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All in the Family

State Capture in Tunisia

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Abstract

This paper examines the relationship between entry regulation and the business interests of former President Ben Ali's family using firm-level data from Tunisia. Connected firms account for a disproportionate share of aggregate employment, output and profits, especially in sectors subject to authorization and restrictions on FDI. Quantile regressions show that profit and market share premia from being connected increase along the firm-size distribution, especially in highly regulated sectors. These patterns are partly explained by Ben Ali's relatives sorting into the most profitable sectors. The market shares of connected firms are positively correlated with exit and concentration rates in highly regulated sectors. Although causality is difficult to establish, the results are consistent with the hypothesis that the Ben Ali clan abused entry regulation for private gain at the expense of reduced competition.

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Produced by the Research Support Team

All in the Family

State Capture in Tunisia

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1 Introduction

The potential for regulatory abuse is well known. Countries with more cumbersome entry regulations have higher levels of corruption and are less developed, yet do not have better public goods (Djankov et al., 2002, Ades and di Tella, 1997). While these patterns may in part be explained by limited administrative capacity in developing countries, they have also been associated with capture by special interests. Political connections account for significant market value in traded firms (Fisman, 2001) and are especially prevalent in countries with weak rule of law (Faccio et al., 2005). Nonetheless, microeconomic evidence on capture of investment regulation remains limited in spite of in-depth theoretical analysis of the nexus between corruption, rents, and regulation (see e.g. Stigler 1971, Shleifer and Vishny, 1993, 1994, Bliss and Di Tella, 1997, Ades and Di Tella, 1999, Acemoglu and Verdier, 2000).

To help fill this gap in the literature, this paper documents the association between the business interests of President Ben Ali and his family and entry regulation ordained in the Tunisian Investment Incentives Code, *Code d'Incitations aux Investissements* (hereafter referred to as the investment code). The investment code is the main investment legislation governing economic activity in virtually all sectors of the economy with the exception of mining, finance and domestic commerce. Two clauses in the code restrict investment in some sectors, notably (i) authorization requirements obliging investors to obtain permission from the government to run a business, and (ii) restrictions on Foreign Direct Investment (FDI). These entry regulations are potentially susceptible to abuse, as they can create market power by stifling competition both from prospective entrants and incumbents, and/or steer foreign funds to particular firms. Should such capture occur, it is arguably most likely in sectors subject to both these type of restrictions, where entry regulation is most arduous.

To assess the relationship between entry regulations and state capture, this paper assembles a database on political connections, firm performance and entry regulation. Using the Tunisian firm census, we identify 662 firms owned by the Ben Ali family that were confiscated in the aftermath of the Jasmin revolution.[1] These data are merged with administrative data from the tax authorities,

[1] As the firms are directly linked to the Ben Ali family, we use "Ben Ali firms" and "connected firms" interchangeably to refer to these firms.

containing balance sheet information. We also create a database of entry restrictions ordained in the Investment Incentives code.

The resulting dataset enables us to document the association between the severity of entry regulation and the performance of politically connected firms, which public choice theory predicts to be positively correlated (Stigler, 1971, Peltzman, 1976, McChesney, 1987, De Soto, 1990, Shleifer and Vishny, 1993, 1994). By virtue of spanning the universe of registered firms, it allows us to analyze how the prevalence of political connections and the returns to them vary across the distribution of output and profits. Moreover, it enables us to assess how competition evolved as the Ben Ali family expanded its business empire, and whether potential adverse impacts on competition associated with this expansion were more pronounced in sectors subject to entry regulation.

Tunisia provides a pertinent case study to assess the link between regulation and state-business relationships. Like many other developing countries, Tunisia has a development strategy predicated on extensive state intervention. The Ben Ali family's involvement in the economy was well known, and Tunisia's investment promotion agency advertised his close interactions with the business community as enhancing public welfare. In part because Tunisia registered stable positive growth rates hovering around 4–5% per annum, Ben Ali also had a fairly favorable external image. The World Economic Forum repeatedly ranked Tunisia as the most competitive economy in Africa and the IMF as well as the World Bank heralded Tunisia as a role model for other developing countries. Yet, the Tunisian model had serious flaws; unemployment and corruption were high over the period studied, and contributed to Ben Ali's downfall. Last but not least, Tunisia has a high-quality firm census, and authorities willing to grant access to data on both firm performance and political connections.

The first step in the analysis is showing the importance of Ben Ali firms in the Tunisian economy and the link with entry regulations. While only 0.2% of all private firms reporting positive output and employment were connected, they accounted for 5% of private sector output and appropriated 16% of all net private sector profits.[2] These contributions are to a large extent driven by

[2] Since we identify only firms with direct links to the Ben Ali family, as opposed to all firms with cultivated connections, this number is probably best interpreted as a lower bound on the importance of political connections. These estimates are not out of line with previous studies of the economic significance of connected firms. For example, in his study of firms with connections to the Suharto regime, Fisman (2001) observes that the 25 business groups he identifies account for approximately a third of Indonesian GDP. Similarly, Ferguson and Voth (2008) argue that firms with ties to the Nazi

the performance of Ben Ali firms in sectors subject to authorization and restrictions on FDI. Connected firms are approximately four times more likely than non-connected firms to operate in such sectors, and are important players in these sectors, accounting for 11% of all jobs, 43% of output, and 55% of net profits, in spite of accounting for only 0.9% of all firms. In other sectors, by contrast, they account for 1% of employment, 1.2% of output and 3.3% of net profits. Within the sample of sectors covered by the investment code that we analyse, 88% of connected-firm net profits originate from the highly regulated sectors; in contrast, unconnected firms receive only 17% of their net profits from the highly regulated sectors.

Second, quantile regressions show that the market share and profit premia on being connected rise along the distribution; connections are most valuable for the largest and most profitable firms, which make disproportionate contributions to output and profits. This heterogeneity helps explain why weighted OLS regressions that take into consideration the contribution of each firm to aggregate job creation, productivity, or profits, tend to result in higher estimates of the aggregate Ben Ali premium then conventional unweighted OLS regressions.

Third, the premium on being connected is shown to be especially large and significant amongst firms at the top end of the market share and profits distribution in sectors subject to authorization and FDI restrictions. As a consequence, the aggregate Ben Ali profit and market share premia are significantly higher in such intensely regulated sectors, with the results driven by a handful of firms in each sector. The superior aggregate performance of connected firms in these sectors is consistent with state capture (Stigler, 1971) and obtains using measures of both the *de jure* and the *de facto* severity of entry regulation.

Fourth, while these findings are robust to controlling for sector fixed effects, the premium on being connected reduces when these are controlled for, suggesting that the connectedness premia are in part driven by connected firms sorting into lucrative sectors with high barriers to entry. Still, at the top of the firm-size distribution, controlling for sector fixed effects, Ben Ali firms continue to have

regime accounted for three quarters of stock market capitalization in Nazi Germany. A key difference with these studies, which have focused on publicly listed firms, is that we focus on the universe of firms and almost exclusively on firms with family ties to the Ben Ali regime.

greater market shares and higher profits in highly regulated sectors, consistent with the largest Ben Ali firms benefiting from regulatory capture.

Fifth, examining the relationship between the expansion of Ben Ali firms and competition at the 5-digit sector level shows that growth in the aggregate market share of Ben Ali firms was associated with higher concentration and higher exit rates in sectors subject to authorization requirements and restrictions on FDI. Greater Ben Ali presence was thus associated with attenuated competition in these sectors.

These findings contribute to the literature in a number of ways. While causality is difficult to establish, to the best of our knowledge this is the first paper to document microeconomic evidence on the association between entry regulation and the performance of politically connected firms. Moreover, we demonstrate that the premium on being politically connected is highly heterogeneous and highest for the largest firms. This may help explain why previous studies, which have tended to focus on relatively large firms such as publicly listed enterprises (see e.g. Fisman, 2001, Faccio, 2006, Ferguson et al, 2008), often find large returns to being politically connected. Moreover, they underscore how a relatively limited number of connected firms can have a marked impact on aggregate outcomes, thus contributing to the growing literature on firm granularity following Gabaix 2011. Moreover, our paper is among the first to establish a correlation between political connections and competition indicators. Finally, the paper aids our understanding of the causes of the Arab Spring. Among the complaints common to all Arab Spring protests are the established system of cronyism, which rewarded an elite few, and a demand for social justice. While media reports abound, very little quantitative information exists on the prevalence and economic significance of state-business relationships in the region with the notable exception of Chekir and Diwan, (2012) and Acemoglu et al. (2014), who study listed firms with political connections in Egypt.[3]

The remainder of this paper is organized as follows. The next section describes our data and and the Tunisian Investment Incentives Code. Section 3 presents descriptive statistics demonstrating connected firms accounted for a disproportionate share of output, employment and jobs, especially in sectors in which entry is highly regulated, those subject to authorization and FDI restrictions. Section 4 presents the results of our analysis of firm performance, demonstrating that the Ben Ali

[3] In addition, in a companion paper Rijkers et al. (2015) demonstrate that connected firms in Tunisia were more likely to evade import tariffs.

premium was largest at the top end of the distribution, especially in sectors subject to heavy entry regulation. Section 5 analyses the relationship between competition and the expansion of the Ben Ali business empire. Section 6 concludes.

2 Data

2.1 Identifying the Business Interests of the Ben Ali Family

In the aftermath of the Tunisian revolution, assets of the Ben Ali clan have been confiscated. The confiscation process, which is still ongoing, was ordained by the new government by means of a decree (notably *Décret-loi n° 2011-13*). It involves 114 individuals, including Ben Ali himself, his relatives and his in-laws, and concerned the period from 1987 until the outbreak of the revolution. The seized assets included properties, boats and yachts, stock portfolios, bank accounts, and at least 662 enterprises. The confiscation commission estimates that the total value of these assets combined is approximately 13 billion USD, or more than one-quarter of Tunisian GDP in 2011.

We obtained a list of 662 of the confiscated firms from the Tunisian authorities and use this list to identify the Ben Ali family's business interests. The list covers firms confiscated up until December 2014, including a number of very prominent firms such as Orange Tunisia, Tunisiana, Carthage Cement, ENNAKL auto-industries, and the International School of Carthage, but also an even larger number of little-known enterprises. We merge these data with the Tunisian Business Register, *the Repertoire National des Enterprises (RNE),* an annual census containing information on the size, age, location and legal form of all private-non-agricultural registered firms in Tunisia, including one-person firms without paid employees. The overwhelming majority of the confiscated firms are very small and are not major economic players. Only 252 of the 662 connected firms reported both positive output and employment in at least one year.

2.2 The Firm-level Data

To assess the macroeconomic significance of Ben Ali's business interests and performance differences between connected and non-connected firms, the Tunisian firm census for the period 1996–2010 was merged with data on gross output and profits as declared to the tax authorities, which we obtained from the Ministry of Finance for the period 2000–2010. Information on tax regime and foreign ownership is available for the period 2006-2010. While these administrative data contain information on a limited set of firm characteristics only, lacking among other things information on capital and investment, their coverage is comprehensive: A unique aspect of the Tunisian firm census (RNE) is that it spans the universe of private sector firms. In 2010, the RNE contained information on 102,660 firms with employees and an additional 596,998 firms without paid employees (e.g. the registered self-employed). This enables us to pinpoint which sectors connected entrepreneurs sorted into and how they performed relative to their competitors. In addition, the database enables us to follow the same firms over time, and track entry and exit. Moreover, the quality of the employment data is high.[4] By contrast, data on turnover and profits are missing for approximately one third of all firms. Officials confirmed that the data at our disposal covered all firms for which such information is available. The majority of firms for which information is lacking are operating in the so-called 'régime totalement exportatrice', commonly referred to as the offshore sector. Firms in this tax regime do not have to pay output tax, provided they export at least 70% of their output. As a consequence, tax inspectors have limited incentives to verify the accuracy of their declarations. We thus have to be cognizant of the limitations of administrative data.

2.3 Data on Entry Regulation

To examine the relationship between regulation and the performance of politically connected firms, a data set documenting the evolution of Tunisian investment law was created, which we merge with the firm-level data. More specifically, we code entry regulations proclaimed by the Tunisian Investment Incentives Code (hereafter referred to as the investment code), which governs investment in all sectors

[4] For example, a comparison of the employment numbers obtained from the RNE with those documented in the labor force survey suggest that underreporting of labor is quite low, typically on the order of 10-15% (Rijkers et al., 2014).

of the economy with the exception of finance, mining, energy and domestic commerce, which are regulated by separate laws. The current investment code dates back to December 27, 1993 (Law 93-120 of 27 December 1993) and during Ben Ali's tenure its coverage and key provisions concerning entry were amended by 25 presidential decrees, which are included in our database.[5]

While the code stipulates the freedom to invest for both foreign (non-resident) and domestic (resident) entities, it also contains a number of provisions that restrict this freedom. Two salient such restrictions are authorization requirements and restrictions on FDI.[6] Starting with the former, for a number of activities one needs to obtain prior authorization from the government in order to be able to operate legally; i.e. one needs to apply for operating permits. Examples of such activities include fishing, tourism (e.g. hotels), air transport, maritime transport and road transport, telecommunications, education, the film industry, real estate, marketing, and health related industries.

Second, the investment code stipulates a number of activities for which foreign greenfield investors[7] need to obtain permission from the Investment Commission (*Commission Superieure d'Investissement - CSI),* which is chaired by the Prime Minister, to invest when their foreign equity exceeds 50% of capital, notably transport, communications, tourism, education, cultural production,

[5] More specifically, the decrees covered by our database are: Décret n° 95-1095, Décret n° 96-1234, Décret n° 96-2229, Décret n° 97-0503, Décret n° 97-783, Décret n° 98-29, Décret n° 98-2094, Décret n° 2000-821, Décret n° 2001-2444, Décret n° 2001-1254, Décret n° 2002-0518, Décret n° 2002-519, Décret n° 2003-1676, Décret n° 2004-0008, Décret n° 2004-1630, Décret n° 2004-2129, Décret n° 2005-2856, Décret n° 2006-1697, Décret n° 2007-1398, Décret n° 2007-2311, Décret n° 2007-4194, Décret 2008-3961, Décret n° 2009-2751, Décret n° 2010-825 and Décret n° 2010-2936. We do not include decrees that do not pertain to the coverage of the investment code or entry regulation. That is, we do not record decrees resulting in changes in registration requirements, customs regulations, fiscal advantages, etc.

[6] In addition to containing provisions regulating entry and FDI, the code also contains a myriad of clauses concerning taxation and the provision of fiscal incentives. These include fiscal incentives to promote R&D, SME development, regional development, environmental protection, international trade and agricultural upgrading. While the specificity and complexity of these incentives renders it challenging to analyze them in a comprehensive manner using econometric methods, our exploratory foray into this interesting area for future research is suggestive of substantial abuse of fiscal incentives. For example, Décret n° 2010-3116 stipulates that the ministry of transport will contribute towards the financing of 15 kilometers of railway to connect Carthage Cement's production facility at Jebel Ressas Mornag to the railroad network.

[7] All mergers and acquisitions in which foreign investors obtain majority foreign ownership are subject to approval of the *Commission Superieure d'Investissement.*

entertainment, construction, real estate, computer services, and a select number of other services.[8] Obtaining permission is difficult. According to a recent review of Tunisia's Investment Policies by the OECD, since 2005, the CSI has been processing between two and three applications per year with roughly half of all applications being successful (OECD, 2012). In addition, foreigners are not allowed to own more than one-third of the capital of firms engaged in agricultural activities, while medical laboratories can only be owned by Tunisians. We also consider such activities to be subjected to FDI restrictions. The list of sectors subjected to restrictions on foreign investment overlaps considerably, but not perfectly, with those that are subjected to government authorization.

Authorization requirements and FDI restrictions enable the government to regulate entry and impact market structure and competition. Since both prospective entrants and incumbents need to be authorized in order to operate, entry regulations can be abused both to deter prospective entrants and to stifle competition from existing firms. Anecdotal evidence suggests this may have happened in the case of the closing of the Bouebdelli School, a highly respected private school from which many of Tunisia's elite have graduated in one of the most heavily regulated sectors. This school was perceived to be in direct competition with the International School of Carthage, which was founded by Ben Ali's second wife, Leila Ben Ali. In spite of widespread public protests, the Minister of Education ordered the school to close for failure to comply with registration regulations.[9]

Should regulatory capture occur, then it is arguably most likely to happen in sectors subject to both types of entry restrictions, as opportunities for capture increase with the regulatory burden. Moreover, these regulatory restrictions can be mutually reinforcing—raising the cost to domestic entrepreneurs protects the firm in the home market, while regulating foreign competition can help steer foreign franchises toward the connected group. Since authorization requirements can in principle be used to limit competition from both domestic and foreign firms, sectors that are subject to both types of regulation could be argued to be overregulated. We focus on such sectors not only because they are the most intensely regulated but also because connected firms turn out to be important players in sectors subject to both types of restrictions as shown below.

[8] These FDI restrictions apply to greenfield investments only; all mergers and acquisitions in which foreign investors obtain majority ownership of a firm are subject to approval of the *Commission Superieure d'Investissement.*

[9] Wikileaks cables 09TUNIS372_a and 07TUNIS1489-a: see https://wikileaks.org/plusd/cables/09TUNIS372_a.html, https://wikileaks.org/plusd/cables/07TUNIS1489_a.html, accessed February 23, 2013.

A potential limitation of our approach is that it is based on *de jure* differences in entry regulation, but what matters from an entrepreneur's point of view is how these laws are implemented; it is perfectly possible for entry to be very easy in practice even when written regulation is arduous or for entry to be difficult even when written regulation does not appear excessive. As a validation exercise we hired a leading law firm specialized in corporate law, investment, mergers and acquisitions, and international arbitration, to provide a (inevitably subjective) rating of which sectors were most difficult to obtain permission to enter, providing us with a *de facto* proxy for the intensity of entry regulation based on the expertise of practitioners which we use for robustness checks. Since the supreme court lawyers we worked with are internationally recognized experts with more than more than 30 years of experience across a wide variety of sectors, they are well positioned to assess de facto differences in regulation. Appendix B3 provides more details on the construction of this indicator.

One issue we faced was matching the activities listed in the Investment Code to specific 5-digit sectors, which do not perfectly overlap. In some cases, the Investment Code provides a more detailed description of activities, whereas in others, the code is more general than the Tunisian NAT 96 classification that we use. With the help of officials at the Tunisian INS and the law firm described above, we create a correspondence between activities and sectors, but in some cases multiple activities were mapped to the same sector and vice versa.[10] As a consequence of the resulting aggregation, it is possible that some activities in a given sector are subject to entry restrictions whereas others are not; in these cases we relied on the expert judgment of lawyers to decide whether to codify the entire sectors as regulated or not. These issues are discussed in more detail in Appendix B, which describes how the regulation data were constructed. For the purpose of this analysis, we also exclude sectors that are not populated by firms covered by the Repertoire National des Entreprises (e.g. selected agricultural activities), or exclusively populated by public firms (e.g. postal services).

3 Descriptive Statistics

Ben Ali firms are important from an aggregate economic point of view, as is demonstrated by descriptive statistics on the prevalence and aggregate contributions of Ben Ali firms presented in

[10] A detailed mapping from activities to sector codes was constructed in collaboration with the Tunisian Institut National de la Statistique and is available from the authors upon request. The correspondence we developed was not fully exhaustive; a handful of activity descriptions, such as "exporting activities" were too generic to match to particular subsectors.

column 1 of Table 1. The sample is confined to firms reporting both positive employment and positive output and excludes firms in the *regime forfaitaire*, i.e. small scale self-employed whose turnover does not exceed 100.000 Tunisian Dinars who benefit from a special tax regime in which they pay a flat fee (see the Appendix for a version of Table 1 that uses all firms).[11] In spite of accounting for less than 2% of all wage jobs (and only 0.2% of all firms), Ben Ali firms (which are either partially or fully family owned) produce 5% of all private sector output, and absorb 16% of all net private sector profits.[12]

The prevalence and importance of Ben Ali firms vary dramatically with the intensity of entry regulation, as is shown in columns 2 and 3 of Table 1 which present aggregate descriptive statistics by the prevalence of entry restrictions separately for sectors in which entry is highly regulated (column 2), i.e. those subject to authorization and restrictions on FDI, and those that are not (column 3). In sectors that are governed by the investment code but not subject to severe entry restrictions, connected firms account for approximately 1.2% of output, 1% of jobs, and absorb 3.3% of net profits, in spite of accounting for only 0.2% of all firms in such sectors. Although Ben Ali firms in such sectors outperform their competitors, their contributions are much lower than their economy wide contributions to employment, output and profits. These seem to be driven by their business interests in sectors subject to severe entry restrictions; connected firms are roughly four times more likely than non-connected firms to operate in sectors subject to both authorization requirements and FDI restrictions. Moreover, they appear to be important players in these sectors, accounting for 10.5% of employment, 42.6% of output and 54.5% of net profits in these sectors, in spite of comprising only 0.9% of all firms.

<TABLE 1 ABOUT HERE>

Table 2 presents descriptive statistics on average firm characteristics and average differences between connected and non-connected firms, both in levels and demeaned by 5-digit sector averages

[11] The firms in our estimation sample account for 94% of aggregate output.

[12] This is in part due to many firms reporting losses; when only firms reporting positive profits are considered, Ben Ali firms account for 11% of all profits. Profits are measured as operating profits declared to the tax authorities.

(the right hand columns) for firms that report both positive employment and output.[13] On average, Ben Ali firms are significantly larger in terms of both employment and output, and thus have higher market share. They also record higher average profits; they have higher average profit Z-scores (note that these are calculated annually using the entire set of private sector firms reporting profits). Nonetheless, they are less likely to be profitable, a finding which contrast with the aggregate differences reported in Table 1 and attests to the marked heterogeneity within the group of Ben Ali firms, with the vast majority of firms being very small, but some connected firms being major economic players, and drivers of the aggregate differences discussed above. In particular, only 89 Ben Ali firms are profitable, but this group accounts for over 5 percent of output and nearly 11 percent of gross profits in Tunisia. Granularity in the data is especially pronounced at the top of the distribution, where the top 10 Ben Ali firms alone account for 2.2 billion USD of output (approximately 4% of economy-wide output) and 416 million USD worth of profits (approximately 10% of economy-wide) gross profits.

<TABLE 2 ABOUT HERE>

This heterogeneity is illustrated graphically in Figure 1, which depicts non-parametric plots of the predicted percentage of firms that that are Ben Ali owned by percentile of the output, size and profits distributions, by whether or not the sectors in which the firms operates is subject to both authorization and restrictions on FDI. While connected firms span the entire distribution of employment, output and profits, they are noticeably over-represented at the top end of these distributions, and especially so in sectors that are highly regulated (the graph on the right).

<FIGURE 1 ABOUT HERE>

[13] We focus only on sectors in which at least one Ben Ali firms is active.

This over-representation at the top end of the distribution matters from an aggregate point of view, since the distributions of output, employment and profits are all very skewed, as is shown in Table 3, which presents descriptive statistics on the prevalence of Ben Ali firms across percentiles of the output, profits and employment distributions (the bottom panel), as well as the aggregate contributions of firms in different parts of the distribution (the top panel). Firms in the top percentile of the output (jobs) distribution account for 47% of output (42% of jobs), while firms in the bottom 50% only account for 1.6% (2.3% of jobs) of all output. The share of firms that are Ben Ali owned is higher at the top end of the distribution, and especially so in sectors subject to entry restrictions; of firms in the top 1% of the output (profits distribution) in sectors subject to both authorization and FDI restrictions, 38.9% (8.7%) are Ben Ali owned, while the corresponding percentage of Ben Ali ownership in sectors not subject to restrictions is 2.5% (3.8%).

<TABLE 3 ABOUT HERE>

Is this over-representation at the top end of the size, output and profits distribution purely a function of sorting into more lucrative sectors and/or sectors where firms are on average larger? Figure 2 suggest that it also occurs within sectors; it presents non-parametric plots of the predicted percentage of firms that are Ben Ali owned against firm rank within a sector (with 1 being the largest firm, 2 being the second largest firms etc.) for the 25 largest firms for sectors in which Ben Ali firms were active, distinguishing between sectors that are highly regulated, the solid red line) and sectors that are not (the dotted blue line). While Ben Ali firms are overrepresented at the top end of the distribution in both types of sectors as is evidenced by the downward sloping lines, this is particularly the case in regulated sectors. This over-representation matters because the distribution of output is skewed even within sectors such that individual firms matter; the top 1 firm has an average market share of 27%, the top 5 firms jointly account for 58% of market share and the top 15 of firms account for 74% of market share on average. Thus, connected firms had more market power than non-connected firms, especially in sectors subject to entry restrictions.

Table A2 in the appendix provides a broad overview of activities of Ben Ali firms and documents the average share of output, employment and profits that Ben Ali firms account for across

broad sectors using only firms that report positive output and employment. Many firms engaged in gross trade (24 firms), construction (18), transport and storage (14), telecommunications and ICT (13), cars and motorcycle sales and repair (11), finance and insurance (11), hotels and restaurants (10), professional, scientific and technical activities (9), administration and support services (9), and agriculture, forestry and fishing (6). In terms of the shares of output, employment and profits that Ben Ali firms account for, sheer numbers are not necessarily informative about the economic significance of firms. These aggregate categorizations obscure large variability within broad sectors, as Ben Ali firms are often major market players that account for an important share of output, employment and profits within specific subsectors. For example, connected firms are very important players in air transport, tobacco manufacturing, insurance and film production.

4 Accounting for Performance Differentials: Why Are Ben Ali Firms More Profitable?

Regression analysis is used to assess performance differentials between connected and non-connected firms, and how they vary with the intensity of entry regulation and across the distribution of outcomes of interest. Our most general estimating equation is:

$$Y_{ijt} = \beta_B\, Ben\ Ali_{it} + \beta_R\, Highly\ Regulated_{jt} + \beta_{BR}\, Ben\ Ali_{it} * Highly\ Regulated_{jt} + \beta_X\ X_{it} + \mu_j + \beta_T\, \tau_t + \varepsilon_{ijt} \quad (1)$$

Where Y_{ijt} is an indicator of the performance of firm *i* in sector *j* at time *t*. $Ben\ Ali_{it}$ is a dummy variable indicating whether firm *i* was owned by a clan member at time *t*. $Highly\ Regulated_{jt}$ is a dummy variable that takes the value 1 if a sector is subject to both authorization and FDI restrictions and 0 otherwise.[14] The omitted category is thus comprised of sectors that are not subject to

[14] We also tried including each regulation separately, as well as together, the main results on sectors subject to FDI and authorization requirements remain unchanged. We find that sectors subject to only one requirement are not robustly and significantly different from sectors not subject to entry regulations (in some specifications we even find that the Ben Ali premium is smaller than in non-regulated sectors). This may be because in some sectors, authorization requirements are necessary (for example, authorization requirements in fishing help to preserve the environment), so the regulatory cutoff

authorization nor FDI restrictions as well as sectors that are subject to authorization but not FDI restrictions or vice versa. X_{it} is a vector of firm characteristics, notably the log of the age of the firm, whether the firm is foreign owned, whether it has offshore status (meaning it is exempted from having to pay turnover taxes provided it exports at least 70% of its output, directly or indirectly by selling it to other offshore firms), μ_j is a vector of sector dummies and τ_t is a vector of year dummies. We start by presenting regressions without sector dummies, and then add them. In the appendix we also present sector-specific regressions of equation 1.[15] Since information on foreign ownership and offshore status are only available from 2006 onwards, the sample is confined to 2006-2010. Standard errors are conservatively clustered at the 5 digit sector level.

OLS estimates of equation 1 provide an estimate of *average* performance differences between connected and non-connected firms, with both one person firms, such as coffee shops and beauty parlors, and large firms, such as telecommunications companies and airlines, being given equal importance. If the Ben Ali premium varies with the size of the firm, such averages differentials may obscure important heterogeneity across the distribution, which may drive *aggregate* performance differences (recall that the top 1% of firms accounts for 47% of output, so the Ben Ali premium at the top end of the distribution will be a more important determinant of aggregate performance differences than the Ben Ali premium at the median). To assess this heterogeneity, quantile regression methods are used. These allow us to quantify how the Ben Ali premium varies across the distribution and thus to examine the hypothesis that the correlation between entry restrictions and political connections is especially strong at the top end of the firm size and profit distributions where market power - and potential abuse thereof - is greatest. To assess how much this heterogeneity matters from an aggregate point of view, we also present estimates in which each firm observation is weighted by its output, employment, or absolute net profits (as in Foster et al. 2008) depending on the outcome variable of interest, which enable us to assess the aggregate Ben Ali premium across sectors.

is less informative. In contrast, given one type of regulation, having a second type is more likely to be indicative of excessive regulation. In addition, the specification with three interactions, may have simply been asking too much of the data.

[15] We also ran OLS regressions that use sector-year instead of sector and year dummies (i.e. in which μ_j and τ_t are replaced by τ_{jt} a vector of 5-digit sector-year dummies). The results are qualitatively very similar to those obtained using sector and year dummies, but not presented here to conserve space.

Of focal interest is the coefficient on the interaction between political connectedness and the regulation indicator, β_{BR}. Under the null hypothesis that entry regulations affect connected firms and their competitors in the same way, it should not be significantly different from 0. Under the alternative hypothesis that these regulations served family interests, the coefficient is expected to be positive. Note that differences in general entrepreneurial ability between connected and non-connected entrepreneurs would affect the coefficient on connectedness, β_B, but need not impact the coefficient on the interaction term, unless these capabilities were somehow sector-specific. Causality is difficult to establish; a positive coefficient does not constitute proof of regulatory abuse; it may simply reflect Ben Ali clan members' superior ability to navigate the Tunisian bureaucracy and/or omitted variables.

The results are presented in Tables 4 and 5, using as dependent variables, respectively, output market share (Table 4) and the Z-score of profits (Table 5). The first five columns present quantile regression estimates at the 10^{th}, 50^{th}, 90^{th}, 95^{th}, and 99^{th} percentile respectively. Column 6 presents unweighted OLS estimates and column 7 presents OLS estimates where each observation is weighted by its turnover in case market share is the dependent variable, or absolute net profits as in case the profit Z score is the dependent variable. All regressions include controls for the log of the age of the firm, foreign ownership, offshore status, and year dummies, a dummy indicating whether or not a firm is connected, a highly regulated dummy, and an interaction between the highly regulated dummy and the dummy for being politically connected. The sample is confined to sector-years in the period 2006-2010 in which at least one Ben Ali firm was active, firms producing at least 1600 USD of output annually, having output per worker in excess of 400 USD and employing at least one salaried employee.

<TABLE 4 HERE>

Starting with Table 4, the Ben Ali market share premium is positive and significant across the entire distribution and increases monotonically, being much larger at the top end of the distribution, increasing from 0.011 at the median to an impressive 0.668 at the 99th percentile; put differently, at the 99^{th} percentile connected firms are on average 66.8 percentage points larger than their non-connected peers. Political connections thus appear to be especially valuable for the very largest firms,

which make the biggest contributions to aggregate output. This helps explain why the Ben Ali premium in weighted OLS regressions (presented in column 7), 0.162, is almost three times as large as the Ben Ali premium obtained using standard OLS regressions which are not weighted (which are presented in column 6), which is 0.056.

Moreover, at the top end of the firm size distribution, the Ben Ali premium is even larger in sectors subject to both authorization and FDI restrictions; at the 90^{th}, 95^{th} and 99^{th} percentile connected firms in such sectors enjoy a sizeable and significant additional market share premium. However, at lower quantiles, the connected premium is insignificant or even negative, such that on average, connected firms do not enjoy a significant market share premium, as is shown in column 6 which presents unweighted OLS regressions. Yet, there is a strongly significant substantial additional *aggregate* Ben Ali premium in highly regulated sectors (column 7). The aggregate market share premium of connected firms in sectors subject to authorization and FDI restrictions is 57.6 percentage points higher than in sectors not subject to restrictions, where the aggregate premium is already 16.2 percentage points. Thus, in aggregate connected firms have much higher market share in highly regulated sectors, a finding which would be obscured by unweighted OLS regressions. Regressions using employment market share presented in online Appendix R1 exhibit a similar pattern.

<TABLE 5 ABOUT HERE>

The Ben Ali profit premium is also increasing as one moves up the profits distribution, as is shown in Table 5, which presents specifications that are identical to those presented in Table 4, but with the profit Z-score as the dependent variable. At the bottom end of the profits distribution (column 1) the Ben Ali premium is negative; connected firms suffer larger losses than non-connected firms. However, the premium rises monotonically and is significant and positive at the top end of the size distribution. These differences cancel each other out such that neither average nor aggregate differences between connected and non-connected firms operating in free entry sectors are significant, as is demonstrated in columns 6 and 7 respectively. By contrast, in sectors subject to authorization and FDI restrictions, the aggregate Ben Ali premium is both significant and sizeable, notably 87 standard deviations, in spite of the absence of a significant average Ben Ali premium. In these sectors,

the Ben Ali profits premium rises especially rapidly across the distribution being a spectacular 162 standard deviations at the 99th percentile (recall that one has to add up the coefficient on both the Ben Ali dummy and its interaction with the highly regulated indicator to estimate the total premium).

Thus, both the market share and profits Ben Ali premium are increasing along the firm size distribution and are largest and most significant at the top end of the distribution. Moreover, the premium on being connected is significantly larger at the top end of the distribution for firms operating in sectors in which entry is highly regulated, those subject to authorization and FDI restrictions.

To what extent do these results reflect sorting? Table 6 presents regressions which are identical to those presented in Tables 4 and 5, except that they also control for sector dummies. Thus, identification is now based on comparing Ben Ali firms to competitors within the same sector. The results for market share are presented in panel A; the Ben Ali premium increases monotonically along the market share distribution to 12.9 percentage points at the 99th percentile. Moreover, it is significantly higher at the top end of the distribution in sectors that are subject to authorization and FDI restrictions; while the premium is insignificant at lower quantiles at the 95th percentile it is 13.9 percentage points higher than in sectors in which entry is not highly regulated (where it is 10.7 percentage points) and at the 99th percentile it is 75.8 percentage points higher (than the 12.9 percentage points in sectors not subject to both authorization and FDI restrictions). Thus, the Ben Ali premium is especially sizeable for firms with high market power in sectors subject to intense entry regulation.

<TABLE 6 HERE>

The Ben Ali profit premium (presented in panel B) also shrink when sector dummies are controlled for, yet the main patterns remain; the profit premium on being connected rises along the distribution, and especially so in sectors subject to authorization and FDI restrictions, though the premia are no longer significant in OLS regressions, irrespective of whether or not they are weighted by absolute net profits.

Thus, overall, the main findings are robust to including sector fixed effects, but the estimated Ben Ali premia are in most cases lower than those estimated without sector fixed effects, suggesting that sorting into lucrative sectors with a limited number of players is an important part of the explanation for the superior aggregate performance of connected firms. At the top of the distribution the Ben Ali premia remain highly significant and in the case of market share of a similar size to those estimated without fixed effects, consistent with the largest firms gaining significantly more from connections when there are regulations that can be used to their advantage. Overall, the results show that Ben Ali firms enter restricted sectors with less competition and higher returns and that even within these sectors the largest of the Ben Ali firms reap especially high rewards.

One limitation of our indicator of regulation is that it is a *de jure* measure. As a robustness check, Table 7 presents specifications that are identical to those presented in Table 6, but instead use a (subjective) measure of *de facto* regulation. The results are qualitatively robust to using this *de facto* measure; panel A shows that Ben Ali owned firms outperform their competitors in terms of market share especially in sectors in which obtaining permission to enter is *de facto* difficult; the interaction between the Ben Ali dummy and the *de facto* highly regulated indicator is consistently significant, including in both simple and weighted OLS regressions (presented in columns 6 and 7). The profit premium from being connected, presented in Panel B, is highest at the top end of the profits distribution. Thus, our results are robust to using *de facto* rather than *de jure* measures of regulation.

Nonetheless, conditioning on sector fixed effects does not allow for potential parameter heterogeneity across sectors. To assess how this may impact our estimates and which sectors are driving our findings, Appendix Table A3 presents sector-specific OLS estimates of the Ben Ali market share premium for all sectors in which Ben Ali firms were active in 2010. We exclude sectors that produce less than 20 million TND worth of output per year on average and for which we have fewer than 20 observations over the period 2006-2010. Regular and non-regular air transport are combined into one sector "Air Transport".[16] All regressions control for Ben Ali ownership, foreign ownership offshore status, log firm age, and year dummies. Standard errors are now clustered by firm. The results

[16] We combine regular and non-regular air transport into one sector in order to have more than 20 observations per sector. However, if we run the regressions for each sector separately, we also obtain sizeable and significant positive Ben Ali premia.

attest to the enormous heterogeneity in the Ben Ali premium, which is as high as 72% in air transport, and as low as -12% in cultivation of vegetables.

On average, the Ben Ali premium is more likely to be positive and significant in sectors subject to high entry regulation; in 5 out of 7 sectors the Ben Ali premium is positive and significant, while it is positive but insignificant in the other two. Interestingly, the Ben Al premium is not significant in the telecommunications sector which is subject to authorization and FDI restrictions, even though connected firms jointly account for 93% of the market share and 98% of profits in this industry. This is a reminder of the importance of examining heterogeneity across the distribution.

By contrast, in sectors that are not highly regulated, the premium is significant (at the 10% level) and positive in 16 out of 36 cases, but also significantly negative in 6 sectors. Nonetheless, there are a number of sectors, such as manufacturing of trailers and processing of vegetables, in which connected firms enjoy a very sizeable premium. Closer inspection of these sectors suggest that this premium is related to having a privileged position in Ben Ali dominated value chains; connected firms in these sectors are the exclusive suppliers of inputs to sectors de facto monopolized by the family.

5 The relationship between Ben Ali's business interests and competition

What was the relationship between the expansion of the Ben Ali business empire and competition? To address this question, sector-level regressions are estimated with entry, exit and concentration rates as dependent variables. The key explanatory variable is the aggregate market share of connected firms within a given sector, which varies both over time and across sectors. This variable is interacted with a dummy indicating a sector is highly regulated, either *de jure* or *de facto*, to assess whether the association between Ben Ali presence and competition varied with entry regulation. Our most general estimating equation is:

$$Y_{jt} = \gamma_{BA} Ben\ Ali\%_{jt} + \gamma_R Highly\ Regulated_{jt} + \gamma_{RBA} Ben\ Ali\%_{jt} * Highly\ Regulated_{jt} + \mu_j + \tau_t + \varepsilon_{jt}$$

Where Y_{jt} is a competition indicator, notably the entry rate, exit rate or market concentration, $Ben\ Ali\%_{jt}$ is a measure of the aggregate market share of all Ben Ali owned firms in sector *j* at time *t*. $Highly\ Regulated_{jt}$ is a dummy variable that indicates whether sector *j* is highly regulated (i.e. subject to authorization and FDI restrictions), μ_j is a vector of sector dummies, τ_t is a vector of year dummies; identification is thus based on comparing variation in entry, exit and concentration rates within the same sector over time, and relating that to the aggregate market share of connected firms. We focus on the period 2000-2010 as we do not have output data prior to 2000. We consider both *de jure* and *de facto* measures of regulation.

The main hypothesis is that increased Ben Ali presence is associated with reduced competition, manifested in lower entry, increased exit,[17] and greater concentration and that these effects are more pronounced in sectors that are most intensely regulated.

<TABLE 7 ABOUT HERE>

Results are presented in Table 7. In columns 1-3, respectively, the entry rate, exit rate and the Herfindahl index are regressed on the aggregate market share of connected firms, controlling for 5-digit sector fixed effects as well as year dummies. We run three different models; our baseline specification (presented in panel A) does not control for indicators of regulation; our second and preferred specification (presented in panel B) includes an interaction between being connected and a dummy indicating a sectors is *de jure* highly regulated, i.e. subject to both authorization and FDI; our third model, which serves as a robustness test (presented in panel C), replicates this specification but instead uses a *de facto* measure of regulation.

Starting with the baseline specification, the market share of Ben Ali firms is significantly and positively correlated with exit rates, and the magnitude of the association is economically meaningful; a 10 percentage points increase in Ben Ali market share was associated with 0.4% higher exit rates. The null hypotheses that expansion of the Ben Ali business empire was not associated with lower

[17] In principle, increased exit rates could also be a sign of intensified competition; if this were the case, one might expect entry rates to also rise at the same time.

entry and higher concentration rates are not rejected, although coefficient estimates have the expected signs, pointing towards increased concentration and marginally lower entry rates.

Panel B shows that the association between increased Ben Ali market share and competition varies with entry regulation. Increases in the aggregate market share of Ben Ali owned firms in sectors that are not highly regulated are not associated with significant changes in competition indicators. By contrast, increases in the market share of Ben Ali owned firms in sectors subject to authorization and FDI restrictions are associated with significantly higher exit and concentration rates; a 10 percentage points increase in Ben Ali market share is associated with an increase in exit rates of 0.6 percentage points and an increase in the Herfindahl index of 0.09 (note that to obtain the Ben Ali effect in highly regulated sectors one needs to add the coefficient on the Ben Ali market share measure and its interaction with the dummy for being highly regulated). The null hypothesis that the association between the market share of Ben Ali firms and concentration rates does not vary with regulation is rejected at the 5% level, as is indicated by the significant interaction between the market share of connected firms and the presence of authorization requirements and FDI restrictions. For entry and exit rates, however, the interaction between Ben Ali presence and the presence of both types of restrictions is insignificant. As a robustness check, panel C replicates the models but using a de facto indicator of high regulation instead; the results are qualitatively very similar to those obtained using a *de jure* measure of entry regulation.

In sum, the null hypothesis that the association between competition and Ben Ali presence does not vary with regulation is rejected. Although causality cannot be established, the results are broadly consistent with regulatory capture.

6 Conclusion

Microeconomic evidence on potential capture of investment regulation by ruling elites remains limited because of data limitations. To help fill this gap in the literature, this paper assembles a unique data set to examine the relationship between the business interests of President Ben Ali's family and the Tunisian Investment Incentives Code during the final years of his reign. Tunisia provides a relevant case study, as it was at the forefront of the Arab Spring, because its development strategy was lauded by the international community and predicated on substantial state intervention in the economy, and because it has high quality firm level data in which politically connected firms can be identified.

The Ben Ali family's business interests were significant from a macroeconomic perspective, and especially so in sectors subject to intense entry regulation. Enterprises owned by the Ben Ali family confiscated in the aftermath of the revolution accounted for 5% of all private sector output and appropriated approximately 16% of private sector profits. Connected firms were roughly four times more likely than non-connected firms to operate in sectors subject to authorization and FDI restrictions, and accounted for 43% of output and 55% of net profits in these sectors. By contrast, in other sectors, connected firms only accounted for 1.2% of output and 3.3% of net profits.

These aggregate differences are driven by a relatively limited number of firms. Connected firms are over-represented at the top end of the output and profits distributions, and especially so within highly regulated sectors. Both the market share and profits premia on being connected increase along the distribution, suggesting that connections matter most for the biggest and most profitable firms. Moreover, the premium from being connected is significantly and substantially higher at the top end of the output and profits distribution in sectors subject to authorization and FDI restrictions. These findings obtain using both *de jure* and *de facto* measures of regulation, and are robust to controlling for sector fixed effects. Yet, connectedness premia shrink substantially when sector fixed effects are controlled for, suggesting sorting into lucrative sectors with barriers to entry is an important part of the explanation of the superior aggregate performance of connected firms.

Expansion of the Ben Ali business empire, as measured by increases in the aggregate market share of connected firms, was associated with significant increases in exit and concentration rates in sectors subject to authorization and restrictions on FDI. In sectors not subject to such entry restrictions, expansion of the Ben Ali business empire was not associated with significant changes in entry, exit or concentration. The deterioration in competition indicators associated with greater Ben Ali presence was thus confined to sectors subject to heavy entry regulation.

In sum, although causality is difficult to establish, these results are consistent with the hypothesis that the Ben Ali clan abused entry regulation for private gain at the expense of attenuated competition.

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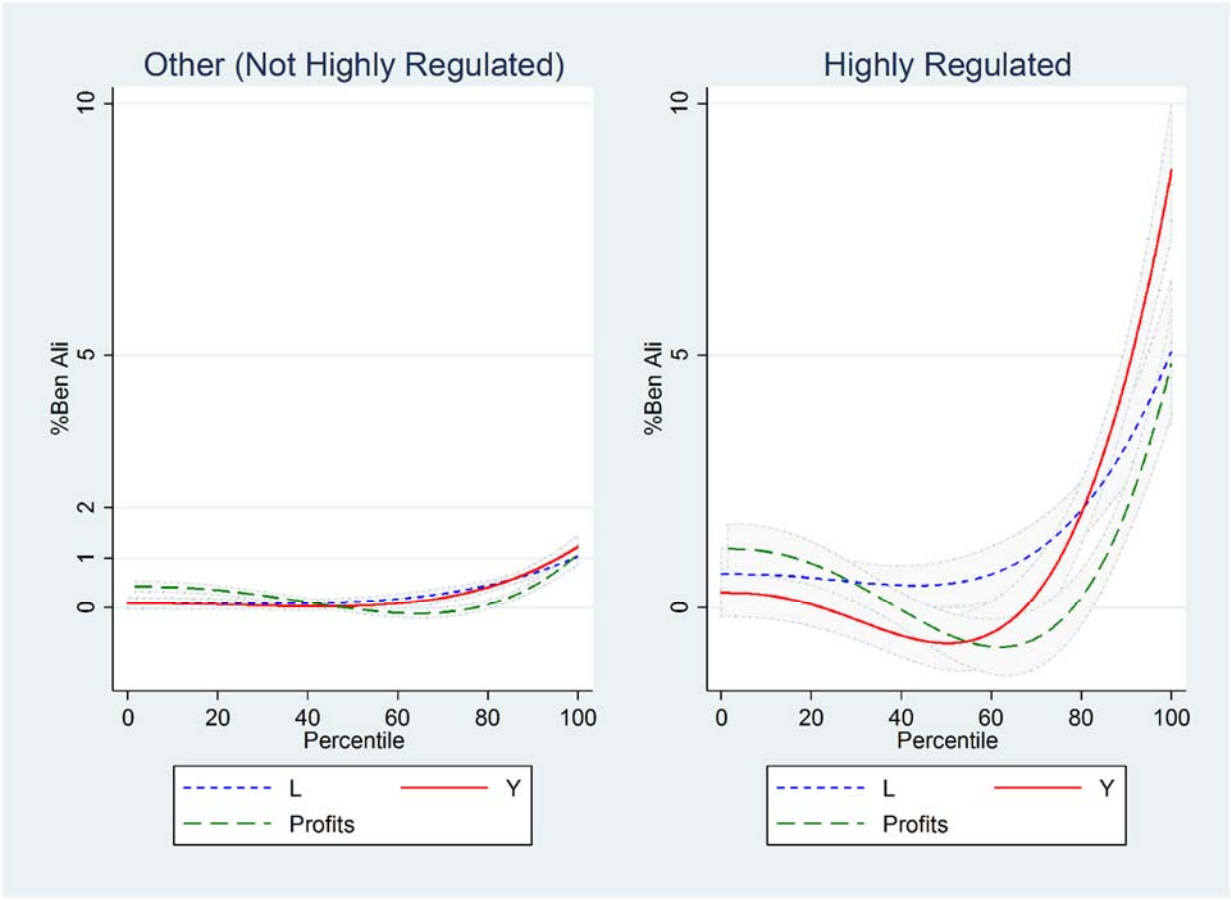
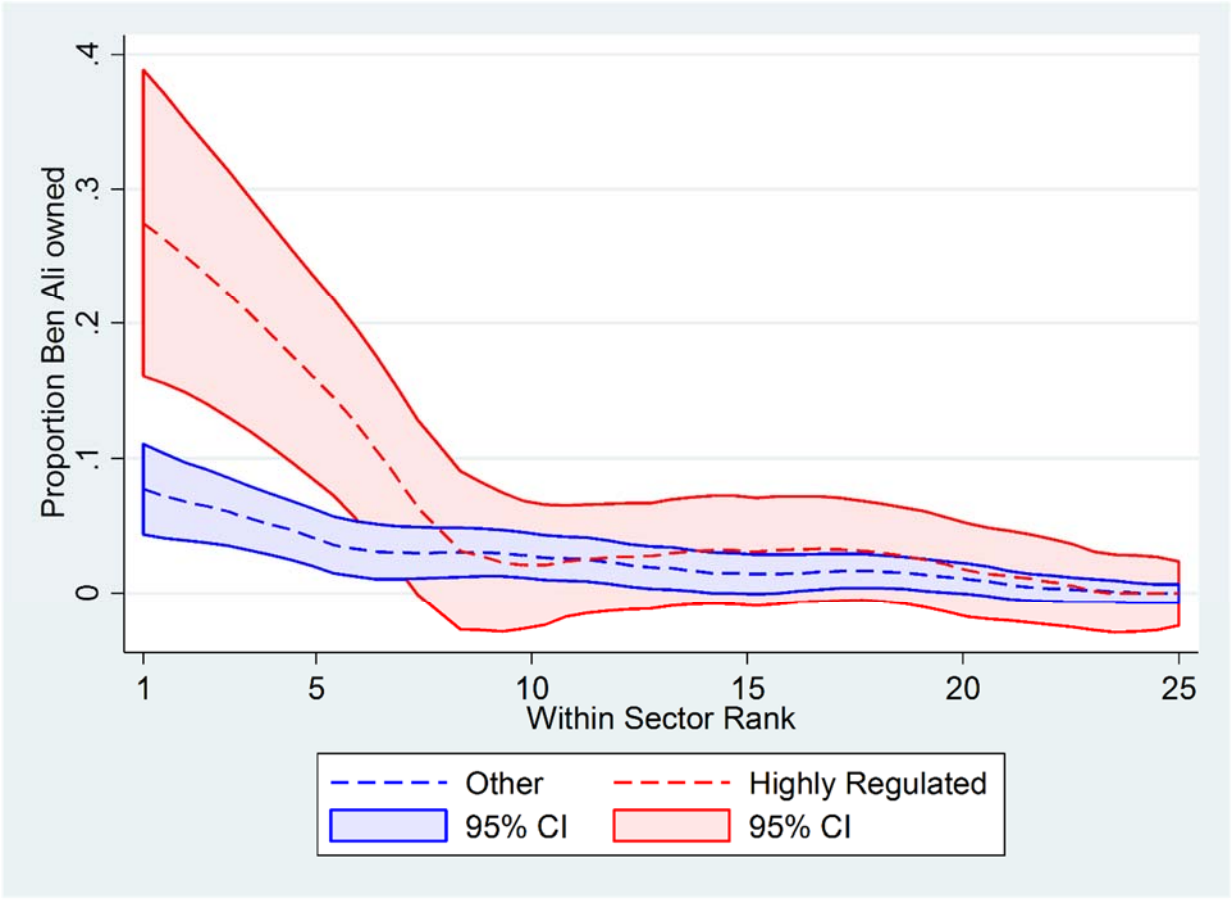
Figure 1: Ben Ali Ownership by Percentile and Presence of Entry Restrictions



Note: the plots present the predicted percentage of Ben Ali ownership by percentile of the jobs (L), output (Y), and net profits (Profits) distributions, separately for sectors in which entry is free and sectors which are subject to either authorization or FDI restrictions (labelled "Other (Not Highly Regulated)") and sectors subject to both authorization and FDI restrictions (labelled "Highly Regulated")

Figure 2: Ben Ali Ownership by Within-Sector Rank



Note: the plots present the predicted proportion of Ben Ali owned firms by within sector rank (the largest firm has rank 1, the second largest firm is assigned rank 2 etc.), separately for sectors in which entry is subject to both authorization and FDI restrictions (labelled "Highly Regulated") and sectors that are not (labelled "Other").

Table 1: Economic Significance Ben Ali Firms in 2010

Aggregate Contributions Ben Ali Firms Only firms with Y>0 and L>0			
	(1)	**(2)**	**(3)**
	Entire Economy	**Sectors Governed by the Investment Code**	
Restrictions?		**Highly Regulated (De Jure)**	**Other (Free Entry and Modestly Regulated)**
		Ben Ali Share	
Firms	0.2%	0.9%	0.2%
L	1.7%	10.5%	1.0%
Y	5.3%	42.6%	1.2%
Net Profits	15.8%	54.5%	3.3%
Gross Profits	10.8%	55.6%	2.3%
Gross Losses	5.6%	58.2%	1.7%
		Sector Totals	
L – wage jobs	907.387	41.813	603.253
% of economy		4.6%	66.5%
Y billions USD	56.938	2.816	24.930
% of economy		4.9%	43.8%
Net profits billions USD	2.239	0.358	0.795
% of economy		11.5%	47.4%

Note: USD:TND exchange rate1:1.5146, data for 2010, L=wage workers, Y=output, Net profits=pre-tax profits declared to the tax authorities (all firms), gross profits=pre-tax profits declared to the tax-authorities only for firms for whom this is positive. Gross losses=tax profits declared to the tax authorities only for firms for whom this is negative. Highly Regulated sectors are those that are subject to both authorization and restrictions on FDI. Other (Free Entry and Modestly Regulated) includes sectors which are not subject to entry restrictions and sectors subject to either only authorization or restrictions on greenfield FDI. Sectors which are not governed by the investment code but by specific laws are included in column 1.

Table 2: Descriptive Statistics

Descriptive Statistics Ben Ali Firms vs Other firms – 2010 Only firms with Y>0 and L>0								
	Descriptive Statistics						***Differentials***	
	Other Firms *(Total N=56565)*			***Ben Ali Firms*** *(Total N=155)*			Ben Ali - Other (average)	(average)
							Demeaned	
	N	**Mean**	**St. Dev.**	**N**	**Mean**	**St. Dev.**	***No***	***5-digit***
Performance [x]								
logL	56565	1.095	1.457	155	2.777	1.929	1.682***	1.182***
logY	56565	18.849	1.914	155	21.568	2.372	2.718***	1.678***
Profits Z-score	56445	0.008	1.124	155	1.760	14.148	1.752*	1.681*
Profitable[#]	56565	0.768	0.422	155	0.574	0.496	-0.194***	-0.062
Market Share[i]	56565	0.009	0.055	155	0.063	0.159	0.055***	0.038***
Firm Characteristics								
Age	56558	13.400	10.325	155	13.019	12.945	-0.381	-0.178
Offshore	56565	0.083	0.275	155	0.071	0.258	-0.012	-0.024
Foreign	56565	0.040	0.196	155	0.039	0.194	-0.001	-0.007
Regulation								
Highly Regulated (de Jure)[^]	29090	0.100	0.300	90	0.300	0.461	0.200*	
Highly Regulated (de Facto)[+]	29090	0.015	0.124	90	0.122	0.329	0.107*	

*, **, and *** in the last two columns indicate that the differential between Ben Ali and non-Ben Ali firms is significant at the 10%, 5% and 1% level respectively. The reported differentials are the coefficients β_{BA} obtained from regressions of the form: $Y_{ijt} = \beta_{BA} * Ben\ Ali + u_j + \varepsilon_{it}$ where *Ben Ali* is a dummy taking the value 1 for connected firms and 0 otherwise and u_j is a vector of 5-digit sector dummies (which are not included when no demeaning is taking place). Standard errors are clustered at the 5-digit sector level.

[+]The profit margin is defined as the ratio of profits to output. Values greater than 1 or smaller than -1 are excluded.

[i] *Market share* is measured at the 5 digit level.

[#]*Profitable* is a dummy variable taking the value 1 if a firm reports positive profits and 0 otherwise.

[^] *Highly Regulated (de Jure)* is a dummy variable indicating whether the particular 5 digit sub-sector the firm operates in is subject to both authorization requirements and FDI restrictions at time t.

[+] *Highly Regulated (de Facto)* is dummy variable taking the value 1 if the 5 digit sector in which the firm is operating is subject to an authorization which is de facto difficult to obtain according to one of Tunisia's leading lawfirms, and 0 otherwise.

Table 3: Distribution of Employment, Output and Net Profits

The Distribution of Employment, Output and Profits - 2010

	L		Y		Net Profits	
	Total	**% of Total**	**Total**	**% of Total**	**Total**	**% of Total**
	000s		Billion USD		Billion USD	
>99th percentile	299	42.4%	13.08	47.3%	1.58	146.6%
95-99 percentile	227	32.1%	7.20	26.0%	0.57	52.8%
90-95th percentile	769	10.9%	2.68	9.7%	0.17	15.8%
90-50th percentile	865	12.3%	4.33	15.6%	0.25	23.5%
1-50th percentile	165	2.3%	0.44	1.6%	-1.49	-138.7%
Total	706		27.68		1.08	

% of firms that are Ben Ali owned

	L		Y		Net Profits	
Highly Regulated? (de jure)	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**
>99th percentile	1.9%	13.5%	2.5%	38.9%	3.8%	8.7%
95-99 percentile	0.8%	2.5%	1.2%	4.6%	0.6%	4.1%
90-95th percentile	0.9%	3.8%	0.7%	5.5%	0.4%	1.2%
90-50th percentile	0.3%	1.2%	0.3%	0.7%	0.0%	0.1%
1-50th percentile	0.1%	0.6%	0.0%	0.0%	0.4%	0.9%
Total	0.3%	1.1%	0.2%	0.9%	0.3%	1.0%

Note: sample is confined to sectors covered by the investment code. USD:TND exchange rate1:1.5146. Highly regulated sectors (de jure) are those that are subject to both authorization and restrictions on FDI.

Table 4: Market Share Regressions

Dependent Variable: Market Share (Output)							
	Quantile Regressions					OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Quantile	**10**	**50**	**90**	**95**	**99**	**Simple**	**Weighted**
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Ben Ali firm (BA)	0.000**	0.011***	0.163***	0.240***	0.668***	0.056***	0.162***
	(0.000)	(0.002)	(0.006)	(0.008)	(0.021)	(0.017)	(0.053)
BA*Highly Regulated (de Jure)	0.000	-0.002	0.678***	0.651***	0.176**	0.068	0.576***
	(0.000)	(0.002)	(0.009)	(0.017)	(0.075)	(0.073)	(0.077)
Highly Regulated (de Jure)	0.000	0.001**	0.001	0.003	0.037	0.003	-0.005
	(0.000)	(0.000)	(0.005)	(0.014)	(0.077)	(0.003)	(0.039)
Offshore	0.000	0.000	0.001	0.002	0.020	0.002	-0.023
	(0.000)	(0.000)	(0.004)	(0.008)	(0.022)	(0.003)	(0.031)
Foreign	0.000***	0.001	0.008**	0.014*	0.049***	0.004	0.092**
	(0.000)	(0.000)	(0.003)	(0.007)	(0.015)	(0.002)	(0.041)
Firm Age (log)	0.000**	0.000***	0.003***	0.007***	0.028**	0.002***	0.053
	(0.000)	(0.000)	(0.001)	(0.002)	(0.012)	(0.001)	(0.033)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	No	No	No	No	No	No	No
Weights	None	None	None	None	None	None	Output
Number of observations	49,446	49,446	49,446	49,446	49,446	49,446	49,446
R2	0.056	0.047	0.051	0.055	0.055	0.059	0.678

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. Standard errors are clustered by sector. The sample is confined to 2006-2010 and to firms which report using hired labor, producing more than 1600 USD worth of output and having labor productivity in excess of 400 USD, operating in sectors governed by the investment code in which at least one Ben Ali firm is contemporaneously active. Highly Regulated (de Jure) is a dummy variable indicating whether the particular 5 digit sub-sector the firm operates in is subject to both authorization requirements and FDI restrictions at time t. Standard errors are clustered at the 5-digit sector level.

Table 5: Profits Z-Score Regressions

Dependent Variable: Profits Z-Score							
	Quantile Regressions					OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Quantile	**10**	**50**	**90**	**95**	**99**	**Simple**	**Weighted**
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Ben Ali firm (BA)	-0.714***	-0.016	1.203***	2.377***	3.737***	-0.043	0.820
	(0.078)	(0.051)	(0.112)	(0.155)	(0.163)	(0.257)	(6.013)
BA*Highly Regulated (de Jure)	0.184**	0.069	1.101***	28.296***	158.823***	6.718	86.378***
	(0.089)	(0.057)	(0.226)	(0.254)	(0.666)	(5.467)	(17.660)
Highly Regulated (de Jure)	0.009	-0.000	0.121	0.236*	0.668**	0.110*	8.209***
	(0.019)	(0.002)	(0.153)	(0.137)	(0.322)	(0.063)	(2.485)
Offshore	0.014	0.020***	0.185***	0.313***	0.984***	0.031	-9.992
	(0.013)	(0.002)	(0.024)	(0.102)	(0.317)	(0.134)	(7.856)
Foreign	-0.035**	-0.003**	0.136***	0.408***	2.476***	0.349	36.196*
	(0.017)	(0.001)	(0.044)	(0.126)	(0.510)	(0.322)	(18.720)
Firm Age (log)	-0.022	0.002***	0.028***	0.069***	0.389***	-0.016	1.910
	(0.022)	(0.000)	(0.004)	(0.013)	(0.078)	(0.044)	(3.159)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	No	No	No	No	No	No	No
Weights	None	None	None	None	None	None	|Net Profits|
Number of observations	43,128	43,128	43,128	43,128	43,128	43,128	43,128
R2	0.005	0.006	0.023	0.038	0.039	0.040	0.771

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. Standard errors are clustered by sector. The sample is confined to 2006-2010 and to firms which report using hired labor, producing more than 1600 USD worth of output and having labor productivity in excess of 400 USD, operating in sectors governed by the investment code in which at least one Ben Ali firm is contemporaneously active. Standard errors are clustered at the 5-digit sector level. Highly Regulated (de Jure) is a dummy variable indicating whether the particular 5 digit sub-sector the firm operates in is subject to both authorization requirements and FDI restrictions at time t.

Table 6: Performance Differences Conditional on Sector Dummies

Performance Differences Conditional on Sector Dummies

	Quantile Regressions					OLS	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Quantile	**10**	**50**	**90**	**95**	**99**	**Simple**	**Weighted**
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Dependent Variable: Market Share (Output)							
Ben Ali firm (BA)	0.000***	0.004	0.083***	0.107***	0.129***	0.038**	0.024
	(0.000)	(0.003)	(0.013)	(0.005)	(0.010)	(0.015)	(0.038)
BA*Highly Regulated (de Jure)	0.000	0.002	-0.012	0.139***	0.758***	0.044	0.358**
	(0.000)	(0.003)	(0.013)	(0.009)	(0.015)	(0.051)	(0.165)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weights	None	None	None	None	None	None	Output
Number of observations	49,446	49,446	49,446	49,446	49,446	49,446	49,446
R2	0.150	0.189	0.247	0.220	0.176	0.288	0.872
Dependent Variable: Profits Z-Score							
Ben Ali firm (BA)	-0.605***	-0.016	0.603***	1.209***	3.159***	-0.096	-4.822
	(0.136)	(0.011)	(0.206)	(0.289)	(0.150)	(0.255)	(6.124)
BA*Highly Regulated (de Jure)	0.176	0.051***	0.672***	1.838***	161.855***	6.535	38.016
	(0.142)	(0.017)	(0.221)	(0.335)	(0.395)	(5.684)	(25.970)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weights	None	None	None	None	None	None	|Net Profits|
Number of observations	43,128	43,128	43,128	43,128	43,128	43,128	41,824
R2	0.009	0.011	0.017	0.016	0.039	0.064	0.836

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. Standard errors are clustered by sector. The sample is confined to 2006-2010 and to firms which report using hired labor, producing more than 1600 USD worth of output and having labor productivity in excess of 400 USD, operating in sectors governed by the investment code in which at least one Ben Ali firm is contemporaneously active. Standard errors are clustered at the 5-digit sector level. Highly Regulated (de Jure) is a dummy variable indicating whether the particular 5 digit sub-sector the firm operates in is subject to both authorization requirements and FDI restrictions at time t. Firm controls include offshore, foreign and log firm age.

Table 7: De Facto Measures of Regulation

Performance Differences Conditional on Sector Dummies

	Quantile Regressions					OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Quantile	**10**	**50**	**90**	**95**	**99**	**Simple**	**Weighted**
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Dependent Variable: Market Share (Output)							
Ben Ali firm (BA)	0.000**	0.006	0.152***	0.198***	0.633***	0.034***	0.047*
	(0.000)	(0.005)	(0.008)	(0.010)	(0.068)	(0.013)	(0.024)
BA*Highly Regulated	0.005***	0.039***	0.756***	0.728***	0.244***	0.177***	0.376*
(de Facto)	(0.000)	(0.005)	(0.008)	(0.011)	(0.050)	(0.051)	(0.218)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weights	None	None	None	None	None	None	Output
Number of observations	49,446	49,446	49,446	49,446	49,446	49,446	49,446
R2	0.099	0.107	0.108	0.107	0.062	0.099	0.107
Dependent Variable: Profits Z-Score							
Ben Ali firm (BA)	-0.679***	-0.008	0.785***	2.088***	2.936***	-0.096	-4.822
	(0.098)	(0.012)	(0.094)	(0.164)	(0.319)	(0.255)	(6.124)
BA*Highly Regulated	-0.123	0.654***	82.702***	150.241***	162.247***	6.535	38.016
(de Facto)	(0.100)	(0.015)	(0.106)	(0.222)	(0.613)	(5.684)	(25.970)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weights	None	None	None	None	None	None	|Net Profits|
Number of observations	43,128	43,128	43,128	43,128	43,128	43,128	41,824
R2	0.012	0.089	0.101	0.101	0.101	0.064	0.836

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. Standard errors are clustered by sector. The sample is confined to 2006-2010 and to firms which report using hired labor, producing more than 1600 USD worth of output and having labor productivity in excess of 400 USD, operating in sectors governed by the investment code in which at least one Ben Ali firm is contemporaneously active. Standard errors are clustered at the 5-digit sector level.
Highly Regulated (de Facto) is dummy variable taking the value 1 if the 5 digit sector in which the firm is operating is subject to an authorization which is de facto difficult to obtain according to one of Tunisia's leading lawfirms, and 0 otherwise.

Table 8: Connected Firms and Competition – Sector Level Evidence

Connected Firms and Competition (2000-2010) – OLS Sector Regressions			
Dependent Variable	**Entry** (1) coef/se	**Exit** (2) coef/se	**Herfindahl** (3) coef/se
A. Baseline			
Ben Ali Market Share	-0.014	0.039**	0.305
	(0.017)	(0.017)	(0.216)
Year Dummies	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes
Number of observations	1,567	1,423	1,567
R2	0.354	0.455	0.874
B. De Jure Regulation			
Ben Ali Market Share (β_{BA})	-0.021	0.027	0.076
	(0.022)	(0.022)	(0.193)
Ben Ali Market Share*Highly Regulated (de Jure) (β_{RBA})	0.023	0.038	0.806***
	(0.030)	(0.026)	(0.224)
$\beta_{BA}+\beta_{RBA}$ (Ben Ali Market Share in Highly Regulated Sectors)	0.002	0.064***	0.883***
Year Dummies	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes
Highly Regulated Dummy	Yes	Yes	Yes
Number of observations	1,567	1,423	1,567
R2	0.354	0.456	0.883
C. De Facto Regulation			
Ben Ali Market Share (β_{BA})	-0.019	0.032	0.068
	(0.025)	(0.022)	(0.217)
Ben Ali Market Share*Highly Regulated (de Facto) (β_{RBA})	0.014	0.023	0.666*
	(0.025)	(0.022)	(0.346)
$\beta_{BA}+\beta_{RBA}$ (Ben Ali Market Share in Highly Regulated Sectors)	-0.006	0.054***	0.734***
Year Dummies	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes
Number of observations	1,567	1,423	1,567
R2	0.354	0.456	0.881

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. The sample is confined to 2000-2010. Standard errors are clustered at the 5-digit sector level. Ben Ali Market Share is a variable that measures the aggregate market share of connected firms at time t. *Highly Restricted (de Jure)* is a dummy variable indicating whether the 5 digit sub-sector the firm operates in is subject to both authorization requirements and FDI restrictions at time t and 0 otherwise. *Highly Regulated (de Facto)* is a dummy variable taking the value 1 if the 5 digit sector in which the firm is operating is subject to an authorization which is de facto difficult to obtain according to one of Tunisia's leading lawfirms, and 0 otherwise. The sample is confined to sectors with an average annual output larger than 20 million Tunisian Dinars, that have never been monopolized, and for which entry and exit rates are strictly lower than 1 (i.e. that do not appear of disappear between 2000 and 2010).

Appendix—Not for Publication

Table A1: Economic Significance Ben Ali Firms in 2010

Aggregate Contributions Ben Ali Firms All Firms			
	(1)	(2)	(3)
	Entire Economy	Sectors Governed by the Investment Code	
Restrictions?		Highly Restricted (de Jure)	Other (Free Entry and Modestly Restricted)
	Ben Ali Share		
Firms	0.1%	0.1%	0.1%
L	1.8%	9.7%	1.1%
Y	5.0%	38.7%	1.2%
Net Profits	14.8%	53.3%	2.8%
Gross Profits	9.6%	52.2%	2.0%
Gross Losses	5.0%	50.0%	1.7%
	Sector Totals		
L – wage jobs	989.568	45.978	660.804
% of economy		4.65%	66.78%
Y billions USD	60.855	3.094	25.942
% of economy		5.08%	42.63%
Net profits billions USD	4.963	0.538	2.364
% of economy		10.83%	47.63%

Note: USD:TND exchange rate1:1.5146, data for 2010, L=wage workers, Y=output, Net profits=pre-tax profits declared to the tax authorities (all firms), gross profits=pre-tax profits declared to the tax-authorities only for firms for whom this is positive. Gross losses=tax profits declared to the tax authorities only for firms for whom this is negative. Highly Restricted sectors are those that are subject to both authorization and restrictions on FDI. Free Entry and Modestly Restricted includes sectors which are not subject to entry restrictions and sectors subject to either only authorization or restrictions on greenfield FDI. Sectors which are not governed by the investment code but by specific laws are included in column 1.

Table A2: Sector Distribution Ben Ali Firms 2010 (by Broad Sector)

		Contributions of Ben Ali firms						*Sector Aggregate*		
	BA Firms	***Firms***	***Y***	***L***	***π***	**Gross *π***	***Gross Losses***	***Y***	***L***	***Profits***
	#	%	%	%	%	%	%	Sum	Sum	Sum
Telecommunications (Information and communication)	13	1.05	59.28	25.27	77	78	80	1265	9396	267
Cars and motorcycles - sales and repair	11	0.41	28.43	6.36	45	39	0	2182	7758	134
Finance and insurance	11	1.86	20.51	18.61	48	21	4	2820	10444	125
Transport and storage	14	0.94	17.96	6.90	-17	7	23	1227	13780	47
Other manufacturing activities	2							284	3515	21
Fabrication of rubber	2							675	7451	10
Fabrication of other mineral products	2							1215	14969	60
Chemicals and pharmaceuticals	1							1139	7163	75
Professional, scientific, technical activities	9	0.16	3.14	2.29	-2	1	13	1149	18267	193
Construction	18	0.41	2.00	0.97	1	4	6	2911	51163	103
Real Estate	0							118	1483	-59
Cars and transport	1							1439	25482	72
Education and human health services	2							520	13093	123
Hotels and restaurants	9	0.17	1.17	1.15	0	2	0	1349	39828	-417
Administration and support services	9	0.42	0.62	0.09	0	1	1	1112	65898	55
Commerce (gross) - excluding cars and motorcycles	24	0.36	0.84	0.57	1	1	0	10735	30842	357
Agriculture, forestry and fishing	6	0.93	0.65	0.76	807	1	9	547	12348	0
Manufacture of textiles	2	0.07	0.44	0.44	0	0	0	2760	102969	174
Manufacturing of paper, printing	1							646	5923	20
Manufacture of food products, beverages and tobacco products	2							4557	30517	123
Metallurgie and fabrication of metal products	2							1741	15854	83
Manufacturing of ICT, electronics, optics	3	0.45	0.21	0.15	1	0	0	2953	29086	177
Retail - excl cars and motorcycles	5	0.04	0.12	0.04	0	0	2	4733	28838	154
Extractive Industries	1							836	5108	110
Repair and installation of machinery	0	0.00	0.00	0.00	0	0	0	404	4509	34
Manufacturing of leather and leather products	0	0.00	0.00	0.00	0	0	0	586	18415	35
Manufacturing of wood	0	0.00	0.00	0.00	0	0	0	56	1608	6
Furniture	0	0.00	0.00	0.00	0	0	0	320	6707	6
Repair of computers	0	0.00	0.00	0.00	0	0	0	48	532	-4
Other Personnel services	0	0.00	0.00	0.00	0	0	0	79	3206	1
Other	6	0.77	0.17	1.49	-1	0	5	938	3801	116
Total	155	0.23	5.03	1.72	16	11	6	51341	589952	2203

Note: Table only includes firms with Y>0 and L>0. Y=output in millions of USD, L=employment (wage workers), π=net profits, Gross π =Gross profits (e.g. only including firms which report positive profits). Empty cells indicate that the number of observations was too small to safeguard statistical anonymity.

Table A3: Sector Specific Ben Ali Premia

Sector Specific Ben Ali Market Share Premia					
Sector (NAT 96)		**BA coef**	**Stderr**	**N**	**R2**
	Highly Regulated				
62100 & 62200	Air Transport[^D A F]	0.718***	0.107	21	0.919
80420	Adult and other education[A F]	0.161***	0.002	374	0.586
64202	Telecommunications (other) [D A F]	0.157	0.109	692	0.386
80300	Higher education[A F]	0.065***	0.009	91	0.278
74400	Marketing[A F]	0.051***	0.019	512	0.090
45214	Construction of powerlines and telecommunications[A F]	0.034***	0.003	284	0.105
70110	Real estate/Property Development[A F]	0.002	0.002	1679	0.039
	Other Sectors				
15332	Vegetables processing (except tomatoes)	0.702***	0.005	72	0.987
34200	Manufacturing of trailers	0.301***	0.022	46	0.556
92110	Films (production)[F]	0.192***	0.029	179	0.760
24410	Manufacturing of pharmaceutical products[A]	0.140***	0.013	131	0.359
36630	Other manufacturing	0.126***	0.002	260	0.325
26300	Manufacturing of ceramic tiles	0.089***	0.006	242	0.108
33200	Manufacturing of measurement and control instruments	0.085**	0.038	75	0.154
25240	Manufacturing of miscellaneous plastic products	0.072***	0.004	334	0.147
74302	Analysis and technical inspections	0.072***	0.009	66	0.090
5020	Fish farming and aquaculture[A]	0.071**	0.032	73	0.396
74130	Marketing research and surveys	0.050***	0.004	88	0.102
1300	Livestock and related crops[F]	0.015*	0.008	188	0.234
22220	Printing (other)	0.010***	0.001	1278	0.067
25220	Manufacturing of plastic packaging	0.009***	0.003	489	0.046
63300	Travel agencies[F]	0.007	0.004	1681	0.055
28120	Manufacturing of joinery and metal closures	0.007	0.005	1325	0.057
18222	Textiles – outerwear	0.006**	0.003	4806	0.032
1122	Horticulture[F]	0.006	0.004	227	0.172
74140	Business and management consulting	0.005	0.004	4416	0.019
15320	Fruit and vegetable juices	0.004	0.008	74	0.031
92720	Other recreational activities[F]	0.002	0.005	713	0.016
45211	Construction of buildings[F]	0.001***	0.000	8216	0.054
60241	Road freight transport[F]	0.001	0.001	2863	0.056
18230	Textiles – underwear	0.001	0.001	970	0.060
14110	Extraction of stones for construction	0.000	0.001	1396	0.089
74700	Cleaning activities	-0.001**	0.000	599	0.034
32100	Manufacturing of electronic components	-0.012*	0.007	369	0.017
55110	Hotels with restaurant[A]	-0.002***	0.000	1980	0.009
74500	HR activities (selection and management of staff)	-0.004*	0.002	92	0.129
72000[^^]	ICT	-0.004	0.003	1183	0.029
29720	Manufacturing of non-electronic household appliances	-0.006	0.020	29	0.020
63110	Handling	-0.033	0.054	116	0.205
63122	Storage (non-refridgerated)	-0.089**	0.036	47	0.610
28510	Treatment and coating of metals	-0.115	0.101	181	0.269
1121	Cultivation of vegetables[F]	-0.119**	0.047	100	0.505
16000	Tobacco industry[A D]	-0.580	0.368	36	0.479

Note: [A] indicates the sector is subject to authorization [F] indicates the sector is subject to FDI restrictions [D] indicates that de facto entry into the sector is considered difficult. The table presents sector-specific coefficient estimates β_B of the Ben Ali market share premium estimated using: $Y_{it} = \beta_B \, Ben\ Ali_{it} + \beta_X X_{it} + \beta_T \tau_t + \varepsilon_{ijt}$, where the dependent

variable Y_{it} is output market of firm i at time t, X_{it} is a set of firm controls including firm age, foreign ownership and offshore status, τ_t is a vector of year dummies and ε_{ijt} an error term. *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. Standard errors are clustered by firm. The sample is confined to 2006-2010 and to firms which report using hired labor, producing more than 1600 USD worth of output and having labor productivity in excess of 400 USD, operating in sectors governed by the investment code in which at least one Ben Ali firm is contemporaneously active. The table only presents results sectors for which we have more than 20 observations, in which at least one Ben Ali firm was active in 2010 producing output in excess of 20 million Tunisian Dinars per year on average. Sector 72000 is used to classify firms which engage in different ICT activities. ^The Air Transport category combines both regular and non-regular air transport to have sufficiently many observations. ^^ The ICT sector (NAT96=72000) contains firms that engage in different ICT activities.

Appendix B: Data Construction (NOT FOR PUBLICATION)

B.1: List of Variables

Variable	Description	Source
Political Connections		
Ben Ali Firm	Dummy variable taking the value 1 if the firms is owned, fully or in part, by a member of the Ben Ali clan	CC and MoF
Firm Characteristics		
L	Number of salaried employees (annual average over 4 quarters)	INS
Age	The age of the firm defined as the difference between the current year minus the year in which it first registered	INS
Foreign	A dummy variable taking the value 1 if a firm has majority foreign ownership, and 0 otherwise.	INS
Offshore	A dummy variable taking the value 1 if a firm operates in the tax regime 'totalement exportatrice', commonly referred to as the offshore sector. Firms in this tax regime do not have to pay output tax, provided they export at least 70% of their output or sell it to other 'offshore' firms	INS
Y	Output as reported in firm's annual tax declaration	MoF
Profits	Profits as reported in the firm's annual tax declaration	
Gross Profits	Profits for firms reporting positive profits and 0 for those reporting losses (The maximum of 0 and profits as reported in the firm's annual tax declaration)	MoF
Gross Losses	Profits for firms reporting losses and 0 for those reporting positive profits (The minimum of 0 and profits as reported in the firm's annual tax declaration)	
Profitable	Dummy variable taking the value 1 if a firms reported positive profits and 0 otherwise	MoF
Market Share	The firms output divided by the sum of all output of firms operating in the same five digit sector	MoF
Regulation		
Highly Regulated (de Jure)	Dummy variable taking the value 1 if the 5 digit sector in which the firm is operating is subject to both prior authorization and restrictions on FDI as stipulated in the Tunisian Investment Code, and 0 otherwise	IC
Highly Regulated (de Facto)	Dummy variable taking the value 1 if the 5 digit sector in which the firm is operating is subject to an authorization which is de facto difficult to obtain, and 0 otherwise. This measure is based on the expert judgment of one of Tunisia's leading lawfirms and inherently subjective.	Leading lawfirm
Competition		

Entry rate	Number of new firms as a proportion of the total number of firms in a NAT96 sector at time t.	INS
Exit rate	Number of new firms that exit as a proportion of the total number of firms in a NAT96 sector at time t.	INS
Herfindahl	Hirschman-Herfindahl index of market concentration $= \sum_{i=1}^{n} (Market\ Share^2{}_i)$	INS

INS=Institut National de la Statistique, IC= Code d'Incitation aux Investissements, MoF= Tunisian Ministry of Finance, CC=La Commission Nationale de Gestion d'Avoirs et des Fonds objets de Confiscation ou de Récupération

B.2: Coding the Investment Code

To assess the relationship between firm performance, political connections and the regulation, we created a database of the Tunisian Investment Code, the *Code d'Incitation aux Investissements (CII)*. The dataset contains annual information at the NAT96 5-digit sector level, the most disaggregated sector classification available in Tunisia, on which activities were covered by the Investment Code and whether these activities were subject to i) prior authorization as stipulated in Article 4 of Décret n°94-492 and subsequent amendments ii) restrictions on foreign investment in the form of having to obtain permission from the *Commission Superieure d'Investissement* as stipulated in stipulated in Article 5 of Décret n°94-492 and subsequent amendments. In addition, there are a number of sectors in which foreign firms are never allowed to have majority foreign ownership including agricultural activities and medical laboratories, which we also consider subject to FDI restrictions.

To construct this dataset we code the original Investment Code enacted in December 1993 and all subsequent decrees resulting in substantive amendments to investment laws up until 2010. In total we record 25 decrees which result in revisions in the coverage of the Investment Code and/or changes in which activities are subject to authorization requirements and/or restrictions on foreign investment. We do not record decrees resulting in changes in registration requirements, customs regulations, fiscal advantages, or other regulations that are not analyzed in this paper. We also exclude artisanal activities from our analysis as they only account for a very small fraction of economic output.

Arguably the most important challenge in coding these regulations is that the list of activities stipulated in the investment code and the Tunisian NAT 96 classification do not overlap perfectly. Sometimes the activities listed in the Investment Code are more general than the NAT96 classifications (for example, the activity "Hébergement" in the Investment Code corresponds to a number of NAT96 categories, notably "Hôtels avec restaurant", "Hôtels de tourisme sans restaurant", "Hôtels non classes", "Auberges de jeunesse et refuges", "Exploitation de terrains de camping", "Autre hébergement touristique", "Hébergement collectif non touristique"). In other instances, they are more specific (for example the activities "Pêche côtière", Pêche au feu, Pêche au chalut" are encompassed by the NAT96 sector "Pêche") whereas other activities are very specific and hard to map to specific sectors (for example "Sélection de couleurs pour les imprimeries"). Occasionally it is hard to create a satisfactory correspondence (for instance the activities "autres industries diverses"

and "Assemblage industriel des produits fabriqués localement" are difficult to map to NAT96 sectors). When a certain CII activity was either too general or too specific to map to a NAT96 activity, we did not include it in our database. Coding the Investment Code thus inherently involves a degree of subjectivity, which we have tried to minimize by developing the correspondence between NAT96 and the Investment Code in collaboration with the Tunisian Institut National de la Statistique and a law firm specialized in investment law.

Another challenge we faced is that in some instances instead of being subject to authorization, firms that want to enter a particular have to submit a so-called *cahier de charges* to the relevant ministry. A cahier de charges is merely a declarative statement on the basis of which entry can only be rejected if it does not meet pre-specified criteria. Sectors subject to a cahier de charges are not considered being subjected to authorization.

Table B1 presents a list of NAT96 sectors subject to authorization and/or FDI restrictions in 2010. The Stata dataset "ICCode9310" contains the regulation data by NAT96 sector for the period 1993-2010. The Excel spreadsheet "ICCode93" provides an overview of the original investment code and the spreadsheet "Decrees" lists all the decrees and how we have coded them.

Table B1: Sectors subject to Authorization and/or FDI restrictions in 2010

The Investment Code in 2010 Only sectors subject to authorization (AUT) and/or FDI Restrictions (FDI R)			
Code	**Sector (NAT96)**	**AUT**	**FDI R**
	Sectors Subject to Authorization and FDI Restrictions		
45120	Forages et sondages	1	1
45212	Construction d'ouvrages d'art et de tunnels	1	1
45214	Construction de lignes électriques et de télécommunications	1	1
55220	Exploitation de terrains de camping	1	1
55231	Autre hébergement touristique	1	1
60100	Transports ferroviaires	1	1
60211	Transports urbains de voyageurs	1	1
60212	Autres transports routiers réguliers de voyageurs	1	1
60220	Transport de voyageurs par taxis et par Louages	1	1
60300	Transports par conduites	1	1
61102	Transports côtiers (par BAC).	1	1
62100	Transports aériens réguliers	1	1
62200	Transports aériens non réguliers	1	1
64202	Autres activités de télécommunications	1	1
70110	Promotion immobilière	1	1
74400	Publicité	1	1
74600	Enquêtes et sécurité	1	1
80101	Enseignement préscolaire	1	1
80102	Enseignement primaire	1	1
80211	Enseignement secondaire (collège - 1er cycle)	1	1
80212	Enseignement secondaire (lycée - 2ème cycle)	1	1
80300	Enseignement supérieur	1	1
80420	Formation permanente et enseignements divers	1	1
85110	Activités hospitalières	1	1
85144	Laboratoires d'analyses médicales	1	1
85321	Crèches et garderies d'enfants	1	1
92130	Projection de films cinématographiques	1	1
92200	Activités de radio et de télévision	1	1
	Sectors Subject to Authorization only		
5010	Pêche	1	0
5020	Pisciculture et aquaculture	1	0
15410	Fabrication d'huiles et graisses brutes	1	0
15611	Meunerie	1	0
15612	Autres activités de travail des grains	1	0
15930	Production de vin	1	0
15940	Cidrerie et fabrication de vins d'autres fruits	1	0
15960	Brasserie	1	0
16000	Industrie du tabac	1	0
17110	Préparation et filature de l'industrie cotonnière	1	0
17120	Préparation et filature de l'industrie lainière-cycle cardé	1	0
17130	Préparation et filature de l'industrie lainière-cycle peigné	1	0
17140	Préparation et filature du lin	1	0
17511	Fabrication industrielle de tapis et moquettes	1	0
24410	Fabrication de produits pharmaceutiques de base	1	0
24420	Fabrication de préparations pharmaceutiques	1	0
26110	Fabrication de verre plat	1	0
26510	Fabrication de ciment	1	0
26520	Fabrication de chaux	1	0
29600	Fabrication d'armes et de munitions	1	0
37100	Récupération de matières métalliques recyclables	1	0

37200	Récupération de matières non métalliques recyclables	1	0
52310	Commerce de détail de produits pharmaceutiques	1	0
55110	Hôtels avec restaurant	1	0
55121	Hôtels de tourisme sans restaurant	1	0
55122	Hôtels non classés	1	0
55210	Auberges de jeunesse et refuges	1	0
85120	Pratique médicale	1	0
85141	Activités des auxiliaires médicaux	1	0
85143	Ambulances	1	0
93041	Activités thermales et de thalassothérapie	1	0
	Sectors Subject to FDI Restrictions only		
1111	Culture de céréales	0	1
1112	Culture de fourrages	0	1
1121	Culture de légumes; maraîchage	0	1
1122	Horticulture; pépinières	0	1
1122	Horticulture; pépinières	0	1
1130	Culture de fruits, de plantes pour boissons et pour épices	0	1
1131	Culture d'agrumes et vergers	0	1
1132	Culture d'oliviers	0	1
1133	Culture de palmiers-dattiers	0	1
1134	Viticulture	0	1
1210	Elevage de bovins, production de lait à la ferme	0	1
1221	Elevage d'ovins et de caprins	0	1
1222	Elevage d'équidés	0	1
1230	Elevage de porcins	0	1
1240	Elevage de volailles	0	1
1251	Elevage de camélidés	0	1
1252	Elevage d'animaux n.c.a	0	1
1300	Culture et élevage associés	0	1
1411	Activités de services aux cultures productives	0	1
1412	Réalisation et entretien de plantations ornementales	0	1
1420	Activités de services annexes à l'élevage, sauf activités vétérinaires	0	1
2011	Sylviculture	0	1
2012	Récolte de l'alfa	0	1
2013	Récolte du liège	0	1
2014	Exploitation forestière	0	1
2020	Activités des services annexes à la sylviculture et aux exploitations forestières	0	1
45211	Construction de bâtiments (gros œuvre)	0	1
45250	Autres travaux de construction	0	1
45310	Travaux d'installation électrique	0	1
45320	Travaux d'isolation	0	1
45410	Plâtrerie	0	1
45430	Revêtement des sols et des murs	0	1
45441	Miroiterie de bâtiment; vitrerie	0	1
60230	Autres transports routiers de voyageurs	0	1
60241	Transports routiers de marchandises	0	1
61101	Transports maritimes	0	1
63300	Agences de voyages	0	1
64120	Autres activités de courrier	0	1
72400	Activités de banques de données	0	1
74201	Activités d'architecture	0	1
74202	Métreurs, géomètres	0	1
74810	Activités photographiques	0	1
74830	Secrétariat, traduction et routage	0	1
74841	Organisation de foires et salons	0	1

80220	Formation professionnelle	0	1
92110	Production de films	0	1
92310	Art dramatique et musique	0	1
92330	Manèges forains et parcs d'attractions	0	1
92520	Gestion des musées et préservation des sites et monuments historiques	0	1
92620	Autres activités sportives	0	1
92720	Autres activités récréatives	0	1

Appendix B3: De facto differences in the intensity of entry regulation

One potential concern with our regulation data is that they measure *de jure*, rather than *de facto* regulation; amongst sectors that are subject to authorization there might be meaningful differences in the ease with which one can secure permission to operate a business. For instance, it is feasible that some sectors are de facto free entry sectors in spite of being nominally subject to authorization. To account for these differences in the ease with which authorization can be obtained, we hired a leading lawfirm to codify in which sectors obtaining authorization is particularly difficult. Their ranking which is listed in Table R2.1 below, is inevitably subjective, and thus has to be interpreted with caution.

Telecommunications, air transport (both regular and non-regular), manufacturing of tobacco, cement, flat glass, arms and weapons, as well as security, radio and TV, recycling, taxi and bus operators are among the sectors in which obtaining authorization is especially difficult. The majority of these sectors (7 out of 13) are also subject to restrictions on FDI.

Interestingly, connected firms tend to be overrepresented in these sectors, accounting for 60% of output and 73% of net profits and 15% of all jobs. These numbers are driven by a few influential sectors, since connected firms are active in 6 of the 13 sectors[18] that are considered especially difficult to enter (four of which are subject to restrictions on FDI). However, these sectors are among the sectors with the highest level of turnover (both economy-wide and in the list of sectors subject to difficult authorization).

[18] Arms and weapons manufacturing (sector code 29600) was also considered to be subject to difficult authorization, but we did not find any private firms active in this sector and therefore excluded it form the analysis.

Table B3.1 Sectors in which Obtaining Authorization is De Facto Difficult

Sectors in which Obtaining Authorization is De Facto Difficult										
		FDI R	Ben Ali Share 2010 (%)				Sector Total 2010			
			Firms	Y	Net Profits	L	N	Y Million USD	Net Profits Million USD	L Jobs
64202	Telecommunications (other)	Yes	2%	95%	100%	76%	266	939	200	4107
62200	Non-regular air transport	Yes	67%	92%	135%	84%	3	217	-9	850
16000	Production of tobacco		14%	73%	-131%	27%	7	58	-1	230
92200	Radio & TV	Yes	33%	9%	-82%	33%	6	12	0	125
62100	Air transport	Yes					2			
26510	Cement manufacturing		14%	5%	15%	20%	7	494	82	1820
26110	Manufacture of flat glass		0%	0%	0%	0%	3	2	0	32
26520	Lime Manufacturing		0%	0%	0%	0%	2			
37100	Recycling of metallic materials		0%	0%	0%	0%	9	10	1	86
37200	Recycling of non- metal materials		0%	0%	0%	0%	87	37	3	757
60220	Taxis and bus operators	Yes	0%	0%	0%	0%	60	31	0	939
60300	Transport via pipeline	Yes	0%	0%	0%	0%	1			
74600	Security	Yes	0%	0%	0%	0%	153	86	4	18130
Total			2%	60%	73%	15%	606	1923	276	27724

Note: USD:TND exchange rate1:1.5146, data for 2010, L=wage workers, Y=output, Net profits=pre-tax profits declared to the tax authorities (all firms). Empty cells indicate that the number of observations was too small to safeguard statistical anonymity.

Appendix R: Additional Robustness Checks (NOT FOR PUBLICATION)

R1: Employment Market Share

Table R1.1: Employment Market Share Regressions

Dependent Variable: Market Share (Employment)							
	Quantile Regressions					OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Quantile	**10**	**50**	**90**	**95**	**99**	**Simple**	**Weighted**
	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se	coef/se
Basic Specification							
Ben Ali firm (BA)	0.000*	0.007***	0.149***	0.206***	0.666***	0.043***	0.140*
	(0.000)	(0.002)	(0.005)	(0.007)	(0.029)	(0.015)	(0.071)
BA*Highly Regulated (de Jure)	0.000	-0.002	0.393***	0.374***	0.082	0.058	0.230*
	(0.000)	(0.004)	(0.008)	(0.014)	(0.050)	(0.060)	(0.121)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	No	No	No	No	No	No	No
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weights	None	None	None	None	None	None	Employment
Number of observations	49,446	49,446	49,446	49,446	49,446	49,446	49,446
R2	0.014	0.046	0.057	0.060	0.056	0.063	0.313
Controlling for Sector Dummies							
Ben Ali firm (BA)	0.000*	0.003***	0.037***	0.063***	0.068***	0.028**	0.048*
	(0.000)	(0.001)	(0.006)	(0.010)	(0.004)	(0.013)	(0.029)
BA*Highly Regulated (de Jure)	0.000	0.001	0.047***	0.133***	0.474***	0.031	0.183*
	(0.000)	(0.001)	(0.006)	(0.011)	(0.025)	(0.038)	(0.104)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weights	None	None	None	None	None	None	Employment
Number of observations	43,128	43,128	43,128	43,128	43,128	49,446	49,446
R2	0.009	0.011	0.017	0.016	0.039	0.356	0.702

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. Standard errors are clustered by sector. The sample is confined to 2006-2010 and to firms which report using hired labor, producing more than 1600 USD worth of output and having labor productivity in excess of 400 USD, operating in sectors governed by the investment code in which at least one Ben Ali firm is contemporaneously active. *Highly Restricted (de Jure)* is a dummy variable indicating whether the 5 digit sub-sector the firm operates in is subject to both authorization requirements and FDI restrictions at time t and 0 otherwise. Standard errors are clustered at the 5-digit sector level.