

Exploring the Effect of Crisis on Cooperatives

A Bayesian Performance Analysis of French Craftsmen Cooperatives

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Particular case of Cooperatives

Cooperatives “are part of the market economy but possess a multidimensionality that enables them to perform in market economies while providing members with a range of tangible and intangible benefits that have the potential to enhance their socio-economic position and voice” (Hannan, 2014)

Resilience of cooperatives

Definition of Resilience

"The ability of the system to withstand either market or environmental shocks without losing the capacity to allocate resources efficiently or to deliver essential services" (Perrings, 2006, p. 418).

- ▶ Better social and economic performances of cooperatives than other businesses (Cheney, 2014 ; Lambru, 2014 ; Bentivogli, 2012 ; Zamagni, 2012 ; Costa, 2016 ; Carini, 2014).
- ▶ Crisis effect may vary by sector and by market context (Birchall, 2013).
- ▶ Supply cooperatives are especially not investigated.

Research Question

Aim

Understand the economic performance of French craftsmen cooperatives during the crisis period.

Question

How effective are they at surviving economic recession ?

Main results

- ▶ Weak impact of Crisis on Turnover ;
- ▶ The magnitude of the crisis effect depend on cooperatives' characteristics.

Data

- ▶ Exhaustive Data regarding French Craftsmen cooperatives (49)
- ▶ 2004-2014
- ▶ Amadeus/Orbis

Methods

- ▶ Efficiency ?
- ▶ Turnover as a proxy of economic performance.
- ▶ Bayesian Analysis fits our sample.
- ▶ Bayesian Model Selection
 - ▶ WAIC and LOO
 - ▶ Transparency → Shinytan

Estimation

- ▶ Production Function
- ▶ Translog Model

$$\ln(\text{Perf}_{i,t}) = \alpha_i + \sum_{k=1}^K \beta_k \ln I_{i,t}^k + \sum_{k=1}^K \beta_{kk} (\ln I_{i,t}^k)^2 + \sum_{k=1 \neq h}^K \beta_{kh} \ln I_{i,t}^k \ln I_{i,t}^h +$$

$$\gamma_1 A_{i,t} + \gamma_2 C_{i,t} + \gamma_3 S_{i,t} + \gamma_4 A.C_{i,t} + \gamma_5 A.S_{i,t} + \gamma_6 C.S_{i,t} + \gamma_7 A.C.S_{i,t} + \mu_i + \epsilon_{i,t} \quad (1)$$

- ▶ Output : Turnover
- ▶ Inputs : Intermediate Consumption, Labor Expense (wages, salaries, benefits), Intangible Assets, Tangible Assets.
- ▶ Control Variables : Age, Sector, Crisis.

Parameter	mean	sd	se_mean	2.5%	50%	97.5%
lnIC	1.235	0.067	0.001	1.103	1.235	1.364
lnLE	-0.165	0.060	0.001	-0.280	-0.165	-0.048
lnIA	-0.028	0.012	0.000	-0.052	-0.028	-0.005
lnTA	0.003	0.016	0.000	-0.029	0.003	0.035
S	-0.033	0.008	0.000	-0.050	-0.033	-0.017
C	-0.018	0.005	0.000	-0.027	-0.018	-0.008
A	-0.001	0.000	0.000	-0.002	-0.001	-0.000
S.C	0.019	0.007	0.000	0.006	0.019	0.032
S.A	0.001	0.001	0.000	0.000	0.001	0.002
C.A	0.001	0.000	0.000	0.000	0.001	0.001
S.C.A	-0.001	0.000	0.000	-0.002	-0.001	-0.000
Intercept	-0.190	0.150	0.002	-0.482	-0.189	0.107

TABLE: Results for the benchmark regression

Age	Sector	Crisis	Impact
Mean	0	0	ref.
Mean	0	1	-0,66%
Mean	1	0	-1,96%
Mean	1	1	-1,93%
Mean - 5 years	0	0	-0,50%
Mean - 5 years	0	1	-0,71%
Mean - 5 years	1	0	-1,92%
Mean - 5 years	1	1	-1,93%
Mean + 5 years	0	0	0,51%
Mean + 5 years	0	1	-0,58%
Mean + 5 years	1	0	-2,00%
Mean + 5 years	1	1	-1,94%

	Estimate	Est.error	l-95% CI	u-95% CI
<i>Elasticities</i>				
Intermediate consumption (IC)	1.5197	0.1252	1.2764	1.7619
Labor expense (LE)	0.1530	0.0684	0.0173	0.2871
Intangible assets (IA)	-0.0019	0.0013	-0.0046	0.0007
Tangible assets (TA)	-0.0130	0.0046	-0.0219	-0.0040
<i>Economies of scale</i>	1.6577	0.1726	1.3204	1.9899

TABLE: Economies of scale and elasticities

Robustness

- ▶ Endogeneity
- ▶ Spatial dimension : GAMM, Radius.

Conclusion

- ▶ Craftsmen cooperatives appear resilient regarding other components of social economy.
- ▶ The magnitude of the returns to scale suggests some evidence against the alleged inexorable trade-off between democracy and efficiency.
- ▶ The crisis negative effect depends on the sector and the experience of the cooperative.

THANK YOU

Questions, remarks?