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To what extent do exemptions from social security contributions affect firm growth, profitability growth, and export intensity?

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Contents

- The main research questions of the thesis
- Some results from the first chapter

Motivations

- The high burden for the public budget of the reduction of social security contributions (RSSCs) in France.
- A lot remains to be done to understand the possible effects and the transmission canals of RSSCs on firm performance.
- The use of more recent and robust econometric methods to analyze these effects [Canay (2011) and Galvao, (2011)].

Plan and methodology of the thesis

- Four chapters analyzing the effect of the RSSCs on:
  - Quarterly employment growth at the establishment level (mainland France and overseas regions).
  - Annual employment growth for mainland firms.
  - Annual profitability growth of mainland firms.
  - Firm export intensity of mainland firms.
- Datasets used:
  - ACOSS during he period 2004-2011
  - CLAP (establishments and firm level data) 2004-2010
  - Diane during the period 2004-2011

First Chapter: application to the overseas regions data

To what extent do exemptions from social security contributions affect firm growth? New evidence using quantile estimations on panel data

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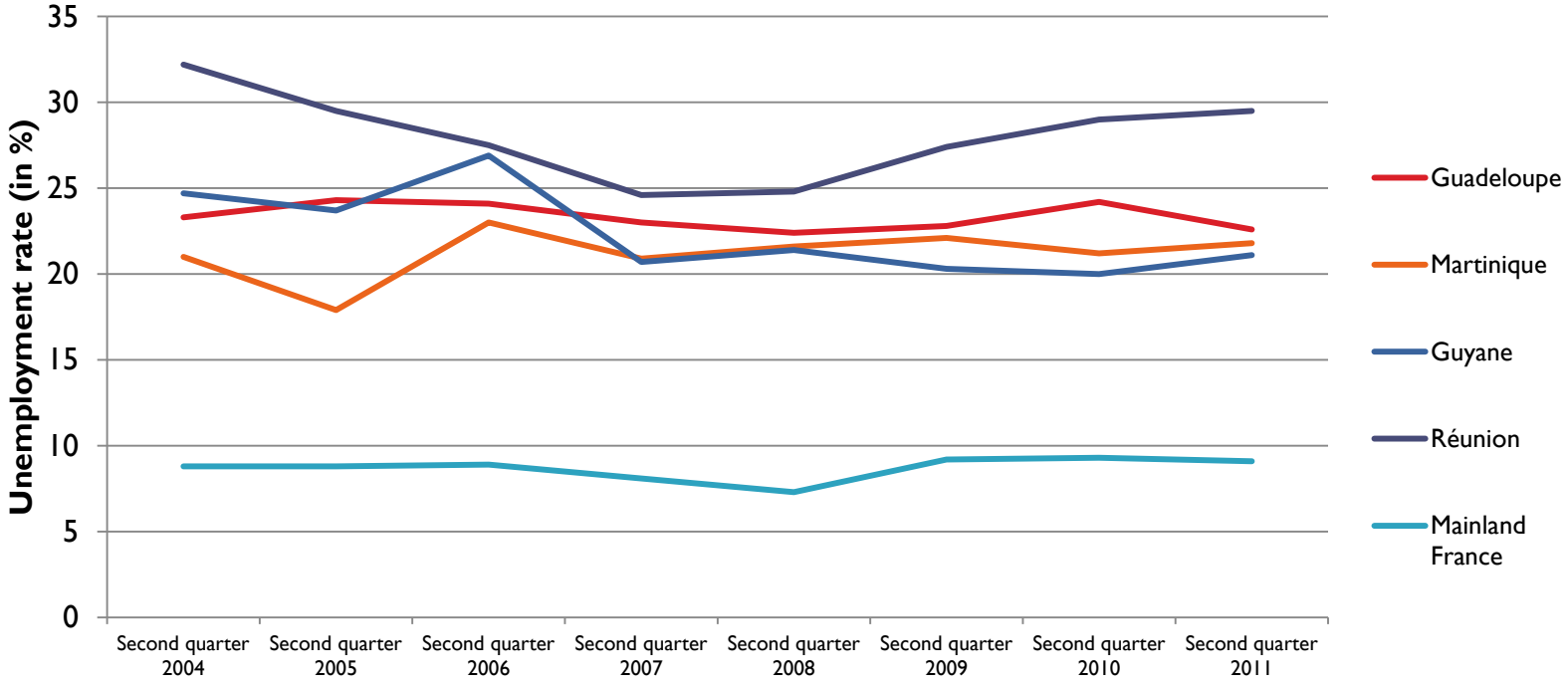
Specific policy for the overseas regions

Figure II: Evolution of the unemployment rate between 2004 and 2011 in mainland France and overseas regions



Source: INSEE

The policies implemented between 2004 and 2010

- Target low wage workers.
- Benefit more to small size establishments.
- Focus only on some industries and areas.

Research questions

- What is the effect of reducing labor cost on establishments growth in overseas regions?

- Is that effect is the same on every point of the distribution of employment growth rate?

Empirical literature: two fields of research

- Firm growth literature:
  - Most of establishments and firms keep the same size on a given period. Only a minority experience an increase or a decrease in their number of employees (Bottazzi and Secchi, 2006; Coad, 2007, 2010; Coad et Holzl, 2010; etc.).
  - Firm age and size affect negatively employment growth (Liu et al., 1999 ; Oliveira and Fortunato, 2006; etc.)
  - Financial constraints hamper firm growth (Yazdanfar, 2012; etc.).
  - Subsidies affect positively firm growth, etc.
- Evaluation policy literature:
  - Brings evidence about a negative relationship between firm growth and labor cost.
  - Removing exemptions induces a decrease in the number of people employed in private companies (Baudin et al., 2009; Cahuc, 2003; etc.
  - RSSCs facilitates the hiring of workers and thus causes a net job creation (Bunel and L'Horty, 2009, 2010, 2011; Crépon and Desplatz, 2001 etc.)

A quarterly model

An extended firm growth model:

$$Growth_{it} = \beta_0 + \beta_1 Size2_{it} + \beta_2 Size3_{it} + \beta_3 Size4_{it} + \beta_4 \ln Age_{it}$$
$$+ \beta_5 Intens_{it} + \beta_6 RSSC_{it} + \beta_7 RSSC_{it} * Q_2 + \beta_8 RSSC_{it} * Q_3$$
$$+ \beta_9 RSSC_{it} * Q_4 + \beta_{10} Q_2 + \beta_{11} Q_3 + \beta_{12} Q_4 + \alpha_i + \varepsilon_{it}$$

Where: $Growth_{it} = \ln Empl_{it} - \ln Empl_{it-1}$ T=1,…, 32. and i=1,…4967.

<u>The sample</u>:

1. We matched ACOSS and CLAP databases and removed missing data: 11050 establishments during the period 2004-2011.
2. We removed wrong data ⟶ 9331 establishments.
3. We controlled for M&A ⟶ 4967 (balanced panel).

Structure of the variables

	Mean	Standard error	Median	Minimum	Maximum	Skewness	Kurtosis
Growth*	0.003	0.136	**0.034**	-0.657	1.923	0.699	8.223
Size1	0.681	0.466	**1**	0	1	-0.778	1.605
Size2	0.134	0.340	0	0	1	2.152	5.630
Size3	0.129	0.335	0	0	1	2.214	5.902
Size4	0.056	0.230	0	0	1	3.861	15.910
lnAge	4.903	0.666	4.963	0	6.611	-0.835	4.685
Intens	1.787	1.157	**1**	0	11	1.238	4.278
RSSC	0.216	0.092	**0.243**	0	0.373	-0.883	2.738

*: transformed variable

2-Step estimator (Canay, 2011)*

Let's consider:

$$Y_{it} = X'_{it}\beta_{\mu} + \alpha_i + u_{it} \qquad \text{where} \qquad E(u_{it} / X_i, \alpha_i) = 0$$

Step 1 : computation of the fixed effects component $\hat{\alpha}_i \equiv E_T\left[Y_{it} - X'_{it}\hat{\beta}_{\mu}\right]$ with

$E_T(.) = T^{-1}\sum_{t=1}^{T}(.)$ and $\hat{\beta}_{\mu}$ the *Within* estimator of β_{μ}

Step 2 : computation of the transformed variable: $\hat{Y}_{it} \equiv Y_{it} - \hat{\alpha}_i$

The optimization program is then :

$$\hat{\beta}(\tau) \equiv \arg\min_{\beta \in \Theta} E_{nT}\left[\rho_{\tau}\left(\hat{Y}_{it} - X'_{it}\beta\right)\right]$$

Canay, I. A., 2011. A simple approach to quantile regression for panel data. *Econometrics journal,* 14(3), pp. 368-386.

Results

VARIABLES	10% Growth	25% Growth	50% Growth	75% Growth	90% Growth
Size2	-0.0836***	-0.127***	-0.0879***	-0.0467***	-0.105***
	(0.00226)	(0.00113)	(0.000436)	(0.000907)	(0.00241)
Size3	-0.107***	-0.171***	-0.152***	-0.127***	-0.196***
	(0.00171)	(0.000679)	(0.000346)	(0.000650)	(0.00173)
Size4	-0.127***	-0.202***	-0.197***	-0.185***	-0.265***
	(0.00169)	(0.000782)	(0.000561)	(0.000943)	(0.00223)
lnAge	0.0115***	-0.00144***	-0.00890***	-0.0142***	-0.0404***
	(0.00114)	(0.000218)	(6.06e-05)	(0.000173)	(0.00134)
Intens	**-0.00893*** **	**-0.00209*** **	**0.00157*** **	**0.00583*** **	**0.0125*** **
	(0.000653)	(0.000169)	(5.66e-05)	(0.000158)	(0.000677)
RSSC	**0.0838*** **	**0.0652*** **	**0.0346*** **	**0.0146*** **	**-0.0341** **
	(0.0170)	**(0.00450)**	**(0.00146)**	**(0.00245)**	**(0.0143)**
RSSCxQ2	**0.0228**	**-0.0221*** **	**-0.0103*** **	**-0.0210*** **	**-0.0303**
	(0.0236)	**(0.00587)**	**(0.00184)**	**(0.00406)**	**(0.0214)**
RSSCxQ3	**0.0683*** **	**-0.00167**	**-0.00561*** **	**-0.0212*** **	**0.0216**
	(0.0239)	**(0.00543)**	**(0.00204)**	**(0.00430)**	**(0.0224)**
RSSCxQ4	**0.0412* **	**-0.0126** **	**-0.0108*** **	**-0.0211*** **	**0.0281**
	(0.0235)	**(0.00528)**	**(0.00179)**	**(0.00329)**	**(0.0195)**
Q2	0.0165***	0.00895***	0.00314***	0.00643***	0.0148***
	(0.00411)	(0.00141)	(0.000522)	(0.00114)	(0.00431)
Q3	-0.00299	0.00250*	0.00194***	0.00701***	0.0130***
	(0.00442)	(0.00136)	(0.000572)	(0.00117)	(0.00438)
Q4	0.0117***	0.00705***	0.00380***	0.00683***	0.00951***
	(0.00422)	(0.00133)	(0.000507)	(0.000904)	(0.00335)
Constant	-0.152***	0.0208***	0.0770***	0.111***	0.346***
	(0.00627)	(0.00160)	(0.000504)	(0.00109)	(0.00767)
Number of observations	153,977	153,977	153,977	153,977	153,977
Number of establishments	4,967	4,967	4,967	4,967	4,967
Pseudo R^2	0.0997	0.3037	0.2884	0.1449	0.1297

Results according to size classes

	10%	25%	50%	75%	90%
VARIABLES	Growth	Growth	Growth	Growth	Growth
1 ≤Size<11					
Intens	**-0.0259*** **	**-0.00253*** **	**0.00180*** **	**0.00655*** **	**0.0296*** **
	(0.00110)	(0.000242)	(5.95e-05)	(0.000225)	(0.00121)
RSSC	**0.328*** **	**0.0608*** **	**0.00410*** **	**-0.0290*** **	**-0.266*** **
	(0.0390)	(0.00754)	(0.00136)	(0.00367)	(0.0331)
Number of observations	108,345	108,345	108,345	108,345	108,345
Number of establishments	3,495	3,495	3,495	3,495	3,495
11 ≤Size<20					
Intens	0.00139	-8.32e-05	**0.00256*** **	**0.00588*** **	**0.00662*** **
	(0.00145)	(0.000729)	(0.000293)	(0.000720)	(0.00128)
RSSC	0.0196	**0.0713*** **	**0.0598*** **	**0.105*** **	**0.128*** **
	(0.0361)	(0.0170)	(0.00710)	(0.0277)	(0.0295)
Number of observations	18,197	18,197	18,197	18,197	18,197
Number of establishments	587	587	587	587	587
20≤Size<50					
Intens	-8.54e-05	8.09e-05	**0.00110*** **	**0.00279*** **	**0.00270*** **
	(0.000848)	(0.000393)	(0.000290)	(0.000458)	(0.000948)
RSSC	0.0354	**0.101*** **	**0.122*** **	**0.138*** **	**0.168*** **
	(0.0256)	(0.0111)	(0.00801)	(0.0147)	(0.0271)
Number of observations	19,313	19,313	19,313	19,313	19,313
Number of establishments	623	623	623	623	623
50≤Size					
Intens	-0.000439	-0.000361	-6.60e-06	0.000719	0.000469
	(0.000877)	(0.000372)	(0.000317)	(0.000464)	(0.00108)
RSSC	-0.0169	**0.0540*** **	**0.119*** **	**0.162*** **	**0.260*** **
	(0.0326)	(0.0186)	(0.0103)	(0.0142)	(0.0357)
Number of observations	8,122	8,122	8,122	8,122	8,122
Number of establishments	262	262	262	262	262

Conclusions

Reducing the rate of social security contributions has a real effect on establishment growth but :

- **The effects of such a policy vary according to**
  - firm size, sector and localization
  - Establishment growth rate
- **For the whole sample, the effects of exemptions tend** to be
  - negative on the right side of the distribution
  - positive on the left side,
- **This result confirms the idea that the policy implemented**
  - tends to promote jobs creation in successful businesses
  - tends to hamper job destruction in declining ones.
  - tends to advantaged large plants compared to the small ones (total number of employed workers is fewer than eleven)
- **The estimated correlation between growth and exemption rate**
  - is higher for most of the establishments in the manufacturing industry
  - but only for a small part of those in business services with more skilled workers.
  - is positive for almost all regions except of Guadeloupe.
- **Robustness analysis confirms theses results.**

Thank you

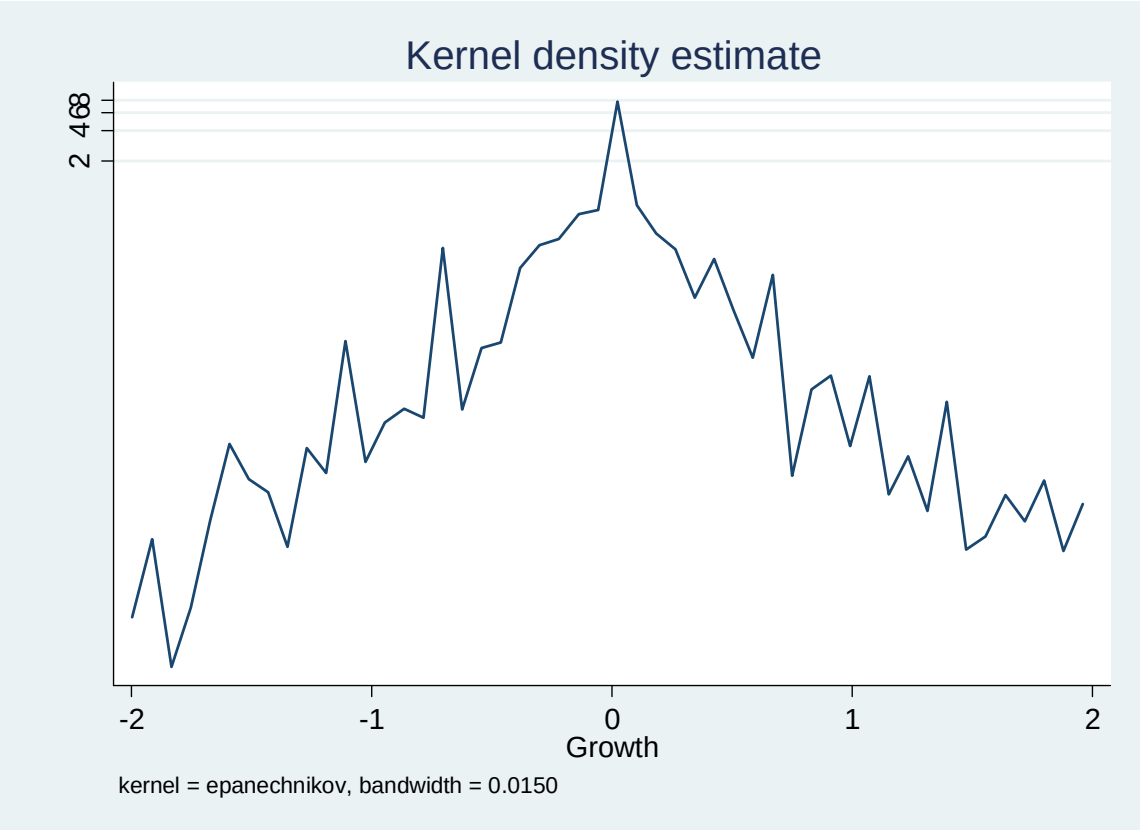
Appendices

Robustness check (I)

N=4967	count	mean	p10	p25	p50	p75	p90	p95
Growth	**153977**	**0.00**	**-0.12**	**0.00**	**0.00**	**0.00**	**0.12**	**0.20**
Size1	153977	0.68	0.00	0.00	1.00	1.00	1.00	1.00
Size2	153977	0.13	0.00	0.00	0.00	0.00	1.00	1.00
Size3	153977	0.13	0.00	0.00	0.00	0.00	1.00	1.00
Size4	153977	0.06	0.00	0.00	0.00	0.00	0.00	1.00
lnAge	158944	4.90	4.06	4.52	4.96	5.38	5.71	5.86
RSSC	**158944**	**0.22**	**0.06**	**0.16**	**0.24**	**0.29**	**0.31**	**0.32**
Intens	158944	1.79	1.00	1.00	1.00	3.00	3.00	4.00
N	158944							

N=9331	count	mean	p10	p25	p50	p75	p90	p95
Growth	**289261**	**0.00**	**-0.15**	**0.00**	**0.00**	**0.00**	**0.15**	**0.29**
Size1	289261	0.78	0.00	1.00	1.00	1.00	1.00	1.00
Size2	289261	0.10	0.00	0.00	0.00	0.00	0.00	1.00
Size3	289261	0.09	0.00	0.00	0.00	0.00	0.00	1.00
Size4	289261	0.04	0.00	0.00	0.00	0.00	0.00	0.00
lnAge	298592	4.87	4.03	4.49	4.93	5.35	5.68	5.84
RSSC	**298592**	**0.23**	**0.09**	**0.19**	**0.26**	**0.30**	**0.31**	**0.32**
Intens	298592	1.69	1.00	1.00	1.00	2.00	3.00	4.00
N	298592							

Robustness check (II)



Robustness check (III)

	FE	OLS	2-STEP				
			10%	25%	50%	75%	90%
VARIABLES	Growth	Growth	Growth*	Growth*	Growth*	Growth*	Growth*
Intens	0.00522***	0.00362***	-0.00398***	-0.00103***	0.00338***	0.00720***	0.0128***
	(0.000461)	(0.000346)	(0.000674)	(0.000156)	(3.57e-05)	(0.000193)	(0.000565)
RSSC	0.0993***	0.00620	**0.0284**	**0.110*** **	**0.0657*** **	**0.0500*** **	**0.0758*** **
	(0.0187)	(0.00976)	(0.0191)	(0.00428)	(0.00164)	(0.00365)	(0.0213)
Number of observations	289,261	289,261	289,261	289,261	289,261	289,261	289,261
Number of establishments	**9,331**	**9,331**	**9,331**	**9,331**	**9,331**	**9,331**	**9,331**
R^2 Within	0.0169	-	-	-	-	-	-
R^2 Between	0.000626	-	-	-	-	-	-
R^2 Overall	0.00165	-	-	-	-	-	-
R^2	-	0.00349	-	-	-	-	-
Adjusted-R^2	-	0.00345	-	-	-	-	-
Pseudo R^2	-	-	0.0757	0.2710	0.2273	0.1146	0.0985
Fisher	117.6***	93.12***	-	-	-	-	-

*: transformed variable

Results by industry

	10%	25%	50%	75%	90%
VARIABLES	Growth	Growth	Growth	Growth	Growth
Trade and repair of motor vehicles industry					
Intens	**-0.00918*** **	**-0.00190*** **	**0.00149*** **	**0.00479*** **	**0.0115*** **
	(0.00109)	(0.000337)	(9.91e-05)	(0.000252)	(0.000876)
RSSC	**0.117*** **	**0.0587*** **	**0.0243*** **	0.00329	-0.0588
	(0.0318)	(0.0120)	(0.00243)	(0.00420)	(0.0367)
Number of observations	47,895	47,895	47,895	47,895	47,895
Number of establishments	1,545	1,545	1,545	1,545	1,545
Accommodation and food service activities					
Intens	-0.00280	**-0.00303*** **	**0.00228*** **	**0.00744*** **	**0.0136*** **
	(0.00300)	(0.00108)	(0.000322)	(0.00104)	(0.00226)
RSSC	0.219	**0.166*** **	**0.128*** **	**0.147*** **	**0.256* **
	(0.218)	(0.0580)	(0.0202)	(0.0389)	(0.144)
Number of observations	8,122	8,122	8,122	8,122	8,122
Number of establishments	262	262	262	262	262
Manufacturing industry					
Intens	**-0.00391*** **	-0.000832	**0.00235*** **	**0.00469*** **	**0.00763*** **
	(0.00134)	(0.000530)	(0.000218)	(0.000410)	(0.00104)
RSSC	**0.284*** **	**0.180*** **	**0.119*** **	**0.103*** **	0.0732
	(0.0805)	(0.0280)	(0.00878)	(0.0158)	(0.0722)
Number of observations	17,639	17,639	17,639	17,639	17,639
Number of establishments	569	569	569	569	569
Business services industry					
Intens	**-0.0185*** **	**-0.00279*** **	**0.00141*** **	**0.00686*** **	**0.0186*** **
	(0.00249)	(0.000443)	(0.000194)	(0.000491)	(0.00195)
RSSC	**0.211*** **	**0.0346*** **	**-0.0200*** **	**-0.0512*** **	**-0.198*** **
	(0.0670)	(0.00974)	(0.00318)	(0.0109)	(0.0437)
Number of observations	19,313	19,313	19,313	19,313	19,313
Number of establishments	623	623	623	623	623

Results by region

	10%	25%	50%	75%	90%
VARIABLES	Growth	Growth	Growth	Growth	Growth
Guadeloupe					
Intens	**-0.00681*** **	**-0.00187*** **	**0.00245*** **	**0.00665*** **	**0.0129*** **
	(0.00167)	(0.000508)	(0.000220)	(0.000482)	(0.00123)
RSSC	-0.0704	0.00346	**-0.0139*** **	**-0.0290*** **	**-0.0844*** **
	(0.0445)	(0.0108)	(0.00304)	(0.00589)	(0.0316)
Number of observations	29,574	29,574	29,574	29,574	29,574
Number of establishments	954	954	954	954	954
Guyane					
Intens	-0.00140	0.000890	**0.00190*** **	**0.00535*** **	**0.00876*** **
	(0.00175)	(0.00102)	(0.000270)	(0.000688)	(0.00187)
RSSC	**0.0789* **	**0.0989*** **	**0.0734*** **	**0.0759*** **	0.0225
	(0.0475)	(0.0128)	(0.00810)	(0.0116)	(0.0532)
Number of observations	10,478	10,478	10,478	10,478	10,478
Number of establishments	338	338	338	338	338
Martinique					
Intens	**-0.00879*** **	**-0.00233*** **	**0.00153*** **	**0.00534*** **	**0.0112*** **
	(0.00102)	(0.000393)	(0.000122)	(0.000326)	(0.00110)
RSSC	0.0249	**0.0778*** **	**0.0494*** **	**0.0332*** **	0.0303
	(0.0313)	(0.0120)	(0.00249)	(0.00397)	(0.0294)
Number of observations	36,642	36,642	36,642	36,642	36,642
Number of establishments	1,182	1,182	1,182	1,182	1,182
Réunion					
Intens	**-0.0129*** **	**-0.00238*** **	**0.00146*** **	**0.00582*** **	**0.0157*** **
	(0.000961)	(0.000188)	(7.85e-05)	(0.000242)	(0.000952)
RSSC	**0.163*** **	**0.0683*** **	**0.0274*** **	-0.00129	**-0.0981*** **
	(0.0298)	(0.00715)	(0.00227)	(0.00407)	(0.0270)
Number of observations	72,478	72,478	72,478	72,478	72,478
Number of establishments	2,338	2,338	2,338	2,338	2,338