On the Economic Consequences of Political Instability: Evidence from Mozambican Firms

Patrick Domingues[†] and Felipe Starosta de Waldemar[‡]

This version: November 2016

Please do not quote or *circulate* without authors' permission

ABSTRACT:

This paper investigates the impact of regional political instability, defined as surprise electoral results, on firm performance. We combine an original Mozambican database of election results with a national geo-localized firm survey, and we perform a difference-in-difference analysis. Our empirical strategy relies on a comparison between treated provinces (where the wining party changed between two different elections) and control provinces (where the winning party remained the same). This strategy overcomes many of the traditional limitations, such as the control of unobserved characteristics, as we introduce firm fixed effects. The results show that firms facing political instability performed significantly worse after electoral shocks. This result is robust to different measures of economic performance, outliers, a falsification test and the use of a semiparametric difference-in-difference estimator. This finding suggests that in a context of weak political and economic environments, political instability is a binding constraint for economic growth.

Keywords: political instability, firm growth, Mozambique, manufacturing

J.E.L: O12, D22, L25, N47

[†] Université Paris Est Créteil, ERUDITE: patrick.domingues@u-pec.fr
[‡] RITM, Univ. Paris-Sud, Université Paris-Saclay : felipe.starosta-de-waldemar@u-psud.fr

Introduction

Political phenomena are among the major determinants of economic growth (Barro, 1991 and Alesina *et al.* 1996). The political sphere shapes both economic policy and business environments; thus, it affects firm performance. For instance, changes in countries' political environments can create uncertainty in business decisions, inducing low investment and increasing capital flight (Overland *et al.*, 2005). Therefore, special attention should be paid to the consequences of political changes for firms' performance, particularly for less developed countries, where a volatile political background can potentially endanger the production and living standards at higher stakes.

In this paper, we focus on the impact of political instability on different measures of firm performance. We define political instability as a surprise concerning the winning party in electoral polls for a particular province, comparing two successive elections. Our preferred measure of firm performance is labor productivity. We test our hypothesis on the Mozambican economy using a difference-in-difference (DID) approach.

The Mozambican context is especially appropriate for two main reasons. First, this country has a strong dualistic political heritage caused by former combat groups during its long and intensive civil war (from 1977 to 1992). During this conflict, the Frente de Libertação de Moçambique (FRELIMO) was involved in a civil war against the Resistência Nacional Moçambicana (RENAMO) (Domingues, 2011; Domingues and Barré, 2013). After this period, former armed groups became political adversaries in the first multi-party elections, which took place in 1994. The FRELIMO candidate, Joaquim Chissano, was elected, beating the RENAMO candidate, Afonso Dhlakama. Chissano also won the 1999 elections. As a result, FRELIMO became the ruling party in Mozambique. However, the political scene at the province level was heterogeneous because in regions where RENAMO was well implanted during the civil war, it remained the main political party after the end of the conflict.

Second, the local level is important for firms' operations in Mozambique. This is true for both the sales of a firm (output) and some of the regulatory and business practices (institutional input). On one hand, firms in the manufacturing sector sell more than 80% of their total revenues within the same district where they operate (DNEAP, 2013). On the other hand, political decentralization became increasingly important in Mozambique at the start of the 2000s (Massuanganhe, 2005). A decree in 2000 transferred several duties to be implemented by local authorities, such as tax collection and justice enforcement. It also implemented a monetary incentive for the taxes the community leaders would collect. Laws

passed in 2003 (District Development Plans and Lei dos Órgãos Locais do Estado-LOLE) gave stronger power to local authorities (Massuanganhe, 2005).

In this environment of insecure economic and institutional contexts, political instability is a potentially strong determinant of firm performance. One dimension of political instability is electoral surprises, consequences of the evolving variation in the preferences of the electorate. These events generate uncertainty, as firms do not know if they will be able to appropriate a large portion of their output. The uncertainty created by an electoral surprise can modify both economic policy and the effective protection of property rights at the local level. As a consequence, physical capital accumulation is distorted by political instability, thereby lowering firms' output and growth. In Mozambique, the powerful opposition between the two dominant parties created uncertainty for firms' operations, such as labor productivity, total sales and profits.

However, previous works in the literature have focused either on macroeconomic levels or on the effects of alternative political scenarios on firm performance. The seminal paper of Alesina et al. (1996) proposes a macro-level analysis to investigate the relationship between political instability and growth. The authors provide evidence that countries and historical periods that face a high propensity for government collapse have significantly lower growth. Carmignani (2003) provides a detailed theoretical and empirical review of the economic literature on the relationship between macroeconomic outcome variables (including growth) and political instability. This study identifies, most of the time, a negative effect of instability on macroeconomic outcomes.[1] In a more recent study, Jong-a-Pin (2009) and Aisen and Veiga (2013) confirm this result. Jong-a-Pin (2009) finds that among the four dimensions of political instability, the only dimension that has a negative and robust effect on economic growth is the instability of the political regime. Aisen and Veiga (2013) highlight that among the channels of transmission, political instability lowers growth by diminishing productivity growth and physical and human capital accumulation. This result is also confirmed by Bates and Block (2013). Using a sample of 27 African countries where agriculture is the predominant economic sector, they find that competitive presidential elections during the late twentieth century altered political incentives. As a consequence, policy reforms were implemented that have enhanced the performance of farmers, hence boosting economic growth. Using data for the United States, Baker *et al.* (2015) highlight that policy uncertainty predicts declines in investment, output, and employment at the macro level. When they focus

---

[1] Nonetheless, Carmignani (2003) also presents the results of a few articles that find a positive effect of instability on economic growth, thereby challenging the traditional negative effect of instability on growth.

on the micro level (using firm-level data), they note that policy uncertainty increases stock price volatility and reduces investment in policy-sensitive sectors.

Alongside this body of literature, Earle and Gehlbach (2015) focus on Ukraine's Orange Revolution and find that after a major political turnover at the national level, firms in regions that voted more for the winning party experienced better performance. The reason for this phenomenon is that particularistic local economic policies in regions most supportive of the winning Yushchenko candidate benefited the firms located in these regions more than firms located in regions less supportive of Yushchenko. Amongst these policies, Earle and Gehlbach (2015) state that tax and regulations affect investment, and they point out that enforcement, corruption and predation are also other determinants for firm operations.

Our paper contributes to the existing literature in two ways. First, it tests the effect of political instability on the microeconomic level, which had previously been performed based only on macroeconomic outcomes. Second, we contribute by focusing on political instability at the intra-national level rather than at the country level. To the best of our knowledge, this paper is the first attempt to use two different electoral episodes to identify regional political instability. This novel dataset of Mozambican firms allows us to conduct a specific analysis on several measures of firm performance. The data comprise information on output, profits, the number of employees and other important variables at the firm level, from 2007 to 2011. To measure political instability, our empirical strategy relies on the comparison between firms located in provinces affected by an electoral surprise: firms in provinces where the party finishing first in the ballots switched between two successive polls (treated group) and firms in provinces where the political party remained the same (control group). Therefore, based on a DID strategy, our empirical approach relies on the most straightforward relationship between political instability and firm performance.

We find that in a context of weak institutions such as Mozambique, political instability hampers firm performance. When there is an unexpected electoral outcome in the winning party at the province level, firms perform worse after this electoral shock. Uncertainty adds up to a sizable constraint in firm productivity. Our results remain stable when we exclude outliers and when we use an enlarged sample of surviving firms for the 2008-2011 period. Our results are also robust to a modification in the assignment of treated and control provinces using the 2009 presidential election results. Furthermore, our results are not driven by common trends in the pre-treatment period, as we perform a falsification test that demonstrates no effect before the electoral shock. Moreover, our results are robust to the issue of the imbalanced observable characteristics of the treated and control groups. To address this issue, we employ

the semiparametric DID estimator developed by Abadie (2005), and we find that the effect of political instability on firm productivity is negative and strongly significant.

The paper proceeds as follows. In Section 2, we describe the political context in Mozambique and set our main hypothesis. In Section 3, we present the datasets used in the empirical section and the descriptive statistics. Section 4 details our empirical approach and discusses our main results derived from a DID strategy as well as their robustness. Finally, Section 5 concludes regarding the negative impact of political instability on firm performance.

2. Political context and main hypothesis

The modern political context of Mozambique is characterized by a decade of struggles. After Mozambican independence, on June 25th, 1975, Samora Machel, the first president of the new republic, who was a member of the FRELIMO party, planned to establish a form of democracy based on a single-party structure called "scientific socialism" (Saul, 1985). Instead of this political program, the first historical event for independent Mozambique was a civil war between FRELIMO and RENAMO, which lasted fifteen years (from 1977 to 1992).[2]

During this period, these two opponents fought all over Mozambique with no clear battlefront. All Mozambican provinces were involved in this civil conflict, but not all were exposed to it with the same level of intensity or during the same time period (see Domingues, 2011 for more details). In 1990, FRELIMO and RENAMO started a period of negotiations referred to as the Rome talks (as the first round of direct negotiations took place in Rome in July 1990). Nevertheless, fighting continued in most provinces during this period, and it was only on October 4th, 1992, that these negotiations led to the resolution of the conflict (Vines, 1996; Saul 1999).

In 1994, the first multi-party elections took place, and the FRELIMO candidate, Joaquim Chissano, was elected, beating the RENAMO candidate, Afonso Dhlakama. Chissano and FRELIMO won the election again in 1999, becoming the ruling party in Mozambique. The first two elections after the Rome talks were characterized by a relatively high level of political rivalry (Dresden, 2015). However, after these elections, RENAMO'S electoral support diminished over the years, while FRELIMO restored political ascendency. As a result, the level of competitiveness was not sustained. This period was marked by widespread privations of small firms to members of the FRELIMO elite and large firms to foreign companies but also by growing corruption (Hanlon and Mosse, 2009). In 2004,

---

[2] Information provided by UCDP/PRIO Armed Conflict Dataset. Based on the Correlate of War (COW) dataset, the Mozambican Civil War took place from 1979 to 1992.

FRELIMO candidate, Armando Guebuza, won the presidential election. As highlighted by Hanlon and Mosse (2009), the period under the rule of the new president consisted of the use of state resources for productive investments. Furthermore, Armando Guebuza renewed his party and started to fix the corruption issue.

However, the 2000s were marked by low levels of citizen support for democracy, as indicated by Pereira et al. (2002, 2003) using Afrobarometer data. Therefore, the democratic regime in Mozambique displays pronounced problems. One can note that the population does not engage in public political debate and also has difficulty observing the economic progress of the political regime. Mattes and Shenga (2008) note that an information problem leads to weak political accountability in Mozambique, intensified by a small level of human capital and a high prevalence of poverty. In the same direction, Ames et al. (2010) use North et al.'s (2009) framework and call Mozambique a limited access society. In this classification, instead of promoting the supply of impersonal public goods, the political elite (FRELIMO) answers with transfers and clientelistic goods. Alongside the troubling political opposition of RENAMO (Manning, 2001), the political context of Mozambique is propitious to create unstable regional economic and institutional contexts that can directly affect firms' performance.

The microeconomic effect of the political environment may be at work in the case of intra-national political instability in Mozambique. Political instability creates uncertainties for business operations, blocking critical decisions made at the firm level. This in turns lowers labor productivity, total output and profits. On one hand is the example of the 1999 election results, which were severely contested by RENAMO (Manning, 2001), which tried to bargain for ministerial positions and government positions for the provinces in which it won the majority of votes. Instability reigned for a year, from the end of elections in November 1999 to October 2000, where mass demonstrations organized by the opposition party resulted in violent clashes. RENAMO was not able to perform well as an organized opposition party in the institutional context of the peace agreement signed a few years earlier. On the other hand, the local investment climate and specific economic policies, such as provincial strategy plans, are subject to discretionary changes when political institutions change due to fluctuations in electoral preferences. In Mozambique, there are many examples of these important dimensions of daily business life (World Bank, 2010), especially in the provinces outside Maputo. In Tete Province, rules concerning business operations licenses are a major concern for different private sector actors. In Nampula, a provincial strategy plan for development for the 2010-2020 decade was launched in 2010, with a projected value of almost half of the total

private investment flowing into Mozambique. A similar provincial strategy plan was implemented in the city of Beira (Sofala Province) that focused on the improvement of the quality and provision of many municipal services. In summary, all this evidence on the important dimensions of the provincial business climate concurs with the effect of political instability on firm performance through the uncertainty of the economic and institutional environment.

3. Data and descriptive statistics

3.1. Data

We use the Inquérito Anual às Empresas (i.e., Annual Enterprise Survey), a national survey of Mozambican manufacturing firms, which started in 2007. In this paper, we combine these annual surveys to build a panel database from 2007 to 2011 (the last available year). To our knowledge, this paper is the first to use these firm-level data[3] for an applied econometric analysis. These data were gathered by the Instituto National de Estatistica (INE), the national statistics office of Mozambique. INE compiles basic information on all firms at the FUE (Ficheiro de Unidades Estatisticas)[4], and then, it chooses a sample of firms from which to gather more detailed data. Each survey gathers traditional information on more than 1000 firms with standard questions conducted traditionally by any national office (see Table 1 for some yearly descriptive statistics). This survey is exhaustive for firms with more than 30 employees. The rest of the firms recorded in this survey are randomly selected using three criteria: sector (2 digits CAE – Classificação das Actividades Económicas),[5] ownership and size. The sampling follows the distribution of the population of the Mozambican urban manufacturing sector. Therefore, firms are located in all eleven Mozambican provinces. Note that to deflate the current values (in Meticais, the Mozambican currency) provided by the Inquérito Annual às Empresas, we use the annual inflation percentage rate for Mozambique from the World Development Indicators (World Bank).

We merge this firm panel database with the results of all Mozambican elections, compiled by Hanlon (2015). This dataset records the national election results from 1999 to 2014[6] for the presidential position and the national assembly. In addition, it provides results for the provincial assembly elections of 1999, 2004, 2009 and 2014. The dataset provides, for

---

[3] Note that establishment-level information is not available for use due to statistical secrecy.
[4] A "File of Statistical Units" or more simply a "business register unit".
[5] The CAE is the "Classification of Economic Activities", and this classification follows the International Standard Industry Classification (ISIC), revision 3.
[6] This dataset also includes election results at the municipal (Autarquias) level in 2008. However, we cannot use this information because as stated above, we do not know in which city a firm is located.

each province, the number of votes for each presidential candidate and the number of votes for each political party (for the legislative elections). It also provides information for each election on the number of blank and spoiled votes. We use the results for the national assembly counted at the provincial level, as these better reflect the preferences of the voter for a specific party (FRELIMO and RENAMO) by removing the strong individual effect of a presidential candidate. Nevertheless, our results are robust when we use presidential elections (counted at the provincial level) to code our treated and control provinces.

3.2. Descriptive statistics

In Table 1, we present the sample composition at the firm level. The number of firms significantly increased in 2008 and then remained stable. Since we aim to test the robustness of our result to a falsification (placebo) test, as highlighted in the next section, keeping firms that existed in 2007 is essential to put this test into practice. Therefore, we only keep firms that existed during the whole period (2007-2011). That means we have approximately half (if we look at the first year) and one third (following years) of the total sample. However, in addition to our main results, we test the effect with a sample of surviving firms from 2008 to 2011, which significantly increases our sample and does not modify our main results. All in all, regardless of which of these two strategies is used, our results should be interpreted as being conditional on firm survival.

Table 1 : Number of firms per year

	2007	2008	2009	2010	2011
Observations (survey)	1338	2214	2212	2094	2161
Study sample	700	700	700	700	700

Source: Author's calculations

Table 2 reports the summary statistics related to our firm-level variables. In this paper, we use alternative left hand side variables to test the robustness of our results to different measures of firm performance. Our main explained variable is labor productivity, measured as output divided by the number of employees (output per worker). Furthermore, we measure firm performance as growth rates before and after an electoral shock. Following our benchmark measure, we use the annual labor productivity (output per worker) growth rate of a firm i, defined as $\Delta O_i = \frac{O_{it+1} - O_{it}}{O_{it}}$. For the pre-election period, we measure the annual growth rate between 2008 and 2009 (we do not use 2007 for the same reason as for the falsification

test), while for the post-election period, we measure the annual average growth rate between 2011 and 2009. Then, we use total output, defined as a firm's total sales (price multiplied by quantity) of goods and services in a single year to investigate this effect on firm size. For a consistent comparison between different years, we deflate the output values (productivity and total sales) using the inflation rate of Mozambique, as explained above. Finally, to take into account the evolution of firms' costs, we use firm profits, defined as the output of the firm minus its costs. The costs are defined as the sum of the value of raw materials, the direct labor costs of workers (wage bill), factory operating expenses, value added tax and other taxes, and other costs (amortization and provision for future expenses). We measure the levels of these variables for the years 2008 (pre-treatment) and 2011 (post-treatment).

Table 2 : Firm-Level Variables and Summary Statistics

VARIABLE	Obs.	Mean	Std. Dev.	Min	Max
2008 (pre-election)					
Output per worker	700	1971188	1.58e+07	620.24	4.08e+08
Output per worker (growth rate)	700	6.85	39.16	-.99	639.6634
Output	700	2.15e+08	1.31e+09	93916.59	3.13e+10
Profits	700	5.66e+07	7.39e+08	-5.46e+08	1.88e+10
2011 (post-election)					
Output per worker	700	4541701	3.36e+07	1743.14	8.68e+08
Output per worker (growth rate)	700	3.70	23.19	-.49	323.35
Output	700	4.20e+08	1.55e+09	522679.2	2.62e+10
Profits	700	1.44e+08	7.83e+08	-2.86e+09	1.73e+10

Notes: Values are in millions of Meticais, deflated by the annual percent change in the consumer price index (World Development Indicators).

In Table 3, we present the results of the National Assembly elections for three different contests at the province level. Note that in 1999, both FRELIMO (5 provinces) and RENAMO (6 provinces) were the winning parties, but FRELIMO won in the more populous provinces, thus becoming the dominant party. This context resulted in socio-economic turmoil, as presented above (Manning, 2001). In the following elections, in 2004, RENAMO lost in many of its provinces, keeping an advantage in only two, Zambézia and Sofala. Finally, in the 2009 elections, FRELIMO obtained the majority of the votes in all provinces. Therefore, we code as 1 the treated provinces, Zambézia and Sofala, which were affected by an electoral surprise during the 2009 elections, and we code as 0 all 9 other regions in the country, for which there was no switch in the party that finished first in the ballots between two successive polls (control group). This electoral surprise at the province level is our definition of political instability. The results from the polls (50.7% for FRELIMO in Sofala

and 53.6% for FRELIMO in Zambézia) showed that FRELIMO indeed had only a small victory.[7] Thus, the pre-election period is defined as the years 2007 and 2008, while the post-election period is defined as 2010 and 2011. In that sense, we have two observations for each firm: pre- and post-2009 election.

Table 3: Election Results

Province Name	Winning Party 1999	Winning Party 2004	Winning Party 2009	Political Instability (2004-2009)
Niassa	RENAMO	FRELIMO	FRELIMO	0
Cabo Delgado	FRELIMO	FRELIMO	FRELIMO	0
Nampula	RENAMO	FRELIMO	FRELIMO	0
Zambézia	RENAMO	RENAMO	FRELIMO	1
Tete	RENAMO	FRELIMO	FRELIMO	0
Manica	RENAMO	FRELIMO	FRELIMO	0
Sofala	RENAMO	RENAMO	FRELIMO	1
Inhambane	FRELIMO	FRELIMO	FRELIMO	0
Gaza	FRELIMO	FRELIMO	FRELIMO	0
Maputo Provincia	FRELIMO	FRELIMO	FRELIMO	0
Maputo Cidade	FRELIMO	FRELIMO	FRELIMO	0

Source: Author's calculation using data from Hanlon (2015).

To measure the revealed preference in a province for one of the two major political parties in Mozambique, we prefer using assembly instead of presidential election results to eliminate the individual effect of a particular candidate. In the case of using presidential election results, in 2004 in Manica Province, RENAMO finished first in the presidential elections, albeit with a very small margin (a total difference of 48 votes between the two: 92161 votes for RENAMO and 92113 votes for FRELIMO). In that case, we should consider RENAMO the winner of the 2004 election, which in turn also makes Manica a treated province. We test for this alternative coding of the treatment variable in the next section. It would also be interesting to use a similar coding strategy relying on provincial assembly elections. However, the first elections took place in 2008, so it is impossible to code political change and instability using our firm-level data for the period of study.

Another possibility would be to test the effect of political instability on firm performance using district-level election results. Due to secrecy reasons, the district

---

[7] Note that in our case, the political switch is different from the one identified by Earle and Gehlbach (2015). In the Ukranian case, there is a major regime change at the country level, which is identical for every firm in different regions. Moreover, their treatment variable is continuous, which is not the most common way of measuring a treatment effect in the literature, measuring the percentage of supporting votes for the party that established the new political regime.

localization of each firm is not shared by the INE. More importantly, using the same preferred election results for 2004 and 2009, the same pattern of electoral results is predominantly observed at the district level in the treated provinces.[8] Political instability has also occurred at the district (city) level.

Finally, focusing on the coding of our treatment variable, one could consider that the effect of political instability on firm performance captures other macroeconomic shocks occurring at this time in Mozambique. This would be the case, for example, if an important infrastructure project or a major natural resource discovery (and/or production) happened in only control or treated provinces. This did not happen in our context. The main ports in Mozambique are in Beira (Sofala) and in Maputo. On one hand, the large production and exports of coal in Tete Province go through the Beira port, providing benefits to business in both control and treated provinces. On the other hand, the gas discovery off the Cabo Delgado coast (the Rovuma Basin) in 2010 provided gas for the whole country, and it had not started to be produced in our period of study. Furthermore, the series of robustness tests in the next section gives support for our main finding.

4. Empirical Approach and Results

The political environment is a potentially important determinant of firm performance in Mozambique. The long civil war history and the composition of the current political parties have created a strong dualistic political sphere. The low level of firm productivity and the overall negative effect of unclear and unsustained economic policies are important impediments of economic growth and development. In the rest of this section, we empirically test the hypothesis of the effect of intranational political instability on firm performance in Mozambique.

To examine this effect, we employ a DID estimator using the results of a provincial electoral surprise as a quasi-natural experiment by which the local institutional and economic environment was affected. In practice, this consists of associating a political surprise to a treatment and comparing changes in firms' performance indicators between a treatment group (T), that is, firms located in provinces affected by a surprise electoral variation, and a control group (C), that is, firms located in provinces where the political context did not change before and after the 2009 election. The fundamental assumption of the DID strategy is that the treatment group would have followed a similar trend in terms of performance as their

---

[8] In Sofala, 11 of the 13 districts witnessed the same political instability trajectory, while this was true for 14 out of 17 districts in Zambézia.

counterparts (i.e., the control group) if they did not experience an electoral shock in their province. Therefore, under this identifying assumption, the DID estimator provides an unbiased estimate of the average impact of political instability, controlling for any time-invariant firm characteristics. Our empirical specification is

$$Y_{it} = \delta_t + \eta_i + \alpha D_{it} + \varepsilon_{it} \quad (1)$$

where Y_{it} is labor productivity (output per worker), and for robustness, we also use alternative indicators of firm performance, as presented above. D_{it} is a dummy equal to 1 if firm i is located in a province affected (T) by political instability in period t and equal to 0 if firm i is located in a province not affected (C) by political instability in period t. δ_t is a time fixed effect capturing all the specific characteristic of the post-election period, η_i is a firm fixed effect, and ε_{it} is the error term. Our main hypothesis is that political instability raises uncertainty in the provincial institutional and economic environment, such as the degree of property rights protection (strikes, shutdowns, and attacks on private entrepreneurs) and the future course of economic policy, which in turn impact firm performance. Since we control for firm fixed effects, the coefficient α measures how the change in the associated outcome variable varies with political instability.

As a starting point, Table 4 below provides simple nonparametric DID estimates on the balanced panel of firms for the control and treatment groups. Labor productivity (in levels) raises between 2008 and 2011 for both groups. However, this increase is much stronger for firms in the control group. The DID estimate in the last column of Table 4 shows that this increase in labor productivity is significantly smaller for firms in the treated group than firms in the control group. Nevertheless, these results are only bivariate associations that may be driven by unobserved firm characteristics or time differences that we want to simultaneously control for. This is the exact objective of the parametric estimations below.

Table 4: Nonparametric difference in differences:

Output per worker	Control group (C)		Treatment group (T)			DID	
	2008	2011	2008	2011	Δ(C)	Δ(T)	Δ(T)-Δ(C)
	2055848	4916942	1296084	1549392	2861095	253308	-2607787
	(670646.5)	(1428860)	(525464.9)	(350636.3)	(1578420)	(631711.3)	(946708.3)***
Number of observations	622	622	78	78	1244	156	1400

** p < 0.05; *** p < 0.01 (significance level, issued from a bivariate linear regression of Δ(Output per worker) on political instability dummy D)

Table 5 provides the regression results for Equation 1. For all specifications, the coefficient α for our variable of interest, D_{it}, is negative and strongly significant. Political instability affects overall firm performance since labor productivity decreases between 2008 and 2011. As highlighted by column 1, firms located in provinces affected by political instability display systematically lower output per worker during the post-electoral period than counterfactual firms. To verify that this result is not driven by a specific time period effect for 2011, we present in column 2 our main results but use labor productivity values for 2010 as our post-treatment period. The negative and significant effect of political instability on firm productivity remains unchanged.

These results are confirmed by the growth of output per worker in column 3. In this growth analysis, the pre-electoral period is the annual growth rate from 2008 to 2009. Treated firms performed poorly during the post-election period (the average annual growth rate between 2009 and 2011). As a consequence, political instability modified the regional economic and institutional context, for instance, raising the uncertainty over output appropriation.

Columns 4 and 5 provide robustness tests to check whether the results hold for alternative measures of firm performance, namely, firm size (total sales) and firm profits, both in levels, as in column 1. In both columns, the coefficient associated with our treatment effect, political instability, is negative and strongly significant. Political instability at the intranational level has a negative effect on firms' total output and profits.

Table 5: Main results and LHS robustness

VARIABLES	(1) Output per worker	(2) Output per worker	(3) Output per worker (Growth)	(4) Output	(5) Profit
Political Instability	-2607786.79***	-2647996.08**	-15.57**	-1.849e+08**	-9.757e+07**
	(750,538.26)	(1008099.630)	(5.32)	(69936833.89)	(37271803.45)
Post-election Dummy	2861094.81***	2921947.29***	-1.41	2.257e+08***	98099120.36***
	(548,068.13)	(757,329.30)	(1.00)	(37606630.70)	(7901381.29)
Constant	1971188.33***	1971188.33***	6.85***	2.150e+08***	56571646.11***
	(245,169.00)	(338,506.56)	(0.53)	(17028001.06)	(4054844.37)
Observations	1,400	1,400	1,400	1,400	1,400
R-squared	0.02	0.02	0.02	0.06	0.05
Number of firms	700	700	700	700	700

Robust standard errors clustered at the province-level in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note that our results are not influenced by time-invariant unobservable firm characteristics, as we control for firm fixed effects. Furthermore, our results are not driven by a time shock common to all firms because we introduce time fixed effects. Standard errors are clustered at the province level (treatment level), following Bertrand et al. (2004).

The coefficient estimates are also economically evocative. Firms located in a treated province have a productivity level that is on average 2.7 million meticais lower than in other provinces, meaning half the average output of all firms in the post-election period.

Table 6 provides the results of sensitivity tests conducted to see whether our results hold with the exclusion of outliers, as our results may be driven by extreme values. In all columns, we remove from our sample the bottom and top 1% of the distribution of our dependent variable, output per worker. In column 1, we drop outliers for the pre-treatment period, while in column 2, we drop outliers for the post-treatment period. In column 3, we take out all firms from the two previous columns. Note that 3 firms are eliminated in both columns, so we drop 25 firms as outliers. Our main result, that is, the negative effect of political instability on firm labor productivity, remains unchanged.

Table 6: Robustness of our main result excluding the top and bottom 1% of the distribution of our dependent variable

VARIABLES	(1) Output per worker	(2) Output per worker	(3) Output per worker
Political Instability	-1455602.56***	-1376176.43**	-984,909.86***
	(235,018.92)	(554,977.10)	(170,704.14)
Post-election dummy	2196967.41***	1636395.66***	1736816.44***
	(235,013.59)	(167,055.84)	(170,594.88)
Constant	1127476.59***	1332175.94***	1114611.25***
	(104,831.17)	(79,850.42)	(76,073.40)
Observations	1,372	1,372	1,350
R-squared	0.08	0.08	0.10
Number of firms	686	686	675

Robust standard errors clustered at the province-level in parentheses *** p<0.01, ** p<0.05, * p<0.1. Column 1 excludes firms from the top and the bottom 1% of the distribution of dependent variables, based on labor productivity of 2008. Column 2 excludes firms from the top and the bottom 1% of the distribution of dependent variables, based on labor productivity of 2011. Column 3 excludes firms from the top and bottom 1% of the distribution of dependent variables, based on labor productivity both of 2008 and 2011.

Table 7 provides many checks for the robustness of our results. In column 1, we relax the constraint of including in our sample only firms existing from 2007 to 2011. In this specification, we use all surviving firms that existed from 2008 and 2011. This significantly

increases the number of firms to 1419 and the number of observations to 2838.[9] Our results show that our effect is robust to this larger sample. In column 2, we perform a robustness check on the treatment assignment of our independent variable. Instead of using provincial-level national assembly election results, we test the effect of political instability on firms' labor productivity using provincial-level presidential election results to code which provinces are treated and which are not. In this specification, we now have 3 provinces that are treated, with Manica joining Sofala and Zambézia, as previously stated. Our main result is robust to this test.

Our earlier estimations mention a strong and robust adverse impact of political instability on firms' performance, controlling for time-invariant firm unobservables and year-specific characteristics. However, as mentioned, to validate these findings, we have to test their validity to the issue of selection into treatment. This is one of the major concerns of DID estimates, as the strong identifying assumption of this strategy is that firms' performance trajectories in the control group are the right counterfactual. This may not be the case if we suspected that firms affected by an electoral surprise did not follow a parallel path with control firms in terms of economic performance. This could be the case if firms in specific sectors were found only in certain (treated) provinces and these sectors, for other external reasons, suffered a demand-driven shock and thus experienced a larger (or smaller) path before the electoral shock. Another possibility is that firms located in treated provinces anticipated political instability in the following elections and improved their performance before the elections to prevent a potential negative effect of political change. However, for the treated provinces, the differences between the two parties in the election results in 2009 were small, and the political climate in Mozambique before the polls did not allow this level of important anticipation. However, if this were the case, the parallel trend assumption would be invalidated. In this setting, the falsification test below also empirically tests whether this anticipation really occurred.

To test the validity of the DID identifying assumption, we test the parallel trend hypothesis two years before the election occurred (between 2007 and 2008) to implement a "falsification test". More broadly, we estimate the impact of "future political instability" ($t = 1$) on baseline firm performance ($t = 0$), following equation (2):

---

[9] In Table A1 in the appendix, we test whether there are statistically significant differences concerning labor productivity between firms from the traditional and the enlarged samples. Our results show that this is not the case.

$$Y_{i0} = \delta_t + \eta_i + \alpha D_{i1} + \varepsilon_{it} \quad (2)$$

where Y_{i0} is labor productivity (output per worker) in 2007, D_{i1} is a dummy equal to 1 if firm i is located in a province that will be affected (T) by political change in 2009, and 0 otherwise, and other variables are defined as above. The results of this falsification test are presented in column 3 of Table 7. They show that there is no significant difference between the treated and control groups regarding baseline firm performance. Therefore, one of the main assumptions of the DID is validated by our results.

At last, in column 4 of Table 7, we present the results from a semiparametric DID estimation, following Abadie (2005). Again, the main issue concerning a standard DID estimator is that it requires that in the absence of treatment, the outcomes for the control and treated groups would follow parallel trends. If selection into treatment is correlated with firm characteristics that affect the dynamic of labor productivity, this assumption is invalidated. For example, in our case, this would be plausible if selection into treatment is influenced by firm temporary shocks on past outcomes, which generate nonparallel outcomes, even if we had similar observable characteristics in the pre-treatment period. Abadie (2005) develops a two-step strategy that can be used to estimate treatment effects using propensity score matching, which addresses the issue of the imbalance of characteristics between treated and control groups. Therefore, the parallel trend assumption is much more valid.

In Table A2 in the appendix, we present the mean tests for the baseline (in 2008) firm characteristics between the treatment groups. These characteristics are firm size (total sales), ownership (5 different dummies for each type of ownership) and sector of activity (9 different dummies that correspond to aggregated sectors following revision 3.1 of the International Standard Industry Classification). Note that the size variable is not different between groups, differently from the ownership and sector dummies, where we find at least one dummy that is significantly different between the treated and the control groups. Therefore, in our semiparametric estimation, following Abadie (2005), we include the ownership and sector dummies as control variables.

The results of column 4 in Table 7 show that the increase in firms' labor productivity is significantly smaller for firms in the treatment group than those in the control group[10]. Although smaller than our previous point estimates, this result is close to our main results, providing further evidence that selection into treatment does not strongly affect our results.

---

[10] We have similar results when we include firm size as one the control variables. The results are available upon request.

Table 7: Robustness checks

VARIABLES	(1) Output per worker	(2) Output per worker	(3) Output per worker	(4) Output per worker
Political Instability	-2675513.10**			-800,598.23**
	(930,283.62)			(378,475.61)
Presidential		-2307764.99***		
Political Instability		(715,375.33)		
Post-election dummy	3596960.44***	2900193.57***		
	(873,995.31)	(545,262.19)		
Future Political Instability			227,725.78	
			(255,527.27)	
Future post-election dummy			-744,854.92**	
			(254,623.34)	
Constant	1729656.03***	1971188.33***	3628857.75***	
	(386,659.68)	(236,013.25)	(113,599.17)	
Observations	2,838	1,400	1,400	1,361
R-squared	0.01	0.02	0.001	
Number of firms	1419	700	700	

Robust standard errors clustered at the province-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Column 1 uses surviving firms for the period 2008-2011. Column 2 uses presidential elections results to code treated and control provinces. Column 3 do a falsification test in the pre-election period. Column 4 presents results of the semiparametric difference-in-difference estimator (Abadie, 2005).

In addition to selection into treatment issues, another selection bias concern is linked to attrition. As mentioned in Section 3, among the initial sample of firms, 638 were not in the sample in 2011 (approximately 47.6%). This non negligible attrition might induce selection bias in our estimations if firms located in non-treated provinces exiting the sample were significantly different in terms of the outcome variable compared to exiting firms located in treated provinces. For example, if firms in treated provinces displaying high labor productivity exited the sample while firms in non-treated provinces displaying low labor productivity exited the sample, then our treatment effect would only spuriously capture the nonrandom effect of attrition on our outcome variable. To test this potential issue of non-random attrition, we perform a mean comparison test between treated and non-treated firms using the sub-sample of 638 exiting firms. Table 8 presents the results of this mean test. We find no significant difference in terms of output per worker between exiting firms in control provinces and exiting firms in treated provinces.

Table 8: Mean comparison test using Output per worker (2007)

	Control	Treatment	Δ(T) - Δ(C)
Number of Observations	496	142	638
Mean	2010231	1251361	758870.6
Standard Errors	(623648.1)	(446782.3)	(1190373)

5. Conclusion

The objective of this paper is to test the effect of political instability on firm activities. To this end, we focus on the effect of unexpected electoral results on the economic performance of Mozambican enterprises. We find that political instability, defined as an electoral surprise, diminishes firms' productivity. Although the macroeconomic link between the political sphere and economic growth and development has been highlighted, we adopt a microeconomic approach exploiting the instability of the intranational political context when there is no change in the national ruling party. Political instability in our study is defined by its electoral surprise dimension, which is a consequence of the competing interests that search for power in political institutions (Carmignani, 2003).

We use a novel dataset on Mozambican enterprises from 2007 to 2011 that contains main information at the firm level, such as employment, output, localization, and ownership type. The Mozambican case is especially interesting as it is a least developed country with a strong dualistic political landscape and an important heritage shaped by civil war combatant groups. We use election data and measure political instability as a surprise change in the provincial party winners between the 2004 and 2009 elections. We use a DID approach and find that firms located in treated provinces (where there was an electoral surprise) performed worse than firms in non-treated provinces (where there was no electoral surprise), ceteris paribus. This result is robust for different measures of economic output, outliers, attrition, a falsification test and semiparametric DID estimations. As a consequence, political instability has modified the regional economic and institutional context (property rights protection), for instance, by creating uncertainty about the amount of its own output a firm will able to appropriate. Our results emphasize that in countries with weak institutions, political turmoil results in an instable daily business life for small and medium entrepreneurs. However, our results do not imply that political instability is harmful per se for all socio-economic aspects and that a single-party government, resembling a dictatorship, should be a first-best option. In nations with a strong dominant party, political change can bring new winds of democracy and accountability.

References

Abadie, Alberto (2005). "Semiparametric Difference-in-Difference Estimators". *Review of Economic Studies*, 72, 1-19.

Aisen, Ari, Veiga, Franciso J. (2013), "How Does Political Instability Affect Economic Growth?" *European Journal of Political Economy* 29 : 151-167.

Alesina, Alberto, Ozler, Suler, Roubini, Nouriel and Swagel, Phillip (1996). "Political Instability and Economic Growth." *Journal of Economic Growth* 1(2): 189–211.

Ames, Barry, do Rosario, Domingos, Connerley, Edwin, Nguenha, Eduardo and Francisco, Laudemiro (2010). Comparative Assessment of Decentralization in Africa: Mozambique In-Country Assessment Report. USAID.

Baker, Scott R., Bloom, Nicholas, Davis, Steven J. (2015). "Measuring economic policy uncertainty". NBER Working Paper No. 21633.

Barro, Robert J. (1991). "Economic Growth in a Cross Section of Countries." *Quarterly Journal of Economics* 106(2): 407–43.

Bates, Robert H., and Block, Steven A. (2013). "Revisiting African Agriculture: Institutional Change and Productivity Growth." *Journal of Politics* 75(2): 372–84.

Bertrand, Marianne, Duflo, Esther, Mullainathan, Sendhil (2004). "How Much Should we Trust Difference-in-Difference Estimates?" *The Quarterly Journal of Economics*, vol. 119(1), 249-275.

Carmignani, Fabrizio (2003). "Political Instability, Uncertainty and Economics." *Journal of Economics Surveys* 17 (1): 1 – 54.

DNEAP (2013). 'Inquérito as Indústrias Manufactureiras 2012 (IIM2012), Descriptive Report'. Maputo: DNEAP (National Directorate of Studies and Policy Analysis (at MPD)).

Domingues, Patrick and Barre, Thomas (2013). "The Health Consequences of the Mozambican Civil War: an Anthropometric Approach", *Economic Development and Cultural Change*: Vol.61, No.4.

Domingues, Patrick (2011). "A Database on the Mozambican Civil War" *Peace Economics, Peace Science and Public Policy*: Vol.17: Iss.1, Article 5.

Dresden, Jennifer G. R., (2015). By Other Means: Combatant Capabilities, Institutional Choice, and Electoral Competition after Civil War. Mimeo, Georgetown University.

Earle, John S., and Gehlbach, Scott. (2015). "The Productivity Consequences of Political Turnover: Firm-level Evidence from Ukraine's Orange Revolution", *American Journal of Political Science*, Vol. 59, No. 3, July, pp. 708-723.

Jong-a-Pin, Richard (2009). "On the Measure of Political Instability and its Impact on Economic Growth." *European Journal of Political Economy* 25: 15-29.

Manning, Carrie (2001). "Competition and Accommodation in Post-Conflict Democracy: The Case of Mozambique." *Democratization*, 8:2, 140-168

Massuanganhe, Israel J. (2005). Decentralization and District Development. Working Paper n.3, UNCDF-UNDP, Maputo.

Mattes, Robert, and Shenga, Carlos. (2007). "Uncritical Citizenship" in a "Low-Information"Society: Mozambicans in Comparative Perspective. Afrobarometer, Working Paper 91;

North, Douglas, Wallis, John and Weingast, Barry. (2009). *Violence and Social Order: A Conceptual Framework for Interpreting Recorded Human History*. Cambridge: Cambridge University Press.

Overland, Jody, Simons, Kenneth L. and Spagat, Michael (2005). "Political instability and growth in Dictatorships". *Public Choice* 125 (3-4), 445‑470.

Pereira, Joao, Davids, Yul D. and Mattes, Robert. (2002). Mozambicans' Views of Democracy and Political Reform: A Comparative Perspective. Afrobarometer, Working Paper 22.

Pereira, Joao, Raimundo, Ines, Chikwanha, Annie, Saute, Alda and Mattes, Robert. (2003). Eight Years of Multiparty Democracy in Mozambique: The Public's View. Afrobarometer, Working Paper 30.

Saul John S., (1985). *A Difficult Road: The Transition to Socialism in Mozambique*, New York: Monthly Review Press.

Saul John S., (1999), *Inside from the Outside? The Roots and Resolution of Mozambique's Un/Civil War*, in Taisier M. Ali and Robert O. Matthews (eds), *Civil Wars in Africa: Roots and Resolution*, McGill-Queen's University Press: Montreal.

Vines, Alex, (1996), *RENAMO: From Terrorism to Democracy in Mozambique?* London: James Currey.

World Bank, (2010), Prospects for Growth Poles in Mozambique. Report, August 2010.

Appendix

Table A1: mean comparison tests between study sample

Output per worker	All firms	
	Study Sample	**Enlarged Sample**
Mean	1971188	1494506
t-test	0,43	
Number of observations	700	719
	Treatment group (T)	
Mean	1296084	1281116
t-test	0,98	
Number of observations	78	86
	Control group (C)	
Mean	2055848	1523498
t-test	0,43	
Number of observations	622	633

Note : T-test displays the p-value of a two-sided two sample t-test

Table A2: Characteristics of firms across treatment groups, in 2008

Variables	Entire Sample	Treated	Control	Diff.
Size (Employment)	176.0771	222.7949	170.2186	52.57622
	[500.6598]	[914.6984]	[422.0113]	(60.14819)
Ownership (Cooperative)	.0057143	0	.0064309	.0064309
	[.0754305]	[0]	[.0799988]	(.0090637)
Ownership (Public Enterprise)	.0257143	.025641	.0257235	.0000824
	[.1583948]	[.159085]	[.1584365]	(.0190396)
Ownership (Individual Entrepreneur)	.1428571	.2051282	.1350482	-.07008**
	[.3501773]	[.4064089]	[.3420502]	(.0420089)
Ownership (S.A.)	.1485714	.1538462	.14791	-.0059362
	[.3559198]	[.3631365]	[.3552964]	(.0427822)
Ownership (Limited Corporations)	.6771429	.6153846	.6848875	.0695028
	[.4679029]	[.4896532]	[.4649346]	(.0561821)
Industry (Agriculture, hunting, forestry, fishing)	.0085714	.025641	.0064309	-.0192102**
	[.0922503]	[.159085]	[.0799988]	(.011065)
Industry (Mining and quarrying)	.0228571	.0384615	.0209003	-.0175612
	[.1495548]	[.1935524]	[.1431658]	(.0179647)
Industry (Manufacturing)	.2671429	.3333333	.2588424	-.0744909*
	[.442784]	[.4744557]	[.4383514]	(.0531495)
Industry (Electricity, gas and water supply)	.0114286	0	.0128617	.0128617
	[.1063679]	[0]	[.1127686]	(.0127765)
Industry (Construction)	.0914286	.1282051	.0868167	-.0413884
	[.2884237]	[.336482]	[.2817929]	(.0346341)
Industry (Wholesale, Hotels, Restaurants)	.3671429	.2948718	.3762058	.081334*
	[.4823706]	[.4589365]	[.4848225]	(.0579009)
Industry (Transport, storage and communications)	.0985714	.1410256	.0932476	-.0477781*
	[.2982989]	[.3503008]	[.2910131]	(.035811)
Industry (Real estate)	.07	.0128205	.0771704	.0643499**
	[.2553295]	[.1132277]	[.2670764]	(.0305947)
Industry (Education, Health and other services)	.0628571	.025641	.0675241	.0418831*
	[.2428794]	[.159085]	[.2511295]	(.0291519)
Number of observations in 2008	**700**	**78**	**622**	**700**

Standard deviations in brackets; standard errors in parentheses