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Is the Investment Decision Different in Cooperatives and Conventional Firms? A Study on French Data

by

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Background

- **Extraordinary resilience of under-investment hypothesis from Furubotn/ Pejovitch (1970) and Vanek (1977) despite lack of conclusive empirical evidence**

- **Often seen as evidence of under-investment:**

  Worker cooperatives thought to be small and under-capitalised

- **But our descriptive stats in another paper (Fakhfakh et al. 2009) on French firms with 20 employees or more (all worker cooperatives and *representative* sample of conventional firms) 1987-1990, 7 industries in manufacturing, construction and services:**

Sample: about 400 coops and 5,200 conventional firms / year	***Difference not significant***	***Higher in conventional firms***	***Higher in worker cooperatives***
Employment Level	**2 industries**	**3 industries**	**2 industries**
Capital Intensity (K/L)	**4 industries**	**3 industries**	
Rate of Growth of Capital (ΔK/K)	**3 industries**		**4 industries**

Idea

"This horse is dead… Let's give it a decent burial. Let's find a new horse"
(Greg Dow, 2006)

Paper

Uses brand new data set w/ 16 years of data (1989-2004) on French worker coops and conventional firms (all with 20 employees or more) in 7 manufacturing industries, to

- **Provide new "stylised facts"**
- **Estimate standard investment models and test whether worker coops invest less**
- **Allow for possible differences in both investment demand and financial constraints between conventional and labor-managed firms**

Interest of French Case

Mildly successful (1,800 workers' coops) and continuous presence since late nineteenth century,

and some constitutional features that might suggest under-investment possible

Outline

Theory and available evidence

Data

Empirical Specifications and Estimations

Results

Conclusions

Theory and Available Evidence

Under-investment in the labor-managed firm (LMF)

- **In principle, average-income-maximizing LMF has same K demand in equilibrium as conventional firm, assuming same capital markets (Estrin and Jones 1998)**

- **But if capital is owned collectively and LMF has no access to external finance, LMF will not invest if payback period > median member's expected time with the firm (Pejovitch 1969, Furubotn and Pejovitch 1970, Vanek 1977)**

  So LMF will under-invest (and self-destruct or produce under increasing returns to scale) or only invest in projects with inefficiently short payback periods

- **Other investment demand factor: Workers more risk averse than external investors (diversified portfolios, greater wealth)**

Financial constraints

What may appear as under-investment may be due to greater financial constraints in LMFs (e.g., Berman and Berman 1989, Lizal and Svejnar 2002)

esp. if observe K/L increases faster in LMF

Theory and Available Evidence (continued)

Evidence

- **LMFs often smaller (Ben-ner 1988) though possibly due to sampling**
- **K/L lower in LMFs (Zevi 1982, Berman and Berman 1989, Bartlett et al 1992) or same as or higher than in conventional firms (Bonin et al 1993, Bartlett 1994)**
- **Growth same as or faster than in conventional firms (Bartlett 1994)**
- **Payback period used in investment appraisal same as in conventional firms (Bartlett et al 1992) or longer in LMFs (Robinson and Wilson 1993)**
- **No under-investment, possible over-accumulation (Estrin and Jones 1992, 1998) or evidence of lower K but due to capital starvation (Berman and Berman 1989)**

Other factors

If labor is not variable in the short run in the LMF, employment level may constrain investment

Theory and Available Evidence (continued)

French worker coops

- **Part of K in collective ownership / can't be split even if coop closes down,**
- **Individual shares not transferable and paid back at par**
- **but mandatory minimum annual π plowback into collectively-owned K**
- **and limited access to external finance**

So might expect under-investment demand, though automatic plowback and/or external finance may ease financial constraints

Data

16-year data set (1989 – 2004) assembled from

- **Manufacturing part of Annual firm survey (Enquête Annuelle d'Entreprise) conducted by French statistical office (INSEE) on firms *with 20 employees or more***
- **Data on all French worker cooperatives (SCOPs) collected by their Federation, CG-SCOP**

Selected industries in which we had enough observations on SCOPs with 20 employees or more

→ **data set with around 190,000 observations for conventional firms and about 1,900 observations for SCOPs**

in seven industries

Data (cont'd)

Table 1A. Variable Means, 1989-2004 (€ 1000s)

	Textiles (max n coops=188: max n conv=31458)			**Printing & Paper** (n coops=460; n conv=25769)			**Metals** (n coops=580: max n conv=55750)		
	Scops	**Conv.**	***t*-test**	**Scops**	**Conv.**	***t*-test**	**Scops**	**Conv.**	***t*-test**
L	56	**67**	***	64	**87**	***	42	**61**	***
K	653	**2497**	***	3189	**7660**	***	1407	**2575**	***
INV	73	**180**	***	394	**504**	**	148	**231**	***
K/L	21.0	**33.3**	***	44.9	45.8	**NS**	30.4	29.8	**NS**
INV/L	2.20	**2.90**	**	**5.78**	4.53	*	3.49	3.29	**NS**
INV/K	0.72	0.14	**NS**	0.15	0.17	**NS**	0.16	0.15	**NS**
ΔL(%)	1.8	1.4	**NS**	2.8	3.1	**NS**	4.3	2.4	**NS**
ΔK(%)	67.3	9.1	**NS**	7.5	**12.7**	***	**11.0**	7.8	**
ΔINV (%)	187.6	415.4	**NS**	159.3	**648.7**	***	550.0	264.6	**NS**
ΔK/L (%)	65.3	11.3	**NS**	9.9	12.4	**NS**	**11.6**	7.0	*

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; NS: difference is not statistically different from zero.

Data (cont'd)

Table 1B. Variable Means, 1989-2004 (€ 1000s)

	Capital Goods (n coops=165; n conv=14629)			Electricals (n coops=137; n conv=18999)			Transport (n coops=83; n conv=5526)			White Goods and Furniture (n coops=114; n conv=7741)		
	Scops	**Conv.**	***t*-test**	**Scops**	**Conv.**	***t*-test**	**Scops**	**Conv.**	***t*-test**	**Scops**	**Conv.**	***t*-test**
L	46	**85**	***	168	170	**NS**	60	**175**	***	55	**105**	***
K	1882	**3535**	***	**18661**	10760	*	703	**10789**	***	1048	**4477**	***
INV	177	**256**	***	1450	1020	**NS**	115	**958**	***	123	**335**	***
K/L	**38.0**	26.9	***	**39.0**	29.5	**	10.7	**22.9**	***	20.2	**24.3**	***
INV/L	**3.5**	2.7	*	3.7	3.4	**NS**	1.7	**2.7**	***	2.0	2.4	**NS**
INV/K	0.13	0.15	**NS**	0.17	0.16	**NS**	0.19	0.16	**NS**	0.16	0.15	**NS**
ΔL(%)	-1.0	**1.5**	**	3.7	2.9	**NS**	5.3	3.2	**NS**	3.2	1.2	**NS**
ΔK (%)	7.7	11.1	**NS**	9.7	10.1	**NS**	10.7	11.5	**NS**	12.6	9.9	**NS**
ΔINV (%)	212.3	310.6	**NS**	114.6	181.6	**NS**	86.1	**185.7**	**	178.8	209.8	**NS**
ΔK/L (%)	11.8	9.6	**NS**	7.6	10.3	**NS**	8.6	9.0	**NS**	9.2	9.7	**NS**

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; NS: difference is not statistically different from zero.

Data (cont'd)

Table 2A. Variable Medians, 1989-2004 (€ 1000s)

	Textiles (max n coops=188: max n conv=31458)		Printing & Paper (n coops=460; n conv=25769)		Metals (n coops=580: max n conv=55750)	
	Scops	**Conv.**	**Scops**	**Conv.**	**Scops**	**Conv.**
L	33	**38**	37	**39**	32	**36**
K	426	**696**	**1415**	1382	720	**925**
INV	23	**37**	**101**	89	53	**68**
K/L	8.47	**15.05**	**39.96**	28.65	**24.05**	23.27
INV/L	0.525	**0.896**	**2.33**	1.99	1.61	**1.73**
INV/K	**0.072**	0.068	0.071	0.076	0.062	**0.081**
ΔL(%)	0	0	0	0	0	0
ΔK(%)	**3.6**	1.6	**2.1**	1.9	2.4	**2.8**
ΔINV (%)	-13.5	**-7.5**	**0.6**	-4.0	-7.3	**-3.1**
ΔK/L (%)	**6.14**	3.62	**3.0**	2.7	2.8	**3.0**

Data (cont'd)

Table 2B. Variable Medians, 1989-2004 (€ 1000s)

	Capital Goods (n coops=165; n conv=14629)		Electricals (n coops=137; n conv=18999)		Transport (n coops=83; n conv=5526)		White Goods and Furniture (n coops=114; n conv=7741)	
	Scops	**Conv.**	**Scops**	**Conv.**	**Scops**	**Conv.**	**Scops**	**Conv.**
L	25	**40**	41	**47**	**45**	43	35	**42**
K	771	**1026**	782	**1156**	521	**819**	844	**1064**
INV	41	**68**	72	**86**	61	**66**	38	**62**
K/L	**29.27**	20.70	15.92	**18.45**	9.95	**17.23**	18.36	**19.50**
INV/L	1.44	**1.45**	**1.85**	1.63	1.29	**1.40**	1.20	**1.28**
INV/K	0.053	**0.076**	**0.104**	0.093	**0.136**	0.089	0.063	**0.072**
ΔL(%)	0	0	0	0	**2.9**	0.0	0	0
ΔK (%)	1.82	**2.07**	**3.89**	3.08	**6.40**	3.34	**4.73**	2.34
ΔINV (%)	**-3.18**	-4.50	**-1.92**	-3.27	-7.43	**-4.66**	-9.57	**-7.28**
ΔK/L (%)	**3.9**	2.4	**5.55**	3.51	**4.64**	3.29	**5.53**	3.54

Specifications and Estimation

Standard investment models for investment demand:

- **Neoclassical**

Desired K derived from profit maximization, so in standard LMF theory should be the same for conventional and LM firms if capital markets are the same.

Typical empirical specification:

$$\frac{I_{it}}{K_{it-1}} = \alpha_i + \alpha_t + \gamma \frac{I_{it-1}}{K_{it-2}} + \sum_{k=1}^{m} \beta_k \frac{Y_{t-k}}{K_{t-1}} + \varepsilon_{it} \quad \textbf{(1)}$$

where *Y* is sales and *β* is inversely related to the cost of capital (Cobb-Douglas production function)
So if coops under-invest *β* should be lower for SCOPs

Depending on the form of the production function, the user cost of K may enter the model linearly,
So the intercept should be lower for under-investing SCOPs

Specifications and Estimation (continued)

Standard investment models for investment demand (cont'd):

- **With adjustment costs and error correction, the model becomes**

$$\frac{I_{it}}{K_{it-1}} = a_i + a_t + b_1 \frac{I_{it-1}}{K_{it-2}} + b_2 \Delta LogY_{it} + b_3 \Delta LogY_{it-1} + b_4 (LogK_{i,t-2} - LogY_{it-2}) + u_{it} \quad \textbf{(2)}$$

- **Euler**

$$\frac{I_{it}}{K_{it-1}} = \alpha_i + \alpha_t + \beta_1 \frac{I_{it-1}}{K_{it-2}} + \beta_2 \left(\frac{I_{it-1}}{K_{it-2}} \right)^2 + \beta_3 \frac{\Pi_{it-1}}{K_{it-2}} + \beta_4 \frac{Y_{it-1}}{K_{it-2}} + \varepsilon_{it} \quad \textbf{(3)}$$

In both models (2) and (3) systematic differences in capital user costs are expected to affect the intercept.

Specifications and Estimation (continued)

Tests for under-investment

We insert a dummy for cooperatives, *SCOP,* by itself and in interaction with the other variables.

If coops have a lower investment demand, we expect

- **The coefficient of the *SCOP* dummy to be negative in models (2) and (3)**
- **The coefficient of the interaction between the *SCOP* dummy and the ($sales/K_{t-1}$) variable in model (1) to be negative**

Financial and employment level constraints

- **Financial constraints on the supply side are usually tested by including a cash-flow variable (already incorporated in the Euler equations model)**
- **We expect the coefficient of the interaction between the *SCOP* dummy and the cash-flow variable to be positive if cooperatives are more constrained in their access to external finance**

- **In order to account for the possibility that employment in LMFs is not variable in the short run, we insert the level of employment (expected to have no effect on conventional investment) by itself and in interaction with the *SCOP* dummy (expected coefficient negative)**

Other control variables include the firm's mean level of capital for the sample period and a dummy variable for subcontractors.

Models (1) (2) and (3) are estimated by Arellano-Bond GMM with robust s.e.'s

Results

Table 3A. MODEL 1 – ARELLANO AND BOND, 1 STEP, ROBUST (xtabond in STATA)

	Textiles	Printing & Paper	Metals
I/K_(t-1)	**.0538161 (1.93) ***	.0027136 (0.13)	.0128599 (0.14)
Scop*I/K_(t-1)	.1586563 (1.28)	**-.6881304 (-7.56) *****	**-.6733792 (-4.06) *****
Y/K_(t-1)	-.0006286 (-0.78)	.0000636 (0.03)	.0049535 (0.47)
Y/K_(t-2)	**-.0007289 (-3.19) *****	**.0011921 (1.72) ***	.0071038 (1.13)
Scop*Y/K_(t-1)	.0066236 (0.48)	**.1458141 (4.02) *****	**.1205278 (3.45) *****
Scop*Y/K_(t-2)	-.0182364 (-1.46)	.0133966 (0.78)	.0016054 (0.10)
CF/K_(t-1)	**.0184261 (2.40) ****	-.01149 (-0.58)	**.045279 (2.11) ****
CF/K_(t-2)	.0051252 (1.12)	-.0164315 (-1.18)	.0232798 (1.06)
Scop*CF/K_(t-1)	.0184765 (0.35)	.1595104 (1.00)	**-.1854995 (-1.78) ***
Scop*CF/K_(t-2)	.0140632 (0.43)	.153208 (1.13)	-.116195 (-1.04)
L_(t-1)	**-.0002179 (-2.51) ****	-.0007809 (-1.46)	**-.0006443 (-5.35) *****
Scop*L_(t-1)	.0009499 (0.61)	-.0008387 (-0.78)	**-.0043561 (-2.82) *****
Scop	.0596404 (1.29)	.032715 (0.41)	-.0270451 (-0.67)

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; *t*-values in parentheses.

Results (cont'd)

Table 3B. MODEL 1 – ARELLANO AND BOND, 1 STEP, ROBUST (xtabond in STATA)

	Capital Goods	Electricals	Transport	White Goods and Furniture
I/K_(t-1)	**.0993345 (2.08) ****	**.081949 (2.34) ****	**.2366588 (3.09) *****	.0482081 (0.91)
Scop*I/K_(t-1)	**-.5828283 (-5.60) *****	**-.6769641 (-6.75) *****	**-.6259545 (-2.76) *****	**-.524468 (-5.01) *****
Y/K_(t-1)	-.0035128 (-0.88)	**-.0036775 (-1.67) ***	**-.0038044 (-1.84) ***	**.0123055 (2.04) ****
Y/K_(t-2)	.0017684 (1.06)	-.0000844 (-0.15)	-.0000451 (-0.03)	-.0019225 (-1.42)
Scop*Y/K_(t-1)	**.0325934 (2.38) ****	**.0594436 (2.12) ****	**.0626845 (4.98) *****	-.0005015 (-0.01)
Scop*Y/K_(t-2)	.0012329 (0.25)	**.0260909 (1.82) ***	-.0066743 (-0.53)	.015249 (0.71)
CF/K_(t-1)	**.0177797 (2.99) *****	**.026462 (2.11) ****	.0264981 (0.80)	.0136216 (0.38)
CF/K_(t-2)	-.0077957 (-1.21)	.0151911 (1.29)	.0035284 (0.13)	.0286829 (1.26)
Scop*CF/K_(t-1)	.0030556 (0.09)	-.225556 (-1.15)	-.087814 (-0.95)	**.7448733 (2.12) ****
Scop*CF/K_(t-2)	-.0028486 (-0.12)	-.0275521 (-0.34)	.1972059 (1.48)	**.4232124 (2.26) ****
L_(t-1)	**-.0002107 (-2.08) ****	**-.0000685 (-2.44) ****	**-.0001476 (-2.65) *****	**-.0001575 (-1.84) ***
Scop*L_(t-1)	-.0003483 (-0.35)	-.0004451 (-1.05)	**-.0061344 (-2.80) *****	-.0016975 (-0.70)
Scop	-.0602605 (-1.61)	.0434172 (1.42)	---	---

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; *t*-values in parentheses

Results (cont'd)

Table 4A. MODEL 2 – ARELLANO AND BOND, 1 STEP, ROBUST (xtabond in STATA)

	Textiles	Printing & Paper	Metals
I/K_(t-1)	**.0454197 (2.73) *** **	-.0247351 (-0.86)	**.0887731 (2.63) *** **
Scop*I/K_(t-1)	.1549105 (1.50)	**-.5629749 (-9.75) *** **	**-.6060812 (-4.84) *** **
ΔLog y_(t-1)	.0118951 (0.54)	-.0688728 (-0.90)	**.052852 (1.70) ***
ΔLog y_(t-2)	**.0462197 (2.13) ** **	**.2916134 (1.97) ** **	.0193048 (0.83)
Scop* ΔLog y_(t-1)	-.0793186 (-1.04)	.2290618 (1.10)	-.014889 (-0.09)
Scop* ΔLog y_(t-2)	.071368 (0.84)	**-.305829 (-1.72) ***	.0134265 (0.14)
Log k - Log y	-.0054061 (-0.14)	**-.1235775 (-1.77) ***	.0339925 (1.37)
Scop* Log k - Log y	.0189832 (0.26)	**-.3268044 (-2.21) ** **	**-.2518852 (-2.02) ** **
CF/K_(t-1)	**.017404 (2.45) ** **	-.0074074 (-0.58)	**.0547217 (2.82) *** **
CF/K_(t-2)	.0043464 (1.07)	-.001313 (-0.21)	.049504 (1.26)
Scop*CF/K_(t-1)	.1134754 (1.50)	.2471601 (1.31)	.019698 (0.36)
Scop*CF/K_(t-2)	.0195693 (0.48)	.0312281 (0.21)	-.0718731 (-0.53)
L_(t-1)	**-.0001836 (-2.18) ** **	-.0005034 (-1.33)	**-.0006109 (-4.80) *** **
Scop*L_(t-1)	.0009242 (0.50)	-.0002127 (-0.16)	**-.003879 (-2.75) *** **
Scop	.0999172 (0.29)	.6500337 (0.34)	.0013685 (0.00)

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; *t*-values in parentheses.

Results (cont'd)

Table 4B. MODEL 2 – ARELLANO AND BOND, 1 STEP, ROBUST (xtabond in STATA)

	Capital Goods	Electricals	Transport	White Goods and Furniture
I/K_(t-1)	.0277661 (0.80)	.0481809 (1.33)	**.1984468 (2.35) ****	.0709753 (1.08)
Scop*I/K_(t-1)	**-.5321273 (-5.25) *****	**-.8171573 (-8.16) *****	**-.4697488 (-1.88) ****	**-.463098 (-3.81) *****
ΔLog y_(t-1)	**.0541929 (2.05) ****	**.0581431 (2.44) ****	**-.1228221 (-1.77) ***	.0051075 (0.11)
ΔLog y_(t-2)	.0010118 (0.06)	**.1041074 (3.65) *****	**.1030699 (2.03) ****	-.0291372 (-0.74)
Scop* ΔLog y_(t-1)	.1142249 (1.39)	-.0292056 (-0.25)	**.4981396 (3.04) *****	-.1025006 (-1.48)
Scop* ΔLog y_(t-2)	**-.0634713 (-2.00) ****	-.0890167 (-1.13)	**-.4097044 (-1.80) ***	-.1438398 (-1.07)
Log k - Log y	-.0294752 (-1.41)	-.0228035 (-1.06)	0740788 (1.26)	-.055904 (-1.45)
Scop* Log k - Log y	-.0564401 (-1.09)	**-.3853472 (-5.80) *****	-.2514834 (-1.07)	.0462194 (0.61)
CF/K_(t-1)	**.0130566 (3.59) *****	**.0213505 (2.26) ****	.0318269 (1.04)	.0122726 (0.32)
CF/K_(t-2)	-.0051586 (-1.43)	.0080837 (0.73)	.0120464 (0.49)	**-.0023618 (-2.20) ****
Scop*CF/K_(t-1)	.0167195 (0.56)	-.0198241 (-0.18)	-.0215915 (-0.19)	**.7187019 (3.20) *****
Scop*CF/K_(t-2)	.0061502 (0.29)	-.0624933 (-1.16)	-.004924 (-0.04)	**.4503918 (2.43) ****
L_(t-1)	**-.0002727 (-2.42) ****	**-.0000491 (-2.28) ****	-.0000637 (-1.39)	**-.0001255 (-1.73) ***
Scop*L_(t-1)	-.0004777 (-0.51)	-.0004553 (-1.40)	**-.0119676 (-4.05) *****	-.0020727 (-0.54)
Scop	-.4116237 (-0.59)	**.9122354 (1.72) ***	---	---

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; *t*-values in parentheses.

Results (cont'd)

Table 5A. MODEL 3 – ARELLANO AND BOND, 1 STEP, ROBUST (xtabond in STATA)

	Textiles	Printing & Paper	Metals
I/K_(t-1)	.1045378 (0.84)	.4583907 (1.46)	**.7322496 (3.43) *** **
Scop*I/K_(t-1)	**-.5288268 (-2.55) ** **	**-1.026443 (-3.02) *** **	**-1.017975 (-3.84) *** **
(I/K_(t-1))^2	**-.0402147 (-2.46) ** **	**-.0872442 (-2.19) ** **	**-.3156608 (-4.05) *** **
Scop * (I/K_(t-1))^2	**.3187445 (5.84) *** **	.0582297 (0.44)	.0821817 (0.58)
Y/K_(t-1)	.0034258 (0.79)	.0057154 (1.03)	.0014352 (0.12)
Y/K_(t-2)	-.0005148 (-1.45)	.001225 (1.36)	.007095 (1.12)
Scop*Y/K_(t-1)	.0114842 (1.16)	**.1014205 (2.02) ** **	**.1257139 (3.10) *** **
Scop*Y/K_(t-2)	-.0109836 (-1.03)	.0218634 (1.05)	-.0024995 (-0.16)
CF/K_(t-1)	**.013576 (2.37) ** **	-.0077967 (-0.30)	**.0331852 (1.71) * **
CF/K_(t-2)	.0032466 (0.71)	-.0118607 (-0.85)	.0163662 (0.77)
Scop*CF/K_(t-1)	-.0019652 (-0.03)	.2071426 (1.19)	-.1321506 (-1.29)
Scop*CF/K_(t-2)	.0028693 (0.06)	.1262899 (0.97)	-.1530444 (-1.04)
L_(t-1)	**-.0003624 (-1.95) * **	**-.0008766 (-1.94) * **	**-.0008695 (-5.68) *** **
Scop*L_(t-1)	-.0013468 (-0.44)	-.0006095 (-0.54)	**-.0026385 (-1.84) * **
Scop	.0013862 (0.03)	.0730476 (0.87)	---

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; *t*-values in parentheses.

Results (cont'd)

Table 5B. MODEL 3 – ARELLANO AND BOND, 1 STEP, ROBUST (xtabond in STATA)

	Capital Goods	Electricals	Transport	White Goods and Furniture
I/K_(t-1)	**.1835131 (2.32) ****	**.6015698 (3.23) *****	**.6358217 (2.77) *****	**.7724476 (2.63) *****
Scop*I/K_(t-1)	**-.7543623 (-2.98) *****	**-.7332945 (-1.75) ***	-.7283296 (-1.13)	**-1.461102 (-4.91) *****
(I/K_(t-1))^2	-.085864 (-1.44)	**-.2424474 (-4.75) *****	**-.5566191 (-3.97) *****	**-1.070123 (-2.66) *****
Scop * (I/K_(t-1))^2	.319952 (0.52)	-.4411075 (-0.86)	-.2033997 (-0.24)	**1.329959 (3.20) *****
Y/K_(t-1)	.0018516 (0.91)	.0023368 (0.89)	**.0280747 (4.67) *****	**.0130622 (1.91) ***
Y/K_(t-2)	.0008344 (0.66)	.0015832 (0.96)	-.0010801 (-0.70)	-.0008475 (-0.54)
Scop*Y/K_(t-1)	**.0314914 (2.08) ****	.0412057 (1.32)	**.0395562 (2.53) ****	.0137307 (0.37)
Scop*Y/K_(t-2)	.0024996 (0.50)	**.0313195 (2.12) ****	-.0095562 (-0.55)	.0106 (0.45)
CF/K_(t-1)	**.0191308 (3.15) *****	.0039099 (0.27)	-.0551297 (-1.36) 0.175	.0284383 (0.84)
CF/K_(t-2)	**-.019886 (-2.03) ****	-.0011456 (-0.10)	-.0250782 (-0.90)	.034209 (1.37)
Scop*CF/K_(t-1)	.0032063 (0.08)	-.1803812 (-0.95)	.0091377 (0.10)	**.6870875 (1.92) ***
Scop*CF/K_(t-2)	.002433 (0.10)	-.0252021 (-0.30)	.2572291 (1.64)	**.3536948 (2.35) ****
L_(t-1)	**-.0002884 (-2.31) ****	**-.0000851 (-2.74) *****	**-.0003027 (-1.92) ***	**-.0001801 (-1.76) ***
Scop*L_(t-1)	.0001274 (0.15)	-.0004529 (-1.04)	**-.0053529 (-2.69) *****	-.0031396 (-1.37)
Scop	-.0518388 (-1.36)	-.0366921 (-0.55)	---	---

***, ** and *: the means are significantly different at the 1%, 5% and 10% levels respectively; *t*-values in parentheses.

Conclusions

We find

- **No evidence of under-investment on the demand side on the part of French worker cooperatives compared with conventional French firms**
- **No evidence of greater financial constraint on cooperatives, but lagged profit may not be the right proxy for cash flow (Bonin et al 1993) or cash flow the right variable for measuring financing constraints (Kaplan and Zingales 1997)**
- **Investment may be constrained by past employment levels in both groups of firms and in the same way**
- **The only consistent difference between the two groups of firms is in the AR pattern of investment, which is negative in cooperatives.**

Next step: investigate SCOPs' capital accumulation and relationship between investment and internal and external sources of finance, taking up agenda from Estrin and Jones (1993, 1998) Bonin et al (1993) Pencavel et al (2006)