.42	-544.43	-607.85	1.87	2.88	1.02
lnL	-75.87	32.24	108.11**	1.63*	2.14***	0.57***
lnY	22.39	118.69	96.29*	3.53***	3.87***	0.44
Authorization	40.96**	44.05**	3.09	0.41	0.45*	0.02
FDI allowed	4.61	4.18	-0.43*	0.36***	0.35***	-0.00
Export share	-36.37***	-27.53***	8.84	-0.39**	-0.38***	0.09
Import share	-10.93	-8.03	2.90	-0.38**	-0.22*	0.18
Observations	4873	3544	8417	4873	3544	8417
Sectors	443	443	443	443	443	443

5 Did partner firms benefit from their connections?

A crucial identifying assumption is that partners benefited from their connections to the Ben Ali regime while he was in power. If they did not, then our measure of being a partner firm might be spurious. A particular concern is that some of the partners may themselves have been extorted and forced to team up with members of the Ben Ali clan, rather than having connected voluntarily. If connections were forced upon partners, it is unlikely that partner firms that are not co-owned with the Ben Ali family would benefit from their owner being (involuntarily) connected to the clan.

To test whether partners benefited from being connected to the Ben Ali family we leverage variation in the timing of the startup of firms that are co-owned by Ben Ali family members and partners. More specifically, we identify partners as being newly connected when they first enter a business venture with the Ben Ali family, and assess how entering such a business partnership with a member of the Ben Ali family impacts the performance of firms held by partners that are not jointly owned with the Ben Ali family.[8] That is we estimate:

[8] One challenge is that we do not have information on the exact year that partners started to jointly own Ben Ali firms together with the Ben Ali family. Implicitly we assume they did this from the moment firms were created, but it could be the case that either the partner or the Ben Ali counterparts joined the firm a few years later. As a result, our results may suffer from attenuation bias.

$$Y_{jt} = \beta PartnerFirm_i * BenAliConnected_{it} + \gamma X_{jt} + \mu_j + \tau_t + \epsilon_{jt} \quad (1)$$

where Y_{it} is a measure of firm performance of firm i in year t, $BenAliConnected_{it}$ is a dummy that takes on value after a partner first starts (jointly owning) a Ben Ali firm. X_{it} is a vector of time-varying firm characteristics, μ_i and τ_t denote firm and year fixed effects respectively. Identification is thus based on assessing to what extent becoming connected to the clan improves firm performance, leveraging within-firm variation in the timing of the arrival of connections. In total we have 185 instances of start-ups of Ben Ali firms co-owned by partners during his tenure, as is shown in Appendix Table A.3.

The results presented in Table A.5 show that partner firms derive a sizable and significant output and workers premium from connecting to the Ben Ali clan. According to the estimates, their real output increases by 46.3% after they established a connection to the clan, and employment increases by 15.4%.

In summary, partner firms, on average, benefited from connecting to power; they produced higher levels of output and managed to hire more workers after their owners started co-owning other firms with the Ben Ali clan.

Table 4: Average Treatment effect (ATT) of establishing a partnership with Ben Ali on partners firms performance.

VARIABLES	Log of real output (1)	Market share (2)	Log of workers (3)
Partnership with Ben Ali clan	0.380***	0.333	0.143***
	(0.132)	(0.342)	(0.0558)
Observations	896,780	896,780	832,372

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are in parentheses. Time period 2000-2010. This table reports Average Treatment Effects on the Treated (ATT) estimated using the doubly robust difference-in-differences estimator (csdid) in a staggered treatment setting. The dependent variable is the logarithm of real output for column 1, the market share for column 2, and the logarithm of one plus the number of wage workers for column 3. Treatment is the establishment of a partnership between an owner of the firm and a member of a Ben Ali family in another firm, and is introduced in different years in units. In all columns, the model controls for the logarithm of firm age, offshore status, state ownership, and foreign ownership. Treated firms are compared to not-yet-treated and never-treated firms.

6 Impact of Regime Change on Politically Connected Firms

To assess the impact of democratization on competition we examine happened to both Ben Ali firms and partner firms after the Arab Spring. If Ben Ali's departure reduced the value of privileges received by companies owned by him and his family as well as those owned by his business partners, we would expect firms with connections to Ben Ali to (i) be more likely to exit and/or (ii) experience a reduction in their performance.

The challenge in both exercises is to disentangle the impact of Ben Ali's fall from the potential confounding effects of the events that happened in Tunisia at the same time. The

2011 Revolution was followed by a temporary contraction of GDP and heightened policy uncertainty. Yet, unlike other instances of democratization, regime change was not triggered by a major macroeconomic shock.

6.1 Were connected firms more likely to exit?

We start by examining whether connected firms were more likely to exit after the revolution by estimating a Cox model of firm survival using only firms that were active in 2010, the last year Ben Ali was in power. Our most general estimating equation takes the form:

$$\Lambda(Exit_{ijt}) = exp(\gamma_{BA} BenAli_i + \gamma_{PA} Partner_i + \gamma_X X_{ijt} + _j + \tau_t + u_{ijt}) \quad (2)$$

$BenAli_i$ and $Partner_i$ denote Ben Ali and partner firms, X_{ijt} denotes a vector of firm characteristics notably controls for firm age, and whether or not a firm is foreign owned and operating in the so-called offshore regime, s_j is a vector of sector dummies, and τ_t is a vector of year dummies.[9]

The results are presented in Table 5 below, with coefficients representing hazard rates relative to regular. Column 1 shows that Ben Ali firms were significantly more likely to exit with a hazard rate of 1.463 times that of non-connected firms. In contrast, partner firms were significantly less likely to exit, which can be considered surprising since they also lost their connections to the regime. However, this specification hides some heterogeneity based on the importance of a firm in its sector. Column 2 presents specifications in which we add controls for the market share of firms interacted with dummies for being politically connected. The results show that firms with a higher market share are slightly less likely to exit and that the protective effect of market share is also relevant for Ben Ali firms. In other words, while Ben Ali firms were more likely to exit after his ousting, large Ben Ali firms proved somehow more resilient. This heterogeneity helps reconcile the strong adverse impact of the revolution on firm exit with the enduring macroeconomic relevance of Ben Ali firms documented in section 3. Figure 1 shows the divergence in the evolution of survival for Ben Ali, Partners and non-connected firms.

6.2 How did the revolution impact the performance of politically connected firms?

This section examines how the Arab Spring impacted the performance of Ben Ali and partner firms relative to those of firms that were not politically connected. To assess how the premium on being connected evolved over time, We estimate event studies of the form:

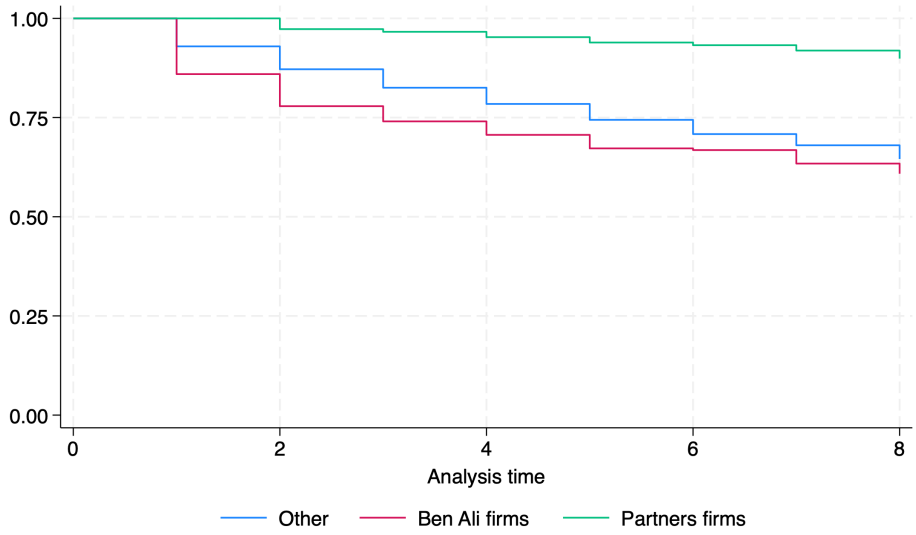
[9] It is not possible to assess differences in exit before the revolution because Ben Ali firms are only identified if they appear on the list of confiscated firms, which implies they did not cease operations prior to the revolution.

Table 5: Survival analysis - Cox proportional hazard model.

	(1)	(2)
Ben Ali Firm	1.463***	1.798***
	(0.179)	(0.328)
Partner Firm	0.360***	0.311***
	(0.0998)	(0.109)
Market Share 2010		0.985***
		(0.00387)
Ben Ali x MS 2010		0.914
		(0.0540)
Partner x MS 2010		1.027
		(0.0187)
Observations	110,258	55,617

*Notes: *** p<0.01, ** p<0.05, * p<0.1. The coefficients represent the hazard ratio, with standard errors in parentheses. We restrict our sample to the year 2010, and the event is a firm's exit defined as its last year of activity (positive output, or workers, or import/export). The time-to-event is defined as the number of years before exit from 2010. The covariates are dummies that take the value of one if a firm was owned by a member of the Ben Ali clan, and another dummy takes the value of one if the firm was owned by a partner of the Ben Ali clan. A partner is defined as someone who holds shares in more than one firm owned by a member of the Ben Ali clan. In column 2 we include an interaction between the Ben Ali clan firm dummy and the 2010 market share in terms of output, and an interaction between the connection status and the 2010 market share. In all columns we control for the logarithm of age, and dummies for whether a firm: is working offshore, has foreign shareholders, and is partly state owned. We also include the logarithm of one plus the number wage workers as a control for the size of firms. Standard errors are clustered at the firm level.*

Figure 1: Kaplan–Meier survivor estimates (2010-2018).



$$
\begin{aligned}
Y_{it} = & \sum_{\substack{t=2000 \\ t \neq 2010}}^{2018} \alpha_t \text{Ben Ali } 2010_j \times D(\text{Year} = t) \\
& + \sum_{\substack{t=2000 \\ t \neq 2010}}^{2018} \delta_t \text{Partner} \times D(\text{Year} = t) \\
& + \sum_{\substack{t=2000 \\ t \neq 2010}}^{2018} \gamma_t X_{it} \times D(\text{Year} = t) \\
& + \mu_j + \tau_t + \epsilon_{it}
\end{aligned}
\tag{3}
$$

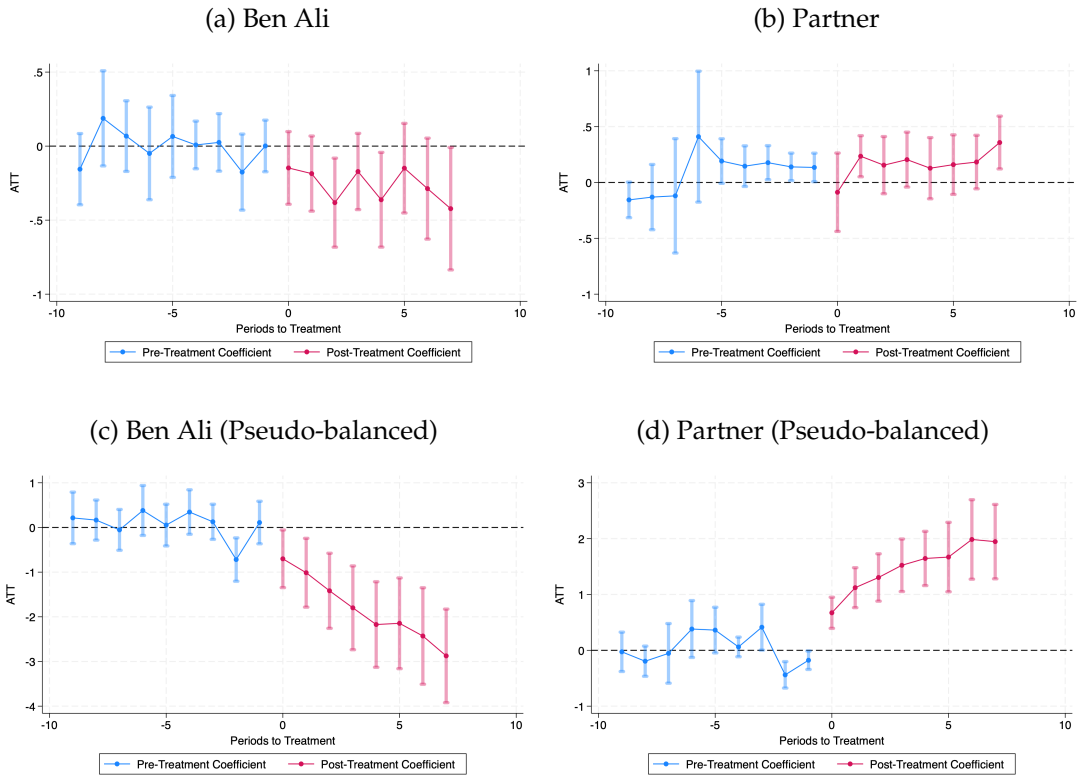
where Y_{it} is an indicator of the performance of firm i at time t, notably log output, market share or log employment. $BenAli_i$ and $Partner_i$ are dummy variables that indicate whether a firm was among the list of Ben Ali and partner firms, respectively. $D(\text{Year} = t)$ are dummy variables that indicate the year. X_{it} is a vector of firm characteristics that include age, foreign ownership, and a dummy that indicates whether or not a firm operates in the offshore regime. After 2010, we fix these measures to their 2010 values to prevent potential endogeneity with respect to treatment, which, in this case, is the regime change. τ_t are year fixed effects, μ_i is a firm fixed effect, and ϵ_{it} is an i.i.d. error term. Standard errors are clustered by five-digit sector. The main coefficients of interest are α_t, the (time-varying) premium on being politically connected, and β_t, which measures how that premium changed in the post-Ben Ali era. The inclusion of firm fixed effects ensures identification is based on within-firm variation in performance over different regimes.

One challenge we have when we analyze the evolution of the premia on having political connections is that we infer Ben Ali ownership on the basis of the confiscation of firms after the revolution. We do not observe firms that were Ben Ali owned before the revolution but

sold and/or forced to exit the market. Our identification of being a business partner of the family also hinges on being an owner of a Ben Ali firm and hence is also impacted by the attendant survivor bias. This complicates the analysis of the evolution of performance premia. In particular, it is hard to reliably test for the potential presence of pre-trends.

Event study regressions of the impact of the revolution on the output, market share and employment premia that Ben Ali and partner firms command are presented in Figures 2, **??** and A.1 respectively. We present the impacts on surviving firms in the top panel and the impacts estimated using the pseudo-balanced panel in the bottom panel. The evolution of the premium on Ben Ali firms is showcased in the left hand side graphs, and the evolution of the premium on partner firms on the right.

Figure 2: Impact of regime change on firms output.

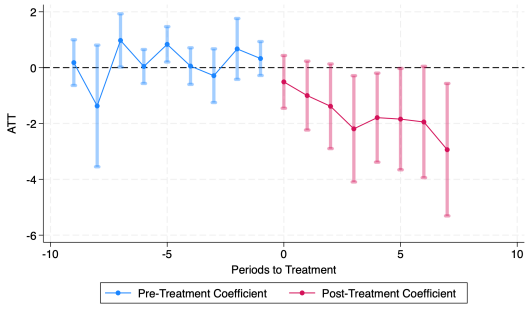


The results suggest an adverse impact of the revolution on the output of Ben Ali owned firms, even among the ones that survive (see Figure 2 panel a). The output premium on surviving Ben Ali firms appears to have risen the last few years of his tenure but then dropped significantly, especially in the first years after the revolution. Taking exiting firms into account (see Figure 2 panel c) unveils a sharply discontinuous drop in the Ben Ali output premium after the revolution.

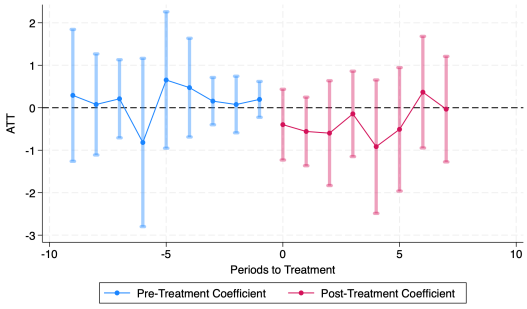
The output premium on partner firms increases throughout the sample period (see 2 panel b), suggesting there may be somewhat of a pre-trend. However, the increase in the premium is particularly pronounced after the revolution when exiting firms are also considered, consistent

Figure 3: Impact of regime change on firms market share.

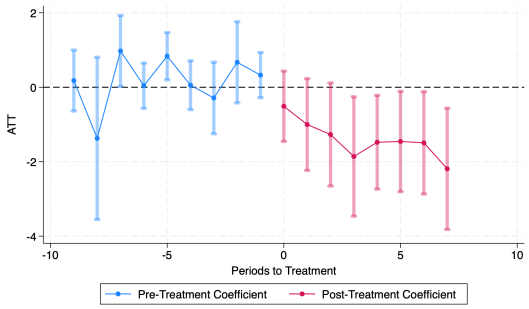
(a) Ben Ali



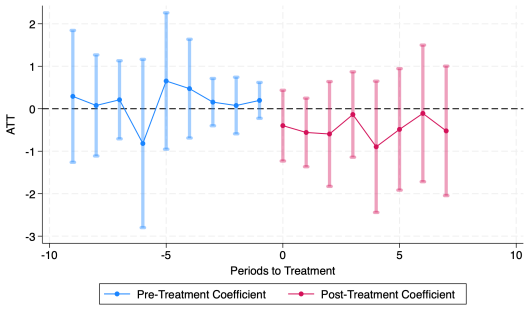
(b) Partner



(c) Ben Ali (Pseudo-balanced)



(d) Partner (Pseudo-balanced)



with the hypothesis that partner firms may have benefited from the demise of Ben Ali (see 2 panel d).

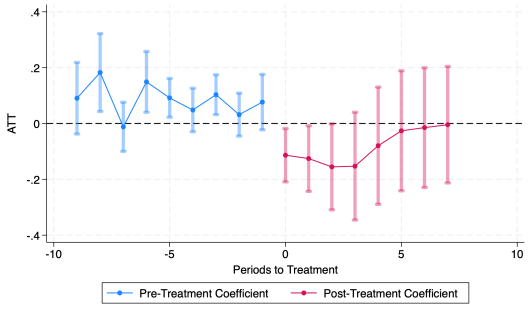
Impacts on market share presented in figure **??** exhibit a similar pattern but show no evidence of pre-trends; Ben ali firms lose market share after the revolution, whereas the market share of partner firms was not impacted. A possible explanation that reconciles the different results for output and market share is that partner firms were operating in growing sectors.

The impacts on employment, which are presented in Figure A.1 mimick those for output. The employment premium commanded by Ben Ali firms appears to have increased throughout his tenure. It stabilized after the revolution among surviving firms (See figure A.1 a) and dropped significantly once we include exiting firms ((See figure A.1 c). For partner firms we observe an increase in their jobs premium in the last few years of Ben Ali's tenure and an further increase right after the Arab Spring.

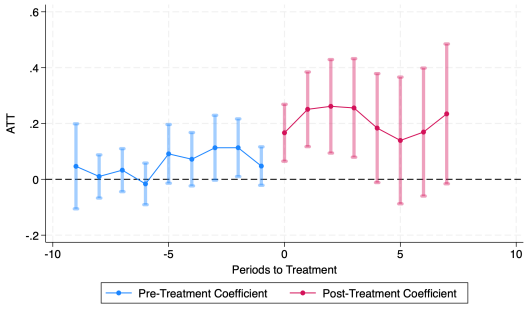
To summarize the Arab spring adversely impacted the performance of Ben Ali owned firms. They were much more likely to exit, but relatively large Ben Ali firms proved resilient and managed to maintain their size. Firms owned by business partners were less likely to exit after the revolution, despite losing their connections to power. They also expanded their output and employment more rapidly than regular firms.

Figure 4: Impact of regime change on firms workers (Santana).

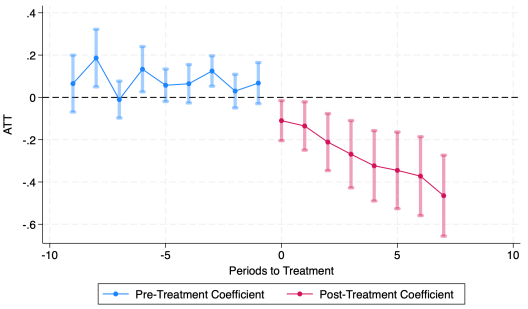
(a) Ben Ali



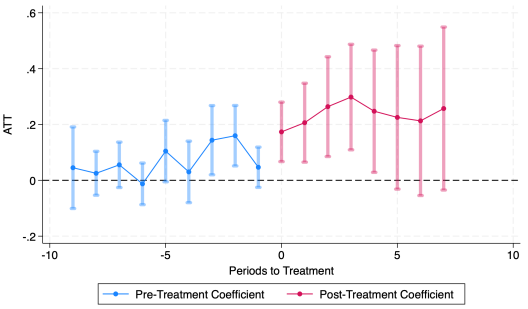
(b) Partner



(c) Ben Ali (Pseudo-balanced)



(d) Partner (Pseudo-balanced)



7 Impact of Political Turnover on Competition at the Industry Level

Having established that the revolution led to disproportionate firm exit among (small) Ben Ali firms, as well a reduction in the market shares of surviving Ben Ali firms, and that partner firms were not especially adversely impacted, we turn to examining the impact of democratization on competition at the sector level more rigorously. We first present event studies of the impact of democratization on competition in Tunisia and then compare the evolution of competition in Tunisia to that in other countries.

7.1 Evolution of competition in Tunisia

We conduct event studies which exploit the departure of Ben Ali as a natural experiment by which the value of political connections to him was reduced. We estimate:

$$
\begin{aligned}
Competition_{jt} = & \sum_{\substack{t=2000 \\ t \neq 2010}}^{2018} \alpha_t \text{Ben Ali MS 2010}_j \times D(\text{Year} = t) \\
& + \sum_{\substack{t=2000 \\ t \neq 2010}}^{2018} \delta_t \text{Partner MS 2010} \times D(\text{Year} = t) \\
& + \sum_{\substack{t=2000 \\ t \neq 2010}}^{2018} \gamma_t Z_{jt} \times D(\text{Year} = t) \\
& + \nu_j + \tau_t + \epsilon_{jt}
\end{aligned} \tag{4}
$$

where $Competition_{jt}$ is a competition indicator of interest $Ben\ Ali\ MS2010_j$ measures the aggregate market share of Ben Ali firms in sector j in 2010, and $Partner\ MS\ 2010_j$ measures the aggregate market share of partner firms in 2010. We fix these measures of political connectedness to their 2010 values to prevent potential endogeneity with respect to treatment, which, in this case, is regime change. Z_{jt} is a vector of sector characteristics, ν_j is a vector of sector fixed effects, ϵ_{jt} is a vector of year effects.

The coefficients $\alpha_{2000}, \ldots, \alpha_{2018}$ measure how the change in the outcome variables associated with the regime collapse varies with the extent to which the industry had been dominated by Ben Ali firms. They capture the differential impact of regime turnover on industries in which firms with political connections had greater market share during the Ben Ali era, and thus measure the impact of the disruption of political connections on competition. Similarly, the coefficients $\delta_{2000}, \ldots, \delta_{2018}$ help us examine to what extent impacts were stronger in sectors where partners firms accounted for a greater share of aggregate output.

The results are presented in Figure 5 and A.18. Premia on the aggregate market share of Ben Ali firms are presented in the left column, premia on the aggregate market share of partner firms are presented in the right column. The clearest result is that the revolution led to a significant reduction in concentration in Ben Ali dominated sectors, as is shown in figure 5c, which shows the evolution of the Herfindahl index and figure 5e which shows the evolution of the market share of the largest 4 firms in a given sector. By contrast, the evolution of concentration rates appears uncorrelated with the aggregate market share of Ben Ali's business partners. The reduction in concentration rates in sectors where Ben Ali's business partners account for an important share of output thus appears driven by by Ben Ali firms. The number of firms also increases significantly in sectors where Ben Ali firms accounted for a greater share of output in 2010, but there appears to be a bit of a pre-trend during his tenure. The impact of regime change on entry and exit is noisily estimated and the null hypothesis of no impact cannot be rejected. The revolution also led to a short-lived compression in profit margins in Ben Ali dominated sectors, but this reduction was not sustained. Churning among the top 4 firms in a given sector also appears higher after the revolution in formerly Ben Ali dominated sectors, but again this effect is noisily estimated and we cannot reject the null of impact at conventional significance levels. Post-revolution churning of such firms is higher in sectors

where partner firms accounted for a higher share of output but there appears to be a pre-trend.

In summary, the revolution led to a significant reduction in concentration in sectors where Ben Ali owned firms accounted for a greater share of aggregate output. By contrast, we do not find evidence that competition improved or deteriorated in sectors where Ben Ali's business partners accounted for a greater share of output.

7.2 How does competition in Tunisia compare to other countries?

One limitation of the event studies presented above is that we are implicitly assuming that the evolution of sectors are not politically connected would have been similar to those that were not in the absence of such connections. But we showed in section 4 that connected firms select into sectors with specific characteristics. As a result there is a concern that these sectors would have evolved differently even in the absence of the presence of Ben Ali and partner firms.

In this section we address this concern head on and compare the evolution of competition in Tunisia to the evolution of competition in 6 other middle income countries, notably Croatia, Ecuador, Georgia, Serbia, Vietnam, and India. This comes at the expense of having to use a slightly coarser industry classification (notably ISIC 4-digit) and having fewer indicators, and fewer years.

Using these data we estimate a simple difference-in-difference regression.

$$\begin{aligned} \text{Competition}_{jt} = & \beta_{BA} \text{Ben Ali Market Share 2010} \\ & + \beta_{BAPost} \text{Ben Ali Market Share 2010 X Post} \\ & + \beta_{PA} \text{Partner Market Share 2010} \\ & + \beta_{PAPost} \text{Partner Market Share 2010 X Post} \\ & + \omega_{st} + c_c + \epsilon \end{aligned} \tag{5}$$

where ω_{st} is a vector of sector-year fixed effects and c_c a vector of country year fixed effects. We are effectively asking how competition in Tunisia compared to competition in the same sector in other countries depending on the presence of Ben Ali and partner firms.

The results are presented in table 6 and show that the presence of Ben Ali firms is association with significantly weaker competition before, but not after the revolution. The first specification only includes a control for the market share of Ben Ali firms in 2010 and its interaction with a post-revolution dummy, the second specification only controls for the market share of partner firms in 2010 and its interaction with a post-revolution dummy, and the third specification controls for both.

Increasing the market share of Ben Ali firms by 1 percentage point is associated with an increase in the Herfindahl index of 0.35% when we do not control for the market share of partner firms, as is done in column 1. When we do control for the presence of partner firms, as we do in column 3, this drops to 0.21%. Interestingly controlling for partner firms also makes

Table 6: Competition in Tunisia versus other countries

	Herfindahl			Concentration rate (top 4)			Churning (top 3)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ben Ali Market Share 2010	0.353***		0.214**	0.327***		0.296**	-0.275***		-0.123*
	(0.123)		(0.108)	(0.068)		(0.115)	(0.077)		(0.070)
Ben Ali Market Share 2010*Post	-0.076		-0.249*	-0.027		-0.096**	0.183***		0.150
	(0.092)		(0.134)	(0.023)		(0.041)	(0.047)		(0.106)
Partner Market Share 2010		-0.162	-0.628***		0.210	-0.242**		-0.350***	-0.417***
		(0.200)	(0.100)		(0.223)	(0.107)		(0.132)	(0.122)
Partner Market Share 2010*Post		0.097	0.052		-0.016	0.031		0.186**	0.049
		(0.068)	(0.048)		(0.050)	(0.085)		(0.082)	(0.118)
Sector-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,790	22,307	21,900	22,488	22,003	21,598	16,845	16,450	16,122
R-squared	0.459	0.460	0.461	0.582	0.580	0.583	0.475	0.478	0.478

the coefficient on the interaction term between the Ben Ali market share in 2010 and the post-revolution dummy negative and significant. In other words, during the Ben Ali era market concentration was significantly higher in sectors where Ben Ali firms were important, but after the revolution this disproportionate concentration appears to have disappeared. Results for the market share held by the largest 4 firm, which are presented in column 4-6, exhibit a similar pattern.

Finally, the last 3 columns use churning among the top 3 largest firms in a sector as the dependent variable; such churning was significantly lower in Tunisian sectors where Ben Ali firms were relatively important during his tenure relative to churning patterns observed in other middle-income countries. After the revolution churning patterns were not diferentially different in Ben Ali dominated sectors.

Results for partner firms are more mixed. On the one hand concentration - proxied by either the Herfindahl index or the market share of the largest 4 firms - is significantly negatively correlated with their aggregate 2010 market share once the presence of Ben Ali firms is accounted for. This suggests that sectors with comparatively more partner firms were more competitive (conditional on Ben Ali presence). But on the other hand, churning rates were also comparatively lower in sectors where partner firms had higher aggregate market shares before the revolution, and this remained the case after the revolution.

8 Anti-Competitive Conduct and Enforcement of Competition Law

To end, we examine one possible mechanism that may help explain the patterns documented above, notably the enforcement of competition law. To do so we examine the propensity of politically connected firms to be accused of and sanctioned for anti-competitive conduct, exploiting information on all allegations submitted to, and cases conducted by the Tunisian competition council.

Tunisia has had competition legislation since 1991, It's scope is broad and applies to any entity carrying out an economic activity likely to affect the general equilibrium of the internal market. While the Tunisian competition council has limited staff and budget when compared

to other competition authorities in countries at comparable levels of development (OECD, 2022), its mandate and resources have been growing over time.

During the period 2001-2010 it received 169 allegations of anti-competitive behaviours, treated 98 cases, and issued 46 sanctions (table A.8). Interestingly only one allegation was made to a Ben Ali firm, in 2010, despite extensive qualitative evidence that they Ben Ali family was breaking competition laws (see for example the Amor report). In addition, only 2 partner firms were subject to an allegation. By contrast after the revolution it received 299 allegations, conducted 214 investigation and issued 55 sanctions. A total of 63 allegations were made against formerly Ben Ali owned firms, of which 52 resulted in investigations and 16 in sanctions.

Table 7: Percentage of firms subject to anti-competitive allegations and sanctions.

VARIABLES	Allegations		Sanctions	
	2001-2010	2011-2020	2001-2010	2011-2020
Ben Ali Firm	0.18%	2.5%	0%	1.5%
Partner Firm	0.6%	1.3%	0%	0.3%
Other	0.03%	0.05%	0.004%	0.02%

To more formally test whether politically connected firms were more likely to be investigated or sanctioned for anti-competitive conduct we pool all allegations and investigations during the period 2000-2010 as well as those in the period 2011-2020 and run a very simple difference-in-difference regression of the form:

$$\begin{aligned} I_{it} = & \beta_{BA} BenAli_i + \beta_{BAPost} BenAli_i \times Post_t \\ & + \beta_{PA} Partner_i + \beta_{PAPost} Partner_i \times Post_t \\ & + \gamma X_{it} + \delta X_{it} \times Post_t \\ & + s_i + \epsilon_{it} \end{aligned} \tag{6}$$

where I_{it} is an outcome indicator of interest, notably whether a firm was subject to an allegation of anti-competitive conduct or an indicator of being sanctioned for such conduct.

The results, which are shown in Table 8, show that before the revolution Ben Ali firms and partner firms were not more likely to be accused of anti-competitive conduct, even after their characteristics and sector fixed effects are controlled for. However, after the revolution the likelihood of Ben Ali firms being accused of anti-competitive conduct is significantly higher; relative to similar firms in the same sector they are 4.77% more likely to be accused of anti-competitive conduct. This is a very large effect since the unconditional likelihood of being the subject of an allegation of such conduct is 0.06%. By contrast the revolution did not impact the propensity of partner firms to be accused.

Ben Ali owned firms were also much more likely to be sanctioned for anti-competitive conduct after the revolution, but not before. In fact, before they were less likely to be convicted of such conduct, though this effect is not always statistically significant.

The fact that formerly Ben Ali owned firms were more likely to be convicted of anti-competitive conduct after the revolution suggest that part of the reason for the improved competition in formerly Ben Ali owned sectors is that they no longer benefit from the same administrative favoritism as they did during Ben Ali's reign. At the same time, it suggests their anti-competitive practices persisted.[10]

Table 8: Anti-competitive conduct.

VARIABLES	Allegations			Sanctions		
	(1)	(2)	(3)	(4)	(5)	(6)
Ben Ali Firm	0.00285	0.00319	-0.00469	-9.87e-05***	5.71e-06	-0.00353
	(0.00345)	(0.00348)	(0.00340)	(3.48e-05)	(4.59e-05)	(0.00339)
Partner Firm	0.0138	0.0137	0.00838	-9.87e-05***	-0.000150***	-0.000347
	(0.00980)	(0.00980)	(0.00864)	(3.48e-05)	(5.81e-05)	(0.000302)
Post 2011	0.000294	0.000120	0.000196	0.000258**	0.000190**	0.000230*
	(0.000225)	(0.000230)	(0.000221)	(0.000114)	(9.21e-05)	(0.000124)
Ben Ali x Post 2011	0.0486***	0.0482***	0.0477***	0.0297**	0.0296**	0.0294**
	(0.0170)	(0.0170)	(0.0170)	(0.0128)	(0.0128)	(0.0127)
Partner x Post 2011	0.00990	0.00959	0.00993	0.00592	0.00580	0.00572
	(0.0161)	(0.0161)	(0.0160)	(0.00619)	(0.00618)	(0.00619)
Controls	No	Yes	Yes	No	Yes	Yes
Sector FE	No	No	Yes	No	No	Yes
Observations	258,263	258,263	258,242	258,263	258,263	258,242
R-squared	0.003	0.024	0.090	0.003	0.007	0.107

*Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Two time periods, pre-2011 and post-2011. The dependent variable is a dummy taking the value of one if the firm faced at least one allegation of anti-competitive conduct during a given time period for columns 1-3 and a dummy taking the value of one if a firm was declared guilty of an anti-competitive conduct by the Competition Council. The main independent variables are dummies taking the value of one if a firm was owned by a member of the Ben Ali clan, and another dummy taking the value of one if the firm was owned by a partner of the Ben Ali clan, interacted with a dummy taking the value of one if year is higher than 2010 (post-revolution). A partner is defined as someone holding shares in more than one firm owned by a member of the Ben Ali clan. In columns 2, 3, 5, and 6 we control for the logarithm of age, and dummies for whether a firm: is working offshore, have foreigners as shareholders and is partly state owned. We include 4-digits NAT sector fixed-effects in columns 3 and 6. Standard errors are clustered at the 4-digits NAT sector level.*

9 Conclusion

There is an ongoing debate about the extent to which democratization promotes growth by curbing capture and reducing cronyism. Elite capture in democracies is often rooted in corrupt practices inherited from previous autocratic regimes. Yet evidence on the impact of democratization on competition is scant.

This paper examined to what extent the Arab Spring, which was fuelled by frustration about a lack of economic opportunities and inequality, promoted competition and reduced capture,

[10] Since we do not directly observe anti-competitive conduct we cannot rule out the possibility that formerly Ben Ali owned firms increased their anti-competitive conduct after the revolution but that seems implausible in view of the wealth of anecdotal evidence that the Ben Ali clan acted as though it had unlimited power during his reign.

leveraging unique firm level data on the universe of registered private firms in Tunisia in which firms that were formerly owned by president Ben Ali and his family are identified.

Ben Ali firms were hard hit by the crisis, but among them, the largest firms proved most resilient, which helps explain why the macroeconomic significance of formerly connected firms did not diminish dramatically. Moreover, firms owned by Ben Ali's business partners escaped almost entirely unscathed and even managed to improve their performance in sectors where Ben Ali firms had been operating.

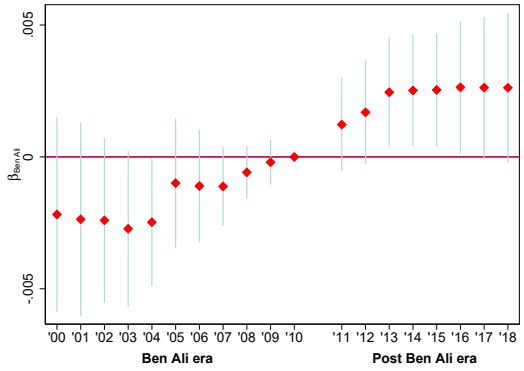
On the bright side, concentration rates, which has been especially elevated in Ben Ali dominated sectors during his tenure, reduced in those sectors after Ben Ali's ousting. In addition, the number of firms grew and churning among the top 3 largest firms also increased, all pointing to improvements in competition relative to the Ben Ali era.

A potential partial explanation for these improvements is enhanced enforcement of competition laws. Despite abundant anecdotal evidence of anti-competitive conduct Ben Ali firms were never sanctioned for infringements of competition law during his tenure. By contrast, after the revolution they were 75 times more likely than regular firms to be sanctioned for illegal anti-competitive practices.

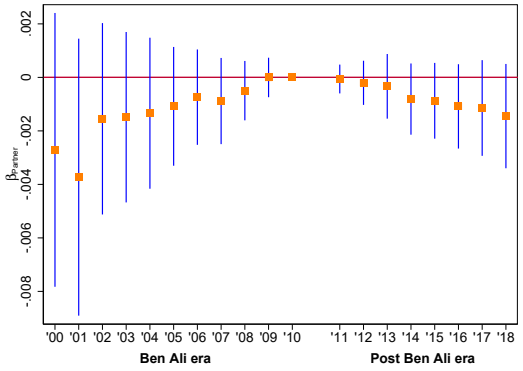
Notwithstanding these positive developments, overall, economic dynamism in Tunisia remains limited and the Arab Spring did not bring the broad based inclusive growth that may had hoped for.

Figure 5: Impact of regime change on competition 1 of 2

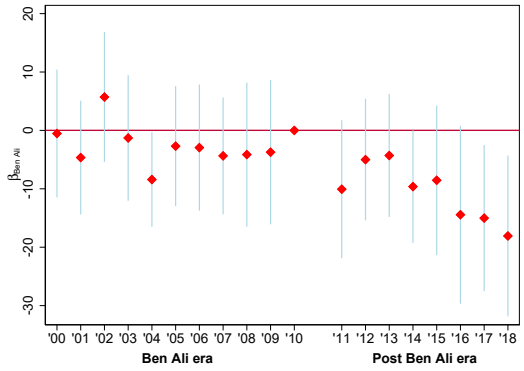
(a) Log Firms (Ben Ali)



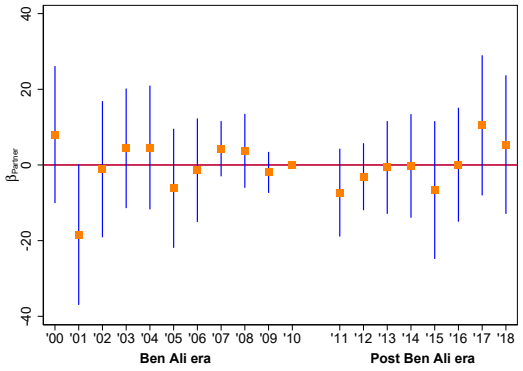
(b) Log Firms (Partner)



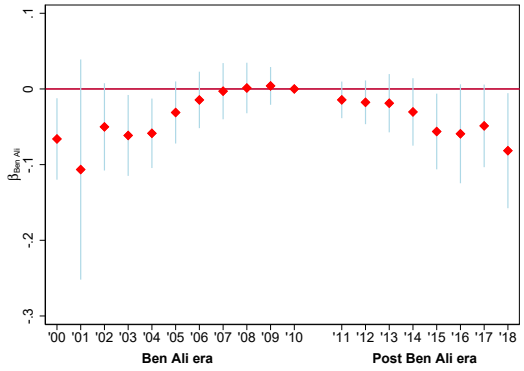
(c) Herfindahl (Ben Ali)



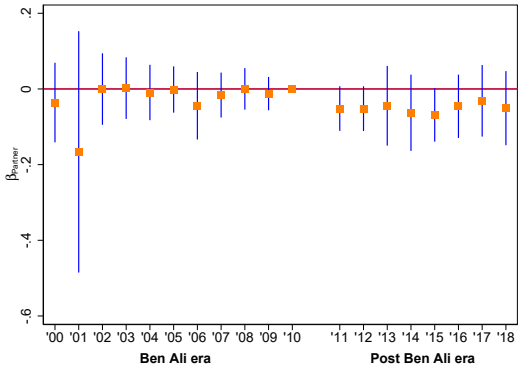
(d) Herfindahl (Partners)



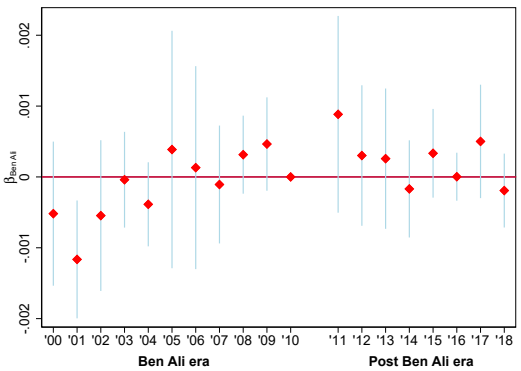
(e) Market share top 4



(f) Market share top 4



(g) Entry



(h) Entry

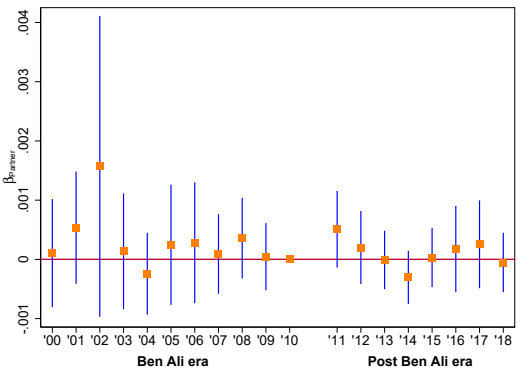
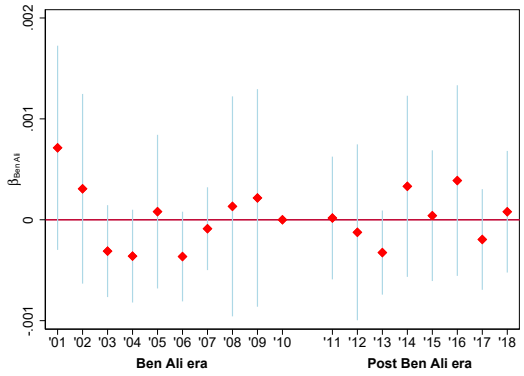
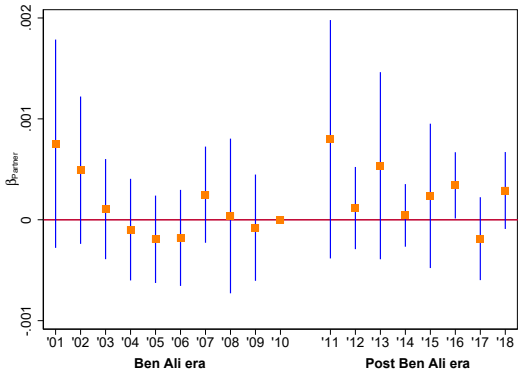


Figure 6: Impact of regime change on competition 2 of 2

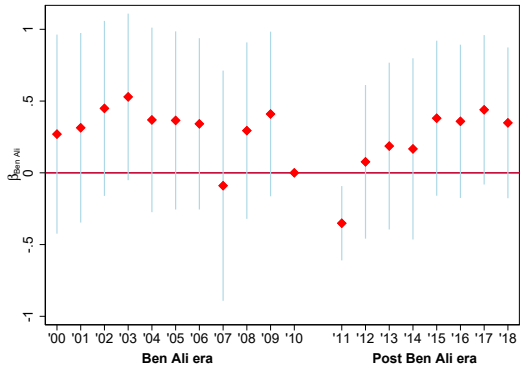
(a) Exit (Ben Ali)



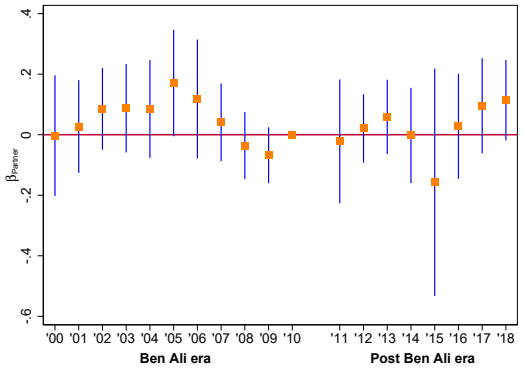
(b) Exit



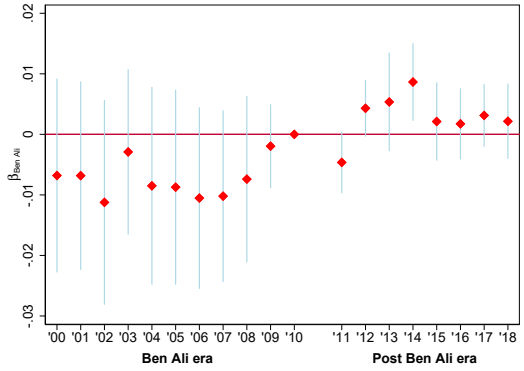
(c) Profit Margin (Ben Ali)



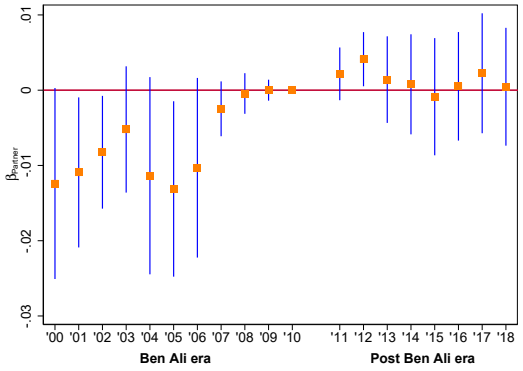
(d) Profit Margin (Partner)



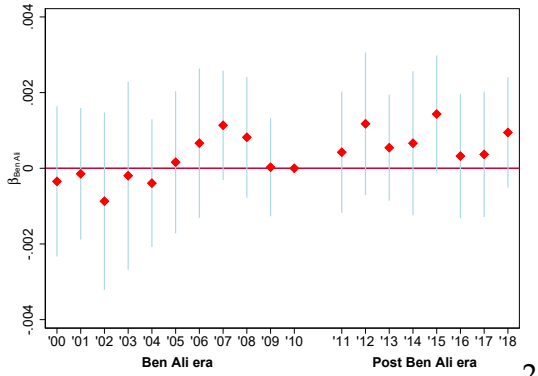
(e) Output (Log) Ben Ali



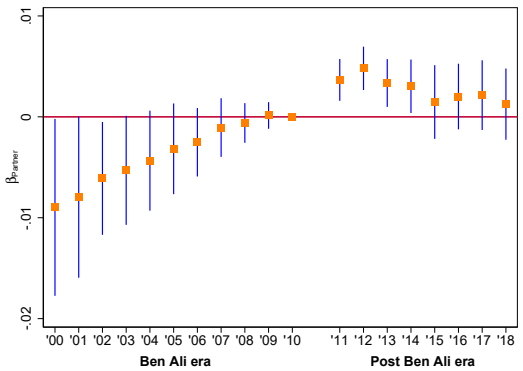
(f) Output (Log) (Partner)



(g) Churning top 4 (Ben Ali)



(h) Churning top 4 (Partner)



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Online Appendix

Did the Arab Spring Promote Competition? Evidence from Tunisia

MHAMED BEN SALAH MASSIMILIANO CALI BOB RIJKERS

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Variable definitions

- Ben Ali market share ($Ben\ Ali\ 2010_j$) is the share of output produced by Ben Ali owned firms in industry j in 2010.

Regulation

- Authorization (AUT): a dummy variable that takes value 1 if operating in the sector requires government approval. There were 101 such sectors in 2010.
- Cahiers de charges (CC): means that firms operating in the sector are required to submit documentation regarding their activities. Though legally not as stringent as having to obtain prior authorization, in practice this regulation can be quite time consuming to comply with. There were 137 sectors subject to some form of cahiers de charges in 2010.
- FDI restriction: a variable representing the share of a firm foreigners can freely own in a given sector (1 = Free). In 2010 there were 241 sectors in which foreigners were not allowed to be majority owners.

Confiscation Process

A few months after the 2011 Tunisian Revolution, the authorities decided to confiscate all the goods and assets of President Ben Ali and his relatives. To this end, three entities were created:

1. "*Commission de confiscation* " (Ministry in charge of State domains and land affairs , décret-loi n°2011/13 du 14/03/2011)[1]
2. "*Commission Nationale de Gestion d'Avoirs et des Fonds Objets de Confiscation ou de Récupération en faveur de l'Etat*" (Ministry of Finance : décret-loi n°2011-68 du 14/07/2011)[2]
3. "*Comité national du recouvrement des biens mal acquis existants à l'étranger*" (Central Bank, décret-loi n°2011-15 du 26/03/2011)[3]

The establishing law of the first commission lists 114 names, including the President Zine El Abidin Ben Ali and his relatives whose assets have to be confiscated. The commission is in charge of deciding who should be considered as being related to the Ben Ali clan (in addition to the 114 names) and which assets must be confiscated. In theory, the principle is simple and three questions need to be answered: (1) Does the person have a relation with the Ben Ali clan; (2) Does the firm benefited from any advantage compared to other firms; (3) Is there a relation between (1) and (2). If these three criteria are met, the first commission issues a confiscation decision for each asset. Once the decision is taken, the first commission transfers the ownership of the assets to the second commission. This commission owns the asset and is in charge of managing and/or selling the given assets. Among other things, they name managers for the companies in which they own a majority of shares. The third commission deals with the assets owned by the clan abroad.

According to the ministry of finance, the national management commission received 1030 decisions of confiscation of shares in the capital of 660 firms et by the end of 2020.[4,5] However, among the 1030 decisions of confiscation, only 288 were officially published (JORT). However, there is a lack of transparency regarding some aspects of the process. In 2017 for instance, even if no official list is available, 14 new names seem to have been added to the list by the confiscation committee.[6] To the best of our knowledge, it was the first time since 2011 that names were added to the list. Other concerns relative to the confiscation processed have been raised, especially by the Court of Auditors ("*Cour des Comptes*") that mention in their evaluation report on the Confiscation Committee that "*The confiscation committee did not complete the procedures for confiscating all the properties involved in the confiscation as well as recording a delay in issuing decisions that resulted in some cases of unjustified confiscation of properties*" (page 7). The same report mention in page 8 that "*The number of confiscation decisions made until the end of 2015*

[1] https://www.pist.tn/jort/2011/2011F/Jo0182011.pdf
[2] https://www.pist.tn/jort/2011/2011F/Jo0522011.pdf
[3] https://www.pist.tn/jort/2011/2011F/Jo0212011.pdf
[4] http://www.finances.gov.tn/fr/societes-confisquees
[5] http://www.finances.gov.tn/fr/les-participations-confisquees-dans-le-capital-des-societes
[6] According to some sources the list is composed of Habib Hawass, Kamal Al-Shamli, Saad Allah, Shukri Bariri, Mabrouk Khachnaoui, Samir bin Rashid, Shafik Jarraya, Mongi bin Rabah, Kamal Gholam, Yassine El-Shenoufy, Najib bin Ismail, Ali Al Qariri, Hilal bin Masoud Bishr, Munther Junaih.

are 181 decisions which represents about 10% of the total decisions". The average time taken by the committee to achieve a confiscation decision is 494 days (page 9).[7]

Among the 1030 assets with a confiscation decision, 74% are Limited Liability Companies (LLC), 20% are Public Limited Companies (PLC) and a few are *SUARL* which are the equivalent of an LLC but with a unique owner. More than 70% of the firms concerned by confiscation were relatively small with less than 500 MDT of capital. However, the remaining firms were among the largest firms in the country with a global value of more than 1'700 MDT. The confiscation encompassed assets for a value of 500 MDT among these firms. Almost all confiscated assets are "direct participation", however we also have 18 "indirect participation" corresponding to firms for which part of their capital is held by another confiscated company.

Once these firms are confiscated, they have bean delt with very differently. Some of them were sold to Al Karama holding, a former holding company owned by a member of the Ben Ali clan that has been confiscated by the state and used to manage and sell off some of the confiscated assets. According to the Ministry of Finance 19 firms were sold to Al Karama, less than 40 according to Al Karama's website and 68 according to different sources. Al Karama only bought firms with either an economic interest or firms that were too big to be left between the hands of civil servants ("to fail") according to an anonymous source from the Confiscation Committee. For other firms, a person was named to manage the firm (107 firms in the Ministry of Financ website, and 260 firms according to other sources). Finally some firms, mainly in agriculture, real estate and tourism, were supposed to go to the *"Caisse des dépôts et consignations"* (CDC), through its affiliated company "CDC Development". However we cannot find any details about the exact firms they took over. By the end of 2020, and according to the Ministry of Finance website, 21 firms were sold for a total value of 2'269 MDT. According to different sources, 27 were sold by the end of 2022. Most of the firms were sold by Al karama holding, however, it seems that some of them were sold through a different process (*Banque de Tunisie*, *Ennakl*, *Société Jet Multimedia* or *Société Club Ulysse*).

[7] http://www.courdescomptes.nat.tn/upload/rapport30/I-3.pdf)

Regulation for market access

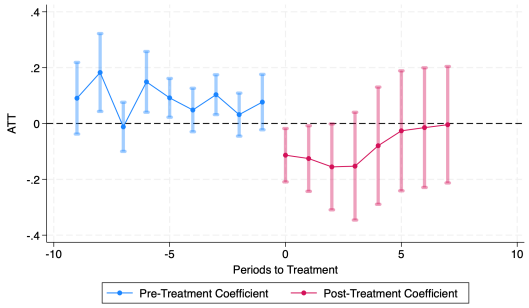
In Tunisia, the regulation of the different economic sectors is complex and different mechanisms are involved. First, for all sectors excluding mining, energy, internal trade and financial activities, an investment code was elaborated in 1993, stating the different regulation for different sectors. However, each activity could still be subject to barriers to entry like authorizations, specifications ("*cahiers de charges*") or restrictions to FDI.

Investment code 1993 + Investment code 2017 + Conseil Supérieur des Investissement + Law 2018-417 for authorizations

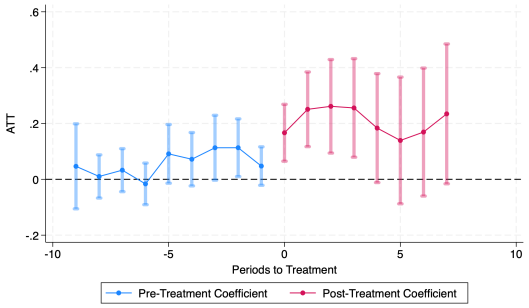
Figures

Figure A.1: Impact of Regime Change on Firm Employment

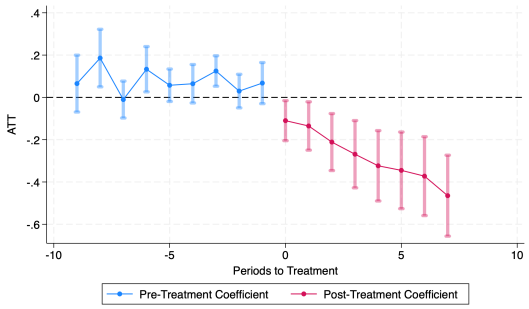
(a) Ben Ali (Survivors)



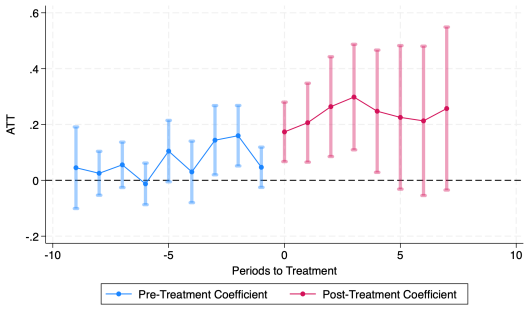
(b) Partner (Survivors)



(c) Ben Ali (Pseudo-balanced)



(d) Partner (Pseudo-balanced)



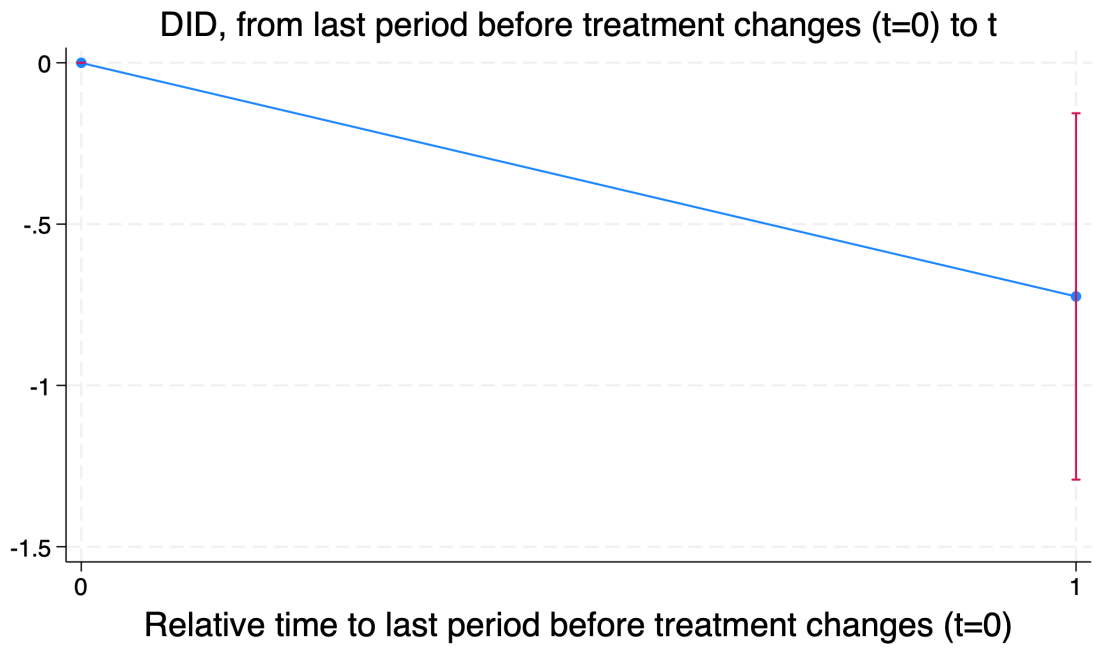


Figure A.2: Output/Ben Ali (full2)

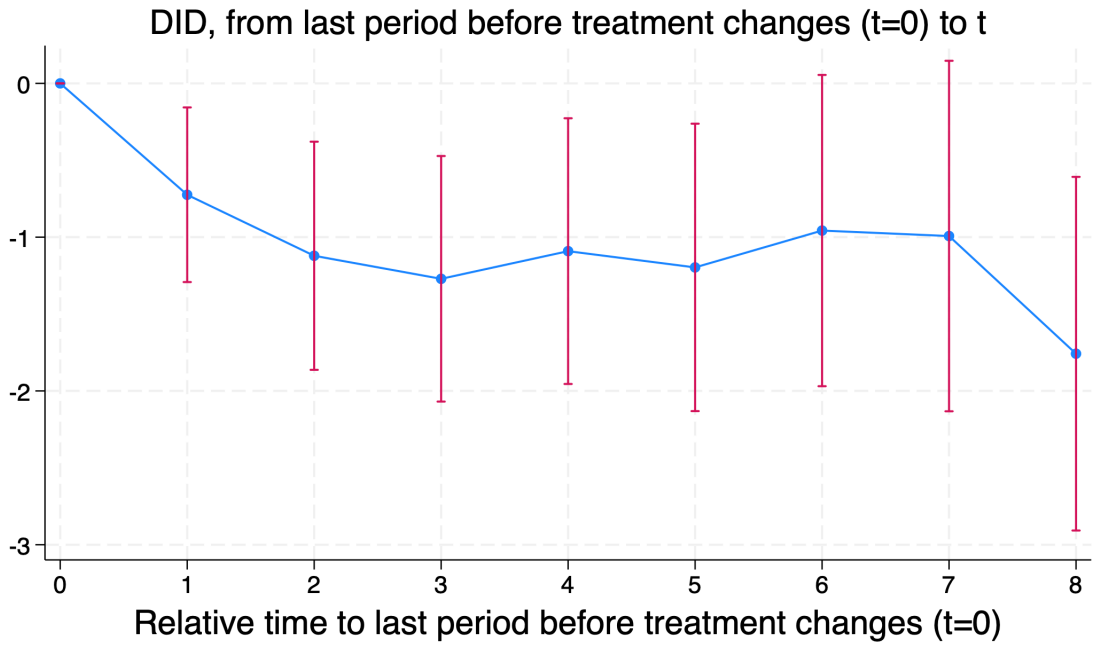


Figure A.3: Output/Ben Ali (full2)

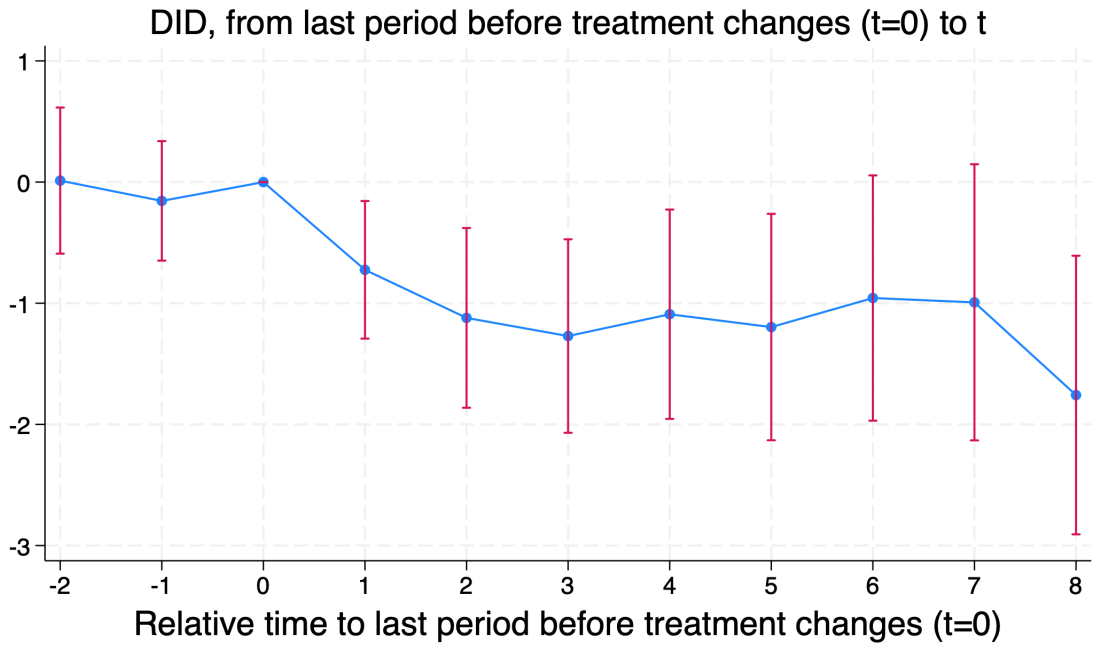


Figure A.4: Output/Ben Ali (full2)

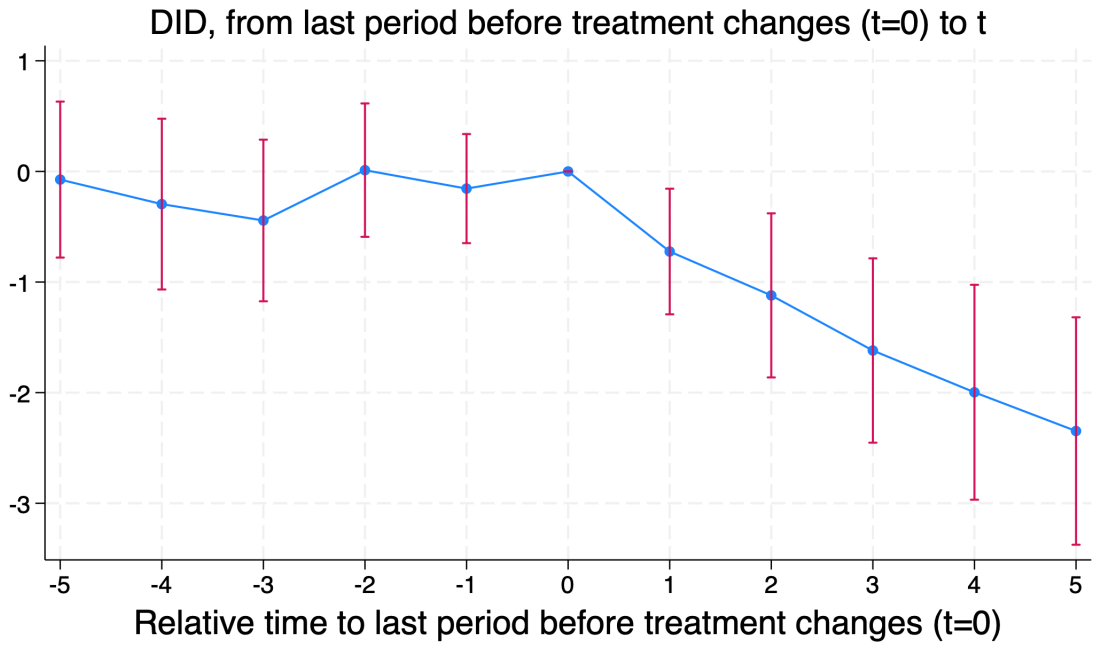


Figure A.5: Output/Ben Ali (full2)

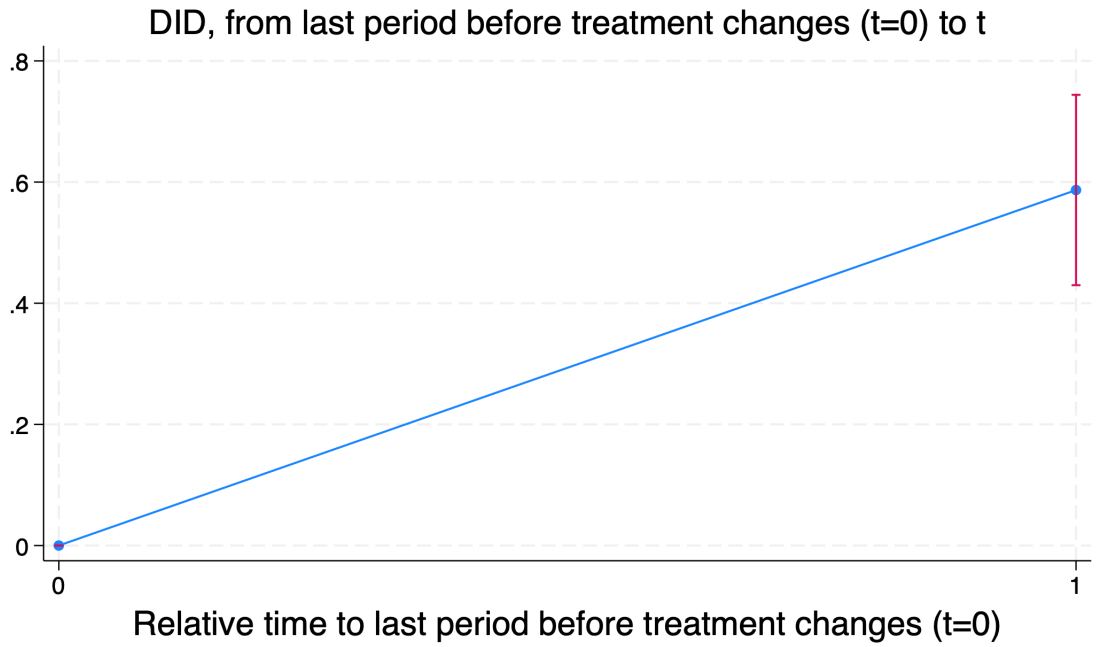


Figure A.6: Output/Part (full2)

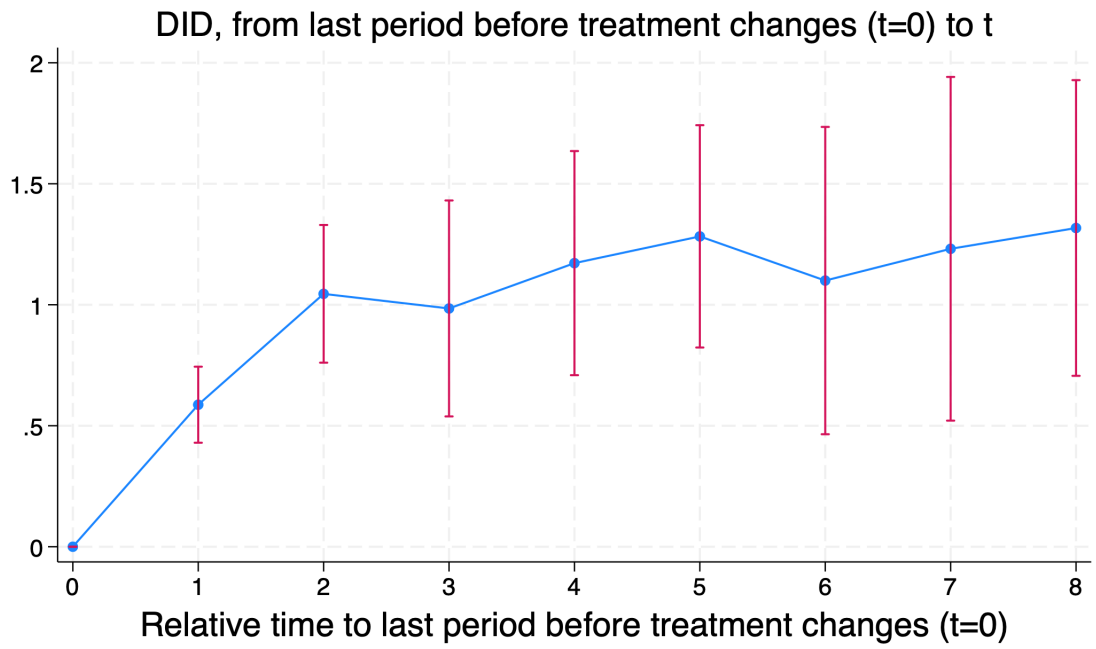


Figure A.7: Output/Part (full2)

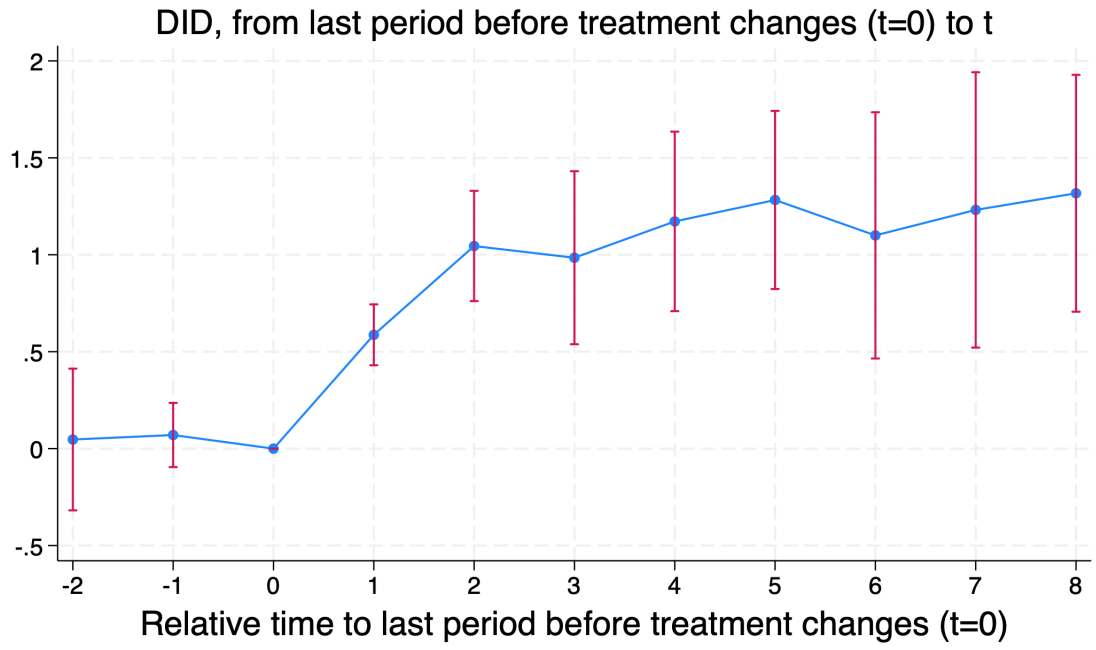


Figure A.8: Output/Part (full2)

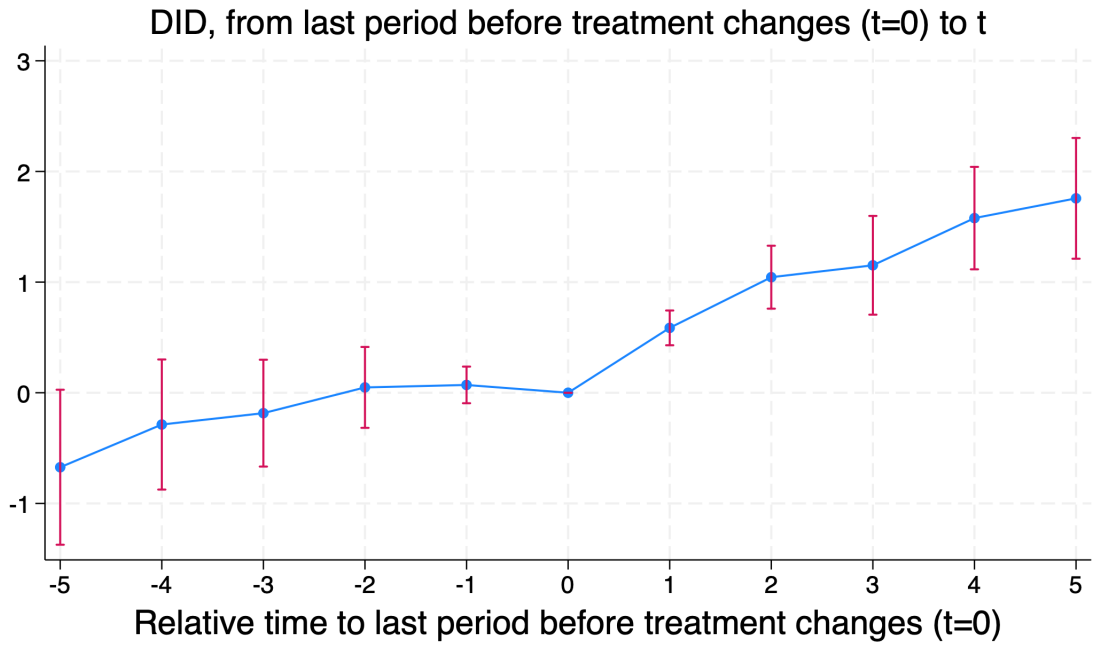


Figure A.9: Output/Part (full2)

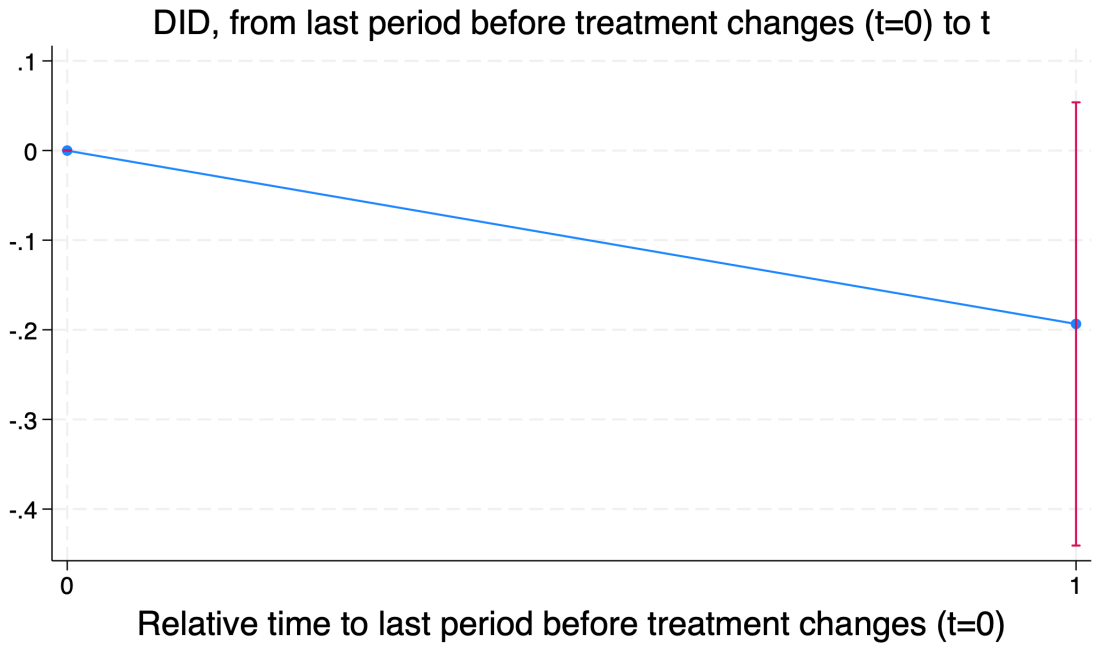


Figure A.10: Output/Ben Ali (surv)

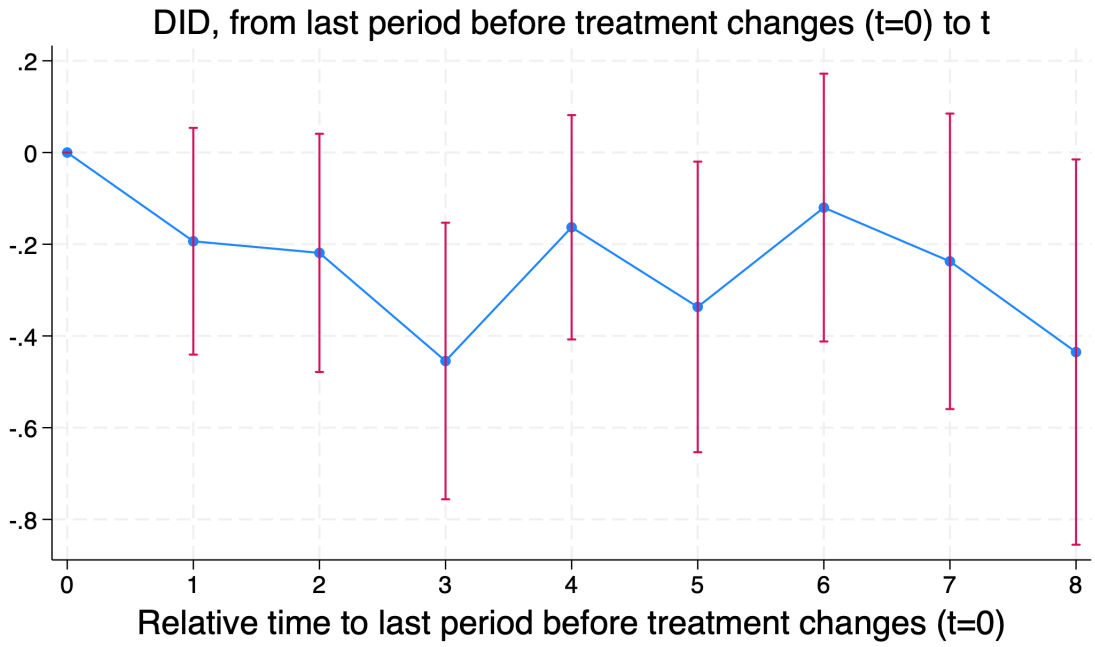


Figure A.11: Output/Ben Ali (surv)

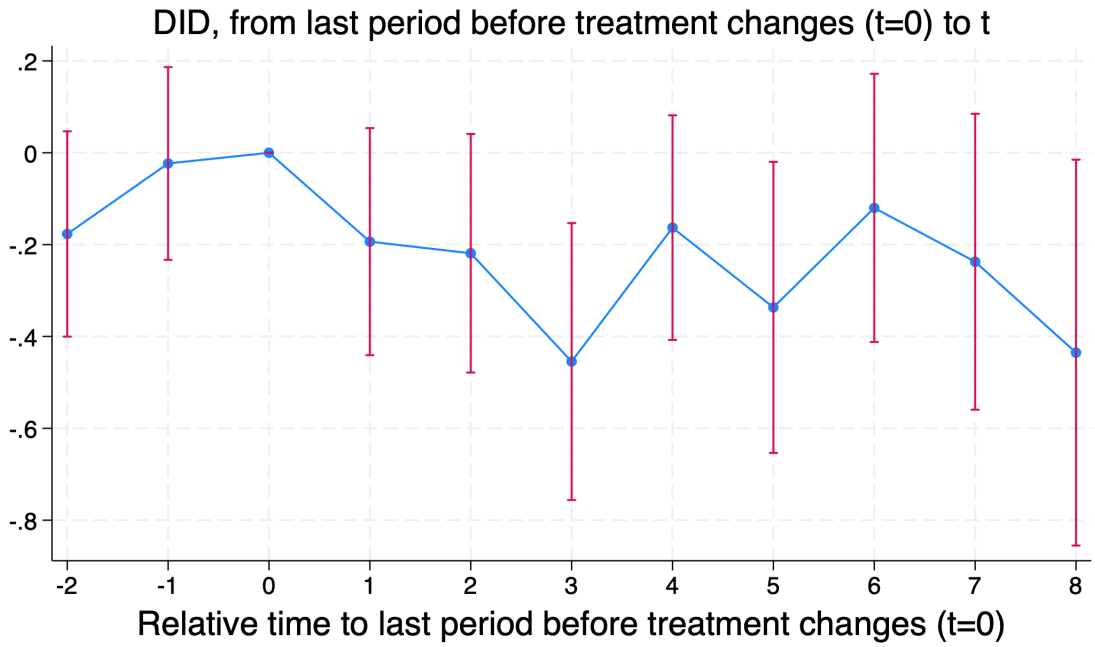


Figure A.12: Output/Ben Ali (surv)

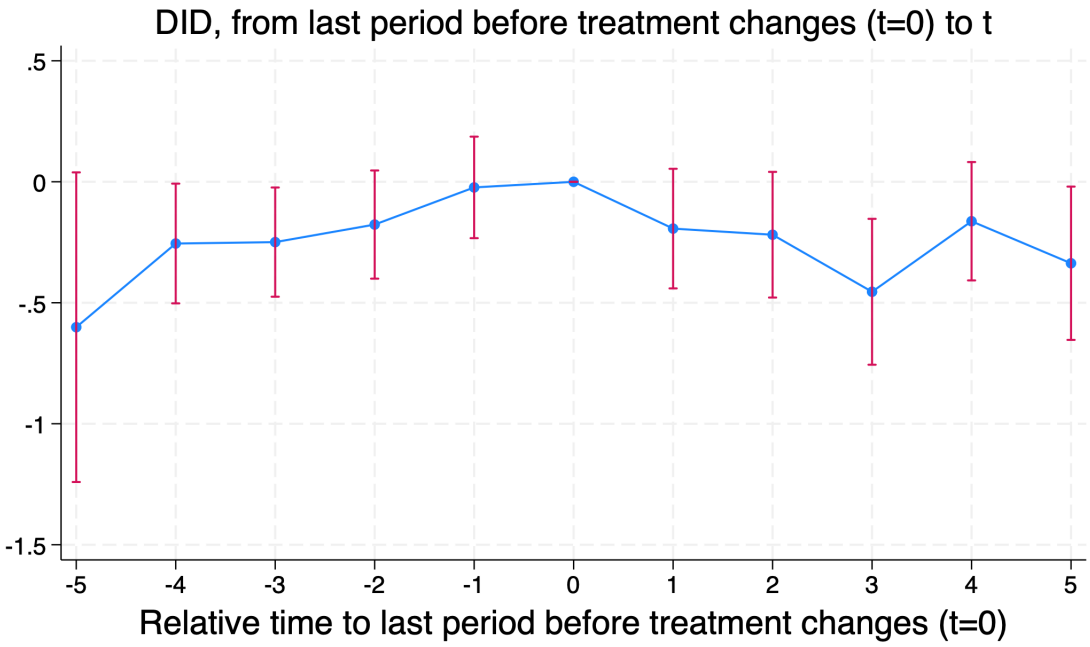


Figure A.13: Output/Ben Ali (surv)

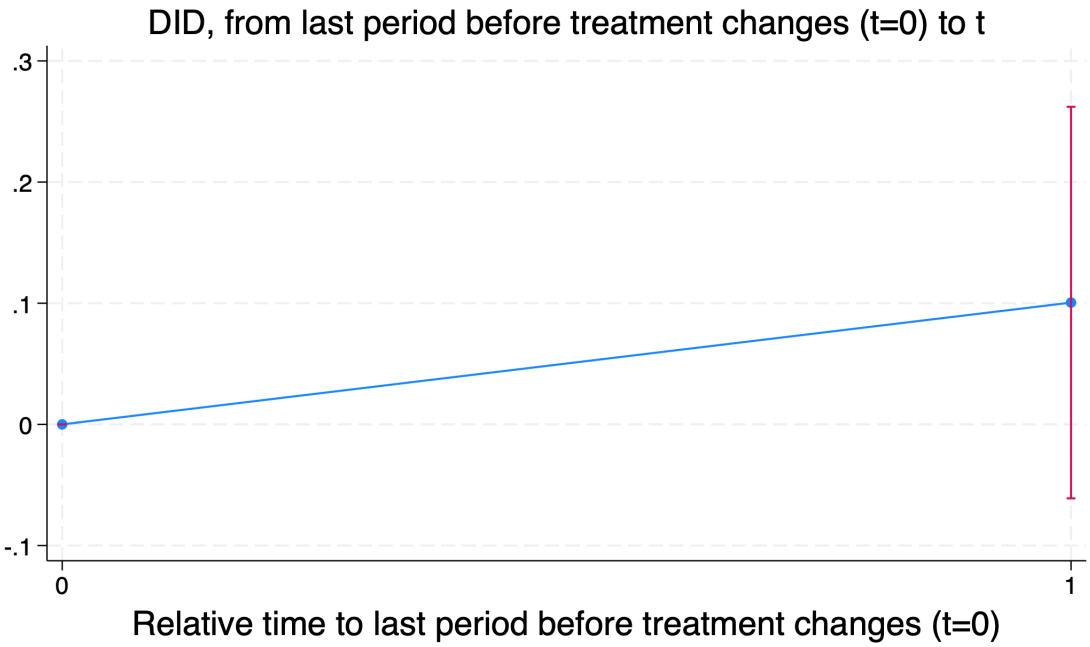


Figure A.14: Output/Part (surv)

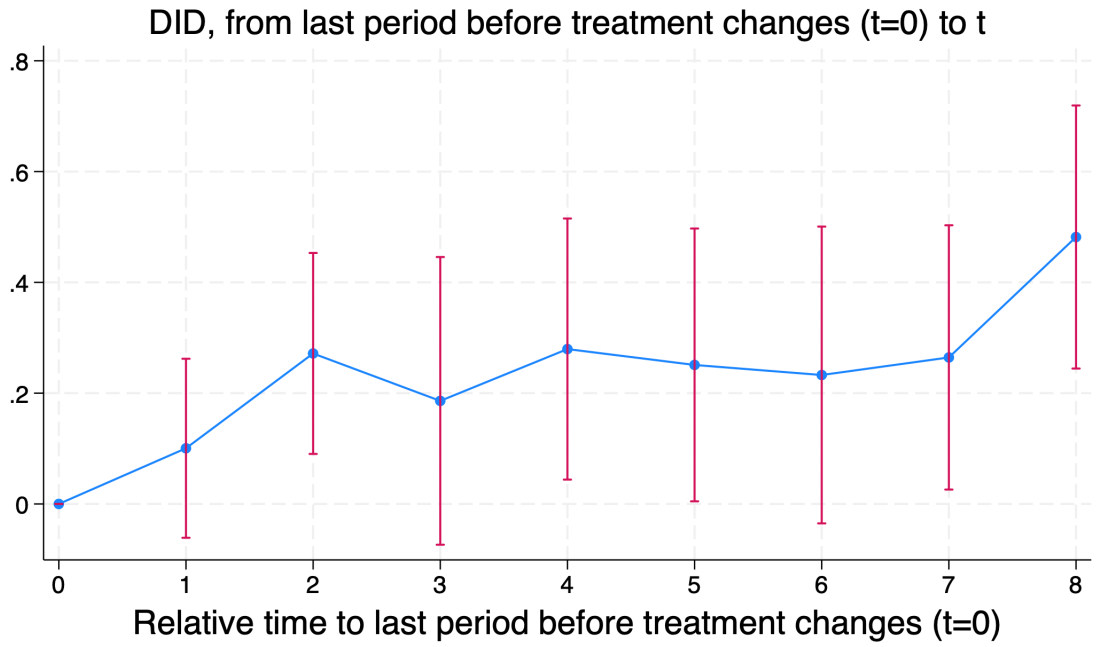


Figure A.15: Output/Part (surv)

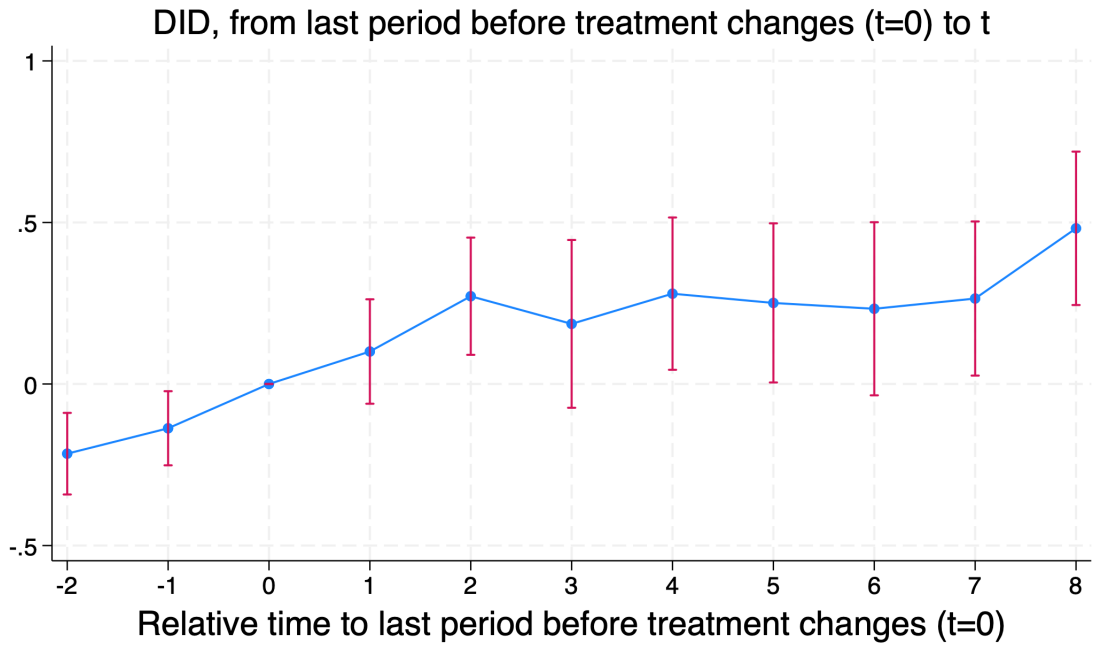


Figure A.16: Output/Part (surv)

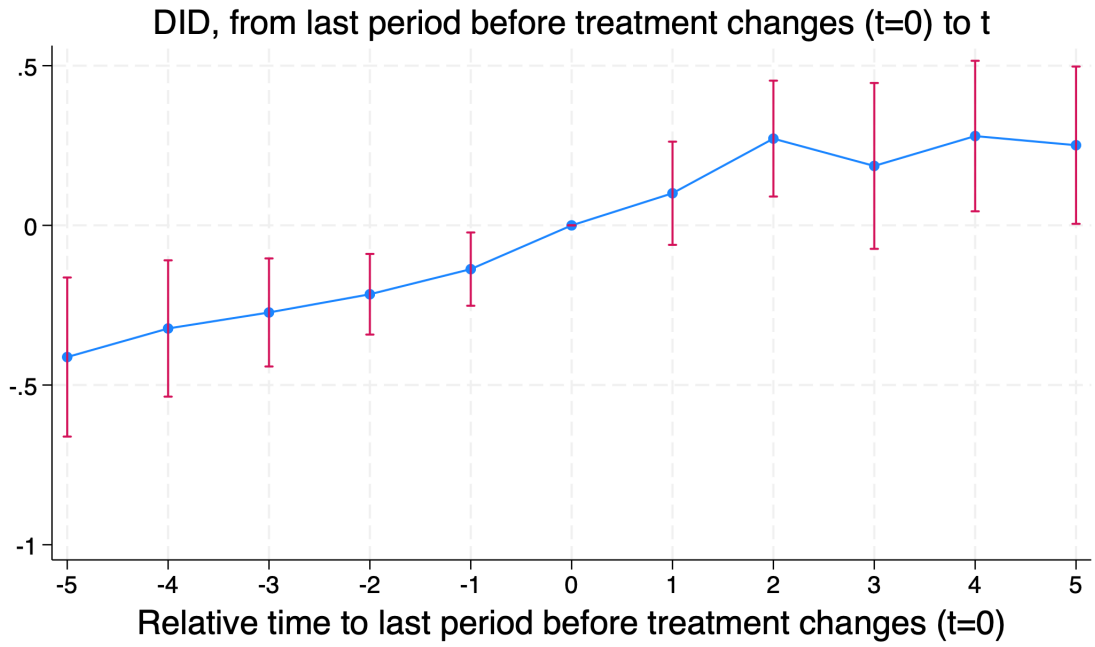


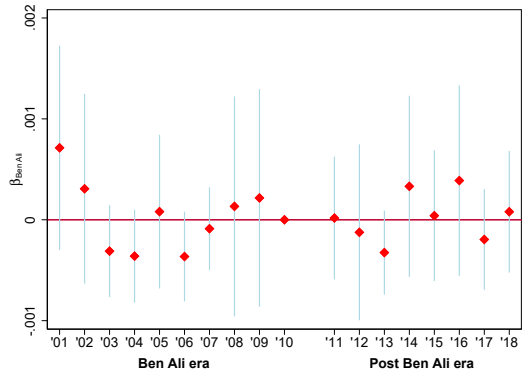
Figure A.17: Output/Part (surv)

Table A.1: Data Sources for Countries Other than Tunisia

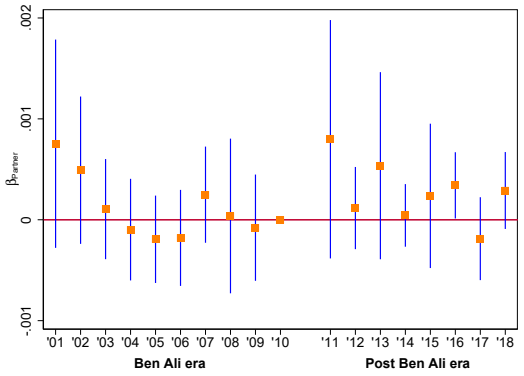
Country	**Source**	**Period**
Croatia	Financial Agency (FINA) Database. Database derived from financial statements submitted by firms.	2008-2018
Ecuador	Sistema de Rentas Internas del Ecuador (SRI)	2007-2017
Georgia	Statistical Survey of Enterprises. National Statistics Office of Georgia.	2008-2018
India	Annual Survey of Industries (ASI). Ministry of Statistics & Programme Implementation	2008-2018
Serbia	Annual Structural Business Survey. Serbian Business Registers Agency.	2008-2018
Vietnam	Economic Census. General Statistics Office of Vietnam (GSO).	2008-2018

Figure A.18: Impact of regime change on competition - further measures

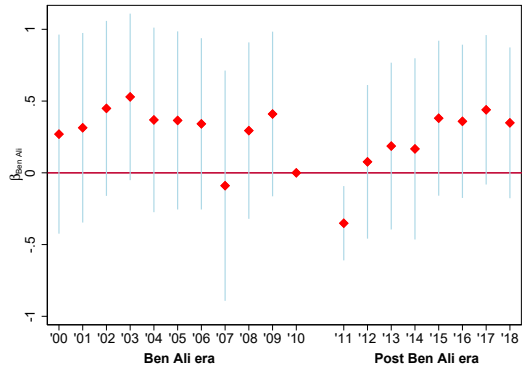
(a) Exit (Ben Ali)



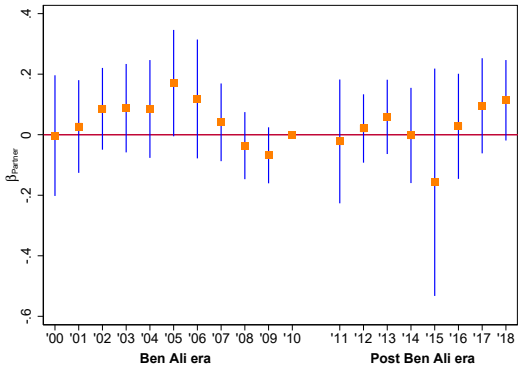
(b) Exit



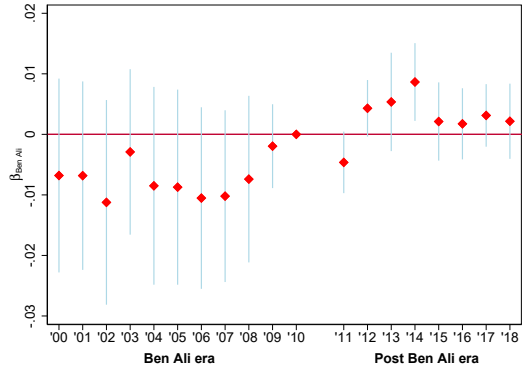
(c) Profit Margin (Ben Ali)



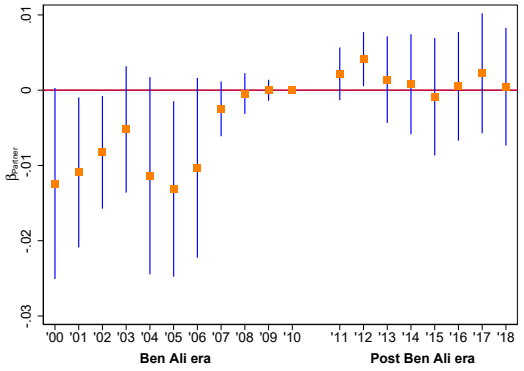
(d) Profit Margin (Partner)



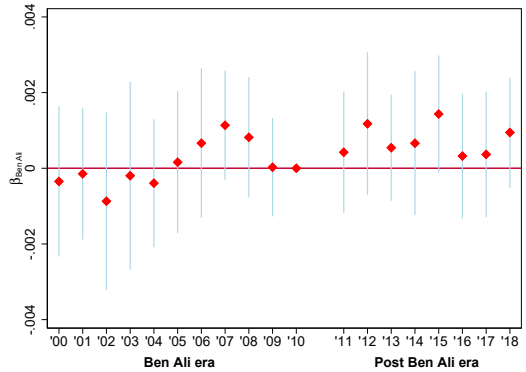
(e) Output (Log) Ben Ali



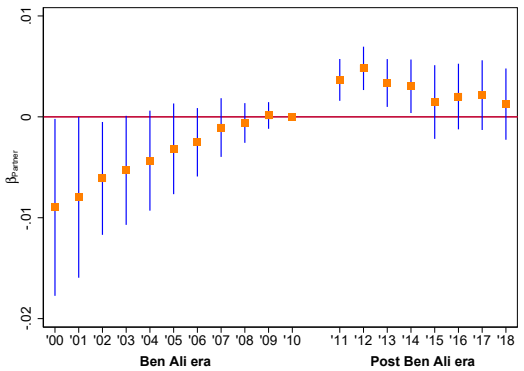
(f) Output (Log) (Partner)



(g) Churning top 4 (Ben Ali)



(h) Churning top 4 (Partner)



Tables

Table A.2: Descriptive Statistics for Ben Ali, Partners and Others, before and after 2011, keeping firms that exit.

	Ben Ali		**Partners**		**Others**		**Δ BA -**	**Δ Part -**
	Mean	SD	Mean	SD	Mean	SD	**Other**	**Other**
			Panel A: Ben Ali era (2001-2010)					
Log (1+Y)	13.32	4.76	14.84	3.92	10.93	3.74	2.39***	3.91***
Log (1+L)	2.49	1.91	3.23	1.99	1.19	1.22	1.30***	2.03***
Profit margin	-0.01	0.28	-0.01	0.24	0.10	0.26	-0.11***	-0.11***
Market share	6.17	16.5	7.43	13.7	0.83	5.26	5.34***	6.60***
Exporter	0.19	0.39	0.26	0.44	0.06	0.25	0.13***	0.20***
Importer	0.43	0.49	0.52	0.50	0.13	0.34	0.29***	0.39***
Age	9.70	10.9	15.4	10.2	12.0	9.70	-2.20***	3.47***
Offshore	0.08	0.27	0.04	0.21	0.06	0.24	0.02***	-0.02**
Foreign	0.01	0.09	0.02	0.12	0.03	0.16	-0.02***	-0.01***
			Panel B: Post Ben Ali era (2011-2018)					
Log (1+Y)	8.88	7.76	14.94	3.96	8.87	5.41	0.01	6.07***
Log (1+L)	2.09	2.16	3.30	2.01	0.99	1.18	1.09***	2.31***
Profit margin	0.01	0.31	0.01	0.24	0.16	0.31	-0.16***	-0.15***
Market share	4.93	14.6	6.64	12.2	0.57	4.34	4.36***	6.07***
Exporter	0.11	0.32	0.25	0.43	0.05	0.22	0.06***	0.20***
Importer	0.27	0.44	0.49	0.50	0.11	0.32	0.16***	0.38***
Age	14.68	10.59	20.89	11.55	17.04	10.41	-2.37***	3.85***
Offshore	0.08	0.26	0.05	0.22	0.08	0.28	0.01	0.02***
Foreign	0.01	0.11	0.03	0.16	0.04	0.19	-0.03***	-0.01*
			Panel C: Difference After - Before					
Log (1+Y)	-4.44***		0.10		-2.06***		-2.39***	2.16***
Log (1+L)	-0.41***		0.08		-0.20***		-0.21***	0.28***
Profit margin	0.01		0.01		0.06***		-0.05***	-0.05***
Market share	-1.24**		-0.79		-0.26***		-0.98***	-0.53**
Exporter	-0.09***		-0.01		-0.01***		-0.07***	0.00
Importer	-0.16***		-0.03		-0.02***		-0.14***	-0.01
Age	4.97***		5.46***		5.08***		-0.11	0.37
Offshore	0.01		0.01		0.02***		-0.01	-0.01
Foreign	0.00		0.01**		0.01***		-0.01	0.00

Notes: Only firms active in 2010. Firms that exit are kept in the dataset with a zero as real output, number of wage workers and profits. Y = real output (in TND), L = wage workers, Profit margin = net profits over sales, Market share = share of output of a firm by year and 4-digits NAT sector, Exporter/Importer= dummy equal to 1 if firm is exporting/importing in a given year, Age= age of firms, Offshore= dummy equal to one if offshore firm, Foreign= dummy equal to one if firm has foreign shareholders.

Table A.3: Number of new entries by year and type of political connection.

Year	Other	Ben Ali clan	Partners	Total
2000	4,107	7	2	4,116
2001	6,228	11	6	6,245
2002	5,706	19	7	5,732
2003	5,170	18	3	5,191
2004	5,371	16	6	5,393
2005	5,324	19	8	5,351
2006	5,515	17	5	5,537
2007	6,409	35	7	6,451
2008	6,465	22	10	6,497
2009	7,730	26	9	7,765
2010	6,454	23	5	6,482
2011	5,512	4	1	5,517
2012	5,796	1	4	5,801
2013	6,098	4	6	6,108
2014	8,261	2	2	8,265
2015	6,517	1	1	6,519
2016	6,233	2	6	6,241
2017	6,393	1	2	6,396
2018	6,732	1	2	6,735
2019	5,714	0	1	5,715
2020	3,770	0	0	3,770
2021	4,721	0	0	4,721
Total	130,226	229	93	130,548

Notes: An entry is defined as the first year during which a firm is active (positive output, or workers, or import/export).

Table A.4: Equality of survivor functions (2010-2018)

	Observed Events	Expected Events	Relative Hazard
Ben Ali firm	77	60.50	1.2742
Partner Firm	14	47.75	0.2935
Other Firms	23913	23895.75	1.0018

Cox regression-based test for the equality of survivor functions, among firms based on their relation to the Ben Ali clan (Ben Ali firms, Partner firms and Other firms). We restrict our sample to the firms active in 2010, and the event is a firm's exit defined as its last year of activity (positive output, or workers, or import/export). The time-to-event is defined as the number of years before exit from 2010 or 2018.

Table A.5: Average Treatment effect (ATT) of the revolution on connected and partners firms performance.

VARIABLES	Log of real output (1)	Market share (2)	Log of workers (3)
Panel A: Surviving firms.			
Ben Ali firms	-0.257**	-1.608**	-0.0927
	(0.112)	(0.622)	(0.0657)
Partners firms	0.164	-0.352	0.208***
	(0.104)	(0.511)	(0.0800)
Observations	1,230,487	1,398,529	952,560
Panel B: Pseudo-Balanced panel.			
Ben Ali firms	-1.801***	-1.406***	-0.277***
	(0.405)	(0.521)	(0.0703)
Partners firms	1.481***	-0.463	0.235**
	(0.197)	(0.564)	(0.0939)
Observations	1,457,969	1,457,894	1,113,081

Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are in parentheses. Time period 2001-2018. Only firms that were active in 2010 are included. This table reports Average Treatment Effects on the Treated (ATT) estimated using the doubly robust Callaway and Sant'Anna (2021) estimator for difference-in-differences models. In panel B, firms that exit are kept in the dataset with a zero as real output, number of wage workers and market share. The dependent variable is the logarithm of real output (panel A) and one plus real output (panel B) for column 1, the market share for column 2, and the logarithm of one plus the number of wage workers for column 3. Treatment is the establishment of a partnership between an owner of the firm and a member of a Ben Ali family in another firm, and is introduced in different years in units. In all columns, the model controls for the logarithm of firm age, offshore status, state ownership, and foreign ownership. Treated firms are compared to not-yet-treated and never-treated firms.

Table A.6: Effect of the revolution on connected firms performance.

VARIABLES	(1)	(2)	(3)	(4)	(5)
Panel A: Real output					
Ben Ali Firm	2.010***				
	(0.141)				
Partner Firm	2.397***				
	(0.159)				
Ben Ali x Post 2011	0.269*	-0.0399	-0.0559	-0.000465	-0.0548
	(0.138)	(0.127)	(0.116)	(0.127)	(0.116)
Partner x Post 2011	0.112	0.432***	0.403***	0.393***	0.297***
	(0.103)	(0.0925)	(0.0948)	(0.0923)	(0.0906)
Partn x BA 2010 x Post				0.0841	0.176
				(0.169)	(0.171)
Observations	1,259,517	1,256,667	1,255,775	1,256,667	1,255,775
R-squared	0.394	0.846	0.851	0.846	0.851
Panel B: Market share					
Ben Ali Firm	3.021***				
	(0.632)				
Partner Firm	4.749***				
	(0.930)				
Ben Ali x Post 2011	-0.510	-0.718	-0.359	-0.724	-0.350
	(0.636)	(0.611)	(0.445)	(0.611)	(0.444)
Partner x Post 2011	-0.876	-0.183	-0.0627	-1.201	-1.164
	(0.607)	(0.575)	(0.447)	(1.264)	(0.885)
Partn x BA 2010 x Post				1.681	1.807*
				(1.346)	(0.994)
Observations	1,446,014	1,445,605	1,444,788	1,445,605	1,444,788
R-squared	0.492	0.859	0.864	0.859	0.864
Panel C: Wage workers					
Ben Ali Firm	0.911***				
	(0.0919)				
Partner Firm	1.341***				
	(0.129)				
Ben Ali x Post 2011	0.0419	0.0175	-0.0479	0.0709	-0.0478
	(0.0870)	(0.0801)	(0.0758)	(0.0801)	(0.0758)
Partner x Post 2011	0.188*	0.365***	0.325***	0.326***	0.319***
	(0.107)	(0.0928)	(0.0952)	(0.112)	(0.117)
Partn x BA 2010 x Post				0.0895	0.0110
				(0.178)	(0.183)
Observations	1,071,143	1,065,675	1,064,809	1,065,675	1,064,809
R-squared	0.380	0.841	0.850	0.841	0.850
Sector	Yes	No	No	No	No
Firm FE	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	No
Sector x Year FE	No	No	Yes	No	Yes

*Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Time period 2001-2018. Firms that exit are kept in the dataset with a zero as real output, number of wage workers and market share. In panel A, dependent variable is the logarithm of one plus real. In panel B, dependent variable is the market share (output). In panel C, dependent variable is the logarithm of one plus the number of wage workers. The main independent variables are dummies taking the value of one if a firm was owned by a member of the Ben Ali clan, and another dummy taking the value of one if the firm was owned by a partner of the Ben Ali clan, interacted with a dummy taking the value of one if year is higher than 2010 (post-revolution). A partner is defined as someone holding shares in more than one firm owned by a member of the Ben Ali clan. In columns 4 and 5, we interact the partner firm and post 2011 interaction with a dummy taking the value of one if there was an active Ben Ali firm in the firm's sector in 2010. In all columns we control for the logarithm of age, and dummies for whether a firm: is working offshore and is partly state owned. Dummies for offshore and state owned firms are interacted with the post 2011 dummy. Standard errors are clustered at the firm level.*

Table A.7: Effect of the revolution on connected firms performance (Pseudo-balanced dataset).

VARIABLES	(1)	(2)	(3)	(4)	(5)
Panel A: Real output					
Ben Ali Firm	1.860***				
	(0.253)				
Partner Firm	2.687***				
	(0.275)				
Ben Ali x Post 2011	-2.913***	-1.729***	-1.733***	-1.101***	-1.729***
	(0.407)	(0.421)	(0.411)	(0.421)	(0.411)
Partner x Post 2011	2.023***	2.303***	2.250***	1.318***	1.595***
	(0.286)	(0.241)	(0.274)	(0.360)	(0.397)
Partn x BA 2010 x Post				1.940***	1.079**
				(0.481)	(0.539)
Observations	1,631,284	1,631,092	1,630,246	1,631,092	1,630,246
R-squared	0.207	0.598	0.636	0.601	0.636
Panel B: Market share					
Ben Ali Firm	3.087***				
	(0.648)				
Partner Firm	4.863***				
	(0.953)				
Ben Ali x Post 2011	-1.489***	-0.671	-0.396	-0.705	-0.389
	(0.577)	(0.509)	(0.373)	(0.509)	(0.372)
Partner x Post 2011	-0.966	-0.236	-0.0877	-1.306	-1.275
	(0.609)	(0.592)	(0.485)	(1.303)	(0.989)
Partn x BA 2010 x Post				1.761	1.958*
				(1.382)	(1.091)
Observations	1,631,115	1,630,923	1,630,160	1,630,923	1,630,160
R-squared	0.470	0.847	0.848	0.847	0.848
Panel C: Wage workers					
Ben Ali Firm	0.909***				
	(0.0955)				
Partner Firm	1.357***				
	(0.136)				
Ben Ali x Post 2011	-0.341***	-0.121	-0.170**	-0.0598	-0.169**
	(0.0914)	(0.0887)	(0.0842)	(0.0887)	(0.0843)
Partner x Post 2011	0.301***	0.436***	0.401***	0.319**	0.313**
	(0.114)	(0.104)	(0.106)	(0.147)	(0.146)
Partn x BA 2010 x Post				0.225	0.149
				(0.205)	(0.208)
Observations	1,349,043	1,345,603	1,344,813	1,345,603	1,344,813
R-squared	0.341	0.807	0.823	0.808	0.823
Sector	Yes	No	No	No	No
Firm FE	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	No
Sector x Year FE	No	No	Yes	No	Yes

*Notes: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Time period 2001-2018. Only firms that were active in 2010 are included. Firms that exit are kept in the dataset with a zero as real output, number of wage workers and market share. In panel A, dependent variable is the logarithm of one plus real. In panel B, dependent variable is the market share (output). In panel C, dependent variable is the logarithm of one plus the number of wage workers. The main independent variables are dummies taking the value of one if a firm was owned by a member of the Ben Ali clan, and another dummy taking the value of one if the firm was owned by a partner of the Ben Ali clan, interacted with a dummy taking the value of one if year is higher than 2010 (post-revolution). A partner is defined as someone holding shares in more than one firm owned by a member of the Ben Ali clan. In columns 4 and 5, we interact the partner firm and post 2011 interaction with a dummy taking the value of one if there was an active Ben Ali firm in the firm's sector in 2010. In all columns we control for the logarithm of age, and dummies for whether a firm: is working offshore and is partly state owned. Dummies for offshore and state owned firms are interacted with the post 2011 dummy. Standard errors are clustered at the firm level.*

Table A.8: Statistics on the decisions of the Competition Council from 2001 to 2020.

Year	Cases	Investigations	Sanctions	Fine
2001	4	2	1	1
2002	7	3	1	0
2003	11	6	5	5
2004	10	9	5	1
2005	24	19	5	0
2006	20	12	4	4
2007	21	11	6	0
2008	21	9	2	2
2009	25	10	7	0
2010	26	17	10	0
2011	30	15	2	0
2012	37	24	6	0
2013	18	15	7	4
2014	23	20	4	0
2015	39	30	11	8
2016	34	22	4	2
2017	26	16	2	2
2018	39	31	8	6
2019	39	32	10	8
2020	14	9	1	1
Total	468	312	101	44

Table A.9: Number of firms with at least one anti-competitive allegation by year and political connection status.

Year	Other	Ben Ali	Partner
2001	1	0	0
2002	2	0	0
2003	1	0	0
2004	3	0	0
2005	5	0	1
2006	10	0	0
2007	8	0	0
2008	26	0	0
2009	6	0	0
2010	27	1	1
2011	20	1	1
2012	20	2	1
2013	12	0	0
2014	8	4	0
2015	16	7	1
2016	14	4	1
2017	18	4	2
2018	51	3	0

Table A.10: Type of ant-competitive conducts that Ben Ali firms are accused of.

Type of anti-competitive conduct	Allegations	Sanctions
Abuse of dominant position	8	1
Abuse of economic dependence	13	9
Cartel	1	0
Collusion	6	3
Excessive low pricing	15	2
Market access limitation	4	3
Price fixing	2	0
Refusal to sell	1	0
Other	22	0

Table A.11: Description and real output premium of connected firms by sector for sectors with both Ben Ali and partners firms.

				2010											
nat09	Sector name	#BA	#Part	Tot output	MS BA	MS Part	BA	Stderr	BA x Post	Stderr	Part	Stderr	Part x Post	Stderr	N	R^2
9329	Other amusement & recreation activities	6	1	512'839	4.97	9.49	-0.795*	0.438	4.322***	0.856	4.169***	0.830	0.471	1.276	3'774	0.091
4712	Retail sale in non-specialised stores	1	1	2.02e+09	9.08	19.8	5.691***	0.830	-0.311	1.097	5.719***	0.645	1.076	0.964	1'475	0.223
5611	Restaurants & mobile food service	4	1	2.16e+08	14.3	2.75	3.977***	0.328	-0.830*	0.444	3.614***	0.463	0.311**	0.695	10'971	0.052
6419	Other monetary intermediation	3	1	4.47e+09	20.2	5.15	2.179***	0.382	0.638	0.512	1.584***	0.486	0.248	0.726	448	0.509
4674	Wholesale of plumbing and heating eqpt.	1	3	2.62e+09	1.15	0.54	4.904***	1.350	-0.570	1.653	2.454***	0.477	-0.387	0.616	22'863	0.022
2229	Manufacture of other plastic products	2	2	4.53e+08	9.92	3.34	0.913	0.693	1.715**	0.847	1.966**	0.805	2.242**	0.923	3'186	0.234
7022	Business & management consultancy	9	1	8'043'256	1.34	0.37	0.784**	0.379	2.701***	0.636	4.442***	0.885	-2.192	1.361	18'766	0.044
5222	Svc incidental to water transportation	2	0	2.81e+08	5.85	0	1.177**	0.591	0.725	0.859	-	-	-	-	2'461	0.069
8542	Tertiary education	1	1	658'744	10.8	0.97	-0.343	0.838	2.441**	1.138	2.223	1.453	-0.540	1.635	461	0.383
1812	Other printing	1	1	2.92e+08	1.70	2.22	2.100***	0.519	1.792**	0.809	2.382***	0.520	0.891	1.722	5'101	0.152
8559	Other education	2	2	973'006	7.21	9.14	-0.516	0.906	1.657	1.605	3.598***	0.724	0.522	1.185	2'985	0.114
6619	Auxiliary to financial svc & insurance	3	1	519'411	2.77	0.17	-1.067*	0.544	1.583	1.155	0.082	0.751	-2.932**	1.143	443	0.425
5223	Svc incidental to air transportation	2	1	2.62e+08	2.46	6.29	0.169	1.083	0.120	1.210	1.959**	0.969	0.071	1.273	226	0.174
6430	Trusts, funds & financial entities	1	3	743'676	0.00	4.72	-3.868***	0.833	1.469	1.278	-0.206	0.499	2.589***	0.761	853	0.163
4110	Development of building projects	19	7	1.36e+09	1.13	4.38	0.675**	0.287	0.292	0.406	1.522***	0.273	-0.737*	0.395	7'539	0.038
4511	Sale of cars & light motor vehicles	9	1	2.00e+09	56.3	0.02	3.098***	0.395	0.569	0.528	0.452	1.691	-0.458	1.888	541	0.508
2222	Manufacture of plastic packinggoods	1	1	3.99e+08	1.66	0.58	0.721	0.540	0.886	0.810	0.721	0.572	0.828	0.830	1'481	0.109
6511	Life insurance	1	1	1.14e+07	10.4	6.35	1.324	1.427	0.973	2.105	2.807**	1.390	1.554	3.471	368	0.119
6420	Activities of holding companies	3	3	2.34e+08	94.4	4.55	3.885***	0.685	-0.874	0.884	0.542	0.831	0.903	1.050	87	0.615
7711	Renting & leasing of cars	3	2	1'780'357	0.55	1.40	0.833	0.813	0.291	1.242	-0.146	0.595	1.869**	0.940	4'066	0.033
1051	Operation of dairies & cheese making	1	7	1.30e+9	8.5	59.6	4.354***	0.689	0.214	1.033	3.430***	0.589	0.448	0.769	646	0.442
4639	Wholesale food/bever./tobacco	7	3	2.76e+09	3.40	23.3	2.085***	0.298	0.409	0.435	3.228***	0.333	0.712	0.490	10'135	0.112
4690	Non-specialised wholesale trade	21	5	4.02e+09	2.97	3.43	1.331***	0.234	-0.331	0.470	3.404***	0.330	0.046	0.494	14'049	0.120
5510	Hotels & similar accommodation	5	5	2.26e+09	2.77	2.20	2.545***	0.361	0.374	0.641	2.918***	0.375	-0.867	0.564	8'783	0.0635
6622	Insurance agents & brokers	2	1	1'730'102	1.81	0.22	3.503***	0.557	-0.792	0.802	1.348**	0.651	-0.809	1.003	9'797	0.118
4941	Freight transport by road	4	2	7.44e+08	0.45	0.78	1.911***	0.340	-1.460**	0.716	2.584***	0.423	-0.530	0.646	13'124	0.042
2331	Manufacture of ceramic tiles and flags	1	2	3.99e+08	8.19	29.1	4.336***	0.665	-0.933	0.998	4.463***	0.664	-0.872	0.922	825	0.300
4669	Wholesale of other machinery & eqpt.	5	1	9.42e+08	2.20	0.16	1.339***	0.261	-1.205**	0.583	1.320**	0.622	0.242	0.851	7'713	0.129
4120	Construction of buildings	7	4	2.72e+09	0.12	0.07	2.262***	0.368	-0.644*	0.608	0.856*	0.484	0.122	0.617	30'314	0.048
6491	Financial leasing	1	5	1.23e+07	12.2	77.8	2.607**	1.306	-2.211	1.821	-0.643	0.678	1.709	1.075	194	0.188
7911	Travel agency activities	5	3	5'433'750	2.00	6.72	1.335***	0.517	-5.733***	1.208	0.457	0.482	1.493**	0.729	7'542	0.084

Table A.12: Description and real output premium of connected firms by sector for sectors with only Ben Ali firms.

			2010								
nat09	Sector name	#BA	Tot output	MS BA	BA	Stderr	BA x Post	Stderr	N	R^2
4652	Wholesale of electronic and telecommunications equipment and parts	3	2'106'070	4.76	-2.326**	1.052	5.564***	1.349	1'026	0.110
4634	Wholesale of beverages	2	3'540'100	2.79	-1.984***	0.738	6.332**	2.948	2'326	0.069
4631	Wholesale of fruit and vegetables	2	3'617'015	3.87	-1.070	1.527	4.041**	1.960	2'314	0.112
7311	Advertising agencies	2	2'739'303	14.4	0.018	0.637	3.915***	1.016	2'219	0.076
5813	Publishing of newspapers	2	765'949	15.8	1.435**	0.713	2.003*	1.120	413	0.263
4649	Wholesale of other household goods	4	3'938'267	0.35	-0.908	0.662	1.849*	1.119	4'561	0.049
2110	Manufacture of basic pharmaceutical products	2	2'223'652	30.3	-4.194***	1.025	1.532	1.481	238	0.371
6120	Wireless telecommunications activities	2	2.95e+07	44.5	-3.359	2.746	1.365	1.714	49	0.737
4222	Construction of utility projects for electricity and telecommunications	2	2'442'428	6.29	2.789***	1.032	0.944	2.515	1'244	0.168
6190	Other telecommunications activities	4	1'631'247	16.7	5.400***	0.533	0.778	0.714	5'009	0.130
5911	Motion picture, video and television program, production activities	5	966'154	58.8	5.178***	0.670	0.766	1.115	1'044	0.171
4531	Wholesale trade of motor vehicle parts and accessories	4	9'252'675	7.65	3.340***	0.566	0.504	0.721	4'772	0.091
4641	Wholesale of textiles	3	3'039'947	4.12	2.818***	0.438	0.305	0.764	3'970	0.034
4321	Electrical installation	2	3'749'543	0.23	2.119***	0.776	-	-	10'164	0.089
1414	Manufacture of underwear	5	2.54e+07	0.88	-0.025	0.392	-0.298	0.860	14'747	0.096
2561	Treatment and coating of metals	2	1'034'431	43.4	3.627***	0.916	-0.568	1.311	588	0.146
4532	Retail trade of motor vehicle parts and accessories	1	9'428'539	0.02	-1.060	0.943	-0.628	1.202	18'879	0.022
0150	Mixed farming	4	484'235	7.47	1.623***	0.531	-0.742	0.813	705	0.064
5224	Cargo handling	1	1'819'501	3.20	3.679***	1.081	-1.216	1.655	435	0.097
0321	Marine aquaculture	5	620'289	2.77	1.308	0.840	-1.665	1.493	396	0.234
4730	Retail sale of automotive fuel in specialised stores	2	2.44e+07	0.37	-0.131	1.010	-1.692	2.667	9'622	0.010
5211	Warehousing and storage	3	1'310'951	1.48	2.676***	0.733	-1.872	1.285	2'526	0.052
5221	Service activities incidental to land transportation	3	583'998	1.44	2.413***	0.608	-2.320	1.658	571	0.250
1200	Manufacture of tobacco products	2	2'805'610	7.93	6.350***	1.049	-2.253	1.483	175	0.678
5110	Passenger air transport	4	4'557'335	84.5	5.182***	1.512	-5.089***	1.771	99	0.398
1041	Manufacture of oils and fats	3	8'472'815	0.03	0.319	0.876	-6.278***	2.261	9'235	0.033

Table A.13: Description and real output premium of connected firms by sector for sectors with only partners firms.

		2010								
nat09	Sector name	#Part	Tot output	MS Part	Part	Stderr	Part x Post	Stderr	N	R^2
0891	Mining of chemical and fertiliser minerals	1	9'834'405	0.05	-4.734***	1.633	4.969***	1.613	59	0.848
6630	Fund management activities	1	22'567	3.40	-3.499*	2.086	4.011	2.431	83	0.561
8553	Driving school activities	1	277'895	0.46	2.294	1.955	2.815	2.073	18'985	0.185
1721	Manufacture of corrugated paper and paperboard	4	4'385'867	14.3	1.014	0.675	2.557***	0.895	1'579	0.190
8533	Secondary education	1	517'287	0.14	-0.636	1.440	2.511	1.688	6'077	0.030
0125	Growing of other tree and bush fruits and nuts	1	115'272	16.5	-2.358**	1.106	2.288	1.399	183	0.378
2420	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	1	351'938	61.0	-0.838	2.036	2.105	3.958	58	0.466
2825	Manufacture of non-domestic cooling and ventilation equipment	1	989'997	8.69	1.658	1.177	1.733	1.545	597	0.092
1042	Manufacture of margarine and similar edible fats	1	1'728'864	54.6	4.364**	1.825	1.566	2.193	343	0.325
2410	Manufacture of basic iron and steel and of ferro-alloys	2	8'526'309	5.89	1.222**	0.544	1.130	0.824	576	0.259
2562	Machining	1	879'684	0.48	1.831***	0.652	0.890	1.657	3'011	0.098
2511	Manufacture of metal structures and parts of structures	2	8'533'086	8.19	4.062***	0.678	0.762	0.991	4'727	0.057
2599	Manufacture of other fabricated metal products	2	4'085'646	2.73	1.311*	0.734	0.759	0.987	2'537	0.142
2751	Manufacture of electric domestic appliances	1	3'412'838	27.7	2.083*	1.065	0.620	2.568	276	0.140
4711	Retail sale in non-specialised stores with food, beverages or tobacco	1	1'587'987	2.81	4.811***	0.579	0.412	0.891	11'785	0.024
1082	Manufacture of cocoa, chocolate and sugar confectionery	1	2'652'017	4.13	2.740***	0.921	0.404	1.427	293	0.317
2651	Manufacture of instruments and appliances for measuring, testing and navigation	1	526'240	15.5	4.143***	1.130	0.372	1.605	253	0.439
0147	Raising of poultry	8	6'026'487	39.6	2.502***	0.433	0.223	0.636	1'699	0.186
2332	Manufacture of bricks, tiles and construction products, in baked clay	2	2'807'306	0.49	-0.440	0.995	0.142	1.414	1'109	0.025
1069	Manufacture of grain mill products	1	3'082'840	49.8	2.173***	0.400	0.020	0.612	132	0.833
6499	Other financial service activities, except insurance and pension funding	1	200'854	46.3	0.849**	0.393	-0.168	0.390	34	0.925
1091	Manufacture of prepared feeds for farm animals	2	1.06e+07	32.1	5.119***	0.684	-0.176	1.035	2'027	0.137
4672	Wholesale of metals and metal ores	2	3'085'069	10.2	3.087***	0.861	-0.269	1.116	1'785	0.054
4741	Retail sale of computers, peripheral units and software in specialised stores	2	3'881'357	3.81	2.742***	0.496	-0.292	0.758	5'966	0.100
1012	Processing and preserving of poultry meat	1	2'666'252	50.8	1.012	1.209	-0.338	1.612	287	0.452
4774	Retail sale of medical and orthopaedic goods in specialised stores	1	1'499'401	1.69	1.861***	0.666	-0.361	1.020	3'010	0.166
2740	Manufacture of electric lighting equipment	1	893'866	3.87	2.740*	1.418	-0.516	2.290	764	0.143
6831	Real estate agencies	1	233'521	2.61	5.045***	1.038	-0.652	1.421	2'115	0.116
6612	Security and commodity contracts brokerage	2	578'310	9.25	1.236**	0.537	-0.684	0.817	372	0.065
1722	Manufacture of household and sanitary goods and of toilet requisites	1	3'699'741	5.03	1.610	1.020	-0.725	1.677	304	0.251
1108	Manufacture of beverages	1	4'917'073	5.93	4.421***	1.115	-1.167	1.573	294	0.163
8010	Private security activities	1	1'433'433	0.98	3.364**	1.352	-1.243	3.572	1'663	0.114
1034	Processing and preserving of fruit and vegetables	1	504'658	77.5	4.201***	1.166	-1.473	1.718	137	0.381
3091	Manufacture of motorcycles	1	303'898	63.4	5.178***	1.036	-1.730	1.358	153	0.312

Table A.14: Description and real output premium of connected firms by sector for sectors with both Ben Ali and partners firms (pseudo-balanced dataset).

		2010														
nat09	Sector name	#BA	#Part	Tot output	MS BA	MS Part	BA	Stderr	BA x Post	Stderr	Part	Stderr	Part x Post	Stderr	N	R^2
6420	Activities of holding companies	3	3	2'336'202	94.4	4.55	4.960***	1.480	-3.851***	1.418	0.465	1.723	-4.352***	1.588	122	0.698
4511	Sale of cars & light motor vehicles	10	1	1.98e+07	56.8	0.24	1.813***	0.518	1.970***	0.486	1.088	2.449	0.593	1.780	590	0.766
6419	Other monetary inter-mediation	3	1	4.47e+07	20.2	5.15	2.049***	0.454	0.218	0.442	1.485**	0.582	0.158	0.613	476	0.752
5611	Restaurants & mobile food service	4	1	2'153'595	14.4	2.76	4.632***	0.592	-1.781***	0.581	3.710***	0.817	1.924**	0.883	14'154	0.619
6491	Financial leasing	1	5	1.23e+07	12.2	77.8	1.184	1.266	-0.697	1.260	0.959	0.692	3.370***	0.714	198	0.725
2229	Manufacture of other plastic products	2	2	3'675'825	12.2	4.11	0.074	1.206	4.776***	1.141	-1.493	1.072	7.851***	0.895	2'767	0.688
8542	Tertiary education	1	1	658'744	10.8	0.97	-0.526	0.732	2.389***	0.705	1.912	1.270	-1.318	1.021	453	0.723
6511	Life insurance	1	1	1.14e+07	10.4	6.35	-0.014	0.727	0.245	0.319	1.347*	0.676	1.220**	0.511	323	0.941
4712	Retail sale in non-specialised stores	1	1	2.02e+07	9.09	19.8	6.196***	1.241	0.216	1.086	5.728***	0.921	1.739*	0.941	1'640	0.682
1051	Operation of dairies & cheese making	1	7	1.30e+07	8.55	59.8	5.498***	1.167	2.101**	1.056	3.909***	0.524	2.972***	0.461	772	0.791
2331	Manufacture of ceramic tiles and flags	1	2	3'987'836	8.19	29.1	4.886***	1.037	0.168	1.583	2.320***	0.880	3.807***	0.994	1'023	0.761
8559	Other education	2	2	973'005	7.48	9.48	0.476	1.030	-2.421***	0.921	3.761***	0.793	3.286***	0.805	3'321	0.635
5222	Svc incidental to water transportation	2	1	2'813'298	5.86	0	1.181	0.997	-0.609	1.308	-	-	-	-	2'876	0.615
9329	Other amusement & recreation activities	9	1	512'838	5.22	9.97	0.216	0.497	-1.849***	0.511	4.803***	0.870	1.253	0.915	3'947	0.623
6619	Auxiliary to financial svc & insurance	3	1	519'441	4.07	0.25	-0.811	0.677	1.697**	0.842	-0.135	0.893	-1.246	0.832	436	0.692
4639	Wholesale food/bever./tobacco	10	3	2.72e+07	3.45	23.6	2.625***	0.541	-1.306**	0.528	3.134***	0.624	2.558***	0.648	11'715	0.596
4690	Non-specialised wholesale trade	22	5	3.95e+07	3.02	3.49	0.926**	0.378	-4.518***	0.398	3.435***	0.549	2.587***	0.579	17'836	0.618
5510	Hotels & similar accommodation	5	5	2.26e+07	2.77	2.20	2.847***	0.473	0.887	0.585	2.526***	0.479	0.103	0.460	10'197	0.690
5223	Svc incidental to air transportation	2	1	2'624'872	2.46	6.29	-0.477	1.281	0.306	0.871	2.106*	1.223	-0.190	0.932	242	0.769
4669	Wholesale of other machinery & eqpt.	6	1	9'195'144	2.26	0.17	1.387***	0.445	-4.724***	0.659	1.779*	1.088	1.216	1.028	8'537	0.620
7911	Travel agency activities	6	3	5'433'750	2.01	6.76	2.189***	0.586	-6.579***	0.815	1.988***	0.563	1.373**	0.594	7'879	0.587
7022	Business & management consultancy	11	1	8'043'256	1.99	0.56	1.876***	0.452	-0.860*	0.457	3.665***	0.944	0.869	1.065	20'166	0.579
6622	Insurance agents & brokers	2	1	1'730'102	1.85	0.22	3.008***	0.550	0.278	0.570	0.746	0.643	0.606	0.702	9'709	0.573
2222	Manufacture of plastic packinggoods	1	1	3'769'751	1.76	0.62	0.883	0.846	1.968**	0.853	0.706	1.303	2.693***	0.872	1'711	0.671
1812	Other printing	1	1	2'860'749	1.73	2.26	2.334***	0.842	3.127***	0.874	2.554***	0.842	-5.416***	1.056	6'023	0.670
4110	Development of building projects	25	7	1.35e+07	1.14	4.43	0.279	0.417	-1.934***	0.548	-0.217	0.423	2.119***	0.525	9'468	0.562
4674	Wholesale of plumbing and heating eqpt.	1	3	2.66e+07	1.13	0.53	1.353	1.712	4.040***	1.524	2.813***	0.719	1.508**	0.666	26'567	0.614
7711	Renting & leasing of cars	4	2	1'780'357	0.57	1.44	0.764	1.006	1.098	1.179	-0.225	0.734	-0.513	0.773	4'448	0.550
4941	Freight transport by road	5	2	7'538'255	0.45	0.77	2.476***	0.533	-4.380***	0.741	3.053***	0.663	1.175*	0.715	16'188	0.588
4120	Construction of buildings	7	4	2.82e+07	0.11	0.06	2.340***	0.620	-3.826***	0.715	-2.244***	0.644	5.686***	0.694	39'239	0.606
6430	Trusts, funds & financial entities	1	3	743'675	0.00	7.96	-4.303***	0.674	1.466*	0.771	-0.570	0.405	2.510***	0.458	818	0.616

Table A.15: Description and real output premium of connected firms by sector for sectors with only Ben Ali firms (Pseudo-balanced dataset).

		2010								
nat09	Sector name	#BA	Tot output	MS BA	BA	Stderr	BA x Post	Stderr	N	R^2
2110	Manufacture of basic pharmaceutical products	2	2'223'652	30.3	-2.636**	1.126	5.587***	1.714	214	0.315
4631	Wholesale of fruit and vegetables	2	3'617'015	3.95	0.355	1.799	2.781	2.193	2'412	0.211
0150	Mixed farming	4	484'234	7.47	1.120**	0.491	2.554***	0.763	723	0.317
2561	Treatment and coating of metals	2	1'034'431	43.5	2.763***	1.061	1.728	1.551	661	0.247
7311	Advertising agencies	2	2'734	14.8	2.719***	0.887	1.535	1.254	2'403	0.123
4652	Wholesale of electronic and telecommunications equipment and parts	3	2'106'070	4.78	-0.153	1.538	1.323	1.744	1'106	0.107
4641	Wholesale of textiles	3	3'039'947	4.27	2.627***	0.487	1.304	0.849	4'170	0.100
5911	Motion picture, video and television program, production activities	5	966'154	61.2	5.447***	0.651	1.104	1.055	1'074	0.315
4531	Wholesale trade of motor vehicle parts and accessories	4	9'252'675	7.86	3.846***	0.650	0.945	0.820	4'925	0.118
4532	Retail trade of motor vehicle parts and accessories	3	9'428'539	0.02	-1.034	1.123	0.239	1.431	19'782	0.061
1414	Manufacture of underwear	6	2.54e+07	0.88	1.415***	0.469	-0.058	0.997	16'068	0.214
1200	Manufacture of tobacco products	2	2'805'610	10.7	3.750**	1.471	-0.126	1.948	181	0.526
5224	Cargo handling	1	1'819'501	3.21	2.594**	1.017	-0.181	1.554	437	0.218
6190	Other telecommunications activities	4	1'631'247	20.8	5.854***	0.600	-0.158	0.770	5'385	0.148
6120	Wireless telecommunications activities	2	2.95e+07	44.5	3.136***	1.120	-0.857	0.652	47	0.015
0321	Marine aquaculture	5	620'289	2.86	1.017	0.875	-1.707	1.419	371	0.211
4649	Wholesale of other household goods	4	3'938'267	0.37	-0.732	0.782	-1.785*	1.069	4'788	0.088
5813	Publishing of newspapers	3	765'948	15.8	1.148	0.757	-2.279**	1.012	425	0.329
5211	Warehousing and storage	3	1'310'951	1.57	2.716***	0.730	-3.539***	1.152	2'419	0.057
4222	Construction of utility projects for electricity and telecommunications	2	2'442'428	6.33	3.096***	1.180	-4.290**	1.969	1'380	0.218
1041	Manufacture of oils and fats	3	8'472'815	0.03	-0.753	0.810	-4.793***	1.104	8'993	0.080
4634	Wholesale of beverages	3	3'540'100	3.05	0.933	1.040	-5.728***	1.943	2'512	0.126
5110	Passenger air transport	4	4'557'335	84.5	4.839***	1.493	-6.093***	1.716	98	0.410
4730	Retail sale of automotive fuel in specialised stores	2	2.44e+07	0.37	-0.285	1.140	-7.559***	1.506	9'858	0.046
5221	Service activities incidental to land transportation	3	583'997	1.61	2.252***	0.667	-7.579***	1.229	617	0.269
4321	Electrical installation	2	3'749'543	0.24	2.648***	0.883	-8.487***	1.325	10'711	0.141

Table A.16: Description and real output premium of connected firms by sector for sectors with both Ben Ali and partners firms (Pseudo-balanced dataset).

		2010								
nat09	Sector name	#Part	Tot output	MS Part	Part	Stderr	Part x Post	Stderr	N	R^2
0125	Growing of other tree and bush fruits and nuts	1	115'272	16.5	-0.800	1.299	3.921**	1.675	199	0.264
8553	Driving school activities	1	277'895	0.55	2.453	2.091	3.686*	2.217	19'058	0.075
2420	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	1	351'938	61.0	2.001	1.953	3.358	3.273	65	0.699
1721	Manufacture of corrugated paper and paperboard	4	4'385'867	14.4	2.279***	0.854	2.870***	1.090	1'685	0.223
1082	Manufacture of cocoa, chocolate and sugar confectionery	1	2'652'017	4.13	2.219***	0.978	2.396	1.507	305	0.364
2599	Manufacture of other fabricated metal products	2	4'085'646	2.74	1.149	0.854	2.256**	1.148	2'704	0.158
0891	Mining of chemical and fertiliser minerals	1	9'834'405	0.05	0.037	1.783	2.239	1.588	52	0.843
1034	Processing and preserving of fruit and vegetables	1	504'658	77.5	2.713**	1.152	1.968	1.671	136	0.393
8533	Secondary education	1	517'286	0.15	1.046	1.824	1.727	2.039	6'343	0.068
2511	Manufacture of metal structures and parts of structures	2	8'533'086	8.21	4.996***	0.754	1.480	1.086	4'855	0.087
4711	Retail sale in non-specialised stores with food, beverages or tobacco	1	1'587'987	4.14	4.606***	0.678	1.479	1.045	12'387	0.071
2410	Manufacture of basic iron and steel and of ferro-alloys	2	8'526'309	5.89	1.009*	0.570	1.471*	0.863	583	0.281
1012	Processing and preserving of poultry meat	1	2'666'252	50.9	0.376	1.324	1.376	1.758	285	0.333
4741	Retail sale of computers, peripheral units and software in specialised stores	2	3'881'357	3.96	2.564***	0.636	1.222	0.972	6'621	0.132
2751	Manufacture of electric domestic appliances	1	3'412'838	27.7	0.859	0.900	1.174	2.165	273	0.325
2825	Manufacture of non-domestic cooling and ventilation equipment	1	989'997	8.71	3.066**	1.216	1.005	1.542	597	0.187
1091	Manufacture of prepared feeds for farm animals	2	1.06e+07	32.2	5.173***	0.722	1.002	1.092	2'058	0.110
0147	Raising of poultry	8	6'026'487	39.9	1.650***	0.389	0.842	0.561	1'630	0.182
4672	Wholesale of metals and metal ores	2	3'085'069	10.3	2.987***	0.995	0.840	1.290	1'884	0.072
1722	Manufacture of household and sanitary goods and of toilet requisites	1	3'699'741	5.02	0.528	1.058	0.770	1.733	312	0.303
1108	Manufacture of beverages	1	4'917'073	5.93	4.874***	1.316	0.578	1.852	311	0.189
4774	Retail sale of medical and orthopaedic goods in specialised stores	1	1'499'401	1.73	1.479**	0.760	0.538	1.164	3'133	0.178
2562	Machining	1	879'684	0.49	1.698**	0.705	0.366	1.793	3'112	0.138
6831	Real estate agencies	1	233'521	3.90	4.578***	1.006	0.199	1.376	2'085	0.147
1069	Manufacture of grain mill products	1	3'082'840	50.0	2.130***	0.448	0.187	0.685	132	0.791
6499	Other financial service activities, except insurance and pension funding	1	200'854	46.4	0.849**	0.393	-0.168	0.390	34	0.925
1042	Manufacture of margarine and similar edible fats	1	1'728'864	54.6	6.777***	2.114	-0.263	2.452	340	0.287
6630	Fund management activities	1	22'567	4.19	-0.801	2.167	-0.282	2.327	67	0.462
6612	Security and commodity contracts brokerage	2	578'310	9.47	0.678***	0.242	-0.657*	0.368	352	0.164
2332	Manufacture of bricks, tiles and construction products, in baked clay	2	2'807'306	0.49	1.322	0.977	-1.636	1.308	1'052	0.042
2651	Manufacture of instruments and appliances for measuring, testing and navigation	1	526'240	15.5	3.791***	0.968	-2.309*	1.250	228	0.205
8010	Private security activities	1	1'433'433	0.98	2.670*	1.396	-5.087	1.901	1'952	0.277
2740	Manufacture of electric lighting equipment	1	893'866	3.88	5.171***	1.519	-5.660***	1.944	796	0.191
3091	Manufacture of motorcycles	1	303'897	63.4	7.231***	1.350	-6.891***	1.520	163	0.373