The Perils of Industrial Policy

Evidence from Tunisia

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Abstract: We examine the relationship between investment laws and the business interests of President Ben Ali and his family, using firm-level data from Tunisia for 1994-2010. Data on investment regulations are merged with tax and firm-level census data in which 220 firms owned by the Ben Ali family are identified. These connected firms outperform their competitors in terms of employment, output, market share, and profits, as well as employment and profits growth, and sectors in which they are active are disproportionately subject to authorization requirements and FDI restrictions. Consistent with theories of capture, performance differences between connected firms and their peers are significantly larger in highly regulated sectors. In addition, the introduction of new FDI restrictions and authorization requirements in narrowly defined 5 digit sectors is correlated both with the presence of connected firms and with their startup, suggesting that regulation is endogenous to cronyism. The evidence implies that Tunisia's industrial policy was used as a vehicle for rent creation for the president and his family.

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1 Introduction

There is considerable controversy about which, if any, industrial policies are optimal. The economic ascent of a number of Asian countries pursuing proactive industrial policies, combined with the stagnation of some countries in Latin America and Africa with relatively liberal investment laws, has led to renewed interest in the state-led development paradigm (see e.g. Rodrick, 2007). At the same time, the correlation between bureaucratic complexity, corruption and under-development across countries has been appealed to as evidence for the view that rather than remedying market failures, interventionist policies primarily serve the private interest of bureaucrats themselves (Djankov et al., 2001, Aedes and di Tella, 2007).

Whether regulation is used to steer resources to strategic sectors and promote growth or is prone to capture and thus likely to retard growth is critical to the debate on the efficacy of industrial policy. Moreover, answering this question will help discriminate between competing theories of economic regulation. In spite of in-depth theoretical analysis of the nexus between corruption, rents and regulation (see e.g. Shleifer and Vishny, 1993, 1994, Bliss and Di Tella, 1997, Ades and Di Tella, 1999, Acemoglu and Verdier, 2000), and the intriguing cross-country evidence cited above, direct empirical testing of the hypothesis that industrial policies primarily serve those who institute them remains limited. This is not surprising since testing this hypothesis requires both identification of the business interests of political decision-makers, how these are affected by regulation, and demonstrating that potential de facto regulatory bias favoring politicians was plausibly deliberate rather than circumstantial.

To shed light on this question, this paper examines the relationship between the business interests of president Ben Ali and his family and the evolution of the Tunisian investment law, the *Code d'Incitations aux Investissements,* during the last decade and a half of Ben Ali's tenure. To characterize the Ben Ali family's business interests, we use the Tunisian industrial census, an administrative dataset containing information on all Tunisian non-agricultural private enterprises, and identify 220 firms owned by the Ben Ali family that were confiscated in the aftermath of the Jasmin revolution. We merge these data with tax data and create a database of the evolution of the Tunisian investment law from 1993 until 2010, the last full calendar year of Ben Ali's tenure. Decision-making authority over investment laws can be confidently attributed to Ben Ali since Tunisia was an autocracy and changes to the investment code were made by decrees signed by the

President himself. The resulting dataset[1] spans the universe of private sector firms in Tunisia and enables us to pinpoint the sectors in which Ben Ali firms are active. It also enables us to document performance differentials between firms owned by the Ben Ali family and their competitors, and to examine to what extent these are explained by regulatory restrictions. Finally, it allows us to test whether the evolution of the investment law was endogenous to the business interests of the Ben Ali family. Thus, we not only examine whether onerous regulations invite corruption, but also whether corruption results in the proliferation of regulation.

Tunisia, a small open economy at the forefront of the Arab Spring, provides a very relevant context to examine who reaps the rents from regulation. To start with, Tunisia's industrial policy was both proactive and characterized by extensive state intervention in the economy. The Tunisian model was seemingly successful; it generated stable growth, and accolades from the international community, even being heralded as a role model for other African and Middle Eastern economies by the IMF. Moreover, the Ben Ali family was an important economic player, and Tunisia's investment promotion agency proudly advertised his close interactions with the business community as enhancing public welfare. But, the Tunisian model was not without serious flaws; unemployment and corruption were relatively high over the period studied, and contributed to Ben Ali's fall. Last but certainly not least, Tunisia has a high-quality industrial census, and authorities willing to share confidential data on both firm performance and political connections.

Previewing our main findings, we show that industrial policy was captured and to some extent dictated by Ben Ali clan's private business interests. To start with, Ben Ali family's entrepreneurship was both extremely lucrative and significant from a macro-economic perspective. The ensemble of 220 confiscated Ben Ali firms appropriated 21% of all net private sector profits and accounted for approximately 3% of private sector output.[2] Since we do not identify in the data all firms with connections to the Ben Ali regime nor firms with cultivated connections, this number is probably best interpreted as a lower bound on the importance of political connections.

[1] The dataset is accessible at the Tunisian Institut National de la Statistique.

[2] These estimates are in 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 is studying account for approximately a third of Indonesian GDP. Similarly, Ferguson and Voth argue that firms with ties to the Nazi 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 exclusively on firms with family ties to the Ben Ali regime.

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Second, Ben Ali firms strategically sort into sectors in which liaising with the government is a key determinant of success, since sectors in which Ben Ali firms are active are significantly more likely to be subject to prior authorization by the government and FDI restrictions. Ben Ali firms dominate the telecommunications and air transport sectors and were also important players in other transport sectors, real estate and consulting, all sectors which are highly regulated.

Third and related, Ben Ali firms outperform their competitors in terms of employment, output, market share, profits, as well as employment and output growth and do so especially in sectors that are regulated. The disproportionate contributions of Ben Ali firms to aggregate output and profits reflect their superior size, output, profits, and labor productivity.

Fourth, performance differentials between connected firms and their competitors are significantly larger in sectors subject to authorization requirements, FDI restrictions and fiscal advantages. Consistent with theories of regulatory capture, the superior performance of connected firms is thus to a large extent explained by regulation.

Last but not least, we present evidence consistent with the idea that the Ben Ali clan manipulated the investment laws to further its own business interest. Although the number of observations is limited, the correlation between cronyism, entry restrictions and protectionism was present in the original code enacted in 1993. In addition, the probability of reforms to investment laws promulgating in additional regulations is significantly higher when Ben Ali firms are present and the null hypothesis of no correlation between crony presence and the introduction authorization requirements and FDI restrictions is strongly rejected. Moreover, the start-up of new Ben Ali firms is significantly correlated with the imposition of new authorization requirements and FDI restrictions.

These findings contribute to the literature in a number of ways. To start with, by providing empirical evidence for the notion that legal barriers to investment serve the private interests of those in power, our paper helps discriminate between competing theories of regulation. Rather than supporting the predictions of Pigouvian public interest theories in which regulation primarily rectifies market failures, our findings are more consistent with public choice theory (Schleifer and Vishny 1993, 1998) which posits that regulation primarily serves the interest of those who create it, or may be captured by those who stand to benefit from it (Stigler, 1971). The paper thus furthers our understanding of the emergence and persistence of suboptimal policies (see the discussion in

Rodrick, 1996), and thereby contributes to the growing literature on the political economy of reform and institutional evolution.

Second and related, by providing empirical evidence consistent with the idea that active industrial policy may arise endogenously in an environment with weak checks and balances, our findings contribute to the debate about appropriate industrial policies and how its efficacy is modulated by governance. In particular, our results countermand the controversial but popular argument that autocrats are better positioned to reap the returns to interventionist policy because they are better able to minimize policy volatility and can implement reforms whose returns may take a while to materialize (see Rodrick, 2007 for a discussion, and McGuire and Olson, 1996 for an opposing viewpoint). Instead they serve as a reminder that the temptation to abuse industrial policy may be strongest when checks and balances are lacking.

Third, this paper contributes to the small but rapidly growing literature on politically connected firms pioneered by Fisman (2001), which has shown such firms both to be prevalent and important from a macroeconomic perspective (Faccio, 2006, Faccio et al., 2006). Most of the papers in this literature have focused on the valuation of political connections and the extent to which they benefit from subsidies, bailouts, and capital controls (Johson and Mitton, 2001) and licensing arrangements (Mobaraq and Purbasari, 2006) limiting competition. By focusing squarely on the relationship between regulation and political connections itself, our results help explain why political connections have been so highly valued (see e.g. Ferguson et al, 2008) and highlight a previously underemphasized mechanism through which they may impact on macroeconomic performance.

Fourth, the paper also aids our understanding of the causes of the Arab Spring, albeit indirectly. 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 about nefarious practices of nepotistic autocrats, 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), who study listed firms with political connections in Egypt. From a policy point of view, these findings caution against interventionist policies to grow local industry and underscore the benefits of transparency, simplicity, and checks and balances. At the same time, they also highlight the need for urgent reforms in Tunisia and other Arab countries in transition, since the Arab Spring has not yet resulted in a radical overhaul of the policy architecture

that facilitated social exclusion. The Tunisian investment code serves as a case in point; it has not been revised since Ben Ali's departure.

The remainder of this paper is organized as follows; the next section describes our data and briefly reviews Tunisian investment law. A bird's eye view of the economic activities of the Ben Ali family is provided in section three, which also presents descriptive statistics demonstrating that firms owned by the Ben Ali family were vastly more profitable than their competitors. Section 4 shows that these performance differences were especially pronounced in densely regulated industries, while Section 5 shows evidence that suggest that Ben Ali manipulated the investment laws to benefit his business interests. Conclusions and policy implications are discussed in section 6.

2 Data

2.1 Identifying Ben Ali's Business Interests

In the aftermath of the Tunisian revolution, assets of the Ben Ali clan were confiscated. The confiscation process involved 114 individuals, including Ben Ali himself, his relatives and his in-laws, and concerned the period from 1987 until the outbreak of the revolution. The seized assets included some 300 enterprises,[3] 550 properties, 48 boats and yachts, 40 stock portfolios, and 367 bank accounts. 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 255 confiscated firms from the Tunisian authorities and use this list to identify the Ben Ali family's business interests. The list included firms confiscated up until December 2012, including a number of very prominent firms such as Orange Tunisia, Tunisiana, Carthage Cement and, ENAKL auto-industries. We were able to identify 220 firms in 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. For 202 firms the identification of firms in the Repertoire was based on their tax id. For an additional 18 firms whose tax ids we did not obtain, identification was based on their name only when there was a unique match between their name and firms in the repertoire. For the remaining 35 firms on the list, matching on their

[3] Not all these firms operate in Tunisia.

name proved problematic because there were multiple firms with the same name. In addition, amongst the 220 firms identified in the RNE, for 6 firms data were missing altogether, such that the effective sample is 214, but even for those information is typically incomplete. We thus do not identify all connected firms, yet do identify the vast majority and, moreover, our sample of connected firms is most likely skewed towards the largest and economically most relevant firms since these are easier to identify. In addition, a major advantage of using data from the confiscation commission is that there is absolutely no ambiguity as to whether these firms were indeed politically connected to the president.

2.2 Administrative 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 confidential tax data on gross output and profits which we obtained from the Ministry of Finance for the period 2000-2010.[4] A unique aspect of the Tunisian firm census (RNE) is that is spans the universe of private sector firms. In 2010, the RNE contained information on 102,660 firms with employees and an additional 501,746 firms without paid employees (e.g. the registered self-employed). This enables us to pinpoint precisely which sectors connected entrepreneurs sorted into and how they perform relative to their competitors. In addition, the database enables us to follow the same firms over time, track entry and exit, and avert survivor bias. Moreover, the quality of the employment data is high.[5] By contrast, tax data on turnover and profits are missing for approximately a third of all firms, even though officials confirmed that the data at our disposal covered all firms in the RNE for which such information is available. The majority of whom are operating in the so-called '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, and, as a consequence, tax inspectors have less incentive to verify the accuracy of their declarations. In addition, for many firms that do report, the data are quite noisy or contain missing values. Thus, we have to be cognizant of the limitations of administrative data.

[4] Data for earlier years were not available since by law the Tunisian ministry of Finance is required to delete data more than ten years old.

[5] 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 in the order of magnitude of 10-15%.

2.3 Data on Regulation; Coding the Investment Code

To test for the relationship between regulation and the performance of politically connected firms, a dataset documenting the evolution of Tunisian investment law was created, which we merge with the firm-level data. More specifically, we code the Tunisian Investment Incentives Code (hereafter referred to as the investment code), which governs investment in all sectors of the economy with the exception of finance, mining, energy and domestic commerce, which are regulated by separate laws. The current investment code dates back to December 27th, 1993 (Law 93-120 of 27 December 1993) and was subsequently amended by 25 presidential decrees, all of which are included in our database.[6]

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. To start with, for a number of activities one needs to obtain prior authorization from the government in order to be able to operate legally. Examples of such activities include; fishing, tourism (travel agencies), air transport, maritime transport and road transport, telecommunications, education, the film industry, real estate, marketing, and health related industries.

Second, it stipulates a number of activities for which foreign firms need to obtain permission from the Investment Commission (*Commission superieure d'investissement),* which is chaired by the Prime Minister, to invest when their foreign equity interest exceeds 50% of capital, notably transport, communications, tourism, education, cultural production, entertainment, construction, real estate, computer services, and a select number of other services. Obtaining such permission is notoriously 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).

Third, the code stipulates that firms engaging in particular activities are eligible for special fiscal advantages. The list of activities for which fiscal incentives are available overlaps considerably

[6] 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° 2002-0518, Décret n° 2003-1676, Décret n° 2004-0008 , Décret n° 2004-1630 , 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 , Décret n° 2010-2936, Décrêt de 2001 (28 mai), Décrêt de 2004 (2 septembre), and décrêt de 2008 publié en 2010

with the list of activities for which one requires prior approval and in which de facto FDI restrictions apply.

The list of activities which are subject to these various regulations has evolved over time, as it has been supplemented and amended by 25 subsequent presidential Decrees, resulting in more than 96 amendments at the NAT 96 level, i.e. the 5-digit sector level. We test whether amendments were plausibly due to manipulation of the investment law by the Ben Ali clan. One advantage of our strategy is that; all these decrees were issued by the president, which enables us confidently attribute decision making authority to Ben Ali himself.

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.[7] With the help of officials at the Tunisian INS we create a correspondence between activities and sectors, but in some cases multiple activities were mapped to the same sector and vice versa.[8] As a consequence it is possible for some sectors to be subjected to several regulations of the same kind.

The code also stipulates that firms that export at least 70% of their output (Articles 10 and 16 of the code), so-called "offshore" firms, are not subject to the same regulatory restrictions and do not have to pay profit and turnover taxes. This has helped Tunisia attract foreign investors and accolades from the international community, the onshore sector being highly protected and largely closed to foreign competition. Indeed, as a result of these various restrictions, Tunisia scores quite poorly on the OECD FDI Restrictiveness index, ranking 42nd out of the 51 countries for which the index is available, below the non-OECD average.

3 Descriptive Statistics: Exorbitant Profits and Strategic Sorting

<TABLE 1 ABOUT HERE>

[7] 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.
[8] 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.

Ben Ali firms are very important from an aggregate economic point of view. Descriptive statistics presented in Table 1 show that while they account for less than 1% of all wage jobs, Ben Ali firms are economically important as they account for 3.2% of all private sector output,[9] and 21.3% of all net private sector profits, although it should be noted that this is in part due to many firms reporting losses; when only firms reporting positive profits are considered, Ben Ali firms account for 6.8% of all profits. Profits are measured as operating profits declared to the tax authorities, which are an imperfect proxy for real profits since firms are allowed to deduct spending towards investments from their tax obligations. While not all firms are fully family owned - suggesting some of these profits accrue to non-family members - these numbers are perhaps best interpreted as a lower bound on the total profits accruing to politically connected firms because many firms do not report positive output, salaried employment or profits.[10] Moreover, as explained above, we do not observe firms which benefitted from cultivated, rather than family connections.

Table 2 presents additional descriptive statistics both in levels and demeaned by 2-digit and 5-digit sector averages (the right hand columns). On average, Ben Ali firms are significantly larger in terms of employment, output, and profits[11], and produce higher levels of output per worker, even after sorting is controlled for by subtracting sector averages. They do not, however, have higher average levels of profit per employee. Note that in spite of their higher average profits, a substantial number of Ben Ali firms report losses; in fact, Ben Ali firms are more likely to report losses than non-connected firms despite generating higher profits on average. The group of Ben Ali firms is highly heterogeneous in other dimensions as well. While 3 connected firms feature in the list of the ten largest firms, 100 firms did not report using any paid laborers.

<TABLE 2 ABOUT HERE>

[9] The total output reported to the tax authorities exceeds 64 billion USD, which seems high in comparison to Tunisia's high GDP numbers, perhaps reflecting measurement error.

[10] For a subset of firms, we were able to identify which share of the firms was owned by the Ben Ali family; adjusting for ownership by non-family members, we find that the sum of net profits if we examine the share of profits and losses directly accruing to the Ben Ali family, these numbers are arguably even more dramatic; the total net profits accruing to the Ben Ali family amount to 333,596 million USD, gross profits accruing to them to 247,315 million and gross losses to -86,281 million, respectively; 25.5% of overall net profits, 4.4% of gross profits and 2.0% of gross losses, respectively).

[11] Note that to account for negative profits, we use a transformation of the log profits measure that also accounts for negative profits, notably $\log(Profits + \sqrt{Profits^2 + 1})$.

Connected firms are more likely to operate in sectors which are subject to FDI restrictions and prone to receiving fiscal incentives, but marginally less likely to operate in sectors in subject to authorization requirements 58% of Ben Ali firms are in sectors subject to FDI restrictions, 49% in sectors subject to authorization requirements and 6% in sectors in which firms are eligible for fiscal advantages. For non Ben-Ali firms the comparable numbers are 46%, 51% and 3% respectively. Once we demean these numbers by the 2-digit sector average Ben Ali firms are consistently more likely to operate in regulated sectors. Later on, we will also demonstrate that sectors in which Ben Ali firms are active are more likely to be subject to FDI restrictions and authorization requirements.[12]

Table 3 provides a broad overview of activities deployed by Ben Ali firms and documents the average share of output, employment and profits Ben Ali firms account for across broad sectors. In terms of sheer numbers, most firms are in the real estate and enterprise services sectors (59 firms), personnel services (20), transport (16), wholesale trade (15), automobile trade (11), and also construction (9), financial services (8), the food industry (7) and hotels and restaurants (7). It is also noticeable that 5 firms engaged in media activities. When we focus instead on the shares of output, employment and profits BA firms account for, we can see that sheer numbers are not necessarily informative about the economic significance of firms; even though there are only 3 Ben Ali firms in the post and telecommunications sector, these account for 43% of output and 44% of profits in that sector. Ben Ali firms are also important in terms of output in the trade and transport sectors.

<TABLE 3ABOUT HERE>

These aggregate categorizations obscure important variability within broad sectors as Ben Ali firms are often major market players that account for an important share of output, employment and profits. This is demonstrated in Table A1 in the Appendix which provides a detailed sectoral breakdown at the 5 digit level, but only for activities in which Ben Ali firms account for more than 10% of all firms, output, employment, gross profits or net profits. The Table unveils that the airline industry and telecommunications are dominated by Ben Ali firms.

[12] Note that the number of observations on these variablesis limited to 132 for this variable because we confine attention to enterprises operating in sectors in which the investment code is binding; the regressions are also confined to this group of firms.

4 Accounting for Performance Differentials: Why are Ben Ali firms much more profitable?

Now that we have established that Ben Ali firms make supranormal profits and grow faster than other firms, even after we condition on their sector selection, a natural next question is how do they reap these rents?

4.1 Static Performance Differentials

To test to what extent the performance differentials documented above are associated with being connected and to what extent they reflect other firm characteristics, such as the activities they engage in, their size, age, we run a number of very simple regressions, where we progressively add explanatory variables. We are particularly interested in testing the hypothesis that Ben Ali firms outperform their competitors when regulatory restrictions are prevalent. Our estimation equation takes the form;

$$Y = \beta_B \, Ben\ Ali \ + \beta_R \, Regulation + \beta_{BR} \, Ben\ Ali \ * Regulation + \beta_X \, lnX + \beta_I \, I + \beta_t \, \tau + \varepsilon$$

Where *Ben Ali* is a dummy variable indicating whether a firm was owned by a clan member, Regulation is a set of dummies capturing whether there are i) restrictions on foreign investment ii) requirements for "authorization" and iii) whether the sectors are subject to special fiscal advantage, *X* is a vector of control variables (including size and age), *I* a set of industry dummies, τ a vector of time dummies and Y an outcome variable of interest.

Our main interest is the coefficient on the interaction between political connectedness and regulation β_{BR}. Under the null hypothesis that regulations affect connected firms and their competitors in the same way, this coefficient should take the value 0. Under the alternative hypothesis that regulations were (ab)used to serve family interests, one would expect a positive coefficient. 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. A positive coefficient nonetheless does not constitute proof of regulatory abuse; it may simply reflect Ben Ali clan' members superior ability to navigate the Tunisian bureaucracy. Irrespective of the

cause of the performance differentials, establishing such patterns of comparative advantage is of interest in and of itself, for rejection of the null hypothesis suggests a lack of a level playing field.

The results of our regressions are presented in Table 4, using as dependent variables respectively employment, pre-tax profits, output and market share. We estimate four separate regressions, progressively adding explanatory variables. The first specification only controls for whether a firm is owned by the Ben Ali family or not. The second specification adds controls for age and firm size (except when the dependent variable is firm size). The third specification adds indicators of regulation, notably dummy variables indicating whether i) operating in the corresponding 5 digit sector requires "authorization" ii) whether there are restrictions on foreign investment in that sector and iii) whether firms in this sector are eligible for special fiscal advantages. In our fourth and preferred specification, these indicators of regulation are interacted with whether firms are connected. All regressions control for industry and year dummies and the sample is confined to activities covered by the investment code. Only firms which report hiring paid workers at some point during the year are included; we exclude the self-employed without employees. Also, due to lack of profits and gross output data in earlier years our sample is out of necessity confined to the period 2000-2010.

The first two specifications confirm that Ben Ali firms are on average dramatically larger than their peers, both in terms of the number of people they employ, but especially in terms of output and profits, and that they have significantly higher market share. The superior output, profits and market share of Ben Ali firms are to a large extent associated with Ben Ali firms employing more workers, with the coefficient on firm size being consistently statistically significant across specifications. Even after we condition on size and age, Ben Ali firms are still on average produce 334 times as much output as their peers and have 5% higher market share. Profits per worker, however, do not appear to vary across connected and non-connected firms once size is included, in part reflecting noise. While these results are crude and potentially reflect measurement error and the fact that we are comparing connected firms with the entire universe of private sector firms, they underscore the superior the performance of Ben Ali firms is on average.

<TABLE 4 HERE>

Turning to the results of focal interest, when we control for regulation at the 5-digit sector level, we observe that the superior performance of Ben Ali firms is especially marked in densely regulated sectors. While all firms in sectors that require authorization tend to produce more output as is evidenced by the positive and statistically significant coefficient on operating in sectors requiring an authorization, this is particularly true for Ben Ali firms, which on average produce 183% more than non-connected firms in such regulated sectors ceteris paribus, with the interaction term being a Ben Ali firm and regulatory restrictions being strongly statistically significant. The productivity differentials associated between Ben Ali and non-Ben Ali firms associated with restrictions on foreign investment and being eligible for fiscal advantages are equally dramatic, 160% and 255%, respectively and also strongly statistically significant.

The higher output of Ben Ali firms in more densely regulated sectors is also manifested in their significantly higher market share in these sectors, with the exception of sectors eligible for fiscal advantages. Interestingly, while on average Ben Ali firms have markets shares which are 6.3% higher than those of non Ben-Ali firms, these differences in market share between Ben Ali firms and non Ben Ali firms are fully accounted for by sorting into sectors subject to authorization requirements, FDI restrictions and fiscal advantages and differential performance of non-Ben Ali firms within these sectors (last column of Table 4); in sectors covered by the investment code but not subject to these regulatory requirements, differences in market share are statistically negligible.

Arguably even more dramatic performance differences between Ben Ai firms and their competitors are observed when we examine profit differentials, though it must be noted that these are rather imprecisely measured. The negative association between the regulations and profitability suggests that the regulations are applied to sectors in need of government assistance. The profit differentials between Ben Ali and non-Ben Ali firms in sectors requiring authorization to operate in and sectors eligible for fiscal advantages assume extraordinary magnitudes, thus these regulations appear to disproportionately assist the profitability of Ben Ali firms. In contrast, FDI restrictions are associated with lower average profits, but not with conditional profit differentials between Ben Ali and non-Ben Ali firms. The results also indicate that in sectors not subject to authorization requirements, FDI restrictions or fiscal advantages, and controlling for size and age, connected firms make lower profits than their competitors, which countermands the idea that Ben Ali family

members were innately better entrepreneurs. One explanation for the finding that Ben Ali firms perform more poorly when regulations but better when they are present is that inferior management on the part of BA firms that can be offset with regulations that target their competitors. Alternatively, it could be the case that these profit numbers reflect the fact that enterprises were not truly economically active, but instead served as a smokescreen for money laundering and other socially unproductive activities.

In summary, size and performance differentials between Ben Ali firms and their peers are significantly larger in sectors subject to authorization requirements, FDI restrictions and fiscal advantages. In fact, in sectors in which none of these regulations are present Ben Ali firms do not have significantly higher market share and, if anything, attain lower labor profitability. These results are thus suggestive of regulatory capture.

4.2 Dynamic Performance Differences

Dynamic performance differentials are assessed in table 5. We estimate four specifications which are similar in set-up to those presented above; we estimate models with and without controlling for the lagged dependent variable and use two different specifications; one that simply controls for whether a firm is owned by the Ben Ali and one that has a full set of controls for initial conditions. Our most general specification is thus;

$$\Delta Y_{it} = \beta_Y \, lnY_{t-1} + \beta_{BA} \, Ben\ Ali \ + \beta_R \, Regulation + \beta_{BAR} \, BenAli * Regulation + \beta_X \, lnX + \beta_I \, I + \beta_t \, \tau + \varepsilon$$

Where we use as dependent variable respectively employment growth, profits growth, output growth and changes in market share.

The results are presented in Table 5 and confirm that Ben Ali firms exhibit significantly higher unconditional employment, profits, output growth and market share growth, albeit that differences in output and profits growth between Ben Ali firms and their competitors are only significant at the 10% level. Once we control for initial employment, profits and output, Ben Ali firms expand output, employment and profits significantly faster at the 1% level.

Again, these performance differences vary strongly across sectors. Differentials in growth performance again vary systematically with the prevalence of regulations, though the results are far

less dramatic than those documented above. Ben Ali firms operating in sectors subject to authorization requirements exhibit slower growth in market share, but faster growth in output once their initial output is controlled for.

Ben Ali firms in sectors with higher restrictions on foreign ownership expand employment faster once initial size is controlled for, and have significantly higher output and market share growth, irrespective of whether or not we control for lagged market share.

Similarly, Ben Ali firms in sectors eligible for fiscal advantages have faster profits growth conditional on initial profits, but expand their market share significantly more slowly, even when lagged market share is not conditioned on. Part of the explanation for the less dramatic findings is measurement error.

<TABLE 5 HERE>

5 Is Regulation Endogenous? Analyzing the Evolution of the Investment Code

Given the association between the success of Ben Ali firms and regulatory density, an important question is whether the Ben Ali family might have manipulated the Investment Code to serve its business interests. To shed light on this question, we examine the evolution of the Tunisian investment code since its inception in 1993. First, wey assessing whether the prevalence of various types of sectoral regulations in the original code was higher in sectors in which Ben Ali firms had already been operating. Second, we assess whether revisions to the code in subsequent years are more likely when Ben Ali firms were undertaking a particular activity, and whether these correlate with the start-up of connected firms in a given sector. Put differently, we test both whether crony presence in 5 digit sectors preceded and coincided with the proliferation of sector-specific regulation.

5.1 Was the original code corrupted?

The strong correlation between cronyism, entry restrictions and protectionism was present in the original code enacted on 27 December 1993. This is demonstrated in Table 6 which presents information on the prevalence of various types of regulation by whether or not crony firms were present in a particular sector, separately for 1994 (the top row), the first full year in which the current investment laws were binding, as well as for 2010 (the bottom panel), the last full calendar year of Ben Ali's reign. Column 1 and 2 document, respectively, the number of 5 digit sectors without and with Ben Ali presence by the prevalence of regulations. Column 3 indicates the proportion of sectors with Ben Ali presence that are regulated. Row totals are provided in column 4 and column 5 presents exact Fischer's t-test of the null hypothesis that the presence of Ben Ali firms and regulations are independent of one another. Fisher's t-test is well-suited for small samples as it provides an exact quantification of the power of the test.

Of the confiscated firms in our list that were already operating before 27 December 1993, the day the investment code was enacted, 8 were active in sectors which were to be governed by the investment code. These 8 firms were spread over 8[13] different sub-sectors, out of a total of 309. While the numbers of sectors with Ben Ali presence is very small, these sub-sectors were significantly more prone to regulation than the sub-sectors in which Ben Ali firms were not active. Only 2 of the 8 sub-sectors in which Ben Ali firms were present were not subject to any type of regulation, as shown in column 2. By contrast, column 1 shows that only about a quarter, 76, of the 301 subsectors in which crony firms were not present were subject to any such regulation, as documented in columns 3 and 4. Fisher's exact t-test, presented in column 5, strongly rejects the null that the prevalence of regulations does not vary with Ben Ali presence at the conventional 5% significance level.

<TABLE 6 ABOUT HERE>

Closer inspection of the table shows that the difference in regulatory density is mostly due to differential prevalence of authorization requirements and FDI restrictions; column 1 shows that 4 of

[13] The subsectors were fabrication of plastic packaging, non-refridgerated warehouses, construction (large structures for) buildings, hotels and restaurants, non-regular air transport, real estate, engineering – technical studies, and services related to production.

the sectors in which connected firms were active were subject to government authorization, 5 were subject to FDI restrictions and 1 subject to special fiscal advantages. By contrast 18% (55 out of 301) of the subsectors in which Ben Ali firms were not active were subject to authorization requirements, 14% (42 out of 301) subject to FDI restrictions and, 3% (8 out of 301) subject to special advantages, as shown in columns 1 and 3. Only for fiscal advantages can we not reject the null hypothesis that they are equally prevalent in sectors in which cronies were active as in sectors in which they were not.[14]

For purposes of comparison, Table 6 also presents the sectoral distribution of regulation and cronies in 2010. Over time, the code was expanded to include an additional 21 sectors and both the prevalence of crony firms and regulation increased; an additional 56 sectors were subject to new regulations. Additional regulations were also introduced in some of the sectors in which some, but not all, activities were already regulated, but these do not show up in Table 6 since we code a sector as being regulated if at least one of the activities in it is subject to regulation. Interestingly, crony entry appears to have been concentrated in regulated sectors; by 2010, crony firms were present in a total of 55 sectors, of which roughly two-thirds were subject to some form of regulation or other, a proportion significantly higher than the prevalence of regulation in sectors in which crony firms were not present, 37%.

The persistence of the correlation between cronyism and regulation begs the question whether Ben Ali firms entered into sectors that were already regulated, or whether sectors in which Ben Ali firms were already operating were more likely to attract additional regulation. This question is examined in the next section, which examines the evolution of the investment code over time.

5.2 Did Ben Ali firms change the rules?

We analyze the evolution of the Tunisian investment code to assess whether Ben Ali might have manipulated the investment code to further his business interests. The main goal is to test whether the probability of additional provisions being introduced in the investment codes was larger in

[14] One limitation of our data is that we only observe connected firms that were confiscated in 2011; we thus do not identify firms that went out of business or were sold before the outbreak of the Revolution. This may result in survivor bias, though it is not a priori obvious how to sign this bias. Such bias is much less likely to afflict the 2010 data.

sectors in which Ben Ali firms were active. To this end, Table 7 summarizes changes made to the Tunisian investment code between 1994 and 2010 by means of 25 decrees issued by Ben Ali himself. These decrees introduced new authorization requirements pertaining to 45 sectors, new FDI restrictions in 28 sectors and new fiscal advantages for 23 sectors. [15,16] Columns 1 and 2 present, respectively, the number of 5-digit sector-year observations without and with Ben Ali presence by whether or not new regulations were imposed within these sectors in the given sector-year. Column 3 provides row percentages of Ben Ali presence by the number of sector-year observations in which new rules were introduced, while column 4 provides row totals of the number of sector-year observations by whether or not new regulations were introduced. Column 5 present t-tests of the hypothesis that the introduction of new regulations is independent of Ben Ali presence within 5-digit sectors.

The introduction of these legal changes stipulating the need for government was correlated with the presence of Ben Ali firms. To start with, the data reject the null hypothesis that the introduction of new requests for government authorization in order to be able to operate is uncorrelated with the presence of connected firms is rejected at the 10% level; columns 1 and 2 show that in 7 of the 45 (approximately 16%) sectors in which new authorization requirements were imposed connected firms were present. By contrast only in 8% of all sector-year observations Ben Ali firms were present, as is shown in column 3. The association between crony presence and the imposition of new FDI requirements is also significant; in 9 out of the 28 sectors in which new restrictions were imposed, Ben Ali firms were present (see columns 1 and 2). The null hypotheses that the likelihood of the imposition of new FDI restrictions does not depend on the presence of connected firms is rejected at the 1% significance level, as is evidenced by Fisher's exact t-test presented in column 5. The only type of regulation for which we cannot reject the null hypothesis that their introduction is not related to the presence of connected firms is fiscal advantages. Nonetheless, the share of sectors eligible for new fiscal advantages in which Ben Ali firms are present (3 out of 21) is slightly higher than the share for sectors not subject to such novel regulations.

[15] Note that because decrees pertain to activities and because sectors can span multiple activities, even at the 5 digit level, a number of sectors in which regulations were already partially subjected to such regulations. E.g. 16 of the 45 sectors subject to new authorization requirements were already prone to some such requirements, 10 sectors in which FDI restrictions became more stringent already had some form of FDI restrictions and 3 out of the 23 sectors eligible for new fiscal advantages were already eligible for some fiscal advantages.

[16] A total of 51 activities were subject to new authorization requirements, 36 activities were subject to new authorization requirements and 39 were subject to new fiscal advantages.

<TABLE 7 ABOUT HERE>

Table 7 also examines the correlation between the introduction of new regulations and startup of new Ben Ali enterprise either in the year the law was revised or the year immediately after. While the number of observations is again small, the data reject the null of independence between the startup of new Ben Ali firms in narrowly defined 5 digit sectors and the introduction of new authorization requirements and FDI restrictions. In addition, it examines to what extent regulatory changes is correlated with prior Ben Ali presence; while the results are weaker than for simultaneous Ben Ali presence, the null hypothesis that the introduction of new FDI restrictions does not vary with prior crony presence is rejected.

5.3 Discussion

Overall our results reject the null hypothesis that the evolution of the Tunisian investment law was independent of Ben Ali's business interests. Although the tests we have run are elementary, they resonate with qualitative evidence on corruption in Tunisia. According to a recent study by the Chekir and Menard (2013), for example, *"predation mainly focused on (i) highly regulated sectors in which cronies could abuse of their influence and privileged access to the decision-making spheres" (p4).* Similarly, in the aftermath of the Jasmin revolution Ben Ali and several of his family members were convicted for abuse of power (though not necessarily for manipulating the investment code itself). Thus, the behavior documented in this paper is certainly consistent with other corrupt practices the Ben Ali clan has been shown to engage in.

Anecdotal evidence from Tunisian entrepreneurs is also illustrative. The story of Mohamed Frikha a succesful technology entrepreneur who started his own airline in 2010, and McDonald's failed entry into the Tunisian food market, highlight the Ben Ali family hold on specific sectors. When attempting to start his own airline, Frikha experienced direct confrontation with special interests and a number of bureaucratic hurdles.[17] McDonald's exclusion from the Tunisian market

[17] Financial Times, February 19, 2013, *New carrier's bumpy take-off in Tunisia* . By Borzou Daragahi.

followed from their unwillingness to grant the sole license to a franchisee with family connections.[18] The government of Tunisia in turn refused to grant authorization, precisely using the regulations it had put in place to protect food businesses from competition.

While the evidence presented here is consistent with significant inequities in terms of market access, a closely related question is to what extent the regulations hampered efficiency, and to what extent they stunted economic growth. While answering this question is beyond the remit of this paper, it is of interest to note that consumer prices for telecommunications services and road transport, two sectors dominated by the Ben Ali clan, are dramatically higher than those in neighboring countries.

6 Conclusion

Competing theories of regulation offer different predictions regarding the raison d'etre of industrial policy. In the Pigouvian tradition, regulation primarily serves to redress market failures, whereas public choice theorists have pointed out that regulation may instead primarily serve the private interests of special interest groups. Which of these views is more accurate is also highly relevant to the debate about the efficacy of industrial policy.

This paper revisits the question of who reaps the rents of regulation by examining the relationship between the evolution of the Tunisian investment law and the business interests of president Ben Ali's family during the last decade and a half before his fall, which precipitated the Arab Spring. Tunisia provides a very pertinent context to examine this issue since its highly interventionist and internationally celebrated industrial policy was seemingly successful in generating sustained growth. Moreover, Ben Ali family's business interests were significant from a macro-economic perspective. Enterprises with direct ownership links to the Ben Ali family confiscated in the aftermath of the revolution accounted for 3% of all private sector output and appropriate

[18] See Wikileaks cable from then US Ambassador for this story and more on Ben Ali family corruption in Tunisia "Tunisian Corruption and President Zine el-Abidine Ben Ali: A President and His Family Bask in Luxury as a Country Suffers" http://middleeast.about.com/od/tunisia/a/tunisia-corruption-wikileaks.htm.

approximately a fifth of all private sector profits. The disproportionate aggregate contribution of Ben Ali firms reflects their superior performance; Ben Ali firms are on average significantly larger than their competitors and record spectacularly higher levels of output, profits and growth.

The superior performance of Ben Ali owned firms to a large extent results from regulatory capture. The sectors in which Ben Ali firms were significantly more likely to be subject to prior government authorization and FDI restrictions. Moreover, performance differences between Ben Ali firms and other firms were significantly larger in sectors subject to authorization requirements, FDI restrictions or fiscal advantages. In the absence of these regulations, performance differences between Ben Ali and other firms were much smaller, absent altogether, or even negative. Thus it appears that capture was a major conduit for rent appropriation.

While these findings may simply explained by the superior ability of Ben Ali family members to navigate the complex Tunisian bureaucracy, our results also attest to an arguably more insidious association between regulation and cronyism; proliferation of regulation being an endogenous response to cronyism; analyzing the evolution of the Tunisian investment law, we reject the hypothesis that its' evolution was exogenous to the president's business interests. While the number of observations is small, we are able to demonstrate that the correlation between cronyism and regulation was already significant when the code was introduced. Moreover, the likelihood of new FDI restrictions and requests for government authorization being imposed in a narrowly defined 5 digit sub-sector is correlated both with prior presence of a Ben Ali firms in that sector, as well as with start-up of connected firms.

The Tunisian experience thus demonstrates how interventionist industrial policy may become captured, and, even more perniciously, that the proliferation of regulation may be in fact be a consequence of corruption. As such, it cautions against overly optimistic embrace of highly interventionist policies, especially in contexts where checks and balances are limited.

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Tables and Graphs

Table 1: Economic Significance Ben Ali Firms[19]

	Ben Ali Firms			*Other firms*			
	N	**Mean**	**Sum (USD)**	**N**	**Mean**	**Sum (USD)**	**Ben Ali Share of Total**
L	127	66	8,392	112309	9	1,036,610	0.80%
Y	122	16,980,822	2,071,660,240	307430	225,300	62,512,270,119	3.20%
Net Profits	122	1,908,925	232,888,796	96859	11,090	1,074,153,638	21.30%
Gross Profits	122	2,811,035	342,946,258	96859	54,320	5,261,372,574	6.80%
Gross Losses	122	-902,110	-110,057,441	96859	-43,230	-4,187,219,068	2.70%

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.

[19] Not all Ben Ali firms are fully family owned. Once we account for ownership share of the Ben Ali famil, the share of profits and losses directly accruing to the Ben Ali family appear even more dramatic; the total net profits accruing to the Ben Ali family amount to 333,596 million USD, gross profits to 247,315, and gross losses to -86,281 million USD.

Table 2: Descriptive Statistics

Descriptive Statistics Ben Ali Firms vs Other firms – 2010									
	Descriptive Statistics						*Differentials*		
	Ben Ali Firms (Total N=214)			*Other Firms (Total N=604192)*					
							Demeaned		
	N	**Mean**	**Std Error**	**N**	**Mean**	**Std Error**	***No***	***2-digit***	***5-digit average***
Static Performance									
lnL	114	2.471	0.178	81180	0.864	0.005	**1.607**	**1.494**	**1.054**
lnY	81	21.394	0.302	250340	16.228	0.004	**5.166**	**4.271**	**2.376**
ln(Y/L)	73	18.904	0.228	59064	17.560	0.006	**1.344**	**1.124**	**0.576**
lnProfits^{+}	94	5.472	1.661	93098	6.880	0.044	**-1.409**	0.098	**1.101**
ln(Profits/L)$^{+}$	64	8.207	1.849	41760	8.282	0.067	-0.076	**0.878**	0.010
Profitable	122	0.541	0.045	96859	0.749	0.001	**-0.208**	**-0.157**	**-0.091**
Market Share	122	0.051	0.014	307407	0.002	0.000	**0.050**	**0.047**	**0.029**
Age	214	7.505	0.591	604150	11.362	0.015	**-3.858**	**-3.176**	**-3.014**
Offshore	214	0.098	0.020	604192	0.032	0.000	**0.067**	**0.029**	**0.003**
Regulation									
FDI Restriction	132	0.576	0.043	268720	0.459	0.001	**0.117**	**0.055**	
Authorization	132	0.492	0.044	268720	0.510	0.001	**-0.018**	**0.166**	
Fiscal Advantage	132	0.061	0.021	268720	0.033	0.000	**0.027**	**0.021**	
Growth									
ΔlnL	97	0.235	0.085	70592	0.025	0.002	**0.210**	**0.192**	**0.143**
ΔlnY	67	0.110	0.159	214746	0.023	0.001	**0.087**	0.035	**-0.030**
Δln(Y/L)	59	-0.152	0.155	50807	0.030	0.003	**-0.182**	**-0.178**	**-0.190**
ΔlnProfits^{+}	72	-0.065	1.628	76072	0.197	0.041	-0.262	**-0.274**	**-0.429**
Δln(Profits/L) $^{+}$	49	-1.876	1.870	34730	-0.198	0.063	**-1.678**	**-1.871**	**-2.092**

* Bolded coefficients in the last three columns indicate that the differential between Ben Ali and non-Ben Ali firms is significant at the 5% level.

$^{+}$Note that to account for negative profits, we use a transformation of the log profits measure that also accounts for negative profits, notably $\log(Profits + \sqrt{Profits^2 + 1})$. Similarly, ln(Profits/L) is constructed as $\log(Profits + \sqrt{Profits^2 + 1}) - lnL$.

Table 3: Sectoral Distibution Ben Ali Firms

Sectoral Distribution Ben Ali Firms (2010)									
			Contributions of Ben Ali firms					*Sector Aggregate*	
	# of BA firms	**% of BA firms**	**% Y by BA firms**	**% of L**	**% of net profits**	**% of gross profits**	**% of gross losses**	**Sum L**	**Sum Y in Millions of USD**
Telecommunications and Post	3	0.03	39.13	57.71	42.33	49.29	95.39	4,264	2,197
Trade, cars	11	0.04	15.35	3.94	28.39	24.6	0	17,107	3,895
Transports	16	0.02	8.53	3.29	-36.75	3.12	6.74	43,460	2,642
Real Estate and Enterprise Services	59	0.11	3.59	0.47	0.6	1.01	1.91	158,636	4,208
Financial Services	8	0.5	2.43	1.13	-0.78	0.57	1.79	23,517	4,052
Fishing	2	0.56	1.88	0.3	-9708.38	13.83	6.66	2,444	50
Minerals (other)	3	0.09	1.48	1.47	18.03	6.02	0	24,715	1,539
Paper, printing	4	0.15	0.81	1.62	1.77	0.56	0	11,733	895
Hotels et restaurants	7	0.03	0.79	0.73	0.02	1.61	0.25	73,699	1,690
Health and education	1	0	0.72	0.27	-1.04	0	3.55	24,259	522
Plastics	2	0.18	0.54	0.53	-0.47	0	0.16	11,793	745
Metalworks	2	0.02	0.54	0.02	-1.89	0	0.25	25,644	2,075
Trade – gross	27	0.08	0.41	0.31	0.52	0.45	0.24	49,557	14,207
Construction	9	0.03	0.38	0.77	9.22	0.14	3.77	87,136	3,044
Personnel Services	20	0.06	0.29	0.61	0.66	0	0.44	13,791	380
Extractive Industries	5	0.33	0	0.03	0	0	0	16,701	1,587
Food industry	7	0.06	0	0.07	0.01	0	0	50,080	5,686
Chemical industry	1	0.06	0	0.01	0	0	0	16,563	2,635
Electronics	6	0.14	0	.	0	0	0	69,058	3,721
Manufacturing – other	2	0.04	0	.	0	0	0	13,670	2,370
Retail trade	3	0	0	0.3	-0.02	0	0.05	42,617	4,562
Textiles	2	0.01	.	0	.	.	.	171,333	2,852
Shoes	.	.	.	.	.	.	.	30,025	606
Manufacturing Wood	1	0.01	.	.	.	.	.	6,116	190
Manufacturing - Machinery and	2	0.35	.	.	.	.	.	5,733	480
Fabrication of Transport Equipment	.	.	.	.	.	.	.	12,860	677
All	214	0.04	3.02	0.81	19.88	6.3	2.57	1,035,881	68,566

Note: The totals do not perfectly match those in Table 2 since for a small proportion of firms information on their sectoral classification is lacking.

Table 4: Performance Differentials (Static)

Static Performance Differentials (2000-2010) – OLS								
Dependent Variable	***lnL***				***Ln Profits***			
Ben Ali Firm	1.513***	1.539***	1.485***	0.874***	2.512***	0.111	0.381	-5.555***
	(0.070)	(0.070)	(0.069)	(0.154)	(0.936)	(0.911)	(0.909)	(2.168)
Age		0.009***	0.009***	0.009***		0.030***	0.029***	0.029***
		(0.000)	(0.000)	(0.000)		(0.002)	(0.002)	(0.002)
lnL						2.129***	2.145***	2.146***
						(0.021)	(0.021)	(0.021)
Authorization			0.194***	0.192***			-0.915***	-0.921***
			(0.009)	(0.009)			(0.121)	(0.121)
BA*Authorization				0.219				7.600***
				(0.159)				(2.097)
FDI Restriction			-0.036***	-0.036***			-0.851***	-0.848***
			(0.008)	(0.008)			(0.135)	(0.135)
BA*FDI Restriction				0.929***				-0.495
				(0.147)				(1.924)
Fiscal advantage			0.442***	0.444***			-4.301***	-4.319***
			(0.011)	(0.011)			(0.140)	(0.140)
BA*Fiscal advantage				-0.997***				14.323***
				(0.241)				(3.333)
Activity Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	420999	420999	420999	420999	197866	197866	197866	197866
R2	0.2417	0.2481	0.2517	0.2518	0.0185	0.0707	0.0751	0.0752
Dependent Variable	***lnY***				***Market Share***			
Ben Ali Firm	2.933***	1.206***	1.067***	0.281*	0.063**	0.050***	0.049***	-0.009
	(0.108)	(0.073)	(0.072)	(0.162)	(0.003)	(0.003)	(0.003)	(0.006)
Age		-0.003***	-0.003***	-0.003***		0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
lnL		1.003***	0.999***	0.999***		0.008***	0.008***	0.008***
		(0.002)	(0.002)	(0.002)		(0.000)	(0.000)	(0.000)
Authorization			0.398***	0.397***			0.003***	0.003***
			(0.010)	(0.010)			(0.000)	(0.000)
BA*Authorization				0.608***				0.033***
				(0.167)				(0.006)
FDI Restriction			0.816***	0.815***			0.003***	0.003***
			(0.008)	(0.008)			(0.000)	(0.000)
BA*FDI Restriction				0.467**				0.061***
				(0.157)				(0.005)
Fiscal advantage			0.071***	0.070***			0.049***	0.005***
			(0.011)	(0.011)			(0.000)	(0.000)
BA*Fiscal advantage				0.895***				-0.012
				(0.246)				(0.009)
Activity Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	329526	329526	329526	329526	385742	385742	385742	385742
R2	0.2589	0.6631	0.6743	0.6743	0.0278	0.0803	0.0809	0.0814

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. The sample is confined to firms which report using hired labor. Activity dummies are defined at the 2-digit level.

Table 5: Dynamic Performance Differentials

Dynamic Performance Differentials (2000-2010) – OLS								
	ΔlnL				***ΔlnProfits***			
Ben Ali Firm	0.150***	0.277***	0.069	0.138**	1.576*	2.217**	1.075	0.539
	(0.032)	(0.031)	(0.072)	(0.070)	(0.899)	(0.799)	(2.088)	(1.856)
Lag Ln L		-0.090***		-0.088***				
		(0.001)		(0.001)				
Lagged lnProfits						-0.423***		-0.426***
						(0.002)		(0.002)
Age			-0.003***	-0.002***			-0.019***	0.008***
			(0.000)	(0.000)			(0.002)	(0.002)
Authorization			-0.010**	0.008*			-0.049	-0.533***
			(0.004)	(0.004)			(0.113)	(0.101)
BA*Authorization			0.028	0.044			-0.581	1.552
			(0.074)	(0.072)			(2.111)	(1.876)
FDI Restriction			-0.016**	-0.024***			0.002	-0.867***
			(0.004)	(0.004)			(0.127)	(0.113)
BA*FDI Restriction			0.099	0.187**			0.993	0.459
			(0.067)	(0.066)			(1.932)	(1.717)
Fiscal advantage			-0.015***	0.030***			-0.221*	-1.927***
			(0.005)	(0.005)			(0.134)	(0.119)
BA*Fiscal advantage			-0.030	-0.135			1.891	6.231***
			(0.109)	(0.107)			(3.472)	(3.086)
Activity Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	331089	331089	331089	331089	191022	191022	191022	191022
R2	0.0031	0.0469	0.0093	0.0508	0.0012	0.21	0.0019	0.2114
	ΔlnY				***ΔMarket Share***			
Ben Ali Firm	0.080*	0.431**	-0.125	0.037	0.006***	0.010***	0.004**	0.004**
	(0.050)	(0.049)	(0.106)	(0.103)	(0.001)	(0.001)	(0.002)	(0.002)
Lagged ln Y		-0.107***		-0.109***				
		(0.001)		(0.001)				
Lagged Market						-0.082***		-0.082***
						(0.001)		(0.001)
Age			-0.004***	-0.003***			0.000***	0.000
			(0.000)	(0.000)			(0.000)	(0.000)
Authorization			-0.029***	0.039***			0.000	0.000***
			(0.006)	(0.006)			(0.000)	(0.000)
BA*Authorization			0.107	0.261***			-0.007***	-0.004**
			(0.113)	(0.110)			(0.002)	(0.002)
FDI Restriction			0.021***	0.135***			0.000***	0.000**
			(0.005)	(0.005)			(0.000)	(0.000)
BA*FDI Restriction			0.200*	0.329***			0.010***	0.014***
			(0.108)	(0.104)			(0.002)	(0.002)
Fiscal advantage			0.002	0.086***			0.000**	0.001***
			(0.008)	(0.007)			(0.000)	(0.000)
BA*Fiscal advantage			0.052	0.016			-0.007***	-0.009**
			(0.170)	(0.165)			(0.003)	(0.003)
Activity Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	400090	400090	400090	400090	500421	500421	500421	500421
R2	0.0041	0.0597	0.0087	0.065	0.0001	0.0418	0.0005	0.0421

Note: *,**,*** denote significance at the 10%, 5% and 1% significance level respectively. The sample is confined to firms which report using hired labor. Activity dummies are defined at the 2-digit level.

Table 6: Regulations and Cronysism - The Investment Code in 1994 and 2010

The Investment Code and Crony Presence 1994 and 2010						
1994 Investment Incentives Code						
	BA Presence?		**% of sector-year obs with BA**	**Total**		**Test for Equality**
	No	**Yes**				
	(1)	**(2)**	**(3)**	**(4)**		**(5)**
Any Regulation						
No	**225**	**2**	*1%*	227		
Yes	**76**	**6**	*7%*	82	Pr	0.0461
% regulated	*25%*	*75%*		*27%*		
Authorization						
No	**259**	**4**	*2%*	250		
Yes	**42**	**4**	*9%*	59	Pr	0.0195
% regulated	*14%*	*50%*		*19%*		
FDI Restrictions						
No	**258**	**4**	*2%*	250		
Yes	**42**	**4**	*7%*	46	Pr	0.0193
% regulated	*18%*	*50%*		*15%*		
Fiscal Advantages						
No	**293**	**7**	*2%*	300		
Yes	**8**	**1**	*11%*	9	Pr	0.2128
% regulated	*3%*	*13%*		*3%*		
2010 Investment Incentives Code						
	BA Presence?		**% of sector-year obs with BA**	**Total**		**Test for Equality**
	No	**Yes**				
	(1)	**(2)**	**(3)**	**(4)**		**(5)**
Any Regulation						
No	**175**	**18**	*9%*	193		
Yes	**101**	**37**	*27%*	138	Pr	0.000
% regulated	*37%*	*67%*		*42%*		
Authorization						
No	**209**	**34**	*14%*	243		
Yes	**67**	**21**	*24%*	88	Pr	0.0441
% regulated	*24%*	*39%*		*27%*		
FDI Restrictions						
No	**237**	**30**	*11%*	267		
Yes	**39**	**25**	*39%*	64	Pr	0.000
% regulated	*14%*	*45%*		*19%*		
Fiscal Advantages						
No	**253**	**49**	*15%*	302		
Yes	**23**	**6**	*21%*	29	Pr	0.600
% regulated	*8%*	*11%*		*9%*		

Note: The test for equality is Fisher's Exact T-test.

Table 7: The evolution of the investment code by cronyism

Evolution of the Tunisian Investment Code (by NAT96 subsector)						
Units of observation: ***5 digit sector-year***	**BA presence** **None**	**Yes**	**% with BA**	**Total**		**Test for Equality**
	(1)	**(2)**	**(3)**	**(4)**		**(5)**
NEW AUTHORIZATION REQUIREMENTS						
	Contemporaneous					
	No	Yes				
No	**5003**	**444**	*7.9%*	5447		
Yes	**38**	**7**	*15.6%*	45	**Pr**	**0.0927**
% with new regulations	*0.8%*	*1.6%*				
	Prior BA Presence					
	No	Yes				
No	**5041**	**397**	*7.3%*	5438		
Yes	**35**	**6**	*14.6%*	41	**Pr**	**0.1201**
% with new regulations	*0.7%*	*1.5%*				
	BA Entry					
	No	Yes				
No	**4976**	**162**	*3.2%*	5438		
Yes	**41**	**4**	*8.9%*	41	**Pr**	**0.0547**
% with new regulations	*0.8%*	*2.4%*				
NEW FDI RESTRICTIONS						
	Contemporaneoous					
	No	Yes				
No	**5022**	**442**	*8.1%*	5464		
Yes	**19**	**9**	*32.1%*	28	**Pr**	**0.000**
% with new regulations	*0.4%*	*2.0%*				
	Prior BA Presence					
	No	Yes				
No	**5055**	**396**	*7.3%*	5451		
Yes	**21**	**7**	*25.0%*	28	**Pr**	**0.0034**
% with new regulations	*0.4%*	*1.7%*				
	BA Entry					
	No	Yes				
No	4992	163	*3.2%*	5155		
Yes	25	3	*10.7%*	28	**Pr**	**0.0589**
% with new regulations	*0.5%*	*1.8%*				
NEW FISCAL ADVANTAGES						
	Contemporaneous					
	No	Yes				
No	**5021**	**448**	*8.2%*	5469		
Yes	**20**	**3**	*13.0%*	23		**0.4304**
% with new regulations	*0.4%*	*0.7%*		0.42		
	Prior BA Presence					
	No	Yes				
No	**5059**	**402**	*7.9%*	5461		
Yes	**17**	**1**	*5.9%*	18	**Pr**	**1.000**
% with new regulations	*0.3%*	*0.3%*				
	BA Entry					
	No	Yes				
No	**4996**	**164**	*3.2%*	5060		
Yes	**21**	**2**	*9.5%*	23	**Pr**	**0.1668**
% with new regulations	*0.4%*	*1.2%*				

Note: The test for equality is Fisher's Exact T-test.

Appendix

Table A1: Sector Distribution Ben Ali Firms – Narrow 5-digit Sectors (ordered by contribution to output)

	BAN	*%BAN*	*% Y BA*	*% L BA*	*% gpr BA*	*% pr BA*	*FDI Restriction*	*Fiscal Advantage*	*Authorization*	*L*	*Y*	*Gross Profits*
Air Transport (Regular)	2	66.67	92.53	83.64	.	.	0	0	1	850	217	0.126
Telecommunications	3	0.03	86.8	57.71	.	.	.	.	.	4264	991	0.479
Administration of Enterprises	5	3.42	86.02	3.02	10.43	11.83	1	0	0	398	122	4.237
Breeding of horses	1	12.5	75.31	.	.	.	.	.	.	0	0	2.997
Fabrication of plaster	1	1.45	47.85	51.53	0	0.2	0	0	1	704	48	1.705
Installation (plumbing and electrics)	2	7.41	44.8	.	21.03	-43.5	.	.	.	1	0	1.203
Commerce of automobiles	5	5.26	43.1	26.05	0	0.89	1	0	1	2372	1,321	2.361
Editing of Journals	2	2.78	17.35	14.82	0	-11.84	.	.	.	1261	40	6.848
Engineering (general)	1	0.08	14.27	0.14	0.36	0.7	.	.	.	2112	79	11.449
Advertising	1	0.2	13.57	22.91	.	.	1	0	1	1029	168	0.343
Credit (bail)	1	5.88	12.24	11.27	.	.	1	0	1	517	745	4.034
Restaurants (Traditional)	2	0.03	11.32	7.42	0	-45.48	1	0	1	6900	117	9.960
Wholesale trade – electronics	3	0.33	10.26	4.19	0	2.7	1	0	0	1965	392	0.791
Transport Related infrastructure	1	1.49	1.66	1.06	12.45	13.19	0	0	1	782	34	56.340
Real Estate	21	1.12	1.38	1.42	93.07	92.31	1	0	1	3903	950	287.887
Gross commerce of non-food items (other)	3	0.26	0.31	0.16	.	.	.	.	.	1247	221	7.139
Other financial intermediation	1	2.56	0.24	1.01	67.46	-5.14	.	.	.	16411	2,416	0.225
Wholeale trade –other	13	0.19	0.18	0.31	.	.	.	.	.	3297	1,839	25.347
Construction of buildings (gros œuvre)	4	0.04	0.09	0.98	0	-1.67	1	1	0	57124	1,597	14.946
Informatics	1	0.03	0.07	0.51	27.39	-87.87	.	.	.	2958	239	5.541
Consulting	13	0.13	0.07	0.15	1	1.27	.	.	.	9713	624	12.024
Retail trade – furniture	1	0.02	0.05	0.08	41.37	46.63	.	.	.	3307	319	95.567
Financial Services – other	2	0.67	0.01	0	71.12	74.33	0	0	0	307	49	14.028
Recreational Activities (other)	10	0.29	0	2.09	0	0.05	.	.	.	1928	39	14.323
Extraction of stones (for construction)	4	0.35	0	0	.	.	0	0	0	4123	141	2.318
Services related to production	4	0.25	0	0.12	0.12	0.16	.	.	.	15665	327	4.231
Real estate agencies	2	0.24	.	.	25.14	-48.83	.	.	.	428	37	1.500

NB Table includes sectors in which Ben Ali firms account for more than 10% of output or gross profits or in which at least 5 Ben Ali firms are active.