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António Afonso (EconPol Europe, Universidade de Lisboa; REM/UECE), Maria João Guedes (Universidade de Lisboa; Advance/CSG), Pankaj C. Patel (Villanova University, Villanova School of Business)

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Labour Productivity in State-Owned Enterprises[*]

António Afonso,[$]   Maria João Guedes,[#]   Pankaj C. Patel[+]

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Abstract

In the aftermath of the Global and Financial Crisis (GFC), between 2013 and 2015, the Portuguese government revoked four holidays for both public sector and private employees. We test whether the revocation had an effect on labour productivity in State-Owned Enterprises (SOEs) in Portugal. Moreover, we also study whether such effects are different taking into account the SOEs managed by the Central Government or the Local and Regional Governments. Our results show that revocation of holidays did not impact labour productivity for either central or local and regional government managed SOEs. Though revocation of holidays espoused to improve productivity, the policy seems to have served a ceremonial purpose, but not an economic one.

JEL: C23; H79; J45; J58; J89; L32.
Keywords: labour productivity; state-owned enterprises; central government; panel data; Portugal

[$] ISEG, Universidade de Lisboa; REM/UECE. R. Miguel Lupi 20, 1249-078 Lisbon, Portugal. email: aafonso@iseg.ulisboa.pt.
[#] ISEG, Universidade de Lisboa; ADVANCE/CSG. R. Miguel Lupi 20, 1249-078 Lisbon, Portugal email: mjguedes@iseg.ulisboa.pt.
[+] Villanova University, Villanova School of Business. 800 Lancaster Avenue, Villanova, PA 19085, US. E-mail: pankaj.patel@villanova.edu.

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1. *Introduction*

As a measure of austerity in the aftermath of the Global and Financial Crisis (GFC), the Portuguese government revoked four holidays for both public and private employees: two civilian (Republic Day and Restoration of Independence) and two religious (Corpus Christi and All Saints Day) holidays. The revocation lasted between 2013 and 2015. The move was effective starting in 2013 and was presented as a measure to increase productivity among public employees. However, following the 2011-2014 Troika bailout to Portugal (even though a reversal of revocation measure was not requested in the Memorandum of Understanding), the four holidays were restored by the government in January 2016.

Given the wave of austerity in the European Union during this period, the plausible motivation for canceling the two holidays was to increase the number of working days and thereby lowering labour costs. For instance, according to the OECD (2017), in Portugal labour costs were then lower than in most of Western Europe, although still above the majority of the Eastern European countries. The espoused policy motive of improving labour productivity remains untested. Whether it served a ceremonial purpose or provided economic benefits to State-Owned Enterprises (SOEs) remains an open question.

Therefore, in this paper, we assess to what extent the revocation of the four holidays affected labour productivity of SOEs in Portugal. Moreover, we also study whether such effects are different by SOEs managed by Central Government and those managed by the Local and Regional Government. The variations in institutions, differences in local norms and mores of employees, the flux in the economic vitality of regions and differences in practices between central and regional government could systematically lead to differences in labour productivity differentials from revocation of holidays between SOEs managed by the Central Government versus the Local and Regional Government.

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The remainder of the paper is organized as follows. Section 2 briefly reviews the related literature. Section 3 provides an analytical framework. Section 4 presents the empirical analysis. Section 5 is the conclusion.

2. Literature

Labour productivity measures output produced per unit of labour input, a common measure of single-factor productivity. Whether state ownership of firms is conductive to higher or lower productivity or better or worse profitability, is a recurrent topic in the literature. A survey by Syverson (2011) highlights several possible determinants and relevant factors that directly impact productivity at the micro-level, notably: managerial skills; quality of human capital; information technology; Productivity Spillovers; Competition; Deregulation or Proper Regulation; flexibility of input markets. Related literature on firm productivity, notably González-Páramo and de Cos (2005) also report empirical evidence relating to the hypothesis that public ownership and competition are determinants of firms' productivity, and mention that public ownership has a significant negative effect on productivity.

One could envisage the use of total factor productivity to better assess overall firm's effectiveness. However, that would require a production function per enterprises, which is not feasible for this study (for instance, Brown et al., 2006, conducted related research considering a broad set of financial indicators for state-owned production enterprises (SOE) in Russia, Ukraine, Hungary, and Romania). In addition, several institutional and legal factors can also play a role in the performance of enterprise ownership and management, both for more central government related enterprises and for locally active enterprises (see, for instance, La Porta et al., 1999, on related institutional issues).

Regarding the case of SOE's productivity, for instance, Abramov et al. (2017) studied 117 of the largest firms in Russia for the period 2006-2014 and reported that increases in the

size of direct government ownership lead to lower labour productivity and profitability and that SOE enterprises tend to perform worse on average than private firms.

Related to the Portuguese revocation of the four public holidays the underlying rationale was to increase labour hour input, resulting from the four additional workdays. Greater expected production or services provided due to additional workdays were also expected to increase firm output, and thereby, labour productivity. Revocation could also have spillover and economic multiplier effects in the economy.

However, it is also plausible that the desired effects also may not be realized. SOEs are inefficiently managed and that might explain the lower efficiency of SOEs (Vernon and Aharoni, 2014). Additional four working days may not necessarily lead to meaningful labour productivity improvements. Behaviourally, employees may resent working four additional days without additional pay and due to the generally lower competitive pressures faced by SOEs, the intended gains may not come to fruition. Overall, whether revocation of holidays improved labour productivity, the much-touted policy change, remains untested.

3. Analytical framework

One can measure labour productivity by computing the output produced per unit of a labour input used. Typically, producer data do not provide measures of output quantities. Hence, as a starting point, and to discuss and assess briefly the theoretical underpinning of the path of labour productivity, Y/L (Y – using sales and services revenues as a proxy for firm output in our case; L – labour force) one needs to compute the total derivative of Y/L:

$$d\left(\frac{Y}{L}\right) = \frac{\partial(Y/L)}{\partial Y}dY + \frac{\partial(Y/L)}{\partial L}dL \qquad (1)$$

$$d\left(\frac{Y}{L}\right) = \frac{1}{L}dY + \left(-\frac{Y}{L^2}\right)dL \qquad (2)$$

$$d\left(\frac{Y}{L}\right) = \frac{dY}{L} - \frac{Y}{L}\frac{dL}{L} \tag{3}$$

which for small changes is,

$$\Delta\left(\frac{Y}{L}\right) = \frac{\Delta Y}{L} - \frac{Y}{L}\frac{\Delta L}{L}. \tag{4}$$

Based on this framework we can bring the assessment to the empirical dataset using a panel analysis framework. Therefore, the following reduced-form panel data specification is estimated:

$$YL_{it} = \beta_t + \beta_i + Revoked_{it} + (Revoked * Central)_{it}\beta_1 + Z'^{\beta_2}_{it-1} + NUTS_{it} + \varepsilon_{it}, \tag{5}$$

where β_t denotes time (year) effects to control for global common shocks, i denotes the firm; and β_i denotes the firm effects to control for firm time-invariant characteristics. ε_{it} is a disturbance term satisfying standard assumptions.

Our dependent variable, YL_{it}, is labour productivity and $Central_{it}$ is a dummy variable (=1) if the SOE is managed at the level of the central government, and the SEOs managed by the local and regional governments are coded as 0. $Revoked_{it}$ is a dummy flagging the years 2013-2015 of the cancellation of the holidays. Z_{it} is a vector of other controls that may affect labour productivity, and $NUTS_{it}$ are regional dummies to distinguish among Portugal's Territorial Units for Statistics (comprising seven regions).

4. Empirical analysis

4.1. Data

We test for the association between the revocation of four holidays and labour productivity in Portuguese SEOs, and the increase in the number of working days, following a government measure of revoking some holidays. Our data comes from Informa D&B and includes the entities with available information between 2010 and 2018. The data includes 262

SOEs of which 158 belong to the local government sub-sector, and the remaining 104 are owned and managed by the central government.

Table 1 presents the distribution of the SOEs, per sector, using "*código das atividades económicas*- CAE", the broad structure letter-based sections for industries. Among the 262 SOEs, Water supply; Sewerage, Waste Management, and Remediation Activities have among the largest shares at 17.9% for the sample (n= 47; CAE code letter =E), followed by Human Health and Social Work Activities at 12.6% of the sample (n=33; CAE code letter =Q) and Art, Entertainment and Recreation at 12.2% of the sample (n=32, CAE code letter= R). The smallest share is for Electricity, Gas, Steam and Air Conditioning Supply and Other Service Services at 0.8% of the sample each (n=2; CAE code letter=D and S, respectively) and Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles at 0.4% of the sample (n=1; CAE code letter= G).

[Table 1]

Table 2 presents the distribution of the SOEs, per Region, using the Nomenclature of the European Union Territorial Units for Statistics or NUTS 2 (*Nomenclatura das Unidades Territoriais para Fins Estatísticos*). The largest share of SOEs is in the Lisbon and Tagus Valley region with 32.1% of the sample (n=84) followed by the North region with 16.8% of the sample. The smallest share of SOE is in the islands of Azores and Madeira, with 5.3% (n=14) and 1.1% (n=3) of the sample, respectively.

[Table 2]

As a starting point, it is useful to take a look at a couple of examples regarding the development of labour productivity in the context of the initial framework described in section 3. Therefore, Figure 1 illustrates labour productivity for three SOEs. As expected, Figure 1 shows the relevance of both the size of the labour force and the level of output itself for

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productivity. Additionally, it is possible to notice relevant changes around the period 2013-2015, when several holidays were revoked.

[Figure 1]

Also, in Table 3A we can observe, for instance, the existence of a positive correlation between labour productivity and the fact that a particular SOE belongs to the central government sub-sector. This is in line with the illustrations provide in Figure 1 where the increase in labour productivity is picked up in the SOE more linked to the Central Administration sub-sector (the example of Portugália Airlines, a subsidiary of TAP Air Portugal, jointly run by private institutional investors and by public management), while that is not the case in the SOEs more directly linked to the Local government sub-sector (EPAL, part of AdP – Águas de Portugal, and APDL, in the example). On the other hand, the occurrence of the revoked holidays alone does not correlate with labour productivity. Moreover, Tabl3 3B shows also some heterogeneity in the firm sample, notably in terms of labour productivity.

[Table 3A and Table 3B]

Variables

Dependent variable. The dependent is labour productivity calculated as the natural logarithm of the ratio of sales and services revenues to employees (labour force), or in other words, the output produced per unit of a labour input used. This is in line with equation (4) in the methodological framework.

Independent variables. The variable of interest Revoked holidays, which is a dummy variable equal to one of the years in the analysis is 2013, 2014 and 2015, and equal to zero the rest of the period.

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Moderator variable. Central is a dummy variable that equals one if the SOE belongs to the state´s central administration and equal to zero if it belongs to the local government sub-sector. This variable will be used as an explanatory variable, to capture a level effect, and also interacted with the variable "Revoked", for a possible slope effect.

Control variables. We use a set of control variables: the number of employees, the natural logarithm of assets, the ratio of salaries per employee and the current ratio. We also add industry and regional time trends.

For the regression analysis, we run a random effects panel analysis with industry time trends and region time trends in all specifications. In Model 1, we start by introducing the direct effect for the Revoked holidays and the moderator effect of being a SOE belonging to the state´s central administration. Then, in Model 2 we introduce the Region dummies, using the Nomenclature of Territorial Units for Statistics or NUTS 2 (5 mainland regions and the 2 autonomous regions of Azores and Madeira). In Model 3 we add the remaining set of controls. Then, in Model 4, and following up on equation 4, we use the difference in labour and the difference in sales and services revenues. In Model 5 we add the regional dummies and finally, in model 6 we add the reaming set of control variables.

4.2. Results

We assess the results using random effects regression, with industry time trends and region time trends, respectively for the enterprises of the central government sub-sector and of the local government sub-sector. This disaggregation is important since the enterprises managed by the two sub-sectors are somewhat different, according to some relevant variables such as the number of employees, liabilities, equity, or net income (see Table 4). Indeed, the SOE from the central government has on average a larger dimension, both in terms of employees and in terms

of sales and services revenues (see also the additional information in the Appendix regarding firm heterogeneity per variable).

[Table 4A and Table 4B]

The results in Table 5 show the effects relative to non-central SEO during the non-revocation period. During the non-revocation period, there was no substantive labour productivity difference between central and non-central SEOs (Model 6, b = 0.656) was significantly higher, in other words, central SOEs were substantially more productive than non-central SEOs. During the revocation period, the non-central SEO (Revoked = 1, Central SOE = 0) had no meaningful improvement in labor productivity relative to non-revocation period (Revoked = 1, Central SOE = 0). The central SOE, had a higher labor productivity (=0.691, mean margins estimate = 11.2985) relative to non-revocation period (=0.656, mean margins estimate = 11.2637). The difference in productivity for central SEOs before and after the revocation translates to 0.0348 (11.2985 - 11.2637), or exp(0.03482) = 1.04 Euros per employee. We consider this effect to be negligible, and it seems that the effects of revoked holidays were ceremonial and not economically meaningful.

[Table5]

5. Conclusion

During the European debt crisis, leaders in Portugal took a variety of austerity measures. In this paper we focused on a policy that was initiated and later revoked, allowing us to assess the effect of revocation on the SOEs during 2013 and 2015. Though most austerity measures affect the population, treatment groups are difficult to discern. The current design allows us to exploit the average population differences in treatment between central and non-central SOEs. Our results show that the effects of the revocation on either SOE types were non-existent.

The lack of economic benefits does not imply that the policy was a failure. Policymakers adopt policies for social, psychological and institutional reasons, in addition to the economic benefit from policies. Perhaps the holiday revocation was one such non-economic policy that may be a precursor to inducing more discipline among SOE employees in the long-term and impact work culture in such firms. Our data do not allow us to discern these effects, however, our findings do make an economic case for the lack of efficacy of this policy during the period of analysis. We hope that the findings are informative in contemplating related policies on public employees in SOEs.

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Figure 1 – Labour productivity

1a: EPAL - EMPRESA PORTUGUESA DAS ÁGUAS LIVRES, S.A.

1a.1

1a.2
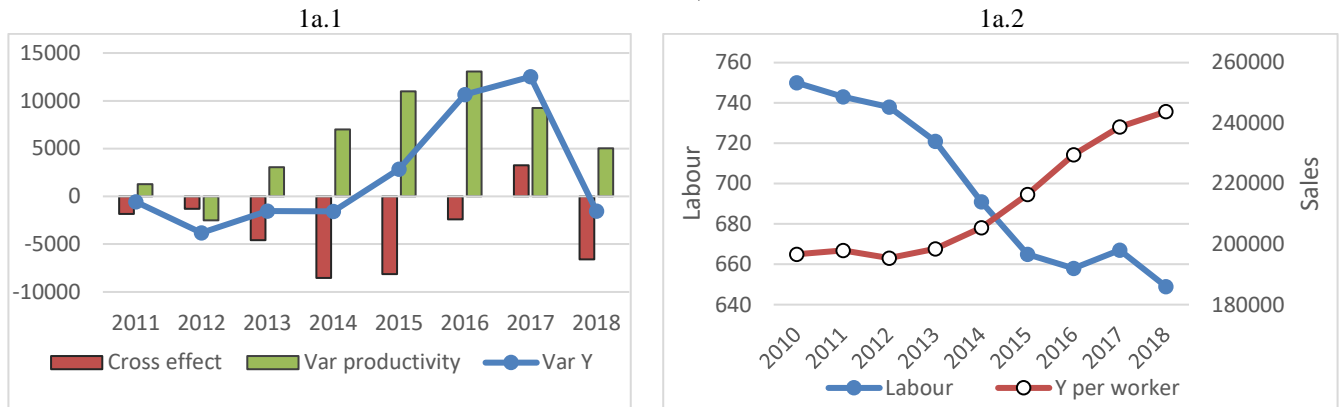
1b: PORTUGÁLIA - COMPANHIA PORTUGUESA DE TRANSPORTES AÉREOS, S.A.

1b.1

1b.2
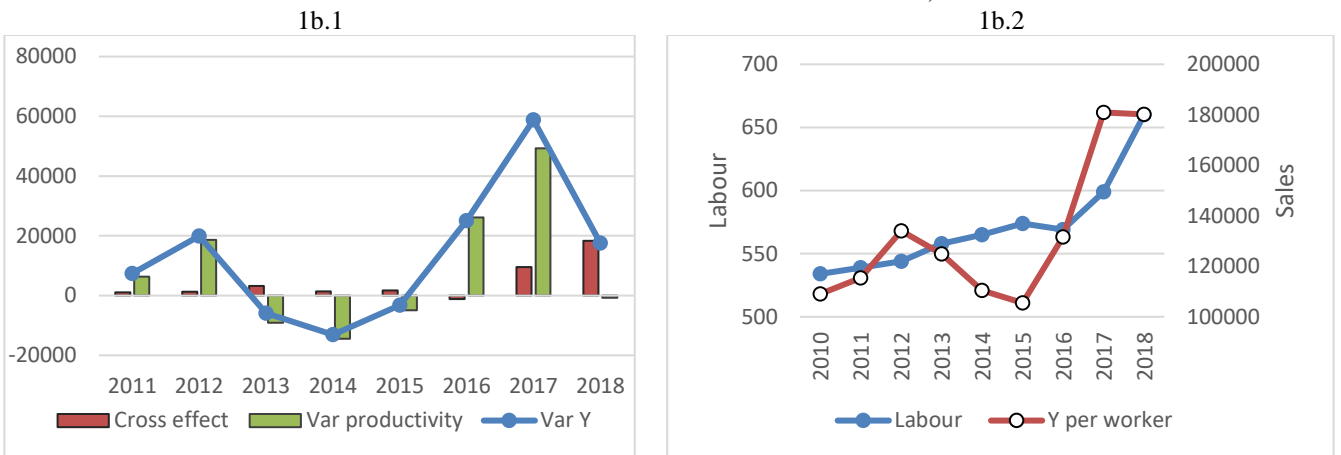
1c: APDL - ADMINISTRAÇÃO DOS PORTOS DO DOURO, LEIXÕES E VIANA DO CASTELO, S.A.

1c.1

1c.2

Source: authors' calculations.

Table 1 – Firm distribution by industry broad structure letter sections classification firm distribution

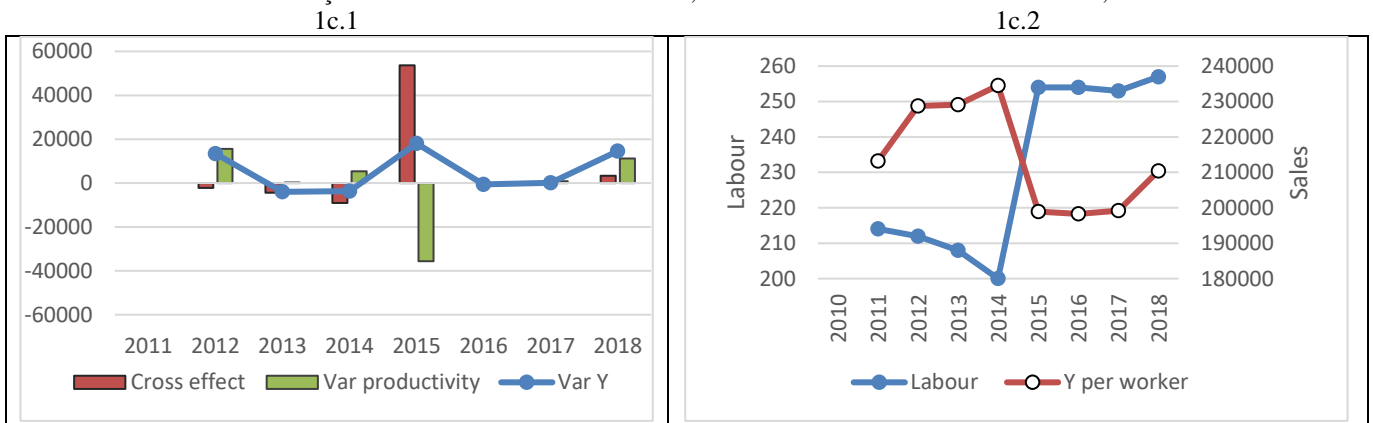| Industry Letter	Description	Number of firms	% Total
A	Agriculture, Forestry, and Fishing	4	1.5%
C	Manufacturing	8	3.1%
D	Electricity, Gas, Steam and Air Conditioning Supply	2	0.8%
E	Water supply; Sewerage, Waste Management, and Remediation Activities	47	17.9%
F	Construction	18	6.9%
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	1	0.4%
H	Transportation and Storage	22	8.4%
I	Accommodation and Food Service Activities	3	1.1%
J	Information and Communication	5	1.9%
K	Financial and Insurance Activities	9	3.4%
L	Real State Activities	23	8.8%
M	Professional, Scientific and Technical Activities	22	8.4%
N	Administrative and Support Service Activities	12	4.6%
O	Public Administration and Defence; Compulsory Social Security	11	4.2%
P	Education	8	3.1%
Q	Human Health and Social Work Activities	33	12.6%
R	Art, Entertainment, and Recreation	32	12.2%
S	Other Service Services	2	0.8%
Total		262	100.0%

Table 2 – Firm distribution by Region (NUTS2 classification)

NUTS2	Number of firms	% Total	% of Total Population
Alentejo	25	9.5%	6.9%
Algarve	18	6.9%	4.3%
Azores	14	5.3%	2.4%
Madeira	3	1.1%	2.5%
Região de Lisboa	84	32.1%	27.7%
Região do Centro	44	16.8%	21.6%
Região do Norte	74	28.2%	34.8%
Total	262	100.0%	100.0%

Table 3A – Correlations

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Labour productivity	1													
2	Revoked Holidays	-0.007	1												
3	Central	0.339***	0.016	1											
4	Employees	-0.003	0.017	0.361***	1										
5	(ln) Assets	0.428***	0.006	0.575***	0.375***	1									
6	Salaries per employee	0.151***	0.01	0.046**	-0.011	0.044**	1								
7	Current ratio	0.080***	-0.001	0.092***	-0.055**	0.017	-0.004	1							
8	PPE	0.083***	0.003	0.170***	0.156***	0.282***	0.008	-0.023	1						
9	Liabilities	0.092***	0.015	0.193***	0.179***	0.341***	0	-0.008	0.201***	1					
10	Equity	0.018	-0.02	0.018	-0.006	0.052**	0.01	0.012	0.042*	0.055**	1				
11	Paid in capital	0.094***	0.006	0.221***	0.235***	0.365***	0.002	0.001	0.303***	0.711***	0.454***	1			
12	Sales and services revenues	0.169***	0.019	0.374***	0.750***	0.442***	0.049**	-0.031	0.179***	0.593***	0.196***	0.551***	1		
13	Net income	-0.033	0	-0.090***	-0.083***	-0.123***	0.005	0.002	0.001	-0.255***	0.657***	0.119***	-0.049**	1	
14	EBITDA	0.100***	-0.001	0.130***	0.049**	0.252***	0.01	-0.006	0.135***	0.633***	0.598***	0.665***	0.494***	0.387***	1

*Notes: N = 2,026 observations, representing 262 SOE, * p<0.10, ** p<0.05, ***p<0.01*

Table 3B – Descriptive statistics

		Mean	SD	Min	Max
1	Labour productivity	10.90	1.6	1.52	18.54
2	Revoked Holidays	0.35	0.48	0	1
3	Central	0.36	0.48	0	1
4	Employees	301.65	797.52	1	7,829
5	(ln) Assets	16.19	2.34	9.64	24.03
6	Salaries per employee	59584.19	1,329,024	0	42,500,000
7	Current ratio	3.97	18.82	0	370.34
8	PPE	28,100,000	14,400,0000	0	336,000,0000
9	Liabilities	148,000,000	942,000,000	4,101.68	24,000,000,000
10	Equity	8,340,000	354,000,000	-4,010,000,000	4,300,000,000
11	Paid in capital	36,900,000	186,000,000	5,000	4,050,000,000
12	Sales and services revenues	21,500,000	59,500,000	96.4	1,320,000,000
13	Net income	-2,300,000	33,900,000	-615,000,000	595,000,000
14	EBITDA	4,040,000	30,600,000	-237,000,000	672,000,000

Notes: N = 2,026 observations, representing 262 SOE. All variables are in Euros, except Employees, that is in units and Central that is a dummy variable.

* p<0.10, ** p<0.05, ***p<0.01

Table 4A – Mean values per Central vs Local SOEs

Means values of....	Central	Local	T value	P-value
Labour productivity	11.63	10.50	-16.197***	0.000
Employees	688.72	87.80	-17.406***	0.000
(ln) Assets	18.01	15.19	-31.613***	0.000
Salaries per employee	14,1439.2	14,360.07	-2.062**	0.039
Current ratio	6.294	2.681	-4.153***	0.000
PPE	61,000,000	9,919,974	-7.760***	0.000
Liabilities	392,000,000	13,200,000	-8.834***	0.000
Equity	17,200,000	3,476,886	-0.832	0.405
Paid in capital	92,100,000	6,409,133	-10.197***	0.000
Sales and services revenues	51,400,000	4,947,688	-18.134***	0.000
Net income	-6,397,811	-36,985	4.056***	0.000
EBITDA	9,370,853	1,097,947	-5.882***	0.000

Table 4B – Mean values per Central vs Local SOEs, with and without Revoked Holidays

Means values of....	Central			Local		
	Revoked	No Revoked	T value	Revoked	No Revoked	T value
Labour productivity	11.68	11.60	-0.595	10.43	10.53	1.280
Employees	729.45	665.47	-0.679	84.05	89.91	0.483
(ln) Assets	18.01	18.00	-0.060	15.17	15.20	0.284
Salaries per employee	185,633.2	116,213	-0.403	15,430.68	13,788.91	-1.209
Current ratio	5.58	6.70	0.613	3.01	2.50	-0.569
PPE	61,600,000	60,700,000	-0.047	9,723,837	10,000,000	0.232
Liabilities	432,000,000	370,000,000	-0.520	14,400,000	12,500,000	-0.443
Equity	-6,814,025	30,800,000	0.828	1,829,025	4,356,003	0.681
Paid in capital	94,900,000	90,500,000	-0.189	5,879,923	6,691,461	0.560
Sales and services revenues	54,900,000	49,400,000	-0.766	4,680,910	5,090,011	0.663
Net income	-6,123,394	-6,554,449	-0.098	-81,399.32	-13,291.09	0.392
EBITDA	9,109,343	9,520,124	0.105	1,026,204	1,136,221	0.704

*Notes: N = 2,026 observations, representing 262 SOE, * p<0.10, ** p<0.05, ***p<0.01*

Table 5– Random effects estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Revoked = 0, Central SOE = 1 (ref. Revoked = 0, Central SOE = 0)	1.021***	1.098***	0.766**	1.084***	1.101***	0.656**
	(0.200)	(0.305)	(0.316)	(0.204)	(0.291)	(0.308)
Revoked = 1, Central SOE = 0	-0.046	-0.041	-0.042	-0.056	-0.035	-0.033
	(0.044)	(0.041)	(0.041)	(0.044)	(0.040)	(0.040)
Revoked = 1, Central SOE = 1	1.076***	1.156***	0.821***	1.089***	1.138***	0.691**
	(0.195)	(0.290)	(0.296)	(0.201)	(0.279)	(0.290)
Assets			0.107**			0.147***
			(0.049)			(0.050)
Current ratio			-0.003**			-0.003**
			(0.001)			(0.001)
Nuts2 : Centre		-64.547	-55.544		-102.099	-90.162
		(60.118)	(59.820)		(65.174)	(64.493)
Nuts2 : Lisbon and Tagus valley		-20.475	-22.540		-51.803	-52.849
		(34.918)	(34.490)		(41.031)	(40.400)
Nuts2: Alentejo		-26.562	-29.558		-30.555	-38.379
		(49.981)	(49.467)		(56.758)	(57.227)
Nuts2: Algarve		-25.376	-26.754		-61.668	-62.796
		(58.829)	(56.297)		(70.918)	(66.618)
Nuts2: Azores islands		-0.205	20.782		-67.948	-39.973
		(55.589)	(59.501)		(54.203)	(52.656)
Nuts2: Madeira Islands		-138.073*	-107.699		-149.576	-100.095
		(79.079)	(75.388)		(96.315)	(86.834)
D. Employees				-0.002***	-0.002***	-0.002***
				(0.000)	(0.000)	(0.000)
D. Sales and services revenues				0.000***	0.000***	0.000***
				(0.000)	(0.000)	(0.000)
Constant	10.459***	-1,121.232*	-1,021.390*	10.449***	-1,305.726**	-1,183.231**
	(0.116)	(669.986)	(608.594)	(0.117)	(626.768)	(586.317)
Year cubic	Yes	Yes	Yes	Yes	Yes	Yes
Industry time trends	Yes	Yes	Yes	Yes	Yes	Yes
Region time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,026	2,026	2,026	1,759	1,759	1,759
Number of SOE	262	262	262	259	259	259

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Nurt2 region base dummy: North of Portugal

Appendix

Table A1 – Mean values per (median values of) Sales and Services

Means values of....	Large	Small	T value	P value
Labour productivity	11.56	10.24	-20.300***	0.000
Employees	574.17	29.14	-16.362***	0.000
(ln) Assets	17.75	14.64	-39.801***	0.000
Salaries per employee	10,4130.3	15,038.1	-1.509	0.131
Current ratio	2.83	5.10	2.716***	0.007
PPE	52,400,000	3,769,231	-7.717***	0.000
Liabilities	258,000,000	38,100,000	-5.289***	0.000
Equity	-2,802,150	19,500,000	1.417	0.157
Paid in capital	61,800,000	12,000,000	-6.101***	0.000
Sales and services revenues	42,100,000	858,862.5	-16.622***	0.000
Net income	-4,616,979	15,707.86	3.080***	0.002
EBITDA	6,455,989	1,628,122	-3.566***	0.000

*** p<0.10, ** p<0.05, ***p<0.01*

Table A2 – Mean values per (median values of) Employees

Means values of....	Large	Small	T value	P value
Labour productivity	10.86	10.94	1.176	0.240
Employees	585.85	16.90	-17.182***	0.000
(ln) Assets	17.25	15.14	-22.670***	0.000
Salaries per employee	19,404.85	99.842.93	1.362	0.173
Current ratio	1.55	6.38	5.824***	0.000
PPE	9,500,000	6,716,933	-6.753***	0.000
Liabilities	245,000,000	50,700,000	-4.673***	0.000
Equity	-6,759,180	23,500,000	1.923	0.055
Paid in capital	55,200,000	18,500,000	-4.469***	0.000
Sales and services revenues	39,800,000	3,158,480	-14.546***	0.000
Net income	-3,876,820	721,335.8	2.095**	0.036
EBITDA	6,149,263	1,930,684	-3.113***	0.002

*** p<0.10, ** p<0.05, ***p<0.01*

Table A3 – Mean values per (median values of) Assets

Means values of....	Large	Small	T value	P value
Labour productivity	11.46	10.34	-16.848***	0.000
Employees	558.64	44.67	-15.318***	0.000
(ln) Assets	18.11	14.28	-63.662***	0.000
Salaries per employee	103,888.3	15,280.1	-1.501	0.134
Current ratio	3.64	4.30	0.788	0.431
PPE	54,700,000	1,496,168	-8.462***	0.000
Liabilities	249,000,000	1,748,704	-7.075***	0.000
Equity	153,300,000	1,344,868	-0.890	0.374
Paid in capital	72,500,000	1,263,333	-8.804***	0.000
Sales and services revenues	41,000,000	1,846,654	-15.726***	0.000
Net income	-4,599,280	1,991.17	3.056***	0.002
EBITDA	7,891,010	193,101.3	-5.713***	0.000

*** p<0.10, ** p<0.05, ***p<0.01*

EconPol Europe

EconPol Europe - The European Network for Economic and Fiscal Policy Research is a unique collaboration of policy-oriented university and non-university research institutes that will contribute their scientific expertise to the discussion of the future design of the European Union. In spring 2017, the network was founded by the ifo Institute together with eight other renowned European research institutes as a new voice for research in Europe. A further five associate partners were added to the network in January 2019.

The mission of EconPol Europe is to contribute its research findings to help solve the pressing economic and fiscal policy issues facing the European Union, and thus to anchor more deeply the European idea in the member states. Its tasks consist of joint interdisciplinary research in the following areas

1) sustainable growth and 'best practice',

2) reform of EU policies and the EU budget,

3) capital markets and the regulation of the financial sector and

4) governance and macroeconomic policy in the European Monetary Union.

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