

Bank Specialization in Lending to New Firms

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Conventional view: Banks avoid new firms

Opaqueness and information asymmetries

- Lack of credit history and stable cash flow patterns
- Uncertain business models and unproven management

Lack of collateral

- New firms typically have limited tangible assets to pledge

Shallow business networks

- New firms lack established relationships with suppliers and customers

Actually, many young firms do use bank credit

- U.S.
 - Many new firms in Kauffman Firm Survey rely on external debt, mostly bank credit (Robb and Robinson, 2014; Bustamente and D'Acunto, 2019)
- Europe
 - Half of Italian new firms borrow from banks when they are one year old (Bonaccorsi di Patti and Nigro, 2018)
 - Stable access to bank credit increases survival rate of new Portuguese firms (Farinha, Félix and Santos, 2019)

What we want to find out

1. Do some banks specialize, and develop expertise, in lending to new firms?
2. If so, is this specialization in lending to new firms useful when it is put to the test → removal of firm-entry barriers

What we do

1. Leverage Portugal's staggered removal of entry barriers across municipalities:
 - Empresa Na Hora (ENH): “On the Spot Firm”
 - Increased local firm entry and employment
(Branstetter et al., 2013; Félix and Maggi, 2019)
 - Lowered local quality of new firms
2. Analyze how local pre-existing variation in bank specialization in lending to new firms affects firm entry and performance after the reform



Related literature

1. Benefits of banks' geographical and industry specialization (Blickle, Parlato and Saunders, 2024; Paravisini, Rappoport, and Schnabl, 2023; Degryse et al., 2024)
2. Costly entry regulation hampers firm creation; forces new entrants to be larger (Klapper, Laeven and Rajan, 2006); reduces employment (Bertrand and Kamarz, 2002); and can have high macro costs (Djankov et al., 2002)

- Introduce a novel dimension of bank specialization:
specialization in lending to start-ups

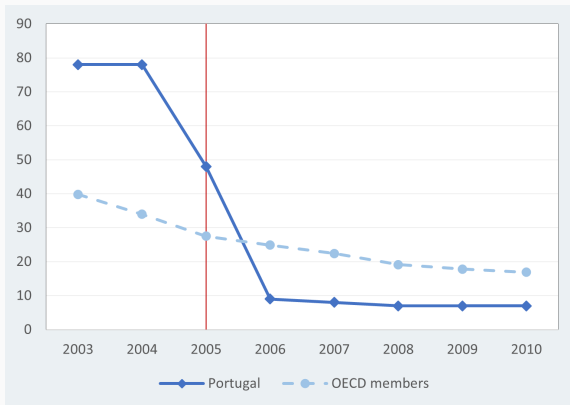
- Introduce a novel dimension of bank specialization: **specialization in lending to start-ups**
- Show that start-ups that obtain their first loan from a startup-specialized bank are **more likely to survive in the long term**

- Introduce a novel dimension of bank specialization: **specialization in lending to start-ups**
- Show that start-ups that obtain their first loan from a startup-specialized bank are **more likely to survive in the long term**
- The knowledge acquired by specialized banks allows them to be **better at screening new borrowers**

Entry deregulation

Entry deregulation in Portugal ('Empresa Na Hora')

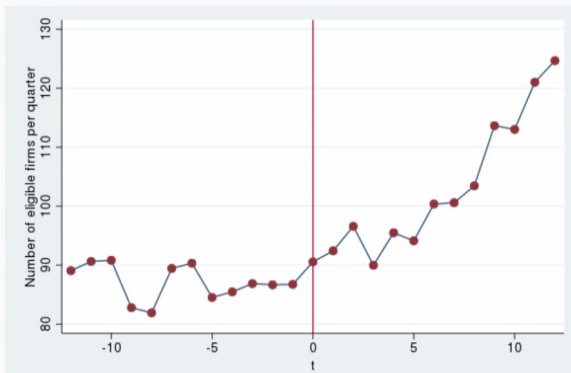
Drastic reduction in red tape required to start a business



Number of days to start a business.
Source: Doing Business, the World Bank

Entry deregulation in Portugal ('Empresa Na Hora')

Implemented in a staggered manner across municipalities, starting in July 2005 and taking advantage of pre-existing infrastructure



Average quarterly number of new firms in municipalities around the ENH introduction, scaled by population

Staggered implementation of the entry deregulation

1. **Exact opening dates of ENH offices**

- Staggered office opening in 84 municipalities (2005-2008)
- 100 control municipalities: mainland, similar in population size (exclude Lisbon, Porto, <10k population)

2. **Statistics Portugal:** Municipality population data

3. **SPAI:** Firm origination dates and industry classification

4. **Central Balance Sheet Database:** Annual firm financial statements, 2006 onward

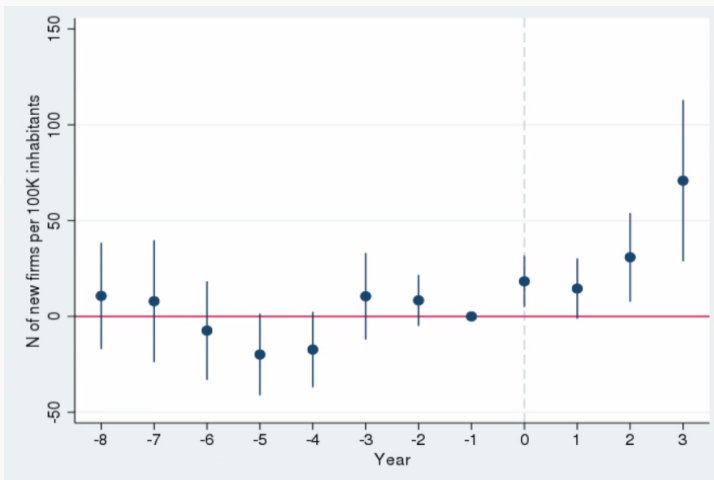
5. **Credit register:** All loans (crucial to capture new firms), 1999 onward

Local entry deregulation and firm creation

No. new firms per 100K inhabitants $_{mt} = \alpha + \beta \text{ENH}_{mt} + \tau_t + \mu_m + \epsilon_{mt}$

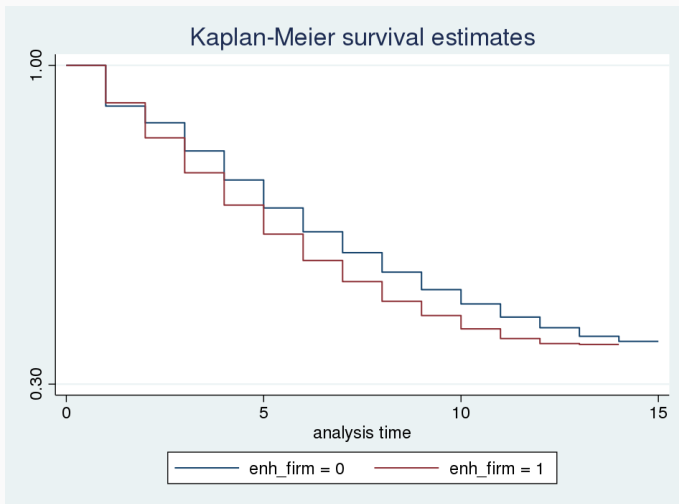
	(1)	(2)	(3)
	Two-Way Fixed Effects	Callaway and Sant'Anna (2021)	Cengiz et al. (2019)
Annual new firms / 100k inhabitants			
ENH	24.26*** (7.92)	24.78*** (8.29)	25.07*** (7.24)
Obs.	1,656	1,656	4,356
R^2	0.778		0.773

Local entry deregulation and firm creation



95% confidence intervals

Weaker firms after local entry deregulation



Note: Kaplan-Meier analysis by firm type: ENH firms (red) vs non-ENH firms (blue) in treated municipalities.

Start-up specialization

Defining start-up specialization

- Define start-ups (new firms) as firms ≤ 4 years old:
“infants” (0–2) and “adolescents” (3–4) (Berger and Udell, 1998)
- RS_{bmt} : relative specialization in start-ups in loan portfolio of bank branch b in municipality m at date t :

$$RS_{bmt} = \underbrace{\frac{\text{N start-up borrowers}_{bmt}}{\text{N borrowers}_{bmt}}}_{\text{individual exposure to start-ups}} - \underbrace{\frac{\text{N start-up borrowers}_{mt}}{\text{N borrowers}_{mt}}}_{\text{average local exposure to start-ups}}$$

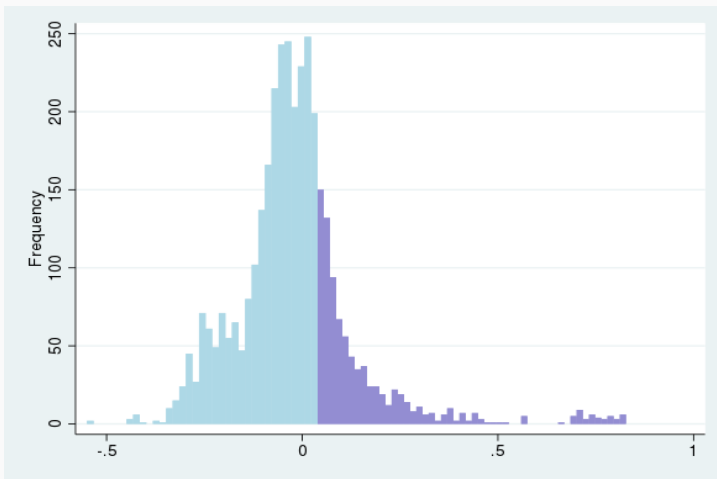
Defining start-up specialization

- Spec_{bmt} is a start-up specialization indicator for a bank branch (Blickle et al., 2024, Duquerroy et al., 2022):

$$\text{Spec}_{bmt} = \mathbf{I}(RS_{bmt} > p75)$$

- Consider the top quartile of the country distribution

Distribution of RS_{bmt} in 2004 (pre-reform)

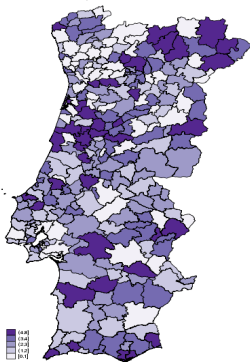


Measuring start-up specialization at the municipality level

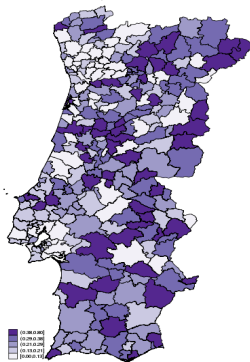
1. Number of start-up specialized branches in a municipality
2. Share of start-up specialized branches among all branches in a municipality
3. Market share of start-up specialized branches in a municipality

Spatial distribution of start-up specialized branches

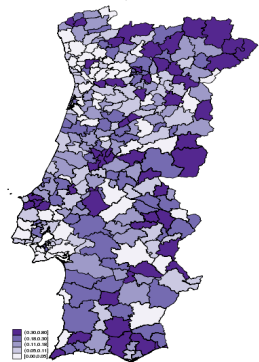
N of specialized branches



Share of specialized branches



Market share of specialized branches



Start-up specialization and firm creation

$$Y_{mt} = \alpha + \beta_1 \text{ENH}_{mt} + \beta_2 \text{ENH}_{mt} \times \text{Spec}_m + \tau_t + \mu_m + \epsilon_{mt}$$

- Y_{mt} : annual no. new firms per 100k inhabitants
- ENH_{mt} : ENH implementation in municipality m in year t
- Spec_m : municipality-level specialization (end 2004)
- τ_t and μ_m : time and municipality fixed effects

Start-up specialization and firm creation

	(1)	(2)	(3)	(4)	(5)	(6)
ENH	0.20 (10.99)	-0.94 (10.98)	9.27 (8.80)	40.64 (35.73)	50.33 (35.23)	68.79* (35.77)
ENH x N specialized branches	8.38** (3.38)			7.89** (3.30)		
ENH x Share spec. branches		120.2** (47.66)			119.0** (47.14)	
ENH x Mrkt sh spec. branches			112.2* (63.46)			121.5* (62.73)
ENH x HHI				-56.56 (142.7)	-138.2 (143.4)	-154.5 (135.2)
ENH x N active SUs/Pop.				-0.033 (0.030)	-0.034 (0.030)	-0.042 (0.032)
+1 SD(Spec)	+13.2	+12.4	+16.2	+12.4	+12.3	+17.5
Observations	1,656	1,656	1,656	1,656	1,656	1,656
Adjusted R-squared	0.749	0.750	0.749	0.749	0.750	0.749
Municipality & Yr FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors clustered at the municipality level in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Specialized branches and lending to new firms

Specialized branches and lending to new firms

$$Y_{bmt} = \alpha + \beta_1 \text{ENH}_{mt} \times \text{Spec}_{bm} + \tau_{bm} + \kappa_{mt} + \epsilon_{bmt}$$

- Y_{bmt} : measures outcome variables at the branch-quarter level
- ENH_{mt} : indicates if the ENH reform has been introduced in municipality m , in quarter t
- Spec_{bm} : 1 if the branch is specialized
- τ_{bm} and κ_{mt} are branch fixed effects and municipality $\times$ quarter fixed effects, respectively

Branch specialization and lending to new firms

Table 4: ENH reform, branch specialization and lending to new firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No. new firm borrowers			No. new firm borrowers/ No. all new borrowers			Credit to new firms/ Credit to all new borrowers		
ENH	0.479*** (0.114)			0.018** (0.007)			0.006 (0.008)		
ENH x Specialized branch	-0.928*** (0.195)	-0.878*** (0.210)	-0.492*** (0.107)	-0.045*** (0.0127)	-0.048*** (0.013)	-0.077*** (0.014)	-0.038*** (0.014)	-0.039*** (0.014)	-0.068*** (0.016)
Specialized branch	0.522*** (0.110)	0.509*** (0.109)		0.055*** (0.007)	0.056*** (0.007)		0.049*** (0.008)	0.050*** (0.008)	
Observations	43,088	43,088	43,088	43,088	43,088	43,088	43,088	43,088	43,088
Adjusted R-squared	0.549	0.531	0.754	0.163	0.167	0.211	0.106	0.112	0.146
Municipality & Quarter & Bank FE	Yes			Yes			Yes		
Mun.-Quarter & Bank FE		Yes			Yes			Yes	
Mun.-Quarter & Branch FE			Yes			Yes			Yes

Branch specialization and credit portfolio performance

	(1)	(2)	(3)
	No. defaulted new firm borrowers / No. new firm borrowers		
ENH	-0.003 (0.007)		
ENH x Specialized branch	-0.0313** (0.0135)	-0.0316** (0.0143)	-0.0272* (0.0148)
Specialized branch	0.0137* (0.0073)	0.0134* (0.0076)	
Municipality & Quarter & Bank FE	Yes		
Municipality-Quarter & Bank FE		Yes	
Municipality-Quarter & Branch FE			Yes
Observations	25,867	25,753	25,613
Adjusted R-squared	0.081	0.100	0.113

Firm survival

Branch specialization and borrower survival

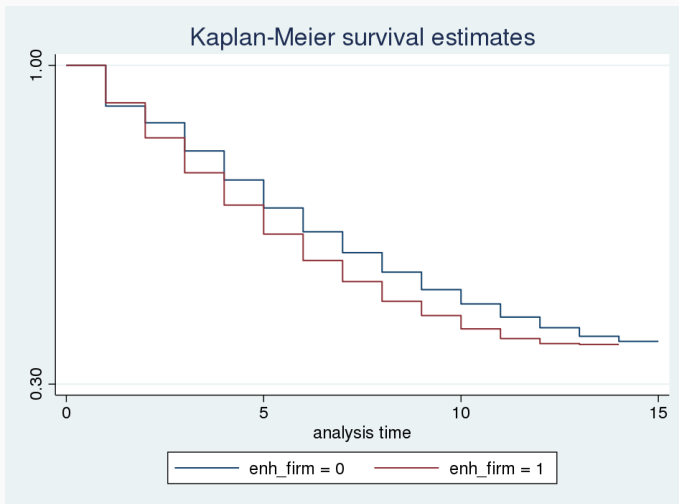
$$S_{fimc}^{age} = \alpha + \beta_1 \text{ENH Firm}_f + \beta_2 \text{ENH Firm}_f \times \text{Spec}_{bm} + \beta_3 \text{Spec}_{bm} + \tau_c + \lambda_{mi} + \epsilon_{fimc}$$

- Cross-sectional model where S_{fimc}^{age} is an indicator variable for firm f in industry i and municipality m originated in the same year (cohort c) existing past age $\in \{5, 10\}$
- Spec_{bm} : indicator for whether a firm obtains in year t its **first bank loan from a start-up specialized branch** b in municipality m
- τ_c and λ_{mi} : origination year (firm cohort) and municipality-industry FE
- Average 5 (10) year start-up survival rate *in the sample of those with a loan* is 65 (45)%

Branch specialization and borrower survival

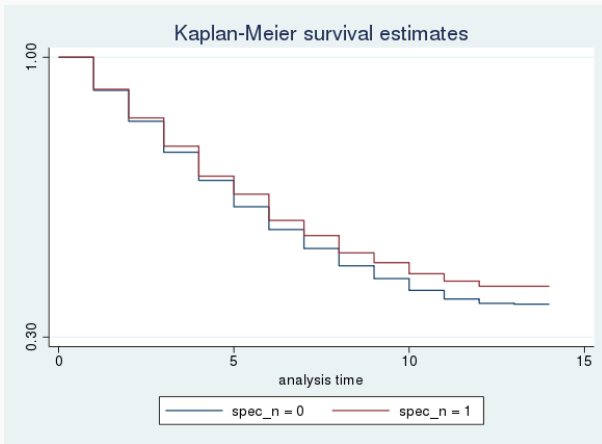
	(1)	(2)	(3)	(4)
	5-year survival		10-year survival	
ENH firm	0.004 (0.010)	0.003 (0.010)	0.002 (0.010)	0.000 (0.010)
ENH firm x Specialized branch	0.051** (0.021)	0.048** (0.020)	0.052** (0.021)	0.047** (0.020)
Specialized branch	-0.003 (0.011)	-0.020* (0.011)	0.002 (0.011)	-0.019* (0.011)
Municipality-Ind FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	Yes	Yes	Yes
Bank FE		Yes		Yes
Observations	36,582	36,578	36,582	36,578
Adjusted R-squared	0.032	0.037	0.041	0.048
<i>Relative to average survival rate</i>	<i>7.8%</i>	<i>7.4%</i>	<i>11.6%</i>	<i>10.4%</i>

ENH firms have a lower survival rate on average...



Note: Kaplan-Meier analysis by firm type: ENH firms (red) vs non-ENH firms (blue) in treated municipalities.

... but less so if they borrow from a specialized branch



Kaplan-Meier analysis of ENH firms' survival rate: specialized branch borrowers (red) vs regular branch borrowers (blue).

Firms are more profitable at early stages if a specialized branch grants the first loan

	ROA at 5 years		ROA at 10 years	
	(1)	(2)	(3)	(4)
ENH Firm	-0.006 (0.008)	-0.006 (0.008)	-0.008 (0.007)	-0.009 (0.007)
ENH Firm x Specialized Branch	0.039*** (0.014)	0.037** (0.015)	0.001 (0.014)	0.004 (0.013)
Specialized Branch	0.001 (0.006)	-0.006 (0.007)	-0.004 (0.007)	-0.002 (0.008)
Muni-Ind & Cohort FE	Yes		Yes	
Muni-Ind & Cohort & Bank FE		Yes		Yes
Observations	23,799	23,795	16,201	16,193
Adjusted R-squared	0.046	0.048	0.047	0.046

Firms employ more workers at mature stages (10 years) if a specialized branch grants the first loan

	(1)	(2)	(3)	(4)
	Ln(Employment)		Δ Employment	
ENH Firm	-0.019 (0.029)	-0.024 (0.029)	0.011 (0.082)	-0.008 (0.081)
ENH Firm x Specialized Branch	0.071 (0.052)	0.093* (0.051)	0.262 (0.167)	0.330* (0.168)
Specialized Branch	-0.014 (0.021)	-0.033 (0.026)	0.032 (0.081)	-0.015 (0.091)
Observations	16,306	16,298	8,789	8,775
Adjusted R-squared	0.095	0.097	0.042	0.045
Muni-Ind & Cohort FE	Yes		Yes	
Muni-Ind & Cohort & Bank FE		Yes		Yes

SE clustered at the municipality level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

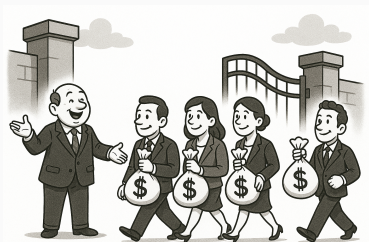
Conclusions

To conclude

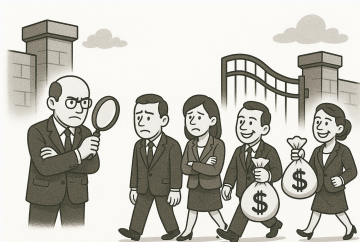
- ➡ Substantial variation between and within banks in their specialization in lending to new firms
- ➡ Spatially staggered entry deregulation increased firm creation by 7% but lowered average firm quality

To conclude

- ☞ Specialized banks change this quantity-quality trade-off
- ☞ Successful entrepreneurship policies may require both lower entry barriers *and* specialized lenders



Non-specialized banks



Specialized banks

Thank you!

Appendices

Additional material

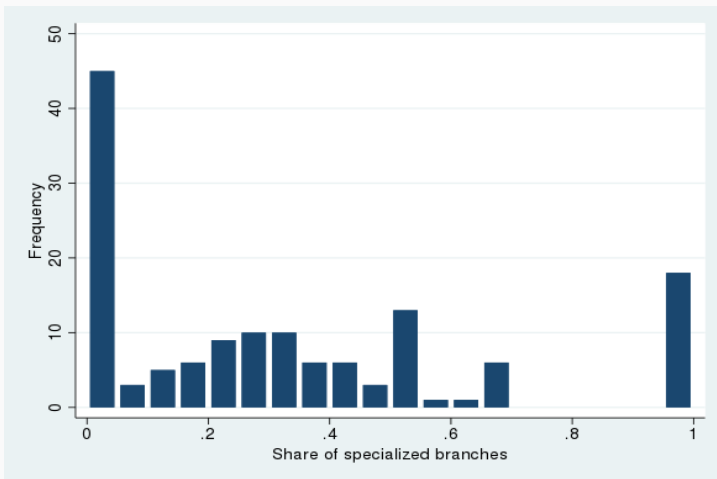
Table 1: Summary statistics

	Count	Mean	SD	Min	p50	Max
<i>Municipality level (2004)</i>						
No. specialized branches	184	2.87	1.76	0.00	3	8
Share specialized branches	184	0.23	0.14	0.00	0.23	0.80
Market share specialized branches	184	0.15	0.14	0.00	0.12	0.64
Herfindahl-Hirschman Index (HHI)	184	0.16	0.06	0.09	0.14	0.44
Active young firms/100k inhabitants	184	886.62	256.34	470.09	857.54	1774.83
Population	184	46,728	52,202	10,032	25,369	371,319
<i>Municipality-year level</i>						
Annual firm entry/100k inhabitants	1,656	346.43	142.97	81.63	323.04	1770.66
<i>Firm-year level</i>						
Bank loan	235,367	0.18	0.38	0.00	0.00	1.00
Leverage	106,989	0.09	0.26	0.00	0.00	1.59
Firm age (months)	235,367	10.06	6.78	0.00	9.00	24.00
Firm size	107,527	10.58	1.60	5.88	10.67	15.14
<i>Firm level</i>						
5-year survival	36,995	0.67	0.47	0	1	1
10-year survival	36,995	0.46	0.50	0	0	1
ENH firm	36,995	0.24	0.43	0	0	1
Specialized branch	36,995	0.14	0.35	0	0	1
Branch size	36,995	17.86	1.61	12.28	17.86	21.73

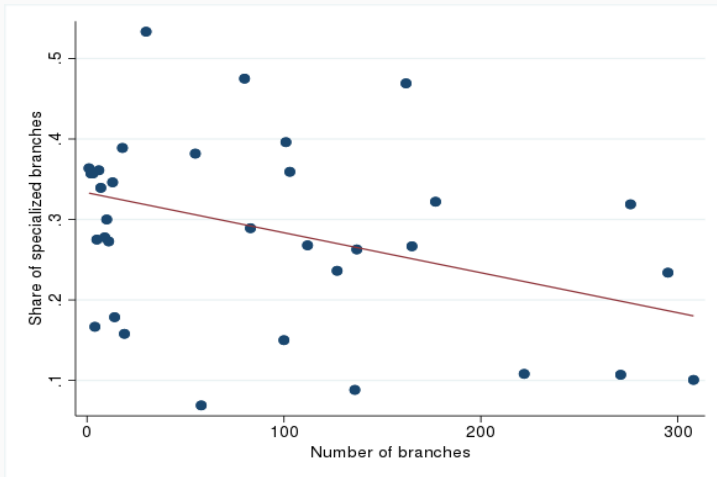
Table 1: Summary statistics

	Count	Mean	SD	Min	p50	Max
Firm age (months) at time of first loan	36,995	12.38	8.84	1	10	45
Net profit/total assets (age 5)	24,261	-0.05	0.28	-1.83	0.00	0.89
EBITDA/total assets (age 5)	24,261	0.03	0.29	-1.59	0.04	1.30
Log no. workers (age 5)	24,443	1.12	0.81	0.00	1.10	7.10
% change no. workers b/w first loan and age 5	13,693	0.51	1.80	-1	0	11
Net profit/total assets (age 10)	16,721	-0.01	0.27	-1.83	0.01	0.89
EBITDA/total assets (age 10)	16,721	0.05	0.28	-1.59	0.04	1.30
Log no. workers (age 10)	16,819	1.13	0.92	0.00	1.10	7.28
% change no. workers b/w first loan and age 10	9,389	0.76	2.37	-1	0	11
<i>Branch-quarter level</i>						
No. new firm borrowers	43,088	2.36	3.80	0	1	22
No. new firm borrowers / No. all new borrowers	43,088	0.37	0.35	0	0.33	1
Credit to new firms / Credit to all new borrowers	43,088	0.33	0.39	0	0.12	1
No. defaulted new firm borrowers / No. new firm borrowers	25,872	0.19	0.29	0	0	1
<i>Bank level</i>						
No. branches	142	24.61	59.59	1	3	308
No. specialized branches	142	6.15	14.60	0	1	88
Share specialized branches	142	0.32	0.33	0	0.26	1

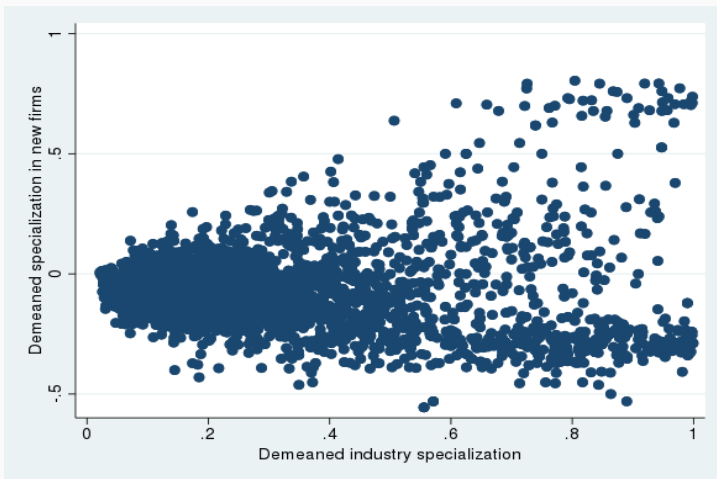
Bank-level distribution of start-up specialized branches



Bank size and start-up specialization



Branch specialization: sector vs. start-ups

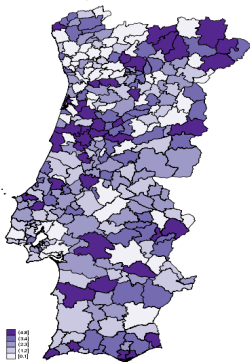


Measuring start-up specialization at the municipality level

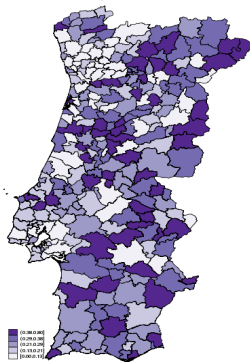
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Spatial distribution of start-up specialized branches

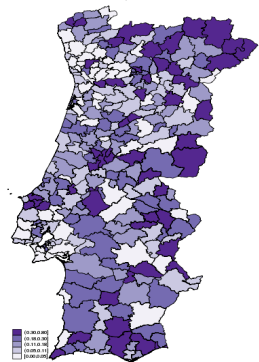
N of specialized branches



Share of specialized branches



Market share of specialized branches



Start-up specialization and firm creation

	(1)	(2)	(3)
ENH	40.64 (35.73)	50.33 (35.23)	68.79* (35.77)
ENH x HHI	-56.56 (142.7)	-138.2 (143.4)	-154.5 (135.2)
ENH x N active SUs/Pop.	-0.0334 (0.0297)	-0.0338 (0.0300)	-0.0419 (0.0321)
ENH x N SuS branches	7.893** (3.296)		
ENH x Share SuS branches		119.0** (47.14)	
ENH x Mrkt share SuS branches			121.5* (62.73)
Constant	343.8*** (0.835)	343.8*** (0.834)	343.8*** (0.842)
Observations	1,656	1,656	1,656
Adjusted R-squared	0.749	0.750	0.749

Credit access

Credit access

$$Y_{fimt} = \alpha + \beta_1 \text{ENH}_{mt} + \beta_2 \text{ENH}_{mt} \times \text{Spec}_m + \gamma X_{fimt} + \tau_t + \mu_m + \lambda_i + \epsilon_{fimt}$$

- Y_{fimt} : measures credit use by firm f in industry i in municipality m at time t :
 1. Loan dummy for bank loan above €5K
 2. Financial leverage (debt/total assets)

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- Y_{fimt} : measures credit use by firm f in industry i in municipality m at time t :
 1. Loan dummy for bank loan above €5K
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- τ_t, μ_m and λ_i are year, municipality and 1-digit industry fixed effects, respectively
- X_{fimt} are firm-level controls (size, age in months)

Credit access

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 2. Financial leverage (debt/total assets)
- τ_t, μ_m and λ_i are year, municipality and 1-digit industry fixed effects, respectively
- X_{fimt} are firm-level controls (size, age in months)
- Sample:
 - Firms created since 2004
 - Panel data: 2004-2008 (or 2006-2008 when adding firm size)

Credit access: Extensive margin

	(1)	(2)	(3)	(4)	(5)	(6)
	2004-2008			2006-2008		
ENH	-0.008 (0.018)	-0.003 (0.018)	0.001 (0.018)	-0.008 (0.032)	-0.004 (0.033)	0.002 (0.035)
ENH x N spec. branches	0.003* (0.002)			0.007*** (0.003)		
ENH x Share spec. branches		0.054** (0.026)			0.097*** (0.036)	
ENH x Mrkt sh spec. branches			0.059** (0.026)			0.050 (0.042)
ENH x HHI	-0.004 (0.084)	-0.043 (0.089)	-0.020 (0.083)	0.051 (0.098)	0.011 (0.105)	0.092 (0.113)
ENH x N active Start-Ups/Pop.	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Firm size				0.104*** (0.002)	0.104*** (0.002)	0.104*** (0.002)
Firm age, months	0.013*** (0.000)	0.013*** (0.000)	0.013*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
+1 SD(Spec) relative to mean (18%)	2.8%	3.7%	3.4%	6.7%	6.7%	
Observations	235,367	235,367	235,367	107,527	107,527	107,527
Adjusted R-squared	0.104	0.104	0.104	0.183	0.183	0.183
Municipality & Yr & Ind FE	Yes	Yes	Yes	Yes	Yes	Yes

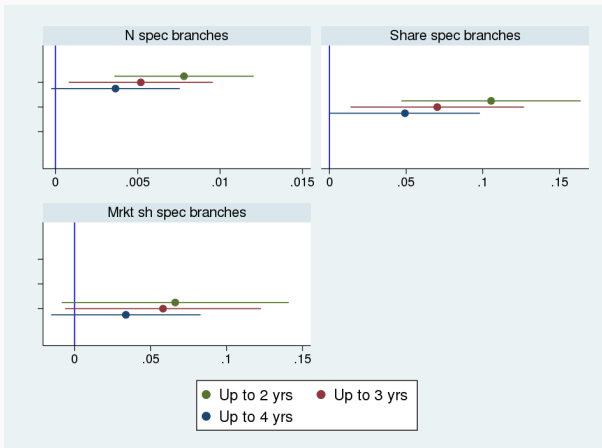
Standard errors clustered at the municipality level in parentheses. *** p<0.01 ** p<0.05 * p<0.1

Credit access: Intensive margin (leverage)

	(1)	(2)	(3)	(4)	(5)	(6)
ENH	0.009 (0.025)	0.010 (0.024)	0.012 (0.024)	0.008 (0.025)	0.009 (0.024)	0.011 (0.024)
ENH x N spec. branches	0.003* (0.002)			0.003* (0.002)		
ENH x Share spec. branches		0.049** (0.022)			0.049** (0.022)	
ENH x Mrkt sh spec. branches			0.048* (0.026)			0.049* (0.026)
ENH x HHI	0.051 (0.119)	0.024 (0.125)	0.054 (0.114)	0.047 (0.119)	0.021 (0.125)	0.050 (0.114)
ENH x N active Start-Ups/Pop	-0.000* (0.000)	-0.000* (0.000)	-0.000** (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000** (0.000)
Firm size				0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)
Firm age, months	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
+1 SD(Spec) relative to mean (10%)	5.5%	6.4%	5.3%	5.5%	6.4%	5.4%
Observations	106,989	106,989	106,989	106,989	106,989	106,989
Adjusted R-squared	0.018	0.018	0.018	0.021	0.021	0.021
Municipality & Yr & Ind FE	Yes	Yes	Yes	Yes	Yes	Yes

Period: 2006-2008. SE clustered at the municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Start-up credit access by age group



Loan dummy dependent variable: Municipality & Industry-Size group-Year FE
95% confidence interval

Credit access: Firm-cluster fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)
	Intensive margin			Extensive margin		
ENH	0.022 (0.036)	0.025 (0.038)	0.028 (0.040)	0.011 (0.021)	0.011 (0.021)	0.011 (0.020)
ENH x N spec. branches	0.007** (0.003)			0.003** (0.002)		
ENH x Share spec. branches		0.100** (0.044)			0.058** (0.023)	
ENH x Mrkt sh spec. branches			0.052 (0.049)			0.061** (0.023)
ENH x HHI	-0.145 (0.129)	-0.181 (0.136)	-0.078 (0.155)	0.001 (0.096)	-0.031 (0.102)	0.018 (0.086)
ENH x N active Start-Ups/Pop	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000*** (0.000)
Firm age, months	0.007*** (0.000)	0.007*** (0.000)	0.007*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
+1 SD(Spec) relative to the mean	6.7%	6.9%		5.5%	7.6%	6.8%
Observations	105,403	105,403	105,403	104,866	104,866	104,866
Adjusted R-squared	0.216	0.216	0.216	0.048	0.049	0.049
Municipality-Ind-Size & Yr FE	Yes	Yes	Yes	Yes	Yes	Yes

Period: 2006-2008. SE clustered at the municipality level in parentheses. *** p<0.01, ** p<0.05, * p<0.1